Exploring the cardiovascular health knowledge, attitudes, and practices in the Fijian Indian community in New Zealand

Thrishila Parshu Ram

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'Om Shri Ganeshaye Namah'

This thesis I dedicate to my beautiful parents,

Mr Parshu Ram and Mrs Pushpa Parshu Ram,

who dreamed, supported, and guided my sister and I

towards a higher education and better quality of life despite

the many challenges they faced in their own lives.

I love you with all my heart and soul.

Abstract

Cardiovascular disease (CVD) places a significant burden on the New Zealand (NZ) health system. The growing size and diversity of the migrant community in NZ highlights the importance of effective and culturally targeted health promotion services, identifying barriers to health and promoting healthier lifestyles. CVD is highly prevalent in the Fijian Indian community in NZ. Unless immediate action is taken, this rapidly growing and slowly ageing population will inevitably face significant adverse health outcomes and increase the social and economic burden of CVD on the NZ health system. Knowledge, attitudes and practices (KAP) surveys are employed to better understand what is known, believed and practised about various health conditions in the context of a study population. A limited number of cardiovascular (CV) health-related KAP questionnaires are available in the literature, and there is limited documentation of their development and validation. The level of KAP towards CV health in high-risk populations, such as the Fijian Indian community living in NZ, has not been explored. Thus, the purpose of this study was to develop a descriptive, cross-sectional CV health-related KAP survey to gain a deeper understanding of the Fijian Indian community and to support CV health and disease prevention initiatives.

The study was divided into two phases. The aim of the first phase was to develop and test a questionnaire to measure the level of KAP towards CV health in the Fijian Indian community in NZ. The questionnaire was developed following a thorough literature review and under the guidance of an advisory team (n = 5). Each advisory member assessed the content validity of each question until an item Content Validity Index (I-CVI) of ≥ 0.78 and scale CVI (S-CVI) of ≥ 0.9 was achieved. The final analysis of the developed questionnaire demonstrated moderate to high content validity with mean I-CVI of 0.94 for appropriateness, mean I-CVI of 0.94 for relevance and mean I-CVI of

0.86 for clarity. The overall average agreement (S-CVI/Ave) for the study questionnaire was 0.91. Experts also provided positive feedback on the overall questionnaire. Prior to this analysis, it was difficult to make predictions about how well the developed questionnaire would be received by the target community, because of the lack of research and understanding about this community in NZ. The aim of the second phase was to test the feasibility of applying the developed questionnaire to test the KAP towards CV health in the Fijian Indian community living in Auckland, NZ. During this phase, 30 participants were asked to complete the questionnaire at two timepoints (with a two-week interval) and provide open feedback on the questionnaire. The purpose of this phase was to assess the test–retest reliability of the questionnaire, test for appropriateness and understanding, and evaluate timing. The key findings of this phase showed that the developed questionnaire was feasible and appropriate to assess the level of KAP towards CV health in this community. The next step for this novel study is to evaluate the construct validity of this questionnaire in a larger sample population.

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List of Abbreviations

ACC	Accident Compensation Corporation
AUDIT	Alcohol Use Disorders Identification Test
AUT	Auckland University of Technology
BMI	Body Mass Index
CAD	Coronary Artery Disease
COACH	Coaching on achieving CV health
CVD	Cardiovascular disease
CVI	Content Validity Index
HaPI	Health and Psychosocial Instruments
HBM	Health belief model
HDL	High-density Lipoprotein
HPS	Health Promoting Schools
IHD	Ischaemic heart disease
I-CVI	Item-Content Validity Index
KAP	Knowledge, attitudes and practices
KCMC	Kilimanjaro Christian Medical Centre
LDL	Low-density Lipoprotein
MoH	Ministry of Health
NZ	New Zealand
PHARMAC	Pharmaceutical Management Agency of New Zealand
PR	Primary researcher
SES	Socioeconomic status
SSA	Sub-Saharan Africa
US	United States
WHO	World Health Organization
TG	Triglycerides

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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Chapter 1: Introduction

This chapter sets the scene for this research by introducing the identity, culture, traditions and values of the Fijian Indian community. It provides an overview of their history and journey from India to Fiji as well as from Fiji to New Zealand (NZ) and the significance of this study. This leads into the strategic study design, aims and hypotheses of this study as well as the personal background and position of the researcher. An overview of the thesis is provided at the end of the chapter.

1.1 Study Context

NZ has one of the highest proportions of people born overseas, after Luxembourg, Switzerland and Australia (Organisation for Economic Co-operation and Development, 2022). The latest NZ Census data (2018) shows that more than a quarter of the NZ population (27.4%) was born overseas, representing an increase since the 2006 and 2013 NZ Censuses (Stats NZ, 2020b). Stats NZ projects that by 2043, NZ will become more ethnically diverse (compared to 2018) because of high levels of net migration of ethnic groups, natural increases and slower population growth of the 'European or Other' ethnic group (Stats NZ, 2022).

Within NZ, there are serious and persistent inequalities in health outcomes in relation to gender, age, ethnicity and socioeconomic groupings (Ministry of Health [MoH], 2021a). The growing size and diversity of the migrant community in NZ highlights the importance of identifying factors informing equity of access and engagement with health services, effective health promotion services and healthier lifestyles. Furthermore, the increasing ageing population and challenge of non-communicable diseases in NZ highlights the growing need for effective and equitable health and disability support services that meet the needs of all New Zealanders (Cammock et al., 2021; MoH, 2020a; Parr-Brownlie et al., 2020).

Cardiovascular disease (CVD) places a significant burden on the NZ health system. According to the MoH, 'CV risk is on a continuum, meaning that anyone is potentially at risk but some more than others' (MoH, 2018a). In NZ, people of Indian descent, particularly in the largest city, Auckland, have significantly higher mortality rates for CVD than do their European/Other ethnicity counterparts, but lower rates than Māori and Pacific peoples (Mehta, 2012; Mehta et al., 2018). Nonetheless, ethnically Indian migrants have much higher hospitalisation rates from CVD (including congestive heart failure) and stroke, along with the highest rate of coronary procedures among all the ethnic groups (Mehta, 2012; Mehta et al., 2018). In addition, Indians had the greatest proportion of people dispensed with pharmacotherapy—that is, blood pressure-lowering, lipid-lowering medications and aspirin—across all medications considered for people with CVD in 2018 (Mehta, 2012; Mehta et al., 2018).

Furthermore, people of Māori, Pacific and Indian ethnicities experience the onset of CVD earlier in their lives than do people of other ethnicities (Chan et al., 2008; Grey et al., 2010; Hooper et al., 2016; MoH, 2017a, 2018a). Currently, cardiovascular (CV) risk assessments in Māori, Pacific and South Asian populations (and people with known significant CVD risk factors) are recommended for men aged as early as 30 years and women aged 40 years. This is 15 years earlier than that recommended for other population groups in NZ (MoH, 2018a; Wells et al., 2017). This inequality in ethnic populations' CV health risk and outcomes places significant stress on the NZ health system, especially given the considerable (54.1%) growth in the Indian population in NZ since 2013 (Stats NZ, 2021a). The Fijian Indian community (study population) represent a major subgroup of the Indian migrant population in NZ, with comparable risk for CVD and poor health outcomes, about which little is known.

1.1.1 The Fijian Indian Community in New Zealand

1.1.1.1 Brief History

The Republic of Fiji, commonly known as Fiji, is an island nation located in Melanesia. Fiji is an archipelago of more than 300 tropical islands in the South Pacific Ocean and has two major islands, Viti Levu and Vanua Levu. Fiji is a multicultural and multiracial country, with a population of 932,636 people (as of 12th July 2022) (World Population Review, 2022). Fiji's population is mostly comprised of native Fijians, or Melanesians (54%) and Indo-Fijians (38%; Ramesh, 2017; World Population Review, 2021). Indo-Fijian, Fiji Indian and Fijian Indian are all terms used to describe people who are citizens of Fiji and are of Indian descent (Walker, 2005). For this study, the term 'Fijian Indian' has been chosen to describe the community of interest.

The history of Indian immigration and settlement in Fiji began in 1879 following an agreement between the colonial governments of India and Fiji. Approximately 60,553 registered, Indian labourers were indentured by the British to work on the sugar plantations and mills that were established by the Australia-based Colonial Sugar Refining Company in Fiji. An indenture contract/agreement known as *girmit* for each labourer was arranged for five years. If they chose to work for an additional five years, they earned the right to repatriation at the expense of the colonial government unless they chose to permanently settle in Fiji. During that time, Indian labourers in Fiji had to live and work in extremely harsh conditions that were often described as 'hell' (or '*narak*') (Ali, 1977).

Following nationalist pressure in India in 1919, the indenture system was eradicated, and Indian labourers were presented with the option of being repatriated back to India at the cost of the government following the termination of their contracts. However, by then, many had settled in Fiji and decided (and were encouraged/permitted) to stay as independent/tenant farmers of sugar companies or as

business people (Ali, 1977; Fiji High Commission, 2021; Gillion, 1958; Kelly, 1988; Minority Rights Group International, 2021).

1.1.1.2 Cultural and Socio-political Context

The Fijian Indian community is a relatively small, close-knit and unique group of people. Though an ethnic minority in most countries including NZ, this growing community is recognised as culturally and economically diverse in their language, religion, cultural practices, spiritual beliefs and traditions.

The emergence of a Fijian Indian identity or genesis is largely a result of the indenture system, in which many Indian labourers arrived from northern and south-eastern parts of India to work in Fiji. To adapt to the sugar plantation work and as a result of resettlement, a unique language known as Fiji Bhat, Fiji Hindi or Fiji Hindustani was formed from the different Indian (Hindi) dialects as well as several loan-words from English and the Fijian language (Barz & Siegel, 1988; Raghuram et al., 2013). Because Fiji Hindi does not have a unique written language pure (*shudh*) Hindi from India is officially used in writing (Siegel, 1998). Hence, most Fijian Indian people speak either English or Fiji Hindi (Mugler, 2003).

Religion and spirituality are highly valued in the Fijian Indian community. Most Fijian Indian people are Hindu or Muslim, and a minority are Christian or Sikh (Fiji Bureau of Statistics, 2021; Naidu et al., 2013). Their religious beliefs influence some of the cultural traditions, and social and religious celebrations they practice, including the type of food that is prepared every day and at each event/celebration. Like the Fijian culture, Fijian Indian people tend to eat three times a day, with dinner being their main meal. Enjoying morning and afternoon tea (plus snacking) throughout the day is also quite common in their daily routine. Their meals usually consist of fruits, vegetables, carbohydrates such as rice and/or home-made roti, occasionally with meat, fish and vegetarian pickles and relishes. Over the years, Fijian Indian people have adapted to

their tropical environment and incorporated Fijian food and practices into their diet, such as eating taro and cassava, cooking food in an underground oven (*lovo*) and drinking kava (*yagona*) (Advameg Inc, 2021). Sharing food with family and friends is an integral part of the culture and it is not uncommon to feed and serve guests who arrive without an invitation.

Economically, the Fijian Indian community makes up a large proportion of the business community in Fiji (Douglas et al., 2018; Evason, 2016; Otsuka, 2006). It has been reported that Fijian Indian people are among the most hardworking and enterprising people in the world (Indian Newslink, 2020). Education is respected and highly valued in the Fijian Indian community. According to Otsuka (2006), Fijian Indian people hold great respect for their 'guru' (teacher) and books. Their value for education is 'deeply rooted in the Bhagavad-Gita philosophy of learning and the Quran teaching, each of which emphasises the importance of increasing one's store of information and acquiring knowledge' (Otsuka, 2006, p. 116). Correspondingly, Fijian Indian people believed that attaining an academic formal education will raise their economic and social status and allow them to gain access to the civil service and professional employment. Similarly, attaining a formal education was seen as a viable avenue or opportunity to progress from farming and to survive in a growing westernised market economy (Otsuka, 2006).

1.1.1.3 From Immigration to Emigration

The Fijian Indian community deeply values its cultural identity (Oranga Tamariki, 2019). By the late 1980s, the Fijian Indian population had thrived to the point that their population size exceeded that of native Fijians. Unfortunately, this caused certain factions of the native Fijian community to become concerned about their ability to have ultimate power in Fiji (Trnka, 2005). Over time, racial tensions emerged in the country, which eventually led to political unrest and ignited a series of coups. Since

1987, Fiji has been destabilised by four military coups. Although the entire country has faced some challenging times, the Fijian Indian population in particular has suffered violence, persecution, and a loss of land and security over these years. Many Fijian Indian families during this time suddenly found themselves landless, and homeless when their leases expired and were not renewed, despite having lived on that land for generations (Kumar & Kumar, 2022; Oranga Tamariki, 2019).

Given this level of uncertainty and personal insecurity (because of the military coups), numerous Fijian Indian people (mostly skilled workers, politicians and highly qualified professionals) left Fiji and resettled in more developed and politically stable countries such as NZ, Australia, the United States of America (USA) and Canada (Devi, 2013; Leckie, 2015; Naidu et al., 2013; Otsuka, 2006; Queensland Health et al., 2017; Voigt-Graf, 2008). Fijian Indian people have made up a considerable proportion of Indian immigrants to NZ following the first coup in Fiji and since the early 1990s (Hundt, 2019).

In NZ, population statistics show a substantial growth in the Fijian Indian community between 2006 and 2018 (Appendix 1). In 2018, there were 15,132 Fijian Indian people living in NZ. The median age for this community was 33 years and there were slightly more females (7,854) than males (7,272) in this community (Appendix 1). Of the Fijian Indian population, 90.4% were English speakers and 50.8% spoke two languages (Appendix 1). Unfortunately, available data do not indicate which languages other than English were most spoken in the community at that time. In terms of regional distribution, 70.3% of Fijian Indian people lived in the Auckland region (Appendix 1) and almost half of the population (45.2%) had arrived in NZ 10–19 years ago (Appendix 1). As a result, 75.7% of the 2018 Fijian Indian population had been born overseas, mainly in the Pacific Islands (Appendix 1). In 2018, most of the population was religiously associated with Hinduism (47.7%), Islam (24.3%) or Christianity (14%)

(Appendix 1). Regarding family composition, 33.3% of Fijian Indian females (aged 15 years or over) had no children, 16.8% had one child, 26.8% had two children and 12.5% had three children (Appendix 1).

The statistics also indicate that 57% of this ethnic population were employed full time (30 hours or more per week) and 4.9% were unemployed. Of those employed in 2018, 22.5% were professionals, 11.5% managers, 11.1% sales workers and 14.1% technicians and trades workers (Appendix 1). The median income in this community at the time was NZ$36,000 per annum and only 8.9% of the population earned NZ$70,001–100,000 per annum. The main source of income for this population was their wages, salary, commissions and bonuses (>60%) (Appendix 1).

In terms of education, 20.6% of the population had an overseas secondary school qualification, 14.6% had a bachelor's degree/Level 7 qualification and 11.8% had no qualifications (Appendix 1). Last, 73.9% of the community were not engaged in active study; that is, were not attending, studying or enrolled in tertiary institutions, school, early childhood education or any other place of education or training. This means that only 22.7% and 3.4% of the population were engaged with full- or part-time study, respectively (Appendix 1).

Fijian Indians in 2018 were a young, growing and economically active population with a calculated median age of 33 years and a large percentage (66.2%) under the age of 15. Although many of the above statistics may have changed over the last four years, this community is considerably smaller than the Indian population (239,139 people, 2018 Census) and Pasifika populations like Samoan (182,721 people, 2018 Census) and Tongan (82,389 people, 2018 Census) communities in NZ (Stats NZ, 2021a).

Although Fijian Indian people may be a relatively small community in NZ, they are very much visible in the NZ business community. Many NZ Fijian Indian families

run small businesses such as dairies, fruit and vegetables shops and ethnic clothing stores, or drive local taxis. Like in Fiji, high academic achievement, strong socioeconomic status (SES), high positions in occupations, and wealth creation are still common aspirations for families and individuals in this NZ community (Oranga Tamariki, 2019). To keep the Fijian culture alive in NZ, several community associations including the Fiji Association in Auckland (Inc) and general clubs like the Fiji Club at the University of Otago have been established. Similarly, several societies were established in the 1990s to provide legal and practical support for Fijian Indian women facing domestic violence or immigration problems (Leckie, 2015). In terms of community leadership, there are a few well-known, highly regarded members of the community from whom individuals/families can seek support and guidance. While there is no official Fijian Indian Association/Society/Club in NZ (to date), a community group called the Fiji Girmit Foundation NZ has become active on social media recently (Fiji Girmit Foundation NZ, 2022).

In NZ, Fijian Indian is not recognised as an ethnic group. In most data or information related to or for Fijian Indian people, they are included/categorised in the broader Indian or Asian ethnic group. Since 2020, there has been an ongoing discussion and appeal to the NZ Government to recognise the NZ Fijian Indian community as Pacific Islanders rather than Asians. In a presentation on Radio NZ (Rovoi, 2021), Mr Krish Naidu, chair of the Fiji Girmit Foundation of NZ expressed that many members of the Fijian community have never been to India or have any connections/links with the nation. He said that young Fijian Indians (in NZ) have strong roots in Fiji and are missing out on crucial opportunities and support in areas such as health and education because they are classified as Asians in NZ, and not Pacific Islanders. The news story also reported mixed views on this subject from various significant leaders in the NZ Pacific community. Rachel Mario, chair of the Auckland Rotuman Fellowship (NZ

community group), said she saw no issue with Fijian Indians being classified as Pacific Islanders as they were born in Fiji and should be treated as people from the Pacific. Malcom Andrews, a Fijian of Solomon Island heritage now living in NZ, founder of Project ConchShell (NZ community group) and a former health and education manager at the Pasifika Medical Association, however, strongly disagreed with this view. He said that Fijian Indian people do not represent the values, principles, belief systems and landmarks that connect Pacific people through thousands of years of migration and evolution—even if their descendants had lived in Fiji for more than 140 years. Offering an alternative view, Dr Primla Khar, president of the Indian Association of Manukau commented that the Fijian Indian population could fit into both Asian and Pacific Island ethnicity groups. (Rovoi, 2021).

Although the outcomes and decisions around this discussion are still unfolding, the conversation highlights the need for researchers and health professionals to examine the cultural and socio-political complexity of this community and how this may influence its members' health and wellbeing when developing policy and service delivery systems.

In Fiji, diabetes, CVD and stroke are the leading causes of death. Risk factors such as high fasting plasma glucose, high Body Mass Index (BMI), high blood pressure and an unhealthy diet have been found to be the key drivers of these non-communicable diseases (Ministry of Health and Medical Services, 2014; The Institute for Health Metrics and Evaluation, 2022). Despite substantial progress in improving life expectancy and mortality rates since 1990, the health and wellbeing of the Fijian population remain relatively poor, as is the case in other developing Pacific Island countries with rapidly ageing populations (Dearie et al., 2021; Taylor et al., 2013; World Health Organization [WHO], 2011). Despite limited data comparing the two main ethnic groups in Fiji (Native Fijian and Fijian Indian), the mortality rate for all

adults in Fiji was reported in 2011 to be two to three times higher than that in the general population in Australia and NZ (Carter et al., 2011). The deterioration in Fiji's healthcare system, and lack of primary care facilities, information and advocacy are regarded as contributing factors in the increasing incidence and prevalence of these diseases, especially diabetes and CVD (Razak & Prasad, 2007; Snowdon et al., 2013).

1.1.2 **Cardiovascular Health and Disease**

1.1.2.1 Definition and Description

CV health refers to the health of the heart and blood vessels. The CV system consists of the heart—which serves as a pump—and blood vessels (i.e., arteries, capillaries and veins) that deliver blood to specific parts of the body. The primary function of the CV system is to provide adequate blood circulation throughout the body (Chaudhry et al., 2021). This is essential to maintaining life, as the flow of blood cells and plasma provides nutrition throughout the body and eliminates waste products from cells. The failure of any component of the CV system can cause irreversible damage to cells and organs, making it one of the leading causes of death in the developed world (Lever, 2005).

CVD is a group of disorders of the heart and blood vessels or diseases of the cardiac muscle and vascular system supplying the heart, brain and other vital organs (Frąk et al., 2022; Gaziano et al., 2006). This includes coronary heart disease (also called coronary artery disease or ischaemic heart disease), cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism (WHO, 2021a). Table 1.1 describes these types of CVD. Flora and Nayak (2019) explained that the 'underlying pathogenesis and progression associated with nearly all CVD is predominantly of atherosclerotic origin' (p. 4063). This involves the accumulation or build-up of fatty deposits/lipids and fibrous elements in the inner walls of large arteries (Lusis, 2000). This accretion can lead to the

gradual development of CVD and subsequently myocardial infarction (heart attack),

cardiac arrhythmia (irregular heartbeat) or stroke (brain attack) (Flora & Nayak, 2019).

Table 1.1

Types of CVD (Adapted From WHO, 2021a)

Type	Description
Coronary heart disease	A disease of blood vessels supplying the heart muscle
Cerebrovascular disease	A disease of blood vessels supplying the brain
Peripheral arterial disease	A disease of blood vessels supplying the arms and legs
Rheumatic heart disease	Damage to the heart muscle and heart valves from rheumatic fever, caused by streptococcal bacteria
Congenital heart disease	Birth defect that affects the normal development and functioning of the heart caused by malformation(s)
Deep vein thrombosis & pulmonary embolism	Blood clots in the leg veins, which can dislodge and move to the heart and lungs

1.2 Problem Statement

The study population, the Fijian Indian community, has grown significantly in

NZ over the years. In 2018 there were 15,132 Fijian Indian people residing in NZ,

which represents a 40.1% increase in the population since 2013 (Stats NZ, 2021a).

According to the 2019 *Global Burden of Disease Study* report (Murray et al., 2020), Fiji

has one of the highest rates of non-communicable diseases in the world; they account

for 84% of total mortality and 31% of premature mortality. Specifically, the report

found that ischaemic heart disease (IHD) and Type 2 diabetes contributed to 23% and

21% of the total mortality in Fiji, respectively (Chand et al., 2020; Mounsey et al.,

2022; Murray et al., 2020). Hence, non-communicable diseases such as CVD and Type

2 diabetes have been documented as a public health concern in Fiji (Fiji Bureau of

Statistics, 2022; Gyaneshwar et al., 2016; Li et al., 1994; Zimmet et al., 1983).

Unfortunately, NZ MoH statistics for the study population are very limited.

Furthermore, there are discrepancies with the current system of ethnic classification

used in the NZ Census. In most cases, the Fijian Indian community is classified as part

of the much larger 'Indian/Asian-Indian' or 'Pacific Island' ethnic population.

Therefore, the levels of risk and prevalence of CVD in this population in NZ can only be roughly estimated from the rates in these larger ethnic populations. Consequently, Fijian Indian people are also at risk of suffering from CVD in later life. Although the Fijian Indian population in NZ makes up approximately 1% of the total NZ population (Stats NZ, 2020a), the increasing and slowly ageing Fijian Indian population combined with the high incidence and prevalence of CVD (including its risk factors) in this community is certain to augment the burden of CVD in NZ unless immediate action is taken. Thus, the rationale for undertaking this research was to develop a tool that would measure the knowledge, attitudes, and practices of the migrant Fijian Indian population towards CVD.

1.3 Significance of This Study

The chronic, deteriorating and irreversible nature of CVD requires a stronger focus on risk prevention through community health promotion and education. Targeting prevention is crucial to both maintaining a sustainable health system and reducing the social and economic burden of disease. However, this ultimately depends on the affordability and effectiveness of relevant interventions (MoH, 2016). A leading example of an effective migrant community education programme targeting coronary heart disease was developed and evaluated by Kandula et al. (2015), involving a culturally salient, multimedia coronary heart disease patient education programme (in both English and Hindi). It resulted in significantly improved knowledge and perceptions of both CV health and disease prevention among South Asian immigrants in the USA. The success of the programme was attributable to previous work in gaining community input and emphasising culture, literacy and behaviour change, which were integrated throughout the programme. This study highlighted the importance of incorporating both the health needs and barriers of an individual and their community to enhance NZ health initiatives or interventions (Kandula et al., 2015; Shah et al., 2015).

A need for enhanced community knowledge was identified for consideration (although not specifically prioritised) in the MoH's (2008) *Diabetes and CVD Quality Improvement Plan*. Wong (2015) emphasised that, 'when implementing health promotion activities for a specific population, it is pertinent to understand the target audience and the various cultural and historical perspectives they carry that impact on health' (p. 3). Thus, attention to the health needs of individual ethnicities or communities is required for successful health promotion.

In 2009, the state of Queensland (Queensland Health) conducted a large health needs assessment for the Fijian population in Australia, evaluating their knowledge, attitude and beliefs regarding health literacy and health-seeking behaviour. They found, in focus groups, with community members and leaders that the level of health literacy among indigenous Fijian and Fijian Indian communities was 'very poor'. This was supported by several testimonies from participants who described their lack of knowledge and understanding of health issues and services. They also described a lack of culturally appropriate health promotion and strategies, coupled with a cultural reluctance to seek help. Findings included a fear of testing or screening, and the perception that health was a low priority, and that financial wellbeing was valued more than health status. The results of the assessment highlighted the importance of health promotion given the significant burden of chronic health conditions such as CVD. Furthermore, the lack of engagement or poor attitude towards preventative health was found to pose an additional challenge to the public health system (Queensland Health, 2011).

Mehta (2012) conducted a similar study to that in the State of Queensland regarding the health needs of Asian people in the Auckland region. Several key issues were identified including the need to improve health promotion and health-related education among Asian communities. Mehta (2012) noted that Fijian Indian people may

have different health profiles from Indian people from India, but because of the lack of research with this population they were unable to compare or understand the differences and needs of this community (Mehta, 2012).

In NZ, the KAP towards CV health and disease has not to date been explored in any high-risk population/community. According to Andrade et al. (2020), KAP surveys should ideally precede any awareness or intervention programme. Data from KAP surveys, whether CV health related or not, provide valuable insight for future interventions, including planning, designing and developing health promotion strategies/programmes (Andrade et al., 2020). Thus, as a first step in identifying strategies to prevent CVD and improve the CV health and wellbeing of the Fijian Indian community, a preliminary assessment of their current KAP towards CV health is necessary.

1.4 Study Design

This study was divided into three phases (Figure 1.1). The first phase aimed to develop and refine a KAP questionnaire to measure the level of KAP towards CV health in the Fijian Indian community under the guidance of relevant experts in the field and community. Once validated, the second phase of this study aimed to test the feasibility and appropriateness of the developed questionnaire to measure the KAP towards CV health in the Fijian Indian community. Depending on the success of Phases One and Two and the time allocated to complete this research, the final phase of this study was intended to apply the questionnaire to measure KAP among the wider Fijian Indian community as a survey. Phase Three was not undertaken in this doctoral research and is now proposed as a follow-up study.

Figure 1.1

The Study Design

1.5 Aims and Hypotheses

The focus of this study was on four research aims. Table 1.2 outlines these aims, their corresponding hypotheses and how they align with the design of this study.

Table 1.2

Study Aims and Hypotheses

	Aim	Hypothesis
Phase One	1. To develop and test a questionnaire to measure the level of KAP towards CV health in Fijian Indian community	a) The developed questionnaire will effectively measure the level of KAP in the Fijian Indian community.
Phase Two	2. To assess the feasibility of applying the developed questionnaire to test the KAP towards CV health in the Fijian Indian community.	
Phase Three (proposed) – *not actioned*	3. To assess the level of KAP (i.e., behaviour and beliefs) towards CV health in the Fijian Indian community in Auckland, NZ.	b) The level of KAP towards CV health among the Fijian Indian community is poor/low.
	4. To understand the relationship between KAP (i.e., behaviour and beliefs) and CV health among the Fijian Indian community in Auckland, NZ.	c) There are positive relationships between cardiovascular health KAP and CV health in the Fijian Indian community

1.6 Research Questions

The following research questions were developed to answer the research aims:

1. Is the developed questionnaire feasible and appropriate to assess the level of knowledge, attitude and practices in the Fijian Indian community?

If so:

1. What is the level of CV health knowledge among the Fijian Indian community?

2. What are the attitudes towards CV health among the Fijian Indian community?

3. What are the practices (behaviour and beliefs) of the Fijian Indian community towards CV health?

4. What are the relationships between KAP in the Fijian Indian community and CV health?

5. What are the demographic and sociocultural factors that influence the KAP of CV health in the Fijian Indian community?

6. How should the KAP of CV health in this community be promoted and enhanced?

1.7 The Researcher's Personal Background and Position in This Study

The researcher is a member of the Fijian Indian community. She was born in Fiji but migrated to NZ at a young age with her family for a better education and quality of life. When the researcher was presented with the opportunity to design her own doctoral research, there was only one subject she wanted to explore further—her people and the rising burden of CVD in the community. Her passion for this topic stems from her own personal experience with people in her family and relatives suffering from CVD and stroke. As a member of this community, she has witnessed and observed the lack of understanding around CV health and disease prevention despite the information and support available. This led the researcher to think about how this research opportunity might help contribute to improving the understanding of CV health in this community. As a starting point, the researcher searched the literature to find evidence for what her community already knew about CVD and whether past researchers had asked the community directly about their perceptions, beliefs or behaviours around managing their heart health and general wellbeing. Unfortunately, insufficient published research was identified to answer any of these questions.

This study arose from the researcher's quest to provide a better understanding of the KAP towards CV health and disease in the Fijian Indian community.

1.8 Overview of the Thesis

This thesis is divided into seven chapters. Chapter 1 provides an overview of the study context and design of this research. Chapter 2 highlights the importance of CV health and disease prevention and provides an overview of the NZ health system and two well-known models for health promotion and behaviour change: the *Ottawa Charter for Health Promotion* ('the Ottawa Charter') and the Health Belief Model. Chapter 3 focuses on KAP surveys and their role in CV health and disease prevention. Chapter 4 describes the methods and findings of Phase One of this study and development of the KAP of CV Health Questionnaire. Chapter 5 presents the methods and findings of Phase Two, the feasibility study. Chapter 6 discusses the relevance of these findings to the study research questions and how they can support the Fijian Indian community in NZ. The chapter also highlights the strengths and limitations of this study. Last, Chapter 7 summarises this thesis with preliminary recommendations and opportunities for future research.

Chapter 2: Health Promotion and Behaviour Change Model

This chapter describes the complex nature of CVD and its global and national impacts. The common risk factors for CVD and how it can be prevented and treated are discussed as well as the importance of CV health promotion. Next, the NZ health system is explored along with the role of the New Zealand Health Strategy. The second half of this chapter describes theoretical models of health promotion and behaviour change—the Ottawa Charter and the Health Belief Model—and how they can be used to promote and improve CV health.

2.1 Global and National Impacts of Cardiovascular Disease

Globally, non-communicable diseases are the leading cause of death, killing 41 million people each year and accounting for 71% of all deaths (Al-Mawali, 2015; WHO, 2021a). There are four main forms of non-communicable diseases: CVD (predominantly, heart attack and stroke), cancers, respiratory diseases and diabetes (Al-Mawali, 2015). Over the last century, CVD has progressed from being a relatively inconsequential disease to a leading cause of morbidity and mortality worldwide (Joseph et al., 2017; Levenson et al., 2002). In 2019, an estimated 17.9 million people died from CVD, which represented 32% of all global deaths. Of these deaths, 85% were a result of heart attack or stroke (WHO, 2021a). According to Lozano et al. (2012), by the year 2030 CVD is projected to be responsible for more than 23 million deaths worldwide.

CVD remains the leading cause of disease burden globally based on the latest evaluations of the *Global Burden of Disease Study* (2019) (Murray et al., 2020). Roth et al. (2020) found that global trends between 1990 and 2019 for 'disability-adjusted life years' and number of 'years of life lost' because of CVD had increased significantly, and that the number of 'years lived with disability' had doubled from approximately 17.7 million to 34.4 million because of CVD (Roth et al., 2020). In other words, CVD is responsible for a considerable reduction in the quality of life, mortality and life

expectancy. CVD imposes substantial costs on health systems, especially in low- and middle-income countries where 'both the annual cost of care and the cost of an acute CVD episode exceed many times the total health expenditure per capita' (Gheorghe et al., 2018, p. 1).

In the past, the high burden of CVD seen in developing countries was a result of the growing incidence of atherosclerotic diseases, possibly because of the presence of more risk factors (e.g., obesity, diabetes, high cholesterol, high blood pressure), relatively early age at which CVD manifests, larger population sizes, growing urbanisation, and higher proportion of young adults or middle-aged people in these countries (Yusuf et al., 2001). Today, 21 years later, it seems these factors have remained unchanged (Amini et al., 2021; Yusuf et al., 2001). As a result, there is a pressing need to focus on implementing cost-effective interventions and health policies concerned with CVD prevention (Roth et al., 2020).

In NZ, CVD is also one of the leading causes of mortality and morbidity. IHD, is the leading cause of death (and premature death) for Māori males, and for both non-Māori males and females, and the second leading cause of death (and premature death) for Māori females (MoH, 2018b). Over the past 20 years, through targeted prevention strategies and improved access to treatment, there have been considerable reductions in the incidence and mortality rates of CVD in NZ. However, the disease still imposes a substantial burden on the NZ health system (Grey et al., 2018; MoH, 2016, 2021b; National Health Committee, 2013).

Health expenditure in NZ is increasing because of an ageing population and the prevalence of chronic disease including CVD and Type 2 diabetes (Nutrition Research Australia, 2018). Like in other countries, CVD contributes significantly to NZ's direct (related to goods, services and other resources for the prevention and treatment of CVD) and indirect (related to productivity gains or losses related to illness or death) healthcare

costs (Nutrition Research Australia, 2018; Pogosova, 2019). In 2008, one NZ district health board spent NZ$151 million for people living with CVD and/or diabetes in inpatient hospitalisations, pharmaceuticals and laboratory services. An additional NZ$24 million was spent on people who had CVD and/or diabetes in their last 12 months of life. On average, this district health board found that each person with CVD and/or diabetes required NZ$2,400 more in healthcare costs than did a person without CVD or diabetes (Chan et al., 2010). In 2011–12, $NZ228 million was spent on hospitalisations for individuals with IHD. Each hospitalisation of a patient with IHD cost an average of NZ$10,500 and lasted around 4.4 days. For stroke, the total acute hospitalisation cost was $NZ67 million; if rehabilitation costs are included, this cost increases to $NZ120.6–127.7 million. In 2020, the NZ Institute of Economic Research estimated the cost of stroke in NZ to be approximately $NZ1.1 billion annually (National Health Committee, 2013)—a vast increase on previous estimates. This cost is predicted to steadily increase to $NZ1.7 billion annually by the year 2038 (Hogan & Siddharth, 2020; Pearce & Longhurst, 2021).

CVD has become a global epidemic, with the burden of disease shifting rapidly (Gaziano, 2005). According to the WHO, 80% of premature CVD is preventable and initiatives to lower CVD risk can greatly reduce the health burden on both the individual and the healthcare system (WHO, 2022a).

2.2 Cardiovascular Disease Risk Factors

CVD has no geographical, socioeconomic or gender boundaries. The aetiological risk factors that lead to the onset and development of CVD are well recognised and consistent throughout the world (Deaton et al., 2011; Flora & Nayak, 2019). Generally, cardiometabolic, behavioural, environmental and social risk factors are the main drivers of CVD (Roth et al., 2020). According to the WHO (2022a), the factors contributing to the development of CVD include a person's genetic makeup, the

environment in which they were raised, their SES, age, mental health, diet, obesity, physical inactivity, smoking and alcohol intake, as well as diabetes, globalisation and urbanisation. Risk factors associated with CVD can be categorised as non-modifiable or modifiable. A non-modifiable CVD risk factor is one that cannot be altered, such as a person's age, ethnicity or family history. A modifiable CVD risk factor is one that can be altered through behavioural change, which includes smoking, diet, and exercise. Collectively, these risk factors represented more than 90% of the CVD risk in all epidemiological studies. Research has shown that many of these risk factors are increasing in prevalence as developing countries move towards more urbanised environments (Deaton et al., 2011; Flora & Nayak, 2019).

Several studies, including systematic reviews with meta-analyses, have shown the promising effects of reducing and managing the various risk factors of CVD (Arafa et al., 2021; Bu et al., 2021; Chang et al., 2021; Choi et al., 2020; Frieden & Jaffe, 2018; Mukhtar et al., 2021; Schroeder et al., 2019; Sisti et al., 2018). In almost all of these studies, the underlying notion is that much of the global CVD burden can be prevented, and that recognising these risk factors and taking steps to reduce or prevent them will help to significantly reduce the rate of rise of this global epidemic (Deaton et al., 2011; Flora & Nayak, 2019; Mukhtar et al., 2021).

2.3 Cardiovascular Disease Prevention and Treatment

CVDs are also known as 'silent killers'. They are often asymptomatic, and, in most cases, a heart attack or stroke may be the first sign of an underlying CVD (WHO, 2021a).By that time, significant damage may have already occurred in the heart muscle or CV system. CVD irreversibly damages the cardiomyocytes (heart muscle cells). This damage leads to a cascade of detrimental events, including the formation of scar tissue, the overload of blood flow and pressure capacity, and the overstretching of viable heart muscle cells, eventually leading to heart failure and death (Hotkar & Balinsky, 2012).

The purpose of CVD prevention programmes is to reduce the risk of CVD by altering one or more risk factors (as discussed previously) through lifestyle modifications or medical treatments such as pharmacological therapy, surgical procedures and medical devices (Willis et al., 2012).

2.3.1 Lifestyle Modifications

Most CVDs can be prevented by addressing behavioural risk factors such as physical inactivity, unhealthy diet, smoking/tobacco use, obesity and the harmful use of alcohol (WHO, 2021a). Universally, exercise is recognised as having a positive impact on many health outcomes, and its effect on CVD is no different (Stewart et al., 2017). Chen et al. (2021) found that introducing moderate physical activity (aerobic or resistance training) three times a week to 248 pre-diabetic patients for 24 months reduced their risk of CVD significantly (Chen et al., 2021). Similarly, Arija et al. (2017) assessed the effectiveness of a nine-month physical activity programme on CVD risk for 364 adult participants. They also found a significant difference in the overall CVD risk compared to the control group during the intervention (Arija et al., 2017).

Unhealthy diets are a major risk factor for CVD. In a systematic review by Chareonrungrueangchai et al. (2020), healthy dietary patterns were found to have significant beneficial effects on the risk of CVD. Similarly, a high intake of certain food groups and nutrients such as nuts, wholegrains, legumes and dietary fibre, and a moderate intake of fish were found to prevent CVD (Chareonrungrueangchai et al., 2020). According to Stewart et al. (2017), the body of evidence regarding the influence of diet and dietary patterns on CVD risk can be ambiguous. Nonetheless, their analysis does support the fact that there is good evidence for recommending diets that are high in fibre, fruit and vegetables, and low in simple sugars and salt to reduce the risk of CVD (Stewart et al., 2017).

Another strong risk factor for CVD is obesity. This condition is an independent risk factor not only for the development of CVD, but for a number of other serious health conditions such as Type 2 diabetes, obstructive sleep apnoea, asthma and osteoarthritis (Akil & Ahmad, 2011). One of the most common ways of measuring obesity is by calculating an individual's BMI. Generally, having a BMI of 25–29.9kg/m^2 is defined as being overweight, and a BMI of ≥30kg/m^2 is classified as obese (Lavie et al., 2009). However, the BMI cut-off value between overweight and obesity among the Asia-Pacific population is much lower: a BMI of 23–24.9 is considered overweight and a BMI of ≥25kg/m^2 is considered obese. The lower classification among the Asia-Pacific population stems from (a) the higher health risks associated with obesity at a lower BMI in Asian populations and, (b) Pacific Islanders tendency to have a larger muscle mass and thus higher BMI compared with Caucasians (Lim et al., 2017; WHO, 2000).

According to Khan et al. (2018), obese patients experience CVD events at an earlier age, live with CVD for a longer period and have a shorter average lifespan compared with individuals in a healthier weight range (Khan et al., 2018). Similarly, Ebbert et al. (2014) found that a higher BMI is associated with a risk of fatal and non-fatal coronary heart disease as well as a higher risk of ischaemic, haemorrhagic and fatal stroke. Given that a direct relationship exists between an individual's BMI and CVD risk, weight loss or the management of weight can have a positive effect not only on a person's risk of CVD but also for other health conditions (Haase et al., 2021).

Furthermore, smoking and alcohol use can have unfavourable effects on CVD risk. Studies have long established the effects of an individual's smoking and alcohol consumption on CVD. Not only does smoking play a role in the initiation of CVD, but it also contributes to and causes disease progression and fatal CV outcomes (Messner & Bernhard, 2014). As an example, smoking has been directly linked to atherogenesis

(formation of plaques or fatty deposits in the arteries; Villablanca et al., 2000). The chemicals in cigarette smoke can cause the cells that line the blood vessels to become inflamed/swollen, resulting in their narrowing, which can lead to a number of CVD conditions including heart attack and stroke (Centers for Disease Control and Prevention, 2014; Ricci et al., 2018). Alcohol consumption, as defined by Chiva-Blanch and Badimon (2020), can either increase or decrease the risk of CVD depending on the amount consumed, drinking frequency and pattern of consumption (Chiva-Blanch & Badimon, 2020). According to Piano (2017), alcohol consumption can have complex effects on CV health. Major pathophysiological effects such as mitochondrial dysfunction and changes in circulation, inflammatory response, oxidative stress and programmed cell death can occur, and are integral to most CVDs (Piano, 2017). Thus, studies such as that by Xu et al. (2007) have shown that avoiding smoking and limiting alcohol consumption helps to reduce the risk of mortality from CVD.

2.3.2 Medical Treatment

Apart from recommending favourable lifestyle modifications, primary care physicians can prescribe essential medications (pharmacological therapy) to people at high risk of developing CVD or those who have CVD. This includes lipid-lowering drugs, anti-hypertensives, anti-platelet and anti-coagulation therapy, and blood glucose control (Flora & Nayak, 2019). Physicians may also recommend a combination of these drugs depending on a person's CVD risk assessment and/or disease severity. At times, surgical procedures and medical devices are needed to treat CVDs. The most common surgical procedures are balloon angioplasty, coronary artery bypass, valve repair and/or replacement, heart transplantation and artificial heart surgery. Medical devices such as pacemakers, prosthetic valves and cardiac patches to cover openings (holes) in the heart are also used to treat CVD (WHO, 2021a). Despite the effectiveness of these various treatments, there is still no cure for any form of heart disease. Nevertheless, research on

CVD prevention and therapy continues, and new findings may lead to better treatments and prevention strategies in the future (Hajar, 2017).

2.4 Importance of Cardiovascular Health Promotion

Given the extensive nature of CVD and the complexity of its known risk factors, an equally comprehensive approach is required locally and globally to challenge the incidence and prevalence of CVD. While deaths from CVD mainly occur in adulthood, exposure to the risk factors begins in childhood and accrue throughout an individual's life. Consequently, efforts to challenge this growing epidemic must focus not only on the treatment and prevention of CVD, but also on the promotion of CV health and primordial prevention (Castellano et al., 2014; Falkner & Lurbe, 2020; WHO, 2013).

In the WHO's (2013) *Global Action Plan for the Prevention and Control of Non-communicable Disease (2013–2020)*, the first global target is for 'a 25% relative reduction in risk of premature mortality from CVDs, cancer, diabetes, or chronic respiratory diseases' (p. 5). To achieve this, one of the main objectives in the plan is 'to reduce modifiable risk factors for non-communicable diseases and underlying social determinants through the creation of health-promoting environments' (WHO, 2013, p. 5). This includes 'strengthening the capacity of individuals and populations to make healthier choices and follow lifestyle patterns that foster good health' (WHO, 2013, p. 29).

Key strategic approaches to the way in which CV health can be promoted include changes in healthcare policies (Joynt, 2015), the introduction of family and community education programmes (Journath et al., 2020; Schwalm et al., 2019), health coaching (An & Song, 2020), self-management programmes (Engelen et al., 2020), advice through medical professionals, and the promotion of CV health at schools (Fernandez-Jimenez Rodrigo et al., 2019), workplaces (Mulchandani et al., 2019; Proper & van Oostrom, 2019) and public/social events (Martin et al., 2022), as well as

through informative advertisements and information booklets (Mentrup et al., 2020). Since 2000, the Korea Occupational Safety and Health Agency has supported implementation of a CVD prevention programme at a number of companies in Korea. The programme consists of a medical check-up and health counselling for workers by occupational health nurses for one year. Kwak et al. (2019) studied the short-term effects of this programme and found that the intervention led to significant reductions in participants' blood pressure, total cholesterol levels, BMI and the rate of smoking. It also increased the percentage of workers engaged in regular exercise and improved the overall CV risk for almost half of the workers (Kwak et al., 2019). In the same way, Kirk-Gardner and Steven (2003) studied a community-based project in Canada called *Hearts for Life*, which was designed to identify CV risk behaviours and change in healthy adult volunteers through an educational intervention about CVD. They found that this educational programme significantly improved knowledge of CVD and reduced coronary risk behaviours such as smoking, eating unhealthy food, high stress levels, inactivity and obesity in healthy adult volunteers over a short period (Kirk-Gardner & Steven, 2003). On a global scale, it has been proven that anti-tobacco laws that prevent smoking in enclosed spaces have reduced CV events in many countries (Castellano et al., 2014).

Despite these encouraging outcomes, CVD is still the leading cause of mortality and morbidity in the world today, and more understanding of the knowledge, health-seeking behaviours and beliefs of given populations, particularly those at risk, is needed if we are to truly challenge the global impact of CVD. The next section discusses the NZ health system and strategies in place to support the prevention and management of long-term health conditions such as CVD.

2.5 The New Zealand Health System

In NZ, health and disability services are delivered by a complex network of organisations and people who work together and across systems to achieve better health for people. Public health units, primary health organisations, non-government organisations, Crown entities, health professionals, and professional and regulatory bodies for health professionals (including all medical and surgical specialist areas), nurses and allied health, play vital roles in providing efficient and quality services for people. A range of education providers and research institutions are involved in the delivery of services and education of the workforce. Alongside this are various consumer bodies and non-government organisations that provide services and advocacy for specific populations and more formal advocacy at inquiry boards, committees and entities. In this complex system, the NZ Ministry of Health has a range of roles in addition to being the government's principal advisor and support to the minister of health. It funds national services such as disability support and public health services and has regulatory functions. Another key organisation is the Accident Compensation Corporation (ACC), which has a no-fault scheme that covers all New Zealanders who have been injured as a result of an accident (ACC, 2021; MoH, 2017d, 2020c).

Until recently (July 2022), district health boards administered most day-to-day business. NZ's 20 district health boards provided and managed health services for the population of their district. This included funding for primary care, hospital services, public health services, aged care services and services provided by other non-government health providers such as Māori and Pacific providers (MoH, 2017d). In April 2021, the NZ Government proposed a new structure for the health system in response to the 2018 *Health and Disability System Review* (Appendix 2). The review states that although the overall NZ public health and disability system performs well, it has significant and persistent issues in the delivering consistent and equitable care for

all. Furthermore, there are indications that the NZ health system is struggling to keep up with the current demand, and the workforce needs greater support to keep the NZ population well for longer. According to this review, the ageing population, advances in care and growing burden from chronic health conditions mean that the demand for consistent and equitable health services will only grow over decades to come (Department of the Prime Minister and Cabinet, 2021a). Thus, the aim of this new structure and delivery of health services was to ensure 'all people have access to the consistent quality care when they need it, to help people live longer in good health and have the best quality of life' (Department of the Prime Minister and Cabinet, 2021b, p. 1).

On 1 July 2022, NZ introduced the new health system in which the 20 district health boards have been de-established, and their functions merged into a single entity or health service, called Te Whatu Ora—Health NZ. Te Whatu Ora—Health NZ now leads the day-to-day running of the health system for the country as well as operational functions of the MoH, such as managing national contracts. This allows the MoH to focus on health policies, strategies and regulations. Te Whatu Ora—Health NZ manages all the health services, including hospital and specialist services, and primary and community care. In this new structure, hospital and specialist services will be planned nationally and delivered more consistently across the country. Four regional divisions and a range of district offices (Population Health and Wellbeing Networks) will develop locality plans for primary and community services and implement these to improve the health and wellbeing of communities. (Department of the Prime Minister and Cabinet, 2021b)

Thus, Te Whatu Ora—Health NZ is also responsible for improving services and outcomes across the health system. The NZ Health Promotion Agency is now a core business unit in Te Whatu Ora—Health NZ that ensures the whole system is orientated

towards supporting people to live well. Furthermore, a Māori Health Authority (Te Aka Whai Ora) is working alongside Te Whatu Ora—Health NZ to improve services and achieve equitable health outcomes for Māori and to develop a *New Zealand Health Plan*—a blueprint for what the health system will deliver over years to come (Department of the Prime Minister and Cabinet, 2021a, 2021b).

Since the new health system (Te Whatu Ora—Health NZ) came into effect, it has been criticised for not prioritising and addressing the unique health needs of Asian and other ethnic minority communities. In January and May 2022, the Asian Health Reform Advisory Group provided considerable feedback and recommendations to the MoH to strengthen the focus of health system reform (Asian Health Reform Advisory Group, 2022; Young et al., 2022). The key recommendations included:

> (1) addressing the invisibility of Asian and ethnic health by developing a systematic national health strategy and implementation health plan for Asian and ethnic communities at regional/district level and (2) promoting an inter-agency approach and strengthen collaboration and partnership to improve health and wellbeing of Asian and ethnic populations including those being inter-sectionally vulnerable. (Asian Health Reform Advisory Group, 2022, p. 12)

For the Fijian Indian community, these recommendations would make NZ public health services easier to access, fairer and more consistent. At the time of writing, it is unknown whether the MoH will implement these recommendations.

2.6 The New Zealand Health Strategy

Prior to the reform, the MoH had put in place its two-part *NZ Health Strategy* (2016) to guide and lead the healthcare services/system in NZ. It consists of the *NZ Health Strategy: Future Direction* and the *Roadmap of Actions 2016*, and aims to continually improve and provide better healthcare services for an evolving environment and population. The central theme of the *NZ Health Strategy* is for 'all New Zealanders to live well, stay well and get well' (Minister of Health, 2016a, p. 15); hence its relevance to this study.

The first part, the *NZ Health Strategy: Future Direction* defines the high-level

direction for NZ's health system over 10 years (2016–26). It outlines some of the

challenges and opportunities the system faces; defines its future, including the culture

and values that underpin this direction; and outlines the five strategic themes that will

support this system towards this central theme and future. The five strategic themes—

'People powered', 'Closer to home', 'Value and high performance', 'One team' and

'Smart system'—are essential for supporting the health and wellbeing of the Fijian

Indian community in NZ (Minister of Health, 2016a; Appendix 2). For example, the

'People powered' theme is about helping New Zealanders understand information they

need to manage their care. The theme 'Closer to home' recognises the importance of

providing care closer to where people live, learn, work and play, especially when it

comes to managing long-term conditions (LTCs). The theme 'Value and high

performance' is focused on delivering better outcomes relating to people's experience

of care, resources and health status. The 'One team' theme aims to develop leadership,

talent and workforce skills throughout the health system and collaborate with

researchers. The last theme, 'Smart system' is committed to discovering, developing

and sharing effective innovations across the NZ health system (Minister of Health,

2016a).

An important issue recognised in the *NZ Health Strategy* (2016) is the

prevention and management of LTCs. Like many healthcare systems around the world,

the NZ health system faces the challenges of an ageing population and rising burden of

LTCs (Minister of Health, 2016b). An LTC, also known as a non-communicable disease

or chronic condition/illness, can be defined as 'any on-going health condition that can

be controlled, but not cured, and requires individuals to self-manage complex symptoms

and treatments' (Wilson & Stock, 2019, p. 1111) such as CVD, diabetes, respiratory

diseases, cancer, mental illness, chronic pain, chronic kidney disease and dementia (MoH, 2020d).

Under the *NZ Health Strategy* theme 'Closer to home', the MoH has created an action to 'tackle long-term conditions and obesity' by increasing 'the effort on prevention, early intervention, rehabilitation and wellbeing for people with long-term health conditions, such as diabetes and CVD'. The aim is to address the 'common risk behaviours such as obesity' by 'intervening at key points across the life course' (Minister of Health, 2016b, p. 11). Although it is difficult to determine how many people in NZ have any type of chronic condition, LTCs represent the largest health loss in NZ. Health loss (or burden of disease) measures how much healthy life is lost because of premature death, illness or impairment (MoH, 2016). According to the MoH, 88% of health loss in NZ is caused by long-term mental and physical conditions (non-communicable diseases), 8% is attributable to injuries and 4% to infectious diseases, nutritional deficiencies and neonatal disorders (MoH, 2016).

Today, the five themes of the *NZ Health Strategy* play an important role in improving and supporting the health and wellbeing of all migrant communities including the Fijian Indian community in NZ. A systematic understanding of how this health strategy can support and promote the CV health of the Fijian Indian community is important. This study is the first step towards providing empirical evidence about the CV health and wellbeing of the Fijian Indian community in NZ. This evidence could help inform the *NZ Health Strategy*, build knowledge and understanding of the Fijian Indian community in NZ, and improve the services and systems available to support their health and wellbeing.

The second part of the *NZ Health Strategy* is the *Roadmap of Actions 2016*. This document lists the 27 areas for action that the health system can take to achieve the goals of this strategy over the next five years (Appendix 2). Each action has been

categorised into one of the five strategic themes described above and will be updated over the 10-year lifespan of the strategy (Minister of Health, 2016b). To date there has been no update to the *Roadmap of Actions 2016* since its publication.

To support the health and wellbeing of all migrant communities in NZ, it is important to understand the effect of migration on health.

2.7 Effect of Migration on Health

Globally, an increasing number of studies has been published on the effect of migration on health. These studies have highlighted the effect of migration on the health of women and children (Gürol & Turfan, 2019; Spencer et al., 2022), youth (Wu et al., 2018), and refugees in Canada (Newbold & McKeary, 2018), Europe (Lebano et al., 2020), the USA (Reed & Barbosa, 2017), NZ and Australia (Dowling et al., 2022; Kanengoni et al., 2018). There is also considerable literature focusing on the effect of migration on health service engagement or utilisation (Ledoux et al., 2018) and health-promoting behaviours (Alidu & Grunfeld, 2018). Despite this growing body of evidence, no research has been conducted on the effect of migration on the health and wellbeing of Fijian Indian people.

Migration is a factor that can have both positive and negative effects on the health and wellbeing of individuals and families. Generally, individuals migrate to improve their living conditions or to escape from debt and poverty (Virupaksha et al., 2014). Often, individuals and families move to gain access to certain medical treatments, or to live in an environment that offers better-quality healthcare services (Gerritsen et al., 2013). However, the process of migration can be challenging and stressful. Many times, it can lead to a lack of preparedness, difficulties adapting to the new environment, language barriers, cultural differences and unpleasant experiences (Virupaksha et al., 2014). These circumstances can impact the health service engagement, health-promoting behaviours and health outcomes of individuals and

families (Davies et al., 2010; Gerritsen et al., 2013; Harrison et al., 2020; Klein & von dem Knesebeck, 2018).

Migrants are often vulnerable to non-communicable diseases such as diabetes, hypertension and CV events, and communicable diseases such as measles and food- or water-borne diseases (WHO, 2022b). The process of acculturation often requires adapting to new surroundings, learning a new language and culture, changing lifestyles, reducing physical activity and making major changes in eating habits such as replacing low-sodium, low-fat diets with processed foods and high amounts of salt. All these changes take a toll on an individual's health and wellbeing, making them more susceptible to illness and disease (Rosenthal, 2014). Furthermore, there is growing evidence that migrants face unique barriers in accessing and engaging with healthcare services including the lack of information, cultural and language barriers, and socioeconomic challenges (Pottie et al., 2017). Consequently, public health efforts need to focus on the barriers to healthcare, understand the needs of the population, and find ways to adapt and better engage with these populations (Rosenthal et al., 2022).

2.8 Migrant Health Status in New Zealand

There are significant health disparities between major ethnic groups that make up NZ's diverse population. According to the MoH (2017c), ethnic groups such as the Māori and Pacific population are the most disproportionately affected by LTCs. The adult Pacific population has a high burden of LTCs such as diabetes, IHD and stroke. The incidence of these chronic conditions is much higher than that for other ethnic groups in NZ and the mortality rates for CVD and diabetes accounts for a large proportion of the overall mortality rates of Pacific people compared with other ethnic groups (MoH, 2014). The causes of poor health in Pacific people are numerous and complex. Education level, sociocultural and economic factors have been identified as having the greatest influence on their health in NZ. However, employment status,

occupation, income and housing have also been identified as contributing factors. According to the *NZ Health Survey*, Pacific people are exposed to higher levels of health risks and unhealthy behaviours. Poor nutrition (e.g., they are less likely to meet vegetable and fruit intake guidelines), lack of physical activity, hazardous drinking and smoking are some examples of these unhealthy behaviours (MoH, 2017b, 2021c).

The Indian community, which is one of the largest communities in the NZ Asian population, has higher rates of CVD and diabetes than the Asian population (Mehta, 2012). The *Asian Health Chart Book* (MoH, 2006) reported that Indian people have significantly higher CVD hospitalisations and mortality rates than other groups in the total population. IHD is a pathological condition caused by an atherosclerotic obstruction or spasm of the epicardial coronary arteries or microvascular dysfunction. This causes a reduction in blood flow in the affected coronary arteries, creating an imbalance between oxygen demand and supply to the myocardium (heart muscle), causing ischaemia (Jensen et al., 2020). In NZ, the rate of IHD hospitalisation is significantly higher for Indian males and females, across all ages, than for the total population. Surprisingly, IHD mortality is significantly higher in Indian females compared with their Chinese and Other Asian counterparts, and the Indian community has higher stroke hospitalisations than the total population (Mehta, 2012; MoH, 2006). Correspondingly, Indian people also have a higher rate of self-reported diabetes than other ethnic groups in NZ (Scragg & Maitra, 2005).

The health of the Asian population is also affected by several factors. A report by Mehta (2012) identified three key issues concerning Asian communities' health needs in Auckland: (1) the lack of preventative behaviours in these communities, such as healthy eating and adequate exercise; (2) the high anecdotal prevalence of smoking; and (3) barriers to appropriate healthcare such as language, lack of knowledge of the NZ health system, lack of cultural competence among health professionals, stigmatism

associated with health issues like mental illness and disability, lack of confidentiality, and transport and cost issues (Mehta, 2012). Since then, no update has been provided by the author on whether these issues have improved or worsened over the years.

As mentioned above, the ethnic identity of Fijian Indian people is multifaceted. Although many Fijian Indian people have adapted to the Fijian (and host) environment with changes to the way they dress, the food they eat, lifestyle and language, they have maintained a distinct culture (Queensland Health et al., 2017). However, the lack of research and ambiguity over population group classification (in statistics) for the Fijian Indian population in NZ makes it difficult to specifically report on their health needs, knowledge, attitudes and behaviours, or compare the above findings with those for other ethnic groups. If the recent recommendations of the Asian Health Reform Advisory Group are not followed, the Fijian Indian community will continue to be hidden in the statistics of other major ethnic communities. Nonetheless, if the Fijian Indian community were to be associated with both the Pacific and Asian communities in NZ, then environmental factors and/or inherent sociocultural influences would mean that the Fijian Indian population should be considered an at-risk group for developing non-communicable diseases such as CVD and diabetes.

Along with educating NZ communities about how to access and utilise healthcare services and providing resources for them to manage their health better, 'building the cultural competence in the system to reflect NZ's cultural diversity' (Minister of Health, 2016b, p. 7) has also been identified as an important area of action in the *NZ Health Strategy*.

2.9 Need for Cultural Competence

Raising cultural competence in healthcare has been an approach to reduce health inequalities globally and improve the knowledge, attitudes and skills of health professionals (Handtke et al., 2019; Jongen et al., 2018; Kurtz et al., 2018). The Medical

Council of New Zealand defines cultural competence as 'an awareness of cultural

diversity and the ability to function effectively and respectfully, when working with and

treating people of different cultural backgrounds' (Medical Council of New Zealand,

2019, p. 18). Becoming culturally competent:

> requires the ability to draw on the values, traditions and customs of other
> cultural groups, to work with knowledgeable persons from other cultures, and
> shape service delivery to meet patients' social, cultural and linguistic needs by
> developing targeted interventions and other supports. (Betancourt et al., 2002;
> Counties Manukau DHB, 2001 as cited in Tiatia, 2008, p. 3)

Thus, 'building the cultural competence' of the NZ health system also has the

potential to develop new and innovative ways to improve health promotion and disease

prevention in high-risk populations. Given the evidence presented above, this would be

important and valuable for developing appropriate and culturally safe approaches to

prevention, early detection and management of LTCs such as CVD.

The Medical Council of New Zealand (2019) acknowledged that despite its

importance, cultural competence alone may not be enough to improve health

inequalities, however it may contribute to delivering culturally safe care. In a recent

literature review, Curtis et al. (2019) coined cultural safety as an extension of cultural

competence:

> Cultural safety requires healthcare professionals and their associated healthcare
> organisations to examine themselves and the potential impact of their own
> culture on clinical interactions and healthcare service delivery. This requires
> individual healthcare professionals and healthcare organisations to acknowledge
> and address their own biases, attitudes, assumptions, stereotypes, prejudices,
> structures and characteristics that may affect the quality of care provided. In
> doing so, cultural safety encompasses a critical consciousness where healthcare
> professionals and healthcare organisations engage in ongoing self-reflection and
> self-awareness and hold themselves accountable for providing culturally safe
> care, as defined by the patient and their communities, and as measured through
> progress towards achieving health equity. Cultural safety requires healthcare
> professionals and their associated healthcare organisations to influence
> healthcare to reduce bias and achieve equity within the workforce and working
> environment. (Curtis et al., 2019, p. 14)

This definition of cultural safety addresses key factors that are responsible for health inequalities and is expected to be fit for purpose in NZ and internationally (Curtis et al., 2019).

To date, 16 responsible authorities including the Medical Council of New Zealand have published clear cultural safety/competence standards that registered health professionals must meet (Curtis et al., 2019; Health Quality and Safety Commission New Zealand, 2021). Alongside these standards, there are various resources available in NZ to learn about various cultures, including specific health-related ethnically grouped frameworks/guidelines. These frameworks/guidelines help health professionals and organisations to better understand how to plan, support and work with people from different cultural backgrounds. These include, for example, Te Whare Tapa Wha (a Māori health model) and the Fonofale Model (a Pacific health model) (Health Navigator, 2021; Mauri Ora, 2021, 2021; MoH, 2020e, 2021d; Tiatia, 2008; Waitemata District Health Board, 2021). Surprisingly, there is (to date) no overlying national health framework for the Asian population in NZ despite its rapid growth (Liao, 2019). Similarly, there are very few (publicly accessible) studies concerning the Fijian Indian community in NZ, let alone resources/frameworks on how health professionals can promote the community's health and wellbeing in NZ.

2.10 Health Promotion and Behaviour Change Models

2.10.1 Ottawa Charter for Health Promotion

The Ottawa Charter has been the 'gold standard' for global health promotion since its inception in November 1986. It has been used by many health promoters in different settings as a seminal document and/or template to improve health and reduce inequalities around the world (Thompson et al., 2018; Watson, 2008; WHO, 2012).

This framework was created at a preliminary conference on health promotion held in Ottawa, Canada in 1986. At this conference, more than 200 participants from 38

countries met to exchange their experiences and share their knowledge of health

promotion. An open dialogue was formed between the many health workers, politicians,

academics and representatives of governmental, voluntary and community organisations

and the group drew up a 'charter' that reflected their individual and collective

commitments to the common goal of health (WHO, 2012).

The Ottawa Charter presents a positive and empowering view on health. It

describes health promotion as 'the process of enabling people to increase control over,

and to improve, their health' (WHO, 1986, p. 1) and outlines several fundamental

conditions and resources (i.e., peace, shelter, education, food, income, a stable eco-

system, sustainable resources, social justice and equity) that are basic prerequisites for

the improvement of health (WHO, 2021b).

There are five key action areas in the Ottawa Charter: (1) build healthy public

policy, (2) create supportive environments, (3) strengthen community action, (4)

develop personal skills, and (5) reorient health services (described below). There are

also three key strategies—advocate, enable and mediate—that the charter recommends

integrating into any health promotional work (Thompson et al., 2018; WHO, 2021b).

The first action, 'Build healthy public policy' emphasises the importance of

health promotion beyond medical care. It recognises the importance of putting health on

the agenda of policy makers in all sectors and at all levels, thereby raising awareness of

their responsibility for health outcomes and the health-related repercussions of their

decisions. A health promotion policy can combine different but related approaches such

as legislation, economic measures, taxation and organisational change to create health,

income and social policies that encourage greater equity. Coordinated and combined

actions can also contribute to ensuring safer and healthier goods and services, healthier

public health services and cleaner, more enjoyable environments (WHO, 2009).

The second action, 'Create supportive environments' acknowledges the fact that societies are interrelated and that there is a complex link between people and the environment. This link creates the basis for a socioecological approach to health as well as addressing the protection of the natural and built environments, and the conservation of natural resources. As a guiding principle globally for nations, regions, and communities alike, this action inspires the need to take care of each other, our communities and our natural environment. The socially informed patterns of life, work and leisure have a significant impact on health, especially in a rapidly changing environment. Therefore, a systematic assessment of the effect of developing areas such as technology, work, energy production and urbanisation on health is essential. Actions that arise from such an assessment will ensure there is a positive benefit to public health (WHO, 2009).

The third action, 'Strengthen community actions' explains how health promotion 'works through concrete and effective community action in setting priorities, making decisions, planning strategies and implementing them to achieve better health' (WHO, 2009, p.3). The centre or key to this process is community empowerment; that is, allowing communities to take ownership and control of their own journeys and future. Community development or empowerment focuses on drawing upon existing people and material resources available in the community to improve self-help and community support, along with creating adaptable methods for increasing public participation in decision making and the direction of health-related issues. This is only achievable through complete and continuous access to information, learning opportunities for health, as well as funding support (WHO, 2009).

In the same way, the fourth action, 'Develop personal skills' promotes the personal and social development of people through the provision of information, education for health and life skills. This creates opportunities for people to take more

control over their own health and their environments and make decisions or choices that are favourable to health. More importantly, 'enabling people to learn, throughout life, to prepare themselves for all of its stages and to cope with chronic illness and injuries is essential' (WHO, 2009, p.4). In most cases, this action can be facilitated through school, home, work and community settings.

The last action, 'Reorient health services' encourages the responsibility for health promotion in healthcare services to be shared among individuals, community groups, health professionals, health service institutions and governments. Collectively, healthcare services need to embrace the expanded mandate and work together in a way that is sensitive and respectful to the cultural needs of the people. As described, 'it should support the needs of individuals and communities for a healthier life, and open channels between the health sector and broader social, political, economic and physical environmental components' (WHO, 2009). In addition, reorientating healthcare services requires a stronger focus on health research and developing professional education and training. In doing so, it must lead to a change of attitude and healthcare service organisation that reflects the total needs of an individual as a whole person (WHO, 2009).

In 2018, the WHO (Regional Office for Europe) published a technical guidance document on how the five key action areas of the Ottawa Charter (described above) could be used to promote the health of refugee and migrant communities. To improve refugee and migrant health and develop effective interventions, decision makers are encouraged to:

- 'Adopt health in all policies approach to ensure policies within all sectors of government, not just the health care sector, promote the health of refugees and migrants ('*building healthy public policy*')

- Improve social services and the quality of the physical and social environments in which refugees and migrants live ('*creating supportive environments*')

- Prioritise community-centred approaches that mobilise the resources and assets within refugee and migrant communities and build local capacities ('*strengthening community actions*')

- Invest in language support and health literacy initiatives to develop personal skills in the host country ('*developing personal skills*') and

- Promote cultural- and diversity-sensitive approaches to health care and build a culturally competent health workforce that is responsive to the unique needs of refugee and migrant populations ('*reorienting health services*')'. (WHO Regional Office for Europe, 2018, pp. 5–6)

Currently, it is unclear whether the above considerations are acknowledged in the reformed NZ health system (Te Whatu Ora—Health NZ). However, if taken into consideration, these recommendations could prioritise the health and wellbeing of the growing migrant population in NZ, which is especially critical for the Fijian Indian community.

The strategies to 'enable, mediate and advocate' lie at the centre of these five action areas to improve health. Kökény (2011) summarised these strategies into three brief statements. Enable refers to 'enabling by creating a supportive environment, but also giving people the information and skills that they need to make healthy choices, mediate means 'mediating between different groups and different sectors to ensure the pursuit of health'; and advocate as in 'advocacy to ensure the creation of conditions favourable to health' (Kökény, 2011, p. 181). These strategies were used to guide health promotion programmes such as *Time to Smile*, an oral health promotion programme to improve the dental health of children (under five years of age) in Glasgow, United Kingdom (UK). This community-based oral health promotion programme delivered

various activities based on the following objectives/strategies: (1) *sustain* distribution of free consumables to support daily brushing at home (i.e., *enable*); (2) *advocate* nursery food and drinks policies to reduce the frequency of sugar consumption; and (3) *promote* dental check-ups from the earliest age in populations that had little understanding of the benefits of preventative care and that were reluctant to visit a dentist (Blair et al., 2006).

In NZ, the Ottawa Charter has been used as a framework for planning and developing public health promotion approaches, strategies and programmes. For example, the *National Breastfeeding Strategy*, the *Health Promoting Schools* (HPS) approach, the *National Health Promotion Framework and Implementation Planning Guide for Screening Programmes* and the *Framework for Prevention of Long-Term Conditions* (Millar & Richards, 2017; MoH, 2011, 2012, 2020b). In terms of CV health and disease initiatives, the Pharmaceutical Management Agency of NZ (PHARMAC) in 2002 developed a programme called *One Heart Many Lives*, which embraced the principles of the Ottawa Charter (Sinclair, 2006).

The *One Heart Many Lives* programme aimed to increase the awareness of and reduce inequalities in CV risk and heart disease in Māori and Pacific Island communities. It was specifically designed to inspire/encourage Māori and Pacific men (who have a higher risk of CVD; New Zealand Guidelines Group, 2003) to have their hearts checked, understand heart disease and pass on the message to their brothers, cousins, sons, friends and family (*whānau*). There were several objectives of this programme, such as increasing the awareness of CVD and risk reduction, and promoting increased consultation between people with a high risk of CVD and medical professionals (Leow et al., 2011). The programme targeted multiple levels of the health sector via social marketing campaigns, community provider projects and collaboration with district health boards and primary health organisations to employ CV risk reduction strategies. PHARMAC worked closely with local health and wellbeing

(*hauora*) organisations, the Heart Foundation and local nurses and families to offer free heart checks at community events and community festivals such as Creekfest, Te Rā o te Raukura and the Ōtara Market.

During these heart checks, trained local primary care nurses also provided health education to the whole family and encouraged them to accompany their partner/father/older family member through the process. According to the PHARMAC website, the 'programme showed that if testing was available in the community, in a culturally safe and positive environment, people would take it up'. At present, this programme has been passed back to community health providers, family health (*whānau ora*) collectives and communities to lead (PHARMAC, 2021).

In summary, the Ottawa Charter articulates core values of equity, participation and empowerment. It recommends adapting health promotion strategies and programmes to local needs by considering the differing social, cultural and economic systems of individual countries and regions (Fry & Zask, 2017; WHO, 2021b); hence its use to underpin the NZ health system.

2.10.2 **Health Belief Model**

The Health Belief Model was one the first models to adapt the theory of behaviour change. Today, it is one of the most widely recognised conceptual frameworks for health behaviour (Mahindarathne, 2021; Tarkang & Zotor, 2015). This model emerged in the 1950s, during a time when a limited number of preventative health services were available, such as chest x-rays for tuberculosis and flu vaccines (Glanz, 2001). It was developed to explain why individuals did or did not take part in these health services to detect or prevent disease (Evans, 2008).

The four key constructs of the Health Belief Model are based on two aspects of an individual's representations of health and health behaviour: threat perception and behavioural evaluation (Conner & Norman, 2015). The first two constructs, 'perceived

susceptibility' and 'perceived severity' are dimensions that construe threat perception. Perceived susceptibility is defined as 'a person's beliefs about the chances of contracting a health condition' and perceived severity is 'one's beliefs of how serious a condition and its consequences are' (Tarkang & Zotor, 2015, p. 5). The last two constructs of the model are components of behavioural evaluation: 'perceived benefits', which refers to 'one's beliefs in the efficacy of the advised action to reduce risk or seriousness of impact'; and perceived barriers, which are 'one's beliefs in the tangible and psychological costs of the advised behaviour' (Tarkang & Zotor, 2015, p. 5).

Over the years, the Health Belief Model has been refined and new concepts have been added to the framework, such as 'cue to action' (Rosenstock, 1974), 'health motivation' (Becker, 1974) and 'self-efficacy' (Rosenstock et al., 1988). Cues to action are events or strategies that motivate people to take action (Snetselaar, 2001). These 'cues' can be both internal and external; for example, perception of one's bodily state, the impact of media publicity/promotion or interpersonal interactions (Rosenstock, 1974). Health motivation is the individual's motivation to remain healthy (Grinberg & Sela, 2021) and self-efficacy is defined as the 'conviction that one can successfully execute the behaviour required to produce the outcome' (Bandura, 1977, p. 193; Rosenstock et al., 1988). The final components of this framework are the modifying factors—that is, socio-demographic and psychological variables such as age, gender, ethnicity, SES and knowledge—that also influence an individual's perception and ability to adopt behaviour change (Rakhshanderou et al., 2020; Figure 1.2).

Figure 1.2

The Health Belief Model (Adapted from Abraham & Sheeran, 2015)
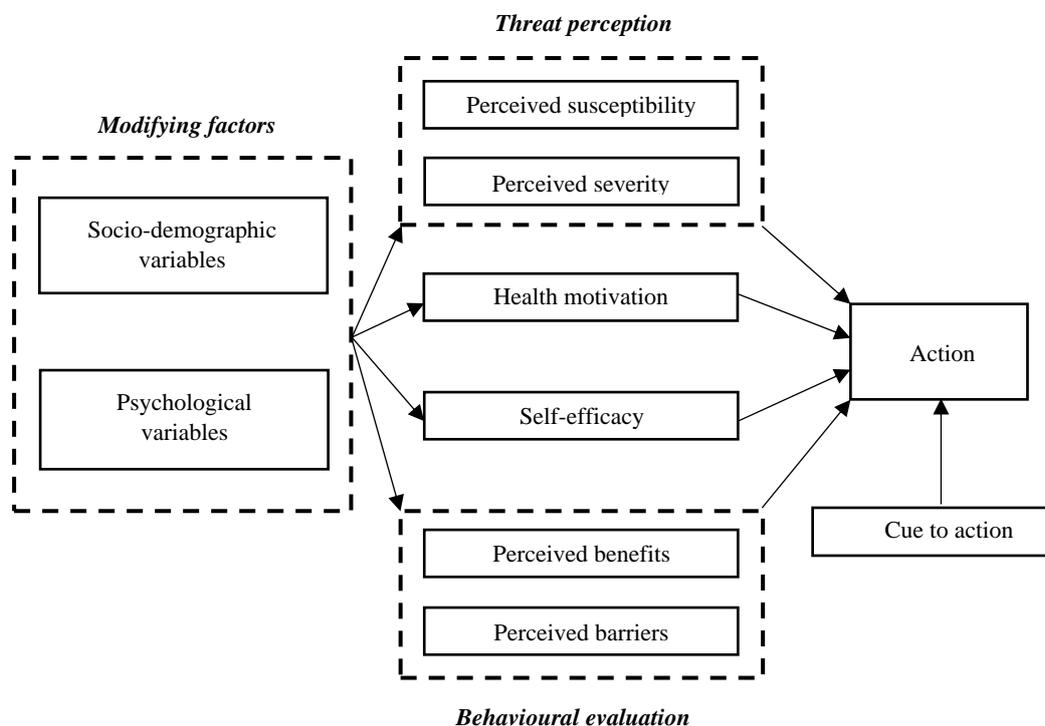
This model states that for behaviour change to succeed, an individual must (a) feel threatened by their current behaviour in relation to a health problem (perceived susceptibility and severity), (b) believe that a specific kind of change will have positive benefits or a valued outcome in reducing the health problem (perceived benefits), and (c) perceive that the barriers to adopting the target behaviour are low (perceived barriers). In addition, the individual needs to feel competent (self-efficacy) and motivated to overcome these perceived barriers to behaviour change (Glanz et al., 2008; Sulat et al., 2018).

For over half a century, this conceptual framework has been used to predict health-related behaviours and to structure interventions to change health behaviours (Glanz et al., 2008). It has been used to develop strategies to help patients learn to adopt healthy behaviours and to work with their clinicians to improve their health (Evans, 2008). These strategies and behaviours relate to diet (Noroozi et al., 2022; Shiraishi et

al., 2021), exercise (Khodaveisi et al., 2021; Makamu-Beteck et al., 2022), medication adherence (Addo et al., 2022; Hu et al., 2022), smoking cessation (Ravi et al., 2021; Yaman Güncan et al., 2021), contraception (Akonor et al., 2021; Yakubu et al., 2019) and vaccinations (Çitak Bilgin et al., 2022; Deng et al., 2022).

Understanding an individual's perception of risk and their engagement with health-protective behaviours is essential for the prevention and reduction of CVD (Amdemariam et al., 2022). In 2020, Kanna and colleagues applied the Health Belief Model framework in a study to evaluate the prospect of promoting health behaviours among community-based Hispanic taxi drivers. By utilising this framework, they were able to obtain a better understanding of the perception, knowledge, behaviour and barriers the participants faced in reducing their CVD risk. Participants in this study reported 'challenging and stressful work shifts as barriers to better nutrition and good health, poor support systems, and low self-efficacy in overcoming barriers' (Kanna et al., 2020, p. 1). Thus, the study highlighted the importance of community outreach programmes that empower this population to improve their CV health (Kanna et al., 2020). Furthermore, Saffari et al. (2020) evaluated how a Health Belief Model-based educational programme could protect at-risk police officers from developing CVD. The study found significant improvements between baseline and follow up in psychological and behavioural risk factors for CVD in the participants. Improvements were seen in their perceptions of CVD susceptibility and severity, and the benefits and barriers associated with preventative behaviours. The researchers also found that self-efficacy for engaging in healthy behaviours increased among these at-risk participants (Saffari et al., 2020). Despite the differences in findings between these two studies, both illustrated the value of understanding the perceptions, knowledge, behaviour and barriers faced by high-risk populations. Kanna et al. (2020) were able to identify the specific needs of the study population and Saffari et al. (2020) were able to use their Health Belief Model-

based intervention to promote CV health and engage behaviour change and thus reduce CVD risk. To date, perceptions, knowledge, behaviour and barriers to CV health have not been studied in the Fijian Indian community in NZ. As illustrated in the examples above, the Health Belief Model provides a better understanding of the key 'predictors' that play a role in an individual's KAP towards health. This is important for finding ways to support CV health promotion and disease prevention in the Fijian Indian community. For this research, the Health Belief Model provides a framing for using an empirical approach to promote and improve CV health in the Fijian Indian community.

2.11 **Chapter Summary**

This chapter highlights the global and national impact of CVD and the importance of CV health promotion. It describes the new NZ health system and the five themes of the *NZ Health Strategy* (2016). In NZ, there are serious health disparities between the health of the migrant population and that of the general population. Therefore, a key action area in the *NZ Health Strategy* is to increase efforts towards prevention, early intervention, rehabilitation and wellbeing for people with LTCs, such as diabetes and CVD. The Ottawa Charter and the Health Belief Model offer a conceptual lens through which to frame new strategies and interventions for health promotion in high-risk populations.

Chapter 3: KAP Surveys

This chapter introduces the concept of KAP surveys. It highlights how KAP surveys can be used to understand a population/community and to support the development of health interventions and health promotion strategies. This chapter also includes a scoping review of the use of KAP surveys in CV health and disease prevention in the literature. This scoping review forms the basis for the first phase of this study.

3.1 Description and Definition

KAP surveys originated in the field of family planning and population research during the 1950s–70s (Khan, 1967; Ratcliffe, 1976). KAP surveys represent a study population, aiming to elicit what is known (knowledge), believed (attitude) and done (practised) in the context of the topic of interest. KAP surveys can be used for various purposes including:

> (1) To identify the baseline knowledge, myths, misconceptions, attitudes, beliefs, and behaviours in relation to a specific health-related topic; (2) To understand, analyse, and communicate about topics or situations of interest in the field; (3) To provide information on needs, issues and barriers related to the development of effective, locally relevant public health intervention; (4) To measure post-intervention changes and the effectiveness of intervention programmes aimed at correcting and changing health-related knowledge, attitudes, behaviours and practice. (Andrade et al., 2020, p. 479)

Importantly, KAP surveys can 'help provide valuable information for resource allocation, planning, and implementation of public health programmes' (Andrade et al. (2020, p. 479). In many respects, KAP surveys have become widely accepted as a form of investigation into health-related behaviours and health-seeking practices, especially in populations about which little is known.

3.2 Health-Related KAP Surveys

Numerous studies have used KAP surveys as a method to better understand a target population and their health needs, including for oral care, medication safety, chronic kidney disease and the management of common LTCs such as diabetes, gout and hyperuricemia (Harrold et al., 2012; Tiwaskar & Sholapuri, 2021; Vaidya et al.,

2020; Wang et al., 2015; Yang et al., 2017). Similarly, several studies have been conducted on the KAP of healthcare providers such as physicians, pharmacists, nurses, healthcare workers and medical or nursing students, regarding various health conditions (Almaghaslah et al., 2021; Balegha et al., 2021; Hu et al., 2021; Kamacooko et al., 2021; Koonisetty et al., 2021; Nguyen et al., 2021a).

In 2010, Saadia and colleagues conducted a descriptive, cross-sectional study in Burayda, Saudi Arabia to assess the level of awareness or baseline KAP of 570 female diabetic patients regarding Type 2 diabetes mellitus. The researchers' rationale for obtaining information about the level of awareness was to create/aid in formulating a preventative programme, and to develop techniques for effective health education. In this study, they used an Arabic version of a diabetes-related KAP questionnaire covering four aspects of disease demographic factors and the KAP of women towards diabetes. They recorded an overall KAP score of 16.70 ± 6.06 (mean ± standard deviation (sd)) from a maximum score of 25. The knowledge score was 12.42 ± 3.03, the attitude score was 1.46 ± 1.79, and the practice score was 2.79 ± 2.28, from maximum possible scores of 14, 5 and 6, respectively. Although, the participants' level of knowledge was high, their levels for attitude and practice towards diabetes were lower than desirable. Consequently, the researchers highlighted a need for structured programmes in their clinic and hospital to improve patients' attitudes and practices towards diabetes (Saadia et al., 2010). However, a significant limitation was that they did not provide evidence or references on how the questionnaire was tested and validated prior to the study.

In 2016, Stanifer and colleagues conducted a community-based, cross-sectional survey of adults in northern Tanzania to measure KAP associated with chronic kidney disease—a non-communicable disease that is a growing public threat among adults in sub-Saharan Africa (SSA). The researchers believed that understanding the KAP

associated with non-communicable diseases was crucial for developing optimal public policies and public health interventions in the region. However, very few community-based assessments have been conducted in this area. To address this gap, they administered a validated KAP survey concerning kidney disease to 606 participants from 431 urban and rural households in the Kilimanjaro region of Tanzania. Overall, they found that participants had limited knowledge of kidney disease, with a mean knowledge score of 3.28 (95% confidence interval: 2.94, 3.63) from a maximum score of 10. This low level of knowledge was also strongly associated with level of education and living in a rural setting. Nevertheless, participants in this study expressed a strong interest in learning more about kidney disease, including its health, economic, and social impacts (attitude), as well as a willingness to seek healthcare from multiple sources for the disease (practice). For the authors, this baseline level of knowledge about kidney disease could serve as an important foundation upon which they could build chronic kidney disease educational programmes, given that the participants showed favourable attitudes towards learning more about kidney disease (Stanifer et al., 2015, 2016).

More recently, Lee et al. (2021) conducted a study in Korea on medication (drug) safety in adults aged 65 years or over. Older individuals are vulnerable and often have difficulty accessing information using computers, mobile devices and the internet. Some may also have physical barriers such as vision and/or hearing problems or decreasing cognitive factors limiting their accessibility and understanding of drug safety information (Brayne et al., n.d.; Dillon & Taragano, 2016; Launiala, 2009; Olaya Guzmán et al., 2019; Pernambuco et al., 2012). To understand this issue further, the researchers developed and validated a questionnaire on medication safety to identify and analyse the relationship between KAP and medication use among older adults. In this study, they found that older participants had average levels of knowledge, attitude

and behavioural practices associated with medication safety. Their results also showed significant differences between knowledge and practice—those who were educated on medication safety achieved higher levels of safe practice than those who were not. They also found that 79.4% of participants self-administered their medications, even though only 28.2% had received medication safety education. The level of knowledge about the safe use of medication was found to positively affect the participants' attitudes and practice. As a result, Lee et al. (2021) recommended that to improve the awareness and practices related to safe medication use in older adults, 'it is necessary to design and implement various educational programmes that can be easily accessed by older adults' (Lee et al., 2021, p. 2).

To summarise, studies to date have established the theoretical concept of the KAP as a process of human behavioural change that can be divided into three successive steps: (1) the acquisition of knowledge; (2) the generation of attitudes; and (3) the formation of behaviour (Fan et al., 2018; Liu et al., 2016). According to Fan et al. (2018), 'the theory presents the progressive relationship between knowledge, attitudes, and behaviour as follows: knowledge is the foundation of behaviour change, and belief and attitudes are the driving force of behaviour change' (p. 2). Wang et al. (2020) found support for this theory in their study as they found that education based on a KAP model can empower patients to actively participate in the care and maintenance of their health and as a result play a 'remarkable role in disease prevention, control, and rehabilitation' (Wang et al., 2020).

These studies are but a few examples of the numerous health-related KAP surveys/studies that have been conducted globally. From children to older adults, specific patient groups or healthcare professionals, KAP surveys in the literature have helped researchers to better understand a population's needs, challenges and barriers regarding various health topics/conditions. These studies have particularly highlighted

the advantages of conducting KAP surveys as a method to determine a target population's health needs, which is a key focus of the current study.

3.3 Scoping Review

To understand the literature on the use of KAP surveys in CV health and disease prevention, a preliminary search was conducted of the MEDLINE (Ovid) database, the Cochrane Database of Systematic Reviews, and the Joanna Briggs Institute Evidence Synthesis Journal. At the time of the search, no current or ongoing systematic reviews or scoping reviews were found on the topic of interest.

Given favourable evidence for the value of health-related KAP surveys in the literature, a scoping review was conducted to explore the body of evidence on the use of KAP surveys for CV health and disease prevention. Sargeant and O'Connor (2020) defined a scoping review as 'a descriptive approach that is designed to chart the literature around a particular topic. The approach involves an extensive literature search, following by a structured mapping, or charting, of the literature' (p.1). According to Munn et al. (2018), scoping reviews are an 'ideal tool to determine the scope or coverage of a body of literature on a given topic and give clear indication of the volume of literature and studies available as well as an overview (broad or detailed) of its focus' (p. 2). Scoping reviews are similar to traditional systematic reviews in that they follow a structured process, but they are performed for different reasons and have some key methodological differences (Arksey & O'Malley, 2005; Colquhoun et al., 2014; Levac et al., 2010; Peters et al., 2015).

Scoping reviews can be conducted to (1) identify the types of available evidence in a given field (Challen et al., 2012); (2) clarify key concepts/definitions in the literature (Hines et al., 2017); (3) examine how research is conducted on a certain topic or field (Callary et al., 2015); (4) identify key characteristics or factors related to a concept (Harfield et al., 2018); (5) as a precursor to a systematic review; and (6) to

identify and analyse knowledge gaps in the literature (Munn et al., 2018; Wagman et al., 2015).

3.4 Scoping Review: Protocol

In 2015, the Joanna Briggs Institute (University of Adelaide, Australia) published formal guidelines for conducting scoping reviews (Peters et al., 2015), which were used to direct this scoping review. As mentioned above, the objective here was to explore the use of KAP surveys regarding CV health and disease prevention in high-risk populations, by using the following review question: 'What is known from the literature on KAP surveys towards CV and disease prevention in high-risk populations?'. The aims of the review were to 1) identify how CV health-related KAP surveys can characterise a population at risk of developing CVD; and 2) explore how knowledge obtained from KAP surveys can support the promotion of CV health and disease prevention in these populations.

The scoping review protocol involved a three-stage process: 1) searching relevant databases to identify and select articles based on the inclusion criteria; 2) screening the titles and abstracts of the selected articles; and 3) reviewing the full text of each article to form a review of the topic. Details of this process and the outcomes of each stage are described below and illustrated in Figure 3.1.

PubMed, Embase and Scopus, three well-known health databases, were used for the literature search. In October 2021, the following search string was applied to all three databases based on the keywords in the study's research question: 'knowledge, attitude and practice' **OR** 'KAP' **AND** 'cardiovascular' **OR** 'heart' **OR** 'CVD' **AND** 'at risk' **OR** 'at-risk; **OR** 'high risk' **OR** 'high-risk'. Given the specific nature of the scoping review topic, articles were selected based on the following inclusion criteria: (1) participants in the study were adults (19+ years of age); (2) the study employed a KAP survey related to CV health and disease prevention; (3) the article was written in

English; and (4) the article was available free in full text for review. Articles were excluded if they did not meet all of these requirements or if they were duplicates.

Figure 3.1

Article Search and Selection Process for a Scoping Review of the Literature (Adapted From Moher et al., 2009; The Joanna Briggs Institute, 2015).

Identification	Records identified through database searching (n = 39)
Screening	Records screened based on inclusion criteria (n = 5) Duplicates removed (n = 2)
Eligibility	Full-text articles assessed for eligibility (n = 3) Additional records identified through reference lists (n = 2)
Included	Studies included (n = 5)
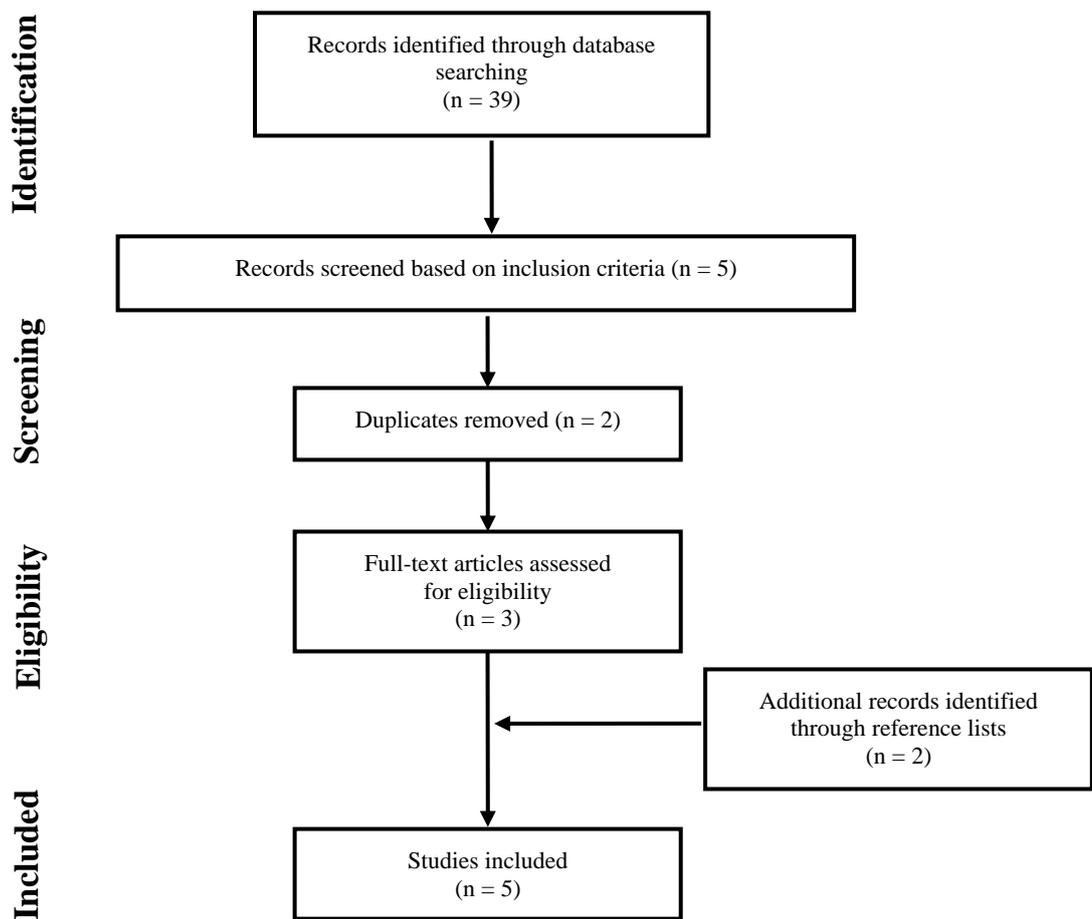
A total of 39 publications/articles was identified through the database search. Each of the 39 articles was screened for inclusion by applying the above criteria to its title and abstract; inclusion or exclusion was determined by consensus of the primary researcher (PR) and the secondary supervisor. Once screened and duplicates removed, three articles were selected for a full-text review. An additional two articles were identified from the reference lists of these articles, resulting in a total of five articles advancing to the next phase of the scoping review.

The limited number of articles related to this topic highlighted an important gap in the literature on the KAP of high-risk populations concerning CV health and disease prevention. These results also confirmed why a scoping review was more appropriate for this study than was a systematic review.

3.5 Scoping Review: Data Extraction Tables

After full-text review, the following information was extracted from the articles using a standardised data extraction form/table: author and year, country, study design, study population, aim, purpose or objectives, study methods, outcomes, conclusion and key findings related to the scoping review question (Tables 3.1–3.5).

In this scoping review, the researcher chose not to evaluate the methodological quality of each individual study (in detail) as the aim of the review was to describe the scope of the literature in this area, rather than comment on its rigour (Arksey & O'Malley, 2005; Helou et al., 2020; The Joanna Briggs Institute, 2015; Tricco et al., 2018). The researcher used a Microsoft Excel spreadsheet to categorise the data/information to describe and summarise each study (Tables 3.1–3.5).

Table 3.1

Data Extraction Table for the Hertz et al. (2019) Study

Database	PubMed
Author & year	Hertz et al. (2019)
Country	Tanzania
Study design	Prospective observational study
Study population	This study was conducted at Kilimanjaro Christian Medical Centre (KCMC), a tertiary care centre in the Kilimanjaro region of northern Tanzania. A total of 349 adult patients presenting at an Emergency Department in northern Tanzania with chest pain or shortness of breath were enrolled in the study
Aim, purpose, or objectives	To increase understanding of the knowledge, attitudes, and preventative practices regarding IHD in SSA to develop patient-centred interventions to improve care and outcomes
Study methods	• A questionnaire was adapted from existing KAP surveys regarding CV disease and the WHO 'STEPS' instrument. • An IHD knowledge score was calculated by allocating 1 point for each correct response to the knowledge-related items, with a maximum score of 10.

Database	PubMed
Outcomes	- Associations between IHD knowledge and patient characteristics were assessed using Welch's t-test. - The mean (sd) knowledge score was 4.8 (3.3). Most respondents (224, 64.2%) recognised obesity as a risk factor for heart attack, and a minority (34, 9.7%) knew that a daily aspirin could reduce the risk of a CV event. Greater IHD knowledge was associated with younger age ($p = 0.045$) and higher levels of education ($p < 0.001$), but not higher risk of CV disease ($p = 0.123$). - Most respondents expressed a willingness to address their diet to improve their health (322, 92.3%) with a preference for treatment from a physician for a heart attack rather than a traditional healer (321, 92.0%). - A minority of patients reported exercising regularly (88, 25.2%) or consulting a doctor routinely for check-ups (100, 28.7%).
Conclusion	High-risk emergency department patients in northern Tanzania have moderate knowledge regarding IHD, but do not consistently engage in healthy preventative practices. Patient-centred interventions are needed to improve IHD knowledge and practices in high-risk populations.
Key findings that relate to scoping review question	Understand a population at risk of developing CVD - High-risk patients have inadequate knowledge of IHD and unhealthy practices towards IHD, highlighting the need for patient-centred educational interventions in northern Tanzania, particularly among high-risk populations. Support the promotion of CV health and disease - Characterising patient KAP towards IHD is essential to developing educational and health system interventions to reduce IHD-related morbidity and mortality across SSA. - The role of the patient in IHD diagnosis and outcomes has previously been largely ignored. If patients at high risk for IHD in SSA have poor knowledge, inappropriate attitudes and unhealthy practices regarding IHD, then IHD burden and outcomes will likely be refractory to improvement, despite physician-centred interventions. - Understanding patients' beliefs, perceptions and behaviours is essential to develop interventions to reduce IHD morbidity and mortality across SSA. - Educational efforts regarding IHD in northern Tanzania should target older high-risk populations. - Identifying barriers to healthy practices and developing patient-centred interventions that address such barriers will be essential for reducing the burden of IHD locally.

Table 3.2

Data Extraction Table for the Shammi et al. (2021) Study

Database	PubMed
Author & year	Shammi et al. (2021)
Country	Bangladesh
Study design	Cross-sectional study
Study population	250 hospitalised, middle-aged and elderly patients with CV diseases at the Coronary Care Unit of the 250-Bed Sadar Hospital, Jashore, Bangladesh
Aim, purpose or objectives	To evaluate the dietary patterns and their association with CVD risk factors of middle-aged and elderly adults
Study methods	Demographic data, knowledge, attitude and practices towards CVD-related data, dietary data, and some biochemical data were collected from 250 participants
Outcomes	• According to their BMI, most respondents were overweight • The respondents' practice level towards CVD was poorer than their knowledge and attitude level. A positive correlation was found in the respondents' KAP. • Most of the CVD patients' troponin values and blood pressure levels were higher than the acceptable limit, and their lipid profile levels were not ideal. Most were at borderline risk of CVD and some at high risk. The patients who consumed a larger amount of red meat, eggs, cheese, fast food, soft drinks and salty snacks had a higher probability of increasing their LDL and triglycerides (TG) levels in their blood (major risk factors of CVD) than did patients who regularly consumed fish, chicken, pulses, nuts, fruits and vegetables in their diet.
Conclusion	This study suggests that the consumption of fatty foods, fast foods and soft drinks leads to the probability of increasing LDL and TG levels in patients at risk of CVD.
Key findings that relate to scoping review question	Understand a population at risk of developing CVD • Research on the association among knowledge, attitude, practice, dietary patterns and biochemical information with CVD risk factors is scarce. • This study assessed that the respondents had good knowledge and positive attitudes but poor practice. • The knowledge score was 71.23 ± 11.20 as the scores were converted to 100 points and a score below 55 was accepted as poor, a score 55–77 was accepted as good, and a score above 77 was accepted as the best. This study shows that the knowledge score was good, as was the attitude score 75.02 ± 8.34, but the practice score was 51.56 ± 7.49, which is below 55 and considered poor. The results indicated that the respondents' knowledge and attitude scores towards CVD were better than their practice scores. • There was a significant positive correlation between knowledge and attitude ($r = 0.391$, $p = 0.000$). There was also a positive correlation between knowledge and practice ($r = 0.107$, $p = 0.032$), and between attitude and practice ($r = 0.120$,

Database	PubMed

$p = 0.057$). It can be anticipated that as knowledge increases, attitude and practice will improve accordingly.

Support the promotion of CV health and disease

- An individual's knowledge, attitude and behaviour also influence CVD risk factors. By altering an individual's food habits and lifestyle and increasing their KAP towards CVD, risk of CVD can be reduced (ref 19–22 in text).
- On pp. 363–364 the authors discussed how specific responses to KAP questions in this study showed prevention against CVD in this population.

Table 3.3

Data Extraction Table for the Vaidya et al. (2013) Study

Database	Embase
Author & year	Vaidya et al. (2013)
Country	Nepal
Study design	Descriptive, community-based, cross-sectional study
Study population	777 respondents from six randomly selected clusters in two villages
Aim, purpose or objectives	To identify the knowledge, attitude, and practice/behaviour of CV health in residents of a semiurban community of Nepal
Study methods	- A basic questionnaire tailored to site-specific responses in Nepal using the WHO–NCD STEP-wise approach to surveillance (STEP 1 and 2 questionnaires) for demographic information, behavioural and physical measurements, and other sources for addressing knowledge, attitudes and practice/behaviour issues (ref 15, 24–39 in text). - Responses to questions on CV health knowledge, attitude, and practice/behaviour were given scores to compare and correlate the components. Blood pressure was recorded, and anthropometric measurements taken.
Outcomes	70.0% of the participants were women, and 26.9% lacked formal education. The burden of CV risk factors was high: 20.1% were current smokers, 43.3% exhibited low physical activity and 21.6% were hypertensive. - Participants had a poor knowledge of the causes of heart disease: 29.7% identified hypertension and 11% identified overweight and physical activity, whereas only 2.2% identified high blood sugar. Approximately 60% of respondents were ignorant of any heart attack symptoms and 20% knew 2–4 symptoms. - Median percentage scores for knowledge, attitude and practice/behaviour were 79.3%, 74.3%, and 48.0%, respectively. Nearly 44% of respondents had insufficient knowledge and fewer than 20% had highly satisfactory knowledge. Among those with highly satisfactory knowledge, only 14.7% had a highly satisfactory

Database	Embase
	attitude, and 19.5%; 13.9% had satisfactory and highly satisfactory practices, respectively.
Conclusion	This study demonstrated a gap between CV health KAP/behaviour in a semiurban community in a low-income nation, even among those already affected by CV disease.
Key findings that relate to scoping review question	Understand a population at risk of developing CVD • The findings of the study indicated a gap in KAP. The poor relationship between KAP scores was unsurprising because a linear relationship between variables may not exist in CV health (e.g., highly satisfactory knowledge = high satisfactory attitude and behaviour) • The questionnaire did not explore whether participants had quit smoking and did not identify the barriers to quitting information that could be important for public health. The Theory of Reasoned Action (ref 48 in text) argues that intention is a critical component of healthy behaviour. Although confirming that the genuineness of intention is difficult, such intention may provide an opportunity for public health intervention. Importantly, respondents' reasons for attempting positive health behaviour were identified. Many constructs of the Health Belief Model (ref 48 in text), such as perceived benefit ('wanted to feel better'), cues to action ('encouraged by a health professional, etc.') and fear ('death of a family member, etc.'), appear to affect behavioural decisions. • This implies that no universal intervention can improve the CV health KAP of every individual in a community. The challenge lies in identifying individuals who comply with various linear models. Health behaviour theories (such as social cognitive theory and the Theory of Reasoned Action; ref 48 in text) suggest that knowledge and attitude are merely two components of the pathways that lead to behaviour. Support the promotion of CV health and disease • To identify a baseline KAP in the community to aid the planning of health promotion activities. The results show the potential and possibility for community health promotion to improve CV health literacy.

Table 3.4

Data Extraction Table for the Mirza et al. (2016) Study

Database	N/A
Author & year	Mirza et al. (2016)
Country	Bangladesh
Study design	Cross-sectional, hospital-based study
Study population	222 Bangladeshi patients from a government CV hospital representing a lower income population in Dhaka, Bangladesh
Aim, purpose or objectives	To assess knowledge and perception about coronary artery disease (CAD) to develop baseline data for preventative programmes
Study methods	• The KAP study questionnaire was first piloted in both the home institution (5 patients) and in the host hospital (15 patients) where it was translated and back translated for comprehension and response consistency. • The 40-point KAP surveys were completed based on systematic random sampling. Correct answers were scored as '1' and incorrect as '0'. The initial demographic variables assessed the patients' SES. Knowledge questions assessed the level of understanding of risk factors, and signs and symptoms of CAD. Attitude questions assessed the level of socio-behavioural perspectives and preconceived notions about CAD. Practice questions identified health-seeking behaviours and preventative behaviours.
Outcomes	The mean KAP score was 21.45 ± 5.83 from a total possible score of 40. Only 5.9% of the sample was able to demonstrate a high level of proficiency. Men had more knowledge ($t(1.962) = 1.334$, $p = 0.051$), but women demonstrated more health-seeking behaviours with stronger statistical significance ($t(-2.135) = -0.407$, $p = 0.034$). Several significant chi-square relationships were found between the SES and KAP scores.
Conclusion	This study demonstrated selective lapses in CAD KAP among Bangladeshi patients of low SES. Future preventative educational interventions would be beneficial by targeting the deficiencies in KAP revealed in this study.
Key findings that relate to scoping review question	Understand a population at risk of developing CVD • A thorough literature research uncovered limited published information regarding KAP towards CAD in the Bangladeshi population, especially in low-SES citizens who often rely on government healthcare facilities. The study filled this knowledge gap by examining relationships in Bangladesh between patients' SES and their KAP regarding CAD. • This survey revealed specific lapses in knowledge, attitude and practice behaviours regarding CVD. Women, the poor, the uneducated and young individuals were less knowledgeable about CVD. A poor understanding of diet and exercise for reducing CVD and the association of tobacco smoking with CVD mortality was demonstrated. • Low understanding of CAD, its traits, risk factors and prevention strategies, may be explained by the knowledge gap hypothesis: a

Database	N/A
	low SES puts people at risk of having limited access to resources compared with those with a high SES. This results in a social divide regarding knowledge.

Support the promotion of CV health and disease
- Implementation of health programmes tailored towards improving a population's current level of understanding, beliefs and behaviours regarding CVD would be more successful and effective if programmes had socioeconomic and sociocultural relevance.
- Future preventative programmes encouraging regular exercise and healthy dietary habits could be more effective if they empowered women. Tobacco cessation campaigns and aspirin prophylaxis are needed as they are underestimated and undervalued in this population. CVD is a largely preventable disease, but many interventions regarding primary and preventative healthcare services are not feasible because of limited infrastructure and constrained funding in developing countries (ref 47 in text). However, this survey demonstrates that future programmes can be more effective if led by government hospitals and local doctors. An effective health educational intervention is a key solution to the CVD epidemic in this region.

Table 3.5

Data Extraction Table for the Mohammad et al. (2018) Study

Database	N/A
Author & year	Mohammad et al. (2018)
Country	Malaysia
Study design	Cross-sectional
Study population	100 patients attending an outpatient clinic in Kuantan, Malaysia selected through convenient sampling
Aim, purpose or objectives	To determine the KAP of patients regarding the risk of CVD and associated factors of the disease in the Kuantan population
Study methods	• A structured questionnaire consisting of four parts was developed to obtain patients' demographic data and KAP regarding risks of CVD. • The score given for a correct answer on knowledge was 3, 2 for 'do not know,' and 1 for an incorrect answer. The scores given for questions about attitude depended on positive and negative statements. If the statement was positive, 5 marks were given for 'strongly agree', 4 for 'agree', 3 for 'neutral', 2 for 'disagree', and 1 for 'strongly disagree', and vice versa for the negative statements. Finally, scores for questions on practice were given as 4 for 'almost every day', 3 for 'frequent', 2 for 'seldom', and 1 for 'never', if the activities were positive, and vice versa for negative activities
Outcomes	• The mean scores (standard deviation) for KAP were 60.75 ± 4.823, 54.36 ± 8.711, and 33.43 ± 4.046, respectively, whereas

Database	N/A
	the maximum scores obtained by the subjects for KAP were 71, 65 and 43, respectively.
	• Regarding questions related to knowledge, 88% of the subjects knew that an irregular eating pattern could cause disease and appreciated the benefits of vegetable intake. Most subjects recognised that smoking and obesity were CVD risk factors. Regarding questions related to attitude, 96% agreed that exercise can prevent CVD. More than half of the subjects followed a healthy lifestyle. There were statistically significant differences observed in knowledge level between sexes ($p = 0.046$) and races ($p = 0.001$).
	• There was, however, no statistically significant difference observed in KAP across different education levels of the subjects regarding the risk of CVD ($p = 0.332$, 0.185 and 0.160, respectively).
Conclusion	This study revealed that patients had good knowledge and attitude regarding CVD risk factors. However, the number of smokers was still quite high. Development of a better public information system is essential for the wellbeing of the society.
Key findings that relate to scoping review question	Understand a population at risk of developing CVD • This population can be considered to have sound knowledge and attitudes regarding CVD risk factors. However, the number of smokers is rather high, at one-third of the total sample size. In addition, the practices of the subjects were not optimal. Significant differences were observed in the knowledge level regarding CVD across genders and races, whereas no significant difference was observed in knowledge across academic levels regarding the risk of CVD. Meanwhile, for attitude and practice, there was no significant difference across genders, races and education levels. This highlights that it is important to have information about the KAP of the population so that some action can be taken for improvement. • The information obtained from this study was used to determine the KAP of the outpatients in a clinic in Kuantan towards risk factors for CVD. Three variables only were used in this study to relate to KAP: gender, race and academic level. However, most of these variables showed no significant difference in KAP regarding the risk of CVD. Support the promotion of CV health and disease • Realisation of risk factors for CVD and its prevention steps are an important key that can ensure early detection of CVD (ref 10-12), which can save lives and resources (ref 13-14). • There is an urgent need to encourage consumption of a healthy diet for given community benefits. • In the future, the results of this study may positively benefit the Kuantan population.

3.6 Scoping Review: Narrative Summary

Using the *Methodology for JBI Scoping Reviews Manual* and the inclusion criteria outlined above, five articles were found to be related to the research question—'What is known from the literature on KAP surveys towards CV and disease prevention in high-risk populations?'. These studies were based in South Asia, Southeast Asia and East Africa and the articles were published between 2013 and 2021. The average sample size across studies was 340 participants (range 100–777). Although there were a few differences in the ratio of male to female participants between studies, all participants were in the middle to older adult age range. Most were patients of either an outpatient clinic, hospital or medical centre although one study (Vaidya et al., 2013) recruited participants from two semiurban communities.

All five studies (Hertz et al., 2019; Mirza et al., 2016; Mohammad et al., 2018; Shammi et al., 2021; Vaidya et al., 2013) employed observational, cross-sectional designs. Cross-sectional studies are primarily used to identify prevalence and relevant associations that can be further investigated with a cohort study or a randomised controlled trial (Mann, 2003).The KAP surveys used in each of these studies were either adapted from existing KAP surveys related to CVD or created, piloted, validated and/or translated into a local language before the study was conducted. The five studies described in Tables 3.1–3.5 are now evaluated.

Vaidya et al. (2013), the earliest study in this review, conducted a descriptive, cross-sectional study to determine the KAP of CV health in two semiurban communities outside Kathmandu, Nepal. This study was part of a larger project called *Heart-Health Associated Research and Dissemination in the Community* carried out in the Jhaukhel-Duwakot Health-Demographic Surveillance Site outside Kathmandu. In a pilot study in 2010, this group of researchers observed poor CV health knowledge in the Duwakot population in Nepal (Vaidya et al., 2010). Thus, the aim of the 2013 study was to

increase the understanding of KAP towards CV health by first conducting in-home interviews with 777 residents using a questionnaire based on the WHO STEP-wise approach to surveillance and other resources for addressing KAP/behaviour issues. This study used multiple sources to create the KAP questionnaire but did not consider assessing the content validity of the questionnaire or pre-testing it in a small group of participants. Nevertheless, it did assess the 'question reliability' by calculating Cronbach's alpha (α), a measure of the internal consistency of a questionnaire. They also provided a detailed description of the scoring system they used to analyse the level of KAP regarding CV health in this community (Vaidya et al., 2013; Table 3.1).

The second study in this review by Mirza et al. (2016) also conducted a cross-sectional study. Its participants were inpatients at the Suhrawardy Cardiovascular Institute Hospital in Bangladesh. The aim of this research was to assess the knowledge, attitudes and health-seeking practices of coronary artery disease (CAD) among inpatients to develop baseline data for preventative programmes, as well as to understand the relationship between a patient's SES and their KAP towards CAD. Prior to this study, Mirza et al. (2016) developed a KAP questionnaire using the WHO guidelines for KAP on tuberculosis, and questions from a Malaysian survey that examined women's KAP towards CVD. This questionnaire was piloted in the authors' home institution (USA) with five patients and at the host hospital (Bangladesh) with 15 patients (results not published). The questionnaire was then translated (and back translated) for comprehension and response consistency (language not specified). A major limitation was that this study did not provide details or references for their testing or analysis methods prior to the study. The researchers administered the KAP survey to 222 patients representing low-income citizens who utilised a government-funded institution for primary and cardiac specialty healthcare (Mirza et al., 2016; Table 3.2).

Mohammad et al. (2018), the third study in this review, focused on determining the KAP of patients in Malaysia regarding the risk of CVD and its associated factors. Similar to the Mirza et al. (2016) study, the authors constructed a KAP questionnaire to identify risk factors for CVD. The content of this questionnaire was validated by experts and then piloted and translated into Malay, the primary language of the surveyed population. Unfortunately, these preliminary results were also not reported/published in the study (no reference provided). The researchers recruited 100 patients attending an outpatient clinic in Kuantan for the study (Mohammad et al., 2018; Table 3.2).

Hertz et al. (2019), the fourth study in this review, conducted a prospective, observational study at Kilimanjaro Christian Medical Centre (KCMC) in northern Tanzania. The objective of this study was to increase understanding of the knowledge, attitudes and preventative practices regarding IHD in SSA to aid in the development of patient-centred interventions to improve care and outcomes. To that end, participants were co-enrolled into this study if they were screened as eligible for a parent study on patterns of care for patients with chest pain or shortness of beath. According to the authors, Tanzania (and SSA) did not have a locally validated KAP survey for IHD at the time. Thus, the KAP survey used in this study was a compilation of multiple KAP surveys regarding CVD in SSA and elsewhere (not specified). Similar to the studies above, selected questions from the various sources were reviewed by an interdisciplinary team consisting of cardiologists, emergency medicine physicians and lay people from Tanzania and the USA. The KAP survey was then translated from English to Swahili (and back translated) and piloted on 10 people to ensure content clarity and fidelity, and to flag any ambiguity. Like the other studies in this review, this research did not include any details or references regarding how the questionnaire was validated and analysed. A total of 349 co-enrolled participants (out of 360 eligible participants) were included in this study (Hertz et al., 2019; Table 3.4).

The last study in this review by Shammi et al. (2021) studied associations between dietary patterns, KAP and biochemical information with CVD risk factors in middle-aged and elderly adults in Bangladesh. In this study, a KAP survey was used to assess 250 participants in the Coronary Care Unit of a 250-bed General Hospital, Bangladesh (Shammi et al., 2021; Table 3.5). Although the questions used in the survey were published, the article did not specify whether the study had used existing KAP surveys as a resource or whether it had validated or piloted its own version.

3.7 Aim One: How can CV Health-Related KAP Surveys Help Researchers Understand a Population at Risk of Developing CVD?

CV health-related KAP surveys assist researchers in assessing (i) awareness and understanding; (ii) attitudes, beliefs, perceptions and behaviours; (iii) the relationship between KAP and CVD risk factors; and (iv) underlying concepts and theoretical models that may influence the population at risk of CVD.

3.7.1 Level of Awareness and Understanding

Hertz et al. (2019) found that many of the adult patients presenting with chest pain or shortness of breath in their emergency department had inadequate knowledge of IHD. Although, the mean (sd) knowledge score was 4.8 (3.5) from a possible 10 points, many participants knew that obesity increased the chance of a heart attack and that high blood pressure, a salt-laden diet, a sedentary lifestyle, high cholesterol and old age were all risk factors for a heart attack. A few of the participants knew that taking a daily aspirin could reduce the chances of a second heart attack or stroke, and that diabetes increases the chances of a heart attack. Similarly, less than half of the participants in this study knew that a heart attack and stroke are not the same thing (Hertz et al., 2019).

Mirza et al. (2016) asked patients in a government CV hospital to identify signs and symptoms of CAD. Among the eight symptoms listed, 91% of the participants were able to recognise chest pain as a characteristic symptom of CAD, but nausea (30%),

dizziness (35%), arm (35%) and jaw pain (20%) was less often recognised in the study population. Overall, the researchers found that many of their participants (71%) were able to identify up to five symptoms, which they considered an appropriate level of proficiency. Participants were also asked to recognise CAD risk factors and different ways to prevent CAD. They found that more than half of the participants identified hypertension, hyperlipidaemia, fatty diet and smoking as probable risk factors, but fewer participants identified physical inactivity or family history as risk factors. In terms of CAD prevention, 78% of participants believed avoiding fatty foods and 63% believed smoking cessation were effective ways to prevent CAD, yet only 22% of participants thought that living an active lifestyle could prevent CAD (Mirza et al., 2016).

In contrast, Mohammad et al. (2018) observed that participants attending an outpatient clinic had good knowledge of CVD risk factors. They found a mean (sd) knowledge score of 60.75 (4.82) out of a possible 75, with 35% of their study population having a knowledge score of 65.0 or above. Half of the participants in this study could correctly answer general questions on CVD, such as knowing that adequate exercise can prevent CVD and that irregular eating patterns can cause harm. However, only 37% of participants knew that obstructed blood vessels were associated with CVD and only 16% knew the difference between good (high-density lipoprotein (HDL)) and bad (low-density lipoprotein (LDL)) cholesterol. For the questions directly related to CVD risk factors, most of the participants were able to identify these correctly—with the exception of diabetes mellitus, stroke and having a sedentary lifestyle—whereas only 38%, 39% and 37% of participants, respectively, were able to identify them as risk factors (Mohammad et al., 2018).

Similarly, Shammi et al. (2021) found middle-aged and elderly patients with CVD at the Coronary Care Unit to have good knowledge of CVD risk factors;

nonetheless, these researchers too were able to highlight gaps in participant knowledge, such as the effects of high cholesterol. In the same study only 16% of participants were able to provide correct responses regarding saturated fats: 94% failed to identify which foods contain trans-fats, and 67% had no knowledge of the foods that could increase blood cholesterol levels (Shammi et al., 2021).

Unlike the other studies, Vaidya et al. (2013) tested their CV health-related KAP survey on residents of a semiurban community, a general population instead of participants who were ill or who had CVD. They found that their study population demonstrated low overall knowledge of the causes of CVD. Approximately 60% of participants did not know any of the signs of a heart attack. Among those who were familiar with the warning signs, almost 50% knew only one sign, 37% knew two signs, 11% knew three signs and 3% knew four signs, out of a possible seven. Unlike Mirza et al.'s (2016) study, only 20% of the participants identified chest pain, the most prominent and significant indicator and warning sign of a heart attack. When participants were asked about what action they would take for a suspected heart attack, more than 20% gave no response, 75% said they would immediately take the person to hospital, and 3% said they would try home therapy, consult a traditional healer or stay home and wait for the symptoms to subside. When participants were asked to identify specific heart-healthy foods, almost all identified green-leafy vegetables (95%) and fruits (92%), but 22% of participants also thought that salty food (such as chips) was healthy (Vaidya et al., 2013).

With KAP surveys, researchers can measure the level of awareness or understanding of a health condition or disease among a population at any given time. For populations at a higher risk of developing CVD, determining their level of awareness or understanding of CVD can be valuable for finding ways and topics on which to educate and promote CV health and disease prevention. The studies in this

review have shown how different populations can have varying levels of awareness and understanding of CVD. Being able to use a tool such as a KAP survey in such situations not only highlights the areas where promotion strategies need to be improved/tailored, but allows researchers to build on existing knowledge of a particular population, as demonstrated by Stanifer et al. (2016).

3.7.2 Attitudes, Beliefs, Perceptions and Behaviours

KAP surveys also draw attention to the importance of an individual's attitude, beliefs, perceptions and behaviours towards a health condition or disease. Andsoy et al. (2015) found that a person's attitude and behaviour can play an important role in their development of CVD.

Mohammad et al. (2018) found that their overall study population (outpatient clinic patients) displayed a positive/good attitude towards CVD, scoring above 50% mor most questions in this section. Most of the participants agreed that they must maintain an active lifestyle, follow a healthy diet, maintain their BMI, have regular medical check-ups, stop smoking and control their stress levels to prevent CVD. However, only 52% of the participants agreed to avoid eating fast food and being inactive in order to reduce their risk of CVD. When participants were questioned about their practices towards CVD prevention, many said they often did vigorous work during their working hours, walked for more than 10 minutes to various places, and ate plenty of vegetables; other preventative practices such as avoiding fried food every day were not so common. Even though smoking is a major cause and well-known risk factor for CVD, the researchers found the number of smokers in their study population (around one-third) to be considerably high (Centers for Disease Control and Prevention, 2010; Mohammad et al., 2018).

Likewise, Shammi et al.'s (2021) study population (Coronary Care Unit patients) had a relatively good attitude about the importance of changing their behaviour

to prevent CVD, but their practices for preventing CVD were limited. Most of the participants in their study agreed that a well-planned balanced diet and doing regular physical exercise were effectives way to prevent CVD. However, many thought that weight was not related to CVD. In terms of their practices, participants in this study were found to regularly use table salt, approximately 50% regularly consumed sugar and more than 50% were found to smoke occasionally, despite being at a higher risk of CVD (Shammi et al., 2021).

In the Hertz et al. (2019) study, the participants, who were patients presenting at an Emergency Department with acute chest pain or shortness of breath, also had a positive attitude towards IHD but did not always engage in healthy preventative practices. Most expressed a willingness to diet to improve their health and preferred having treatment from a physician rather than a traditional healer for a heart attack. Regarding their practices surrounding IHD, most participants stated that they took their daily medications as prescribed and limited their salt intake. However, only a minority reported that they exercised regularly or saw a doctor routinely for health check-ups (Hertz et al., 2019).

Similarly, Mirza et al. (2016) found that the participants in their study (CAD patients) had a higher proficiency in attitude towards CAD than in practice. Though some of the participants admitted that it was their first time seeing a doctor, more than half had routine medical check-ups. A total of 47% of the participants believed that food consumption required no restrictions, and only 35% believed that aspirin reduced CVD morbidity. Moreover, 51% of the participants indicated that they did not know about the role of aspirin despite being told it was a blood thinner. As for practices towards CAD, approximately 33% of the participants were found to exercise more than 20 minutes three times a week, while 43% engaged in less or no physical activity. Most of the study

population failed to allocate time for exercise, and only 22% believed that an active lifestyle could prevent CAD (Mirza et al., 2016).

Vaidya et al. (2013) also found differences in the attitudes and practices of their semiurban community participants towards heart health/CVD. Most of the participants did not consider themselves at risk of CVD, nor did they want to change their lifestyle. Almost 32% believed that they did not have time to take care of themselves and 59% did not think that changing their behaviour would reduce their risk of CVD. However, 23% agreed that the amount of food they ate was too much and they would like to cut down. Nearly 82% of the participants considered themselves overweight, and 27% thought that God or a higher power determined their health. Although the authors failed to comment on this finding, this belief/perception regarding health would be worth exploring further. The study also found that overall, 3 in 10 participants were past or current smokers and more than 40% of the participants reported low physical activity. Approximately 60% said that they had attempted to reduce their consumption of unhealthy foods, and 25% had tried to lose weight or increase their physical activity.

Uncovering the attitudes, beliefs, perceptions and behaviours towards a health condition or disease, such as CVD, can be complex but worthwhile. Unlike determining the level of awareness/understanding, this information gives researchers an insight into the strengths, barriers and perceptions in a population towards the health condition or disease. The studies in this review showed that differences can also exist in the attitude, beliefs, perceptions and behaviours within and between populations. Such information could be used for high-risk populations to inform and guide future health promotion strategies and interventions.

3.7.3 Relationship between KAP and Cardiovascular Disease Risk Factors

In addition to the individual measurement of KAP towards CVD, researchers can measure the relationship between KAP and known CVD risk factors, dietary

patterns and/or other factors such as gender, age, academic level and the SES of a population. This gives researchers an understanding of the effect these factors may have on the population and people's level of KAP towards CVD.

The correlation between KAP scores was evaluated in two of the five studies in this review. Vaidya et al. (2013) found that as the level of knowledge increased, so did the level of highly satisfactory practice. However, knowledge had the opposite effect on attitudes: when the level of knowledge increased, the level of highly satisfactory attitudes decreased. They also found that when the level of attitude increased, the proportion of those with highly satisfactory practice remained unchanged. These findings suggest a poor relationship between KAP scores in this study's population. The authors were not surprised by this finding as they did not expect that a linear relationship (highly satisfactory knowledge = high satisfactory attitude and behaviour) would exist in their population (Vaidya et al., 2013).

Shammi et al. (2021) found significant positive correlations between (a) knowledge and attitude; (b) knowledge and practice, and (c) attitude and practice. Based on this, the authors predicted that as knowledge towards CVD increased in their study population, attitude and practice would improve accordingly. This type of prediction could prove highly valuable for health professionals seeking ways to promote health in high-risk communities and/or population.

Given that Mirza et al.'s (2016) study population was represented by low-income respondents, they examined the relationship between a participant's SES and their KAP towards CAD. They found that those with higher levels of education in the study population were better able to identify hallmark symptoms of CAD, and that a younger age was linked with a lower ability to identify CAD prevention strategies. More men than women were able to identify with CAD prevention strategies, whereas more women than men had higher scores in practices towards CAD. However, there

were no significant differences between genders in overall KAP scores (Mirza et al., 2016).

Similarly, Vaidya et al. (2013) found no significant difference in the overall KAP scores between male and females. However, they did find a significant difference in level of knowledge and practice according to age, caste/ethnicity and education level. Specifically, they found that KAP scores decreased from the youngest to the oldest age group; better-educated participants consumed more fruit and less tobacco and alcohol, but also reported less physical activity and more hypertension. Participants who were employed knew more about biological causes of CVD such as high blood pressure, diabetes and high cholesterol, which the authors thought could be because they had more education, wider exposure to information and better access to treatment and screening tests (Vaidya et al., 2013).

Hertz et al. (2019) found that younger age and higher educational status were associated with better knowledge about IHD. However, when Mohammad et al. (2018) compared gender, race and academic level with KAP scores, they found a significant difference in knowledge between genders and race, but no difference across academic levels. For attitudes and practices, they also found no significant differences between gender, race or academic level (Mohammad et al., 2018).

With a slightly different focus from the other studies in this review, Shammi et al. (2021) evaluated the association between dietary patterns, KAP, biochemical information and CVD risk factors among adults. Although their study did not directly compare each component (dietary patterns and biochemical information) to KAP, an association between dietary patterns and CVD risk factors was found: CVD was more prevalent among the males than the females in their study population.

These studies suggest that different factors can have a unique effect on a population at risk of developing CVD. By identifying and understanding how or to what

extent these factors affect the population, interventions or strategies targeting these factors can be developed.

3.7.4 Application of Theoretical Models

Researchers commonly use theoretical models such as the Health Belief Model and the Theory of Reasoned Action to frame the application of KAP for their study population. By applying relevant theoretical models, researchers can identify the barriers to attaining a higher level of KAP towards a health condition.

Vaidya et al. (2013) found that most of their participants did not consider themselves at risk of CVD and did not want to alter their lifestyle despite being at a higher risk of the disease. The authors contested that this perception may be supported by the Health Belief Model and the Theory of Reasoned Action. According to Redding et al. (2000), the Health Belief Model concerns the likelihood of a person taking action to prevent illness. This depends on four factors involving the individual's perception, that: (a) they are personally vulnerable to the condition (susceptibility); (b) the consequences of the condition would be serious (severity); (c) precautionary behaviour effectively prevents the condition (effectiveness); and (d) the benefits of reducing the threat of the condition exceed the costs of taking action (Redding et al., 2000). When participants in this study were asked about their reasons for attempting positive health behaviours, most of the factors in the Health Belief Model, such as 'wanting to feel better', being 'encouraged by a health professional' or fear such as the death of a family member, appeared to influence their behavioural decisions (Vaidya et al., 2013). Similarly, the authors felt that the Theory of Reasoned Action, which advocates intention as a key component of healthy behaviour, could be used to explain their findings. For example, half of the participants who were smokers reported that they had tried to quit smoking.

To summarise the findings of the aims regarding the first question (How can CV health-related KAP surveys help researchers understand a population at risk of developing CVD, the studies reviewed here show that each population/community is different, and their level of understanding, beliefs/perception/attitudes and practices towards a particular health condition can vary considerably. Each study population demonstrated a specific level of understanding, attitude and practice towards CV health and disease prevention that was characteristic and unique. Some studies revealed distinct differences in measured levels of KAP, and a few found associations between the relationship between KAP and known risk factors in their study population. The research outcomes presented in each of these studies was unique, and allowed researchers to reflect on their findings, revealing gaps in CV health promotion and disease prevention strategies that could be improved or developed in the future.

This section has shown that to find ways to support a community/population at risk of CVD, local cultural wisdom, knowledge, perceptions and practices towards heart health in the community/population must first be acknowledged.

3.8 Aim Two: How can CV Health-Related KAP Surveys Support the Promotion of CV Health and Disease Prevention?

The studies included in this scoping review identified several key opportunities to support the promotion of CV health and disease prevention in high-risk populations. First, there is a need to create tailored or patient-centred health programmes. According to Mirza et al. (2016), the 'implementation of health programmes that are tailored towards improving a population's current level of understanding, beliefs and behaviours regarding CVD, would be more successful and effective if they adhered to socioeconomic and sociocultural relevance' (p. 2741). Their findings showed that future preventative programmes advocating regular exercise and healthy dietary habits could

be more effective if they empowered women, as it was the women in their study who scored significantly higher in the practice category (Mirza et al., 2016).

Mohammad et al. (2018) suggested there was an urgent need to encourage the promotion of healthy diets as almost half of their study population preferred to frequent fast-food restaurants, despite the participants scoring very high on attitudes towards the intake of vegetables and fruit (Mohammad et al., 2018).

Hertz et al. (2019) emphasised the need for patient-centred educational interventions in northern Tanzania, where they found many of the high-risk participants had inadequate knowledge and unhealthy practices towards IHD. As described above, this study identified various areas where participants' (mainly older adults) knowledge was poor, including knowing the difference between a heart attack and stroke, their physiological understanding of a heart attack, the role of aspirin in preventing a CV event, and the association between diabetes and IHD. Consequently, the researchers recommended emphasising these topics in patient-based educational interventions in Tanzania, especially in older high-risk populations (Hertz et al., 2019).

Globally, smoking is known to be a major risk factor not only for CVD, but for many other diseases. Three of the five studies in this review reported a high number of smokers among their participants. Thus, the second recommendation identified among the reviewed studies was to continue and maintain smoking cessation programmes to build a healthier generation that is free from smoking (Mohammad et al., 2018). Mirza et al. (2016) believed that tobacco cessation campaigns and education about aspirin prophylaxis are important, as these factors were found to be underestimated and undervalued in their study population.

The final recommendation was the need to plan and develop more health promotional activities to increase the CV health literacy of a population. According to Liu et al. (2020), health literacy is 'the ability of an individual to obtain and translate

knowledge and information to maintain and improve health in a way that is appropriate to the individual and system contexts' (p. 1). This concept/construct has been found to align with KAP models and theories (Koohpayeh et al., 2021). The aim of Vaidya et al.'s (2013) study was to determine a baseline KAP for their community to inform the planning of health promotion activities. In their study, they asked their participants to express their opinion on the various preventative aspects of heart health that they considered helpful; almost all of participants agreed on the following options: (a) increased access to fruit, vegetables and other healthy foods; (b) improved access to indoor and outdoor public recreational facilities; (c) more awareness programmes about a healthy heart; (d) availability of health facilities to detect and treat heart disease; and (e) smoking bans to prevent CVD in their population. In the same way, Mirza et al. (2016) suggested that future programmes would be more effective if they were led by government hospitals and local doctors in their study population. The benefits of such direct feedback from high-risk populations cannot be overstated. This information not only amplifies the voices of study participants but creates an opportunity for researchers to provide translational evidence for long-term interventional approaches and advocate them to policy makers for change.

3.9 Chapter Summary

The purpose of this scoping review was to explore the use of KAP surveys in promoting CV health and disease prevention in high-risk populations. To date, no scoping review or systematic review has been published describing the use of KAP surveys for promoting CV health and disease prevention in high-risk populations. A preliminary search of the literature revealed a limited number of studies published on this topic. The limited number of studies included this scoping review may, in part, be due to the specific search string used, the databases chosen, and the fact that there is a

considerable gap in the literature on this topic. For this reason, a scoping review of the literature, rather than a systematic review, was more relevant for this study.

The aims of this scoping review were to 1) identify how CV health-related KAP surveys can characterise a population at risk of developing CVD; and 2) explore how knowledge obtained from KAP surveys can support the promotion of CV health and disease prevention in these populations. While more primary research is needed in this area, the main findings of this scoping review demonstrate how CV health-related KAP surveys can be used to identify (a) awareness/understanding, perceptions, beliefs and behaviours regarding CV health; (b) the relationship between KAP and how it correlates with known CVD risk factors; and (c) how different concepts/theory models can be used to understand the level of KAP in a high-risk population. Thus, these findings provide a foundation of empirical knowledge for researchers and professionals to use and implement in future interventions and health promotion strategies. As Andrade et al. (2020) explained, KAP surveys should ideally precede any awareness or intervention programme because KAP data, whether CV health-related or not, can provide valuable insight into future work including planning, designing and developing health promotion strategies/programmes.

Several key learnings and considerations from this scoping review helped shape the experimental design of this study:

1. To be able to conduct a KAP survey (not just a CV health-related KAP survey) in a population, it is necessary to have an appropriate, validated questionnaire. Given that all the studies in this scoping review had used a CV health-related questionnaire based on past research (a thorough search of this literature was outside this scoping review), it was evident that there is no 'gold standard' that could be used in the current study. Therefore, the first step to assessing the KAP

towards CV health in the Fijian Indian community was to develop an appropriate and feasible KAP questionnaire.

2. While there is significant value in asking direct questions related to the KAP towards CV health, as shown in this scoping review, incorporating open-ended (qualitative) questions can be beneficial. Such questions allow participants to express their opinions and ideas about the topic of interest, as demonstrated by Vaidya et al. (2013).

3. It is important for researchers to conduct a content analysis (content validity) of questions and pre-test their questionnaire with a small number of participants before it is disseminated to a larger audience. In this scoping review, three of the five studies assessed the content validity of their KAP questionnaire and/or piloted it in a small sample of their population. Similarly, according to Artino et al. (2014), past research has shown the value of these processes in questionnaire development. Assessing the content of a questionnaire ensures that the chosen questions are appropriate and capable of correctly measuring the KAP of a population and that the data obtained from the survey are relevant to the purpose of the study. Similarly, pre-testing a developed questionnaire allows researchers to confirm that it is practical and easy to understand.

4. To facilitate better understanding and acceptability of their KAP survey, three of the five studies translated their questionnaire into the local language of their study population. Although they did not report on the impact of this action in their questionnaire development process, it is worth considering, if appropriate.

5. It is important to consider the different methods of administration of a KAP questionnaire—for example, written, electronic or interviews—as this could affect the data collection and data completeness at the time of the study. Although none of the studies in this scoping review evaluated this aspect, taking

into account the preference and ability of the target population to complete the

KAP survey could help improve the quality of the data.

Chapter 4: Phase One Study

This chapter describes Phase One, the development of a KAP questionnaire to assess the level of KAP towards CV health in the Fijian Indian community. A preliminary literature review was conducted to identify relevant questions related to CV health and disease prevention. An advisory team consisting of invited members of the local community was formed to assess the content validity of the questionnaire. Each advisory team member provided feedback on the selected questions that was analysed and integrated into the final study questionnaire.

4.1 Development of the Draft Questionnaire

4.1.1 Literature Search

A literature search of the Health and Psychosocial Instruments (HaPI), Scopus and MEDLINE (via PubMed) electronic databases was undertaken in September and October 2018. Using keywords from the research questions in this study the following search terms were selected: 'heart health OR heart disease OR cardiovascular disease OR cardiovascular health' **AND** 'questionnaire OR survey' **AND** with either the term 'knowledge', 'attitudes', 'practices', 'behaviour' and 'beliefs' and used for each database search. Because of the specificity of the keywords selected, there were no restrictions on the year of publication.

4.1.1.1 Inclusion Criteria

References were included if they were written in English and relevant to the topic of interest. For example, included articles were those that assessed the level of KAP (including beliefs) of CV health or disease prevention in the population/community, were available in full text and for which the tool used to assess the topic of interest was presented in the text.

4.1.1.2 Exclusion Criteria

References were excluded if they were specific to children's health, gender, career or a CV or other health condition; for example, a survey on hyperlipidaemia

(high cholesterol). References were also excluded if they were irrelevant to the topic of interest, the resource was unavailable, or the tool used was not pre-tested before use in the study.

4.1.1.3 Search Results

A total of 13 articles met the inclusion criteria and were used to develop the draft questionnaire prior to expert review. For each database, article titles were first screened to identify duplicate results for exclusion. The results were then filtered through the inclusion and exclusion criteria (described above) by reading the abstract of each article. If the abstract met inclusion criteria, the original article (or primary article) was obtained for a full-text review. Last, the reference lists of the original articles were explored for any relevant references. If considered appropriate, these were also acquired and included as secondary references in this search. Tables 4.1–4.3 summarise the database results from the literature search.

Table 4.1

Search Results from the HaPI Database

	Database—HaPI				
	Knowledge	Attitude	Practice	Behaviour	Beliefs
Total results	22	8	10	5	3
Excluded	20	7	10	4	2
Relevant references	2	1	0	1	1

Table 4.2

Search Results from Scopus Database

	Database—Scopus				
	Knowledge	Attitude	Practice	Behaviour	Beliefs
Total results	83	72	123	211	7
Excluded	79	71	123	210	6
Relevant references	4	1	0	1	1

Table 4.3

Search Results from MEDLINE Via the PubMed Database

	Database—MEDLINE via PubMed				
	Knowledge	Attitude	Practice	Behaviour	Beliefs
Total results	219	18	269	89	13
Excluded	217	18	269	89	13
Included references	2	0	0	0	0

4.1.2 Other Resources

The WHO's *Guide to Developing Knowledge, Attitudes and Practices survey*, the MoH (NZ)'s *Cardiovascular Risk Assessment and Management of Primary Care* guidelines and existing questionnaires/KAP surveys on CVD found through Google Scholar were also used in development of the questionnaire.

Similarly, a combined literature search of the CINAHL (Cumulative Index of Nursing and Allied Health Literature) database and MEDLINE via the PubMed database for research that included the Fijian Indian community was also undertaken in October 2018. The following search terms: 'Fijian Indian **AND** Health literacy assessment', 'Fijian Indian **AND** Health literacy', 'Fijian Indian **AND** Health survey' and 'Fijian Indian **AND** Needs assessment' were used. This was intended to guide and adapt the questionnaire so that it was relative to the community of interest. Unfortunately, the results from this search were extremely limited and irrelevant to the topic of interest. This confirmed the need to invite relevant leaders from the local community to be part of an advisory team for the development of the KAP questionnaire.

4.1.3 Draft Questionnaire

The methodological approach to developing a questionnaire used here has been employed in numerous studies (e.g., Wagner et al., 2005; Woringer et al., 2017). According to Hyman et al. (2006), it is perfectly acceptable to use questions from previous surveys; indeed there are significant advantages to doing so for new research,

including that 'recycling' questions prevents the need to 'reinvent the wheel'. Furthermore, the fact that these questions have already been tested means that potential researchers can be fairly confident that the methodological work required for conceptualisation and accurate measurement of validity has been done and the questions are good indicators of their topic of interest (Hyman et al., 2006). In this study, the following sources were also used to guide the development of the questionnaire for expert analysis: Andsoy et al. (2015); Arikan et al. (2009); Awad and Al-Nafisi (2014); Bergman et al. (2011); Ibrahim et al. (2016); Magalhães et al. (2015); Mayo Clinic (2020); MoH (2018a); Mirza et al. (2016); Tovar et al. (2010) and Vaidya et al. (2020). Questions were developed, modified and/or adapted based on their appropriateness and relevance to the research aims and questions of this study. Similarly, attention was paid to the format and structure of the questions and questionnaire design based on the abovementioned sources.

Each section of the draft questionnaire was filtered for repetitive questions/statements and formatted following consultation with the study supervisors, an Auckland University of Technology (AUT) biostatistician (advisor) and peers within the Fijian Indian community. Polit and Beck (2006) was used as a guide to assess the content validity of the developed questionnaire. Appendix 3 presents the evaluation of each relevant article used in the development of the draft questionnaire.

4.1.4 Questionnaire Review Form

A questionnaire review form was designed using Polit and Beck (2006) as a guide (Appendix 4). Each member of the advisory team was asked to review the first section of the questionnaire: Part 1—Knowledge, Attitude and Practices of CV Health.

For every question, each member was asked to use the following criteria as a guide to measure:

- the <u>appropriateness</u> of the question for the category in which it is grouped

- the <u>relevance</u> of the question for assessing either the knowledge, attitude or practice of CV health

- the <u>clarity</u> of the wording.

For each criterion, members were asked to select one option from a 4-point scale to indicate the extent to which they agreed or disagreed with each question: strongly agree, agree, disagree or strongly disagree. As advocated by Lynn (1986), using a 4-point scale avoids having a neutral and ambivalent midpoint (Lynn, 1986; Polit & Beck, 2006). The review form also provided space for each question and the overall questionnaire for advisory team members to express their opinion or suggestions.

4.1.5 Ethical Considerations

Ethics approval for the collection and use of the data during the first phase of this study was obtained from the AUT Ethics Committee (05/03/2019 AUTEC 19/63) (Appendix 5).

4.1.6 Advisory Team

An advisory team was formed by invitation to local/known leaders in the Fijian Indian community and health professionals (medical, nursing, health educators and counsellors) who were experts in the field of CV health and/or had experience with working with the Fijian Indian community in Auckland, NZ.

The following publicly available sources were explored to identify health professionals and local/known leaders in the Fijian Indian community for invitation. An invitation letter (Appendix 6) was sent electronically to each of these sources:

- Friends of Fiji

- The Fiji Association in Auckland Inc.

- The Fijian Indian Association Wellington Inc.

- The Cardiothoracic and Vascular Intensive Care Unit at Auckland City Hospital

- Tamaki Health: a local public health service provider in the community

- Community connections/links—given the PR's immediate connection with the Fijian Indian community in Auckland, NZ.

According to Armstrong et al. (2005), the recommended number of experts to review an instrument is 3–20. For this study, the advisory team consisted of five experts from the local community.

Each member was provided with an electronic copy of the participant information sheet (Appendix 7) and a consent form (Appendix 8) following a phone call with the PR. During this phone call (and throughout the recruitment phase), all members had the opportunity to ask any questions related to the study before signing their consent form.

Once consent forms were signed and returned to the PR, an electronic copy of the draft questionnaire (Appendix 9) and review form (Appendix 12) was sent to each expert for them to assess the content validity of the questionnaire.

Table 4.4 briefly describes the expertise and professional role in the local community of each member of the advisory team.

Table 4.4

Professional Role and Expertise of Advisory Team Members

Expert	Expertise
1	A vocationally trained general practitioner with more than 25 years' experience in the medical field. Worked closely with the Friends of Fiji Health general surgical team to provide medical treatment and training to the local community in Fiji.
2	A registered nurse specialist in the Cardiothoracic and Vascular Intensive Care Unit located at Auckland City Hospital.
3	A Fiji-born Indian, retired medical practitioner and member of Soroptimist International and the University of the Third Age. Had been recognised for services in medicine and the community and was a member of the New Zealand Order of Merit.
4	A doctor and the clinical director of the largest independent healthcare group providing general practice, urgent care clinics, specialist centres and occupational health clinic services to our local community.
5	A well-known, Fiji-born health coach and self-management facilitator in one of the largest independent healthcare groups providing general

practice, urgent care clinics, specialist centres and occupational health
clinic services to the local community.

4.1.7 Content Validation

The Content Validity Index (CVI) measures the 'degree to which an instrument

has an appropriate sample of items for a construct being measured' (Shi et al., 2012, p.

1). It is the most widely reported approach in instrument development. Two types of

CVI can be calculated (Rodrigues et al., 2017; Shi et al., 2012): (1) the CVI of

individual items, or item-level CVI (I-CVI); and (2) the CVI of the overall scale, or

scale-level CVI (S-CVI). Thus, the content validity of the overall instrument can be

assessed by calculating either the S-CVI/UA (universal agreement) or S-CVI/Ave

(average). According to Shi et al. (2012), a scale with excellent content validity should

have I-CVI of 0.78 or higher and a S-CVI/UA and S-CVI/Ave of 0.8 and 0.9 or higher,

respectively.

As recommended by Polit and Beck (2006), the calculations described in Table

4.5 were made to evaluate the draft questionnaire.

Table 4.5

Measures Used to Assess Content Validity of the Draft Questionnaire

I-CVI	The number of experts in agreement, i.e., experts who 'strongly agree' or 'agree' with the appropriateness, relevance or clarity of the question, divided by the total number of experts
Proportion a. 'Stated clearly' b. 'Appropriate' c. 'Relevant'	The number of questions stated clearly/appropriately/deemed relevant divided by the total number of questions in that section
S-CVI/UA	The total number of questions that received agreement (experts who chose 'strongly agree' or 'agree' with the appropriateness, relevance or clarity of the question) by all experts divided by the total number of questions in that section
S-CVI/AVE	The average of the I-CVIs for all items on the scale, i.e., the sum of the proportion stated clearly/appropriate/deemed relevant divided by the total number of experts (S-CVI)

4.1.8 Advisory Team Feedback and Data Analysis

For these data, a minimum I-CVI of 0.8 was chosen as an acceptable standard for content validity (Polit & Beck, 2006; Shi et al., 2012). For the Knowledge section, the mean I-CVI (and S-CVI/Ave) was 0.93, 0.79 and 0.88 for the appropriateness, relevance and clarity of the questions, respectively (Appendix 10, Tables 1–12). Similarly, the mean I-CVI (and S-CVI/Ave) was 0.88 for appropriateness, 0.89 for relevance and 0.82 for clarity of the questions in the Attitude section (Appendix 10, Tables 4–6). Finally, the mean I-CVI (and S-CVI/Ave) for the Practice section was 0.94 for appropriateness, 0.94 for relevance and 0.86 for clarity of the questions (Appendix 10, Tables 7–9).

In addition, the experts provided valuable suggestions and comments on several of the questions. In the Knowledge section (Appendix 10, Table 10), experts suggested changing the term 'cardiovascular disease' in Question 1 (and the overall questionnaire) to 'heart disease' as this would make the question/questionnaire 'easier to understand' and allow participants to 'complete the questionnaire'. Two experts suggested slightly rephrasing Questions 7 and 10, and removing Questions 6, 9 and 14 as they were 'too technical' for the intended audience, 'repetitive' or similar to another question, or were 'unnecessary' or vague questions that 'could confuse the participant on how to answer the question appropriately'. For the Attitudes section (Appendix 10, Table 11), the experts suggested rephrasing three questions (19, 22 and 29) and removing Question 32 for the same reasons as above. For example, one of the experts commented about Question 32, 'I read the nutrition panel information of each product that I intended to buy', suggesting it was unnecessary in this group of questions. Another expert questioned whether people in this community 'would have enough knowledge of the general category of foods' to be able to reflect on such a question. In the last section (Practices), experts suggested rewording five questions (38, 39, 42, 43, and 57) to

improve the clarity and understanding of the questions. This included changing the words 'leisure time' to 'spare time' in Question 42, 'salt/day' to 'salt per day' in Question 38 and '3x/week' to '3 times a week' (Appendix 10, Table 12).

The overall feedback about the questionnaire was both positive and constructive. As anticipated, most of the experts found the questionnaire a 'bit long' or lengthy; however, they did acknowledge that the questions were 'really good' and 'appropriate to create a good profile of the community and their knowledge of heart disease'. The experts also recognised that the questionnaire was 'comprehensive' enough to achieve a 'good picture of what's going on' in the community and that 'it is a good initiative, and the collected data will be valuable'. One expert commented that the open-ended questions included in the questionnaire could 'help in improving the policies'. Furthermore, Expert 5 expressed their appreciation and support for the draft questionnaire by stating that, 'our people need this'.

In summary, the initial review process identified that most questions in each section were deemed appropriate and relevant for the draft questionnaire. However, some questions needed revision to improve clarity. Nine of the 58 questions in these sections were reviewed based on feedback from the advisory team. Tables 4.6 and 4.7 summarise the total I-CVI analysis findings and overall feedback on the draft questionnaire by the advisory team, respectively. Also included are the responses and plan of action (highlighted in red) for revising the study questionnaire. These calculations and results were checked and accepted by study supervisors following review.

Table 4.6

Summary of the Total I-CVI for each Question in the Knowledge, Attitude and Practices

Section

Question		Total question I-CVI analysis		
		Appropriateness I-CVI	Relevance I-CVI	Clarity I-CVI
Knowledge	1	1	1	0.4
	2	0.8	1	0.8
	3	1	1	1
	4	1	1	1
	5	1	1	0.8
	6	0.8	0.8	0.4
	7	0.8	0.8	0.6
	8	1	1	1
	9	1	1	0.6
	10	1	1	0.6
	11	1	1	0.8
	12	0.8	1	0.8
	13	1	1	1
	14	0.6	0.8	0.6
	15	1	1	1
	16	1	1	0.8
	17	1	1	1
	18	1	1	1
Attitude	19	0.8	0.8	0.6
	20	0.8	0.8	0.8
	21	0.8	0.8	0.8
	22	0.8	0.8	0.8
	23	0.8	0.8	0.8
	24	0.8	0.8	0.8
	25	0.8	0.8	0.8
	26	1	1	1
	27	1	1	0.8
	28	1	1	1
	29	1	1	0.6
	30	1	1	1
	31	1	1	1
	32	0.6	0.6	0.8
	33	0.8	1	0.8
	34	0.8	0.8	0.8
	35	1	1	0.8
	36	1	1	0.8
Practice	38	1	1	0.8
	39	1	1	0.8
	40	0.8	0.8	0.8
	41	1	1	1
	42	1	1	0.8
	43	0.8	0.8	0.8
	44	1	1	1

	Total question I-CVI analysis		
Question	Appropriateness I-CVI	Relevance I-CVI	Clarity I-CVI
45	1	1	1
46	1	0.8	0.8
47	0.8	1	1
48	1	1	0.8
49	0.8	0.8	0.8
50	1	1	1
51	0.8	0.8	0.8
52	1	1	1
53	1	1	0.8
54	1	1	0.8
55	0.8	0.8	0.8
56	1	1	1
57	1	1	0.6
58	0.8	0.8	0.8

KEY:
5/5 experts strongly agree or agree = 1.0
4/5 experts strongly agree or agree = 0.8
3/5 experts strongly agree or agree = 0.6
2/5 experts strongly agree or agree = 0.4

QUICK SUMMARY OF RESULTS:
For these data, a minimum I-CVI of 0.8 was chosen as the acceptable standard for content validity (Polit & Beck, 2006; Shi et al., 2012). Most of the questions were appropriate and relevant to each section of the draft questionnaire. However, some questions required revision to achieve more clarity (described below). Nine of the 58 questions in these sections were revised based on the feedback from the advisory team.

Table 4.7

Overall Feedback from the Experts on the Draft Questionnaire Including the

Response/Plan of Action to Each Suggestion/Comment

	Advisory team overall feedback about draft questionnaire
Expert 1	1) Generally—the whole questionaire is too long. Will it be filled approprriately if it is deemed to long and some qustions are quite vague. 2) Section on attitudes, are those questions necessary as many of them can be ascertained from section c questions and statements.
Response & action plan	1) The questionnaire will be split into two sections—Part 1 and Part 2 (as Expert 5 also suggested). 2) Based on individual feedback from each expert and question analysis, some questions have been rephrased or removed in each of

Advisory team overall feedback about draft questionnaire	
	the sections. However, the three sections will remain in the questionnaire.
Expert 2	I feel that the questions are really good. But few suggestions: 1. In attitude section c: questions 37 to 48 has the columns that has the options never/rarely/sometimes/often/always. But the questions 19 to 36 has different options like strongly agree/ agree/not certain/disagree/strongly disagree. If you need it that way its fine. But if you want to make it simple to avoid confusion to readers and look alike to make analysis easy, make it strongly agree/agree/not certain/disagree/strongly disagree for all, and change the statements from questions 40 to 48 from question form to general statement. like: Q40: My daily activity involves vigorous activities (e.g.) Q41: I walk for atleast 10 mins to get to and from places every day Q42: I spend my leisure time to exercise at least 20 minutes per session Q43 : I take Health supplements/special diet that is not recommended by a health professional Q44 : I eat two fruit servings per day Q45: I take three vegetable servings per day sometimes I eat dinner late in the night before I sleep Q47: I eat in between main meals; e.g., …. Q48 : I lead a stress full life 2. Questions 49 to 58 I feel are more of knowledg/believe related questions than practice related. So may be they can be clubbed with knowlede questions. 3a. under demographic data, Q73 : change Questions as, In general, how would you consider your health condition to be? 3b. Q76 to 78 :smoking/alcohol/kava habbits - if Yes, in options, wondering if specifying quantity would be more beneficial in addition to times 3c. Q92: under option, medical term like Atrial fibrillation, I wonder how many will understand? Instead using irregular fast heart beat/rate/rhythm might be an option? 3d. Q95 : Not sure whther it is an applicable to ask people, because it may be difficult for them to say? Can be removed.
Response & action plan	1–2) Relevant questions have been edited based on the individual feedback from experts and question data analysis 3a) Changed Q73 to, 'In general, how would you consider your health condition to be?' 3b) Only the question about alcohol will be rephrased to match the Alcohol Use Disorders Identification Test (AUDIT) screening tool as this is used in the clinical setting. The other two questions (smoking and kava) include a quantity component in the answer. 3c) Included the definition 'irregular fast heartbeat/rate/rhythm' in brackets next to 'atrial fibrillation' (Q92) 3d) I think it is important to know and understand your level of risk for CVD. People who have had their CVDRA done may or may not know or remember what their risk is despite having had an assessment.

Advisory team overall feedback about draft questionnaire	
Expert 3	1. I think the questions are appropriate to create a good profile of the community and their knowledge of heart disease. 2. Open-ended questions—good questions 3. Demographic—relevant questions 4. It will give you a good picture of whats going on. 5. Add not sure in the procedures question
Response & action plan	5) Q92: 'Not sure' has been added to the question as a response option.

Expert 4	1. Change the words 'cardiovascular disease' to heart disease for the community
	2. Remove medical terminology
	3. The open-ended questions would help in improving the policies etc
	4. Update the risk factors - include psychosis/schizophrenia/bipolar as well now (mental health)
	    - PREDICT tool (newer version - 2018)
	    + heart failure it is also a risk factor
	5. Include alcohol intake in the demographics section as it is just as important as smoking habits.
	    -You can use the AUDIT screening tool questions on Medtech—use the first 3 questions.
	    -It is a WHO approved tool and is a needed figure for the government as well (like smoking).
	    -If a person scores 4 and above—considered positive for problem alcohol use.
	6. Overall the questionnaire is very comprehensve and a bit long.
	7. However, it is a good initiative and the collected data will be valuable

Response & action plan	1–2) The term 'cardiovascular disease' has been replaced by 'heart disease' throughout the questionnaire. Most of the medical terminology has been replaced/removed to improve clarity and understanding of the overall questionnaire. 4) The following risk factors will be added to Q17 – 'Severe mental illness, impaired renal function and heart failure'—(Reference: https://bpac.org.nz/2018/cvd.aspx) 5) AUDIT screening tool questions will be used instead of the current question (Q77). 6) The questionnaire will be split into two sections—Part 1 and Part 2 as Expert 5 also suggested.
Expert 5	1. Change medical terms to layperson language—eg q(6)—will they know what HDL is 2. Good open ended questions—this is very important for our community as they would be open to feedback 3. Questionnaire is bit long—spilt it into smaller sections 4. Overall, very good questionnaire—our people need this
Response & action plan	3) The questionnaire will be split into two sections—Part 1 and Part 2.

Note. The wording and spelling of the expert feedback in this table are verbatim.

4.1.9 Revised Questionnaire and Review Form

Based on the findings and feedback described above, the following actions were taken to revise the developed questionnaire. In Part 1—Section A (Knowledge), the researcher removed Questions 6 and 9 as they did not meet the acceptable standard of I-CVI 0.8 for clarity. Question 14 was also removed as it did not meet the acceptable standard of I-CVI 0.8 for appropriateness and clarity. Question 17 was revised to include the options severe mental illness, heart failure and impaired renal function as factors that could increase the risk of a heart attack or heart disease. In Part 1—Section B (Attitudes), Question 32 was removed as it did not meet the acceptable standard of I-CVI 0.8 for appropriateness and relevance, and Question 22 was reworded to include the words 'for my height or age' to clarify the statement about how a participant may feel about their present weight. In Part 1—Section C (Practices), Questions 38, 39, 42 and 43 were slightly reworded to simplify and make them easier for a participant to understand.

There were no changes/actions to the wording or format of the 'open-ended questions' in Part 2. Three of the experts found these questions 'good' and 'very important' for the target community. They stated that participants 'would be open' to providing feedback and the open-ended questions 'would help to improve policies'.

In the last part of the questionnaire, Part 3—Participant Demographics and Current Health Status, Expert 2 suggested rewording Question 73 to, 'In general, how would you consider your health condition to be?'. Expert 3 suggested incorporating the WHO Alcohol Use Disorders Identification Test (AUDIT) screening tool questions as used in primary care (clinical settings) so that the questionnaire would be in line with current clinical practice (WHO, 2001). The final change/action suggested by the experts for this series of questions was to add the definition of 'atrial fibrillation', which is 'irregular fast heartbeat/rate/rhythm', and the option of 'not sure' to Question 92.

The questionnaire was split into two separate documents to help participants manage and complete this comprehensive survey. Part 1—KAP of CV health questions and Part 2—Open-ended Questions made up one document, and Part 3—Participant Demographics and Current Health Status were presented in the other.

Table 4.8 summarises the proposed changes to the questionnaire. These changes were highlighted in a revised letter (Appendix 11) to the advisory team for their information. A revised review form was also created for the advisory team to assess six questions that were rephrased/reworded to meet the standards of each review category (appropriateness, relevance and clarity) and for them to provide any further/additional comments (Appendix 12).

Table 4.8

Summary of the Proposed Changes to the Questionnaire Following Advisory Team Review

	Original question	Action/revised question
Section A: Knowledge	(6): If your 'good' cholesterol (HDL) is high you are at risk for heart disease	This question has been removed from the questionnaire.
	(9): Irregular eating patterns do not harm your health	This question has been removed from the questionnaire.
	(14): The healthiest exercise for the heart involves rapid breathing for a sustained period	This question has been removed from the questionnaire.
	(17): Which of the following factors increase the risk of a heart attack or heart disease?	(17): Rephrased to, 'Which of the following factors increases the risk of a heart attack or heart disease?' Added the options: severe mental illness, heart failure and impaired renal function to the answer selection
Section B: Attitude	(22): I feel my present weight is too high for my health	(22): Rephrased to, 'I feel my present weight is too high for my height or age'.
	(32): I read the nutrition panel information of each	This question has been removed from the questionnaire.

	Original question	Action/revised question
	product that I intend to buy	
Section C: Practice	(38): I use more than 3 teaspoons of salt/day (39): I consume fatty foods more than 3x/week (42): Do you spend your leisure time to exercise at least 20 minutes per session? (43): How often do you take any health supplements or are on a special diet? i.e., that is not recommended by a health professional	(38): Rephrased to, 'I use more than 3 teaspoons of salt per day' (39): Rephrased to, 'I consume fatty foods more than three times a week' (42): Rephrased to, 'During your spare time, do you exercise for at least 20 minutes (per session)?' (43): Rephrased to, 'How often do you take any health supplements or are on a special diet that is not recommended by a health professional?'
Participant Demographics & Current Health Status	(73): In general, you would consider your health to be? (77): Do you drink alcohol? (92): Please indicate if any of the following medical conditions/procedures are known in your immediate family history (i.e., parents, grandparents, or siblings):	(73): Rephrased to, 'In general, how would you consider your health condition to be?' (77): Rephrased to include the AUDIT screening tool questions (used in clinical settings). 1. How often do you drink? (multiple choice answer). If the patient selects an option apart from 'never', then the following questions will emerge: 2. How many per day? (Multiple choice answer) 3. 6 or more per day? (Multiple choice answer) Action 1: The definition 'irregular fast heartbeat/rate/rhythm' has been added in brackets next to atrial fibrillation (one of the answer options) Action 2: Add the option 'not sure' to the answer selection
Overall	Action 1: Split the questionnaire into two separate documents	

The six questions under final review (Table 4.9) were evaluated to confirm that they were appropriate, relevant and clear for the final version of the questionnaire.

Table 4.9

The List of Questions Under Final Review by the Advisory Team

Section	No	Question
Knowledge	1	Heart disease is a disease that is related to heart and blood vessels
	6	Only exercising will lower a person's chance of developing heart disease
	8	Heart disease can occur in young people
Attitude	16	I don't think of myself as at risk of heart disease
	26	I should maintain my weight according to my BMI; i.e., the right weight for my height
Practice	53	I don't know what is considered a healthy diet that would prevent me from developing heart disease

4.1.10 Final Review: Feedback and Data Analysis

As in the first review process, this study chose a minimum I-CVI of 0.8 as an acceptable standard for content validity in the final review (Polit & Beck, 2006; Shi et al., 2012). The appropriateness, relevance and clarity of each of the six questions in Table 4.9 were tested. For appropriateness, the mean I-CVI (and S-CVI/Ave) was 0.97 (Appendix 13, Table 1), for relevance the mean I-CVI (and S-CVI/Ave) was 0.97 (Appendix 13, Table 2) and for clarity the mean I-CVI (and S-CVI/Ave) was 0.80 (Appendix 13, Table 3). Based on this, one of the six questions in the final review (Question 26) was revised as it failed to meet the minimum I-CVI of 0.8 for clarity. Based on the feedback from the experts, the question was reworded to, 'I should ensure that my weight is appropriate for my height' for the final questionnaire. The experts also suggested rephrasing Question 16 to, 'I don't think I'm at risk of having heart disease', and Question 53 to, 'I don't know about healthy diets that would prevent me from developing heart disease' to make these questions easier to understand.

In terms of overall feedback, most of the experts found the final version of the questionnaire 'good', 'simple' and 'appropriate'. With all the changes made, one expert found the questionnaire 'easier to understand'. One expert noted that the 'questionnaire seemed too long' and that 'some people might not have the time or the patience to

complete the questionnaire'. This was certainly a potential drawback of the developed

questionnaire at this point. Thus, time and data completeness were assessed in the next

phase of the study i.e., Phase Two.

Despite this concern, another expert stated how helpful they felt this

questionnaire would be for 'understanding the current status of CV health in this

community' and how the questionnaire was 'quite relevant to current health concerns

within this particular community'. This was reassuring feedback for this study as there

is a need for further research and support for CVD prevention in this community.

Tables 4.10 and 4.11 summarise the findings of the final review and data

analysis, this includes the responses and the plan of action, highlighted in red, employed

to finalise the study questionnaire. These calculations and results were checked and

accepted by the study supervisors following their review.

Table 4.10

Summary of the Total I-CVI for Revised Questions in the KAP Questionnaire

			Advisory team—final questionnaire review—question analysis		
			Appropriateness I-CVI	Relevance I-CVI	Clarity I-CVI
Knowledge	1	Heart disease is a disease that is related to heart and blood vessels	1	1	1
	6	Only exercising will lower a person's chance of developing heart disease	0.8	0.8	0.8
	8	Heart disease can occur in young people	1	1	1
Attitude	16	I don't think of myself as at risk of heart disease	1	1	0.8
	26	I should maintain my weight according to my BMI; i.e., the right weight for my height	1	1	0.6
Practice	53	I don't know what is considered a healthy diet that would prevent me from developing heart disease	1	1	0.8

KEY:						
5/5 experts strongly agree or agree = 1.0						
4/5 experts strongly agree or agree = 0.8						
3/5 experts strongly agree or agree = 0.6						
2/5 experts strongly agree or agree = 0.4						
SUMMARY OF RESULTS:						
As in the first review, a minimum I-CVI of 0.8 was chosen as an acceptable standard for content validity (Polit & Beck, 2006; Shi et al., 2012). Based on this criteria, one of six questions in the questionnaire was revised based on the feedback given by the advisory team. Other feedback/suggestions from the experts were also taken into consideration (described below).						

Table 4.11

Feedback from the Experts on the Six Revised Questions Including the Response/Plan of

Action

Advisory team—final questionnaire review							
Question			Expert 1	Expert 2	Expert 3	Expert 4	Expert 5
Knowledge	1	Heart disease is a disease that is related to heart and blood vessels	-	-	-	-	-
	Action:	No change will be made to this question as 5/5 experts agreed that the question is appropriate, relevant and stated clearly.					
	6	Only exercising will lower a person's chance of developing heart disease	Exercise is one of the factors that can help	-	-	-	-
	Action:	No change will be made to this question as 4/5 experts agreed that the question is appropriate, relevant and stated clearly. Also, the question is a true or false question and the correct answer to this question is FALSE because, as Expert 1 suggests, 'exercise is one of the factors that can help' lower the chance of developing heart disease.					
	8	Heart disease can occur in young people	-	-	-	-	-
	Action:	No change will be made to this question as 5/5 experts agreed that the question was appropriate, relevant and stated clearly.					
Attitude	16	I don't think of myself as at risk of heart disease	-	-	-	-	Change to 'I don't think I'm at risk of having heart disease''
	Action:	Although the question has been deemed appropriate, relevant and started clearly by 4/5 experts, I agree that rephrasing the question to 'I don't think I am at risk of having heart disease' would be easier to understand.					
	26	I should maintain my weight according to my BMI; i.e. the right weight for my height	good reference point	-	-	'I should ensure that my weight is appropriate for my height'	Change to 'I should maintain my weight according to my height''

Advisory team—final questionnaire review						
	Acti on:	Based on the feedback of 3/5 experts, the question will be rephrased to, 'I should ensure that my weight is appropriate for my height'. In my opinion, this is important because to maintain weight you need to ensure that you are the appropriate weight for your height first, especially if we are to use BMI as a reference point.				
Practice	53	I don't know what is considered a healthy diet that would prevent me from developing heart disease	If the answer is yes then the group will need to be educated	-	-	-	Change to 'I don't know about healthy diets that would prevent me from developing heart disease'
	Acti on:	Although the question has been deemed appropriate, relevant and started clearly by 4/5 experts, I agree that rephrasing the question to, 'I don't know about healthy diets that would prevent me from developing heart disease' would make it easier to understand.				

Table 4.12

Final Feedback from Each of the Experts on the Final Questionnaire Including the

Response/Plan of Action

	Advisory team overall feedback about draft questionnaire
Expert 1	1) Generally—the whole questionaire is too long. Will it be filled approprriately if it is deemed to long and some qustions are quite vague. 2) Section on attitudes, are those questions necessary as many of them can be ascertained from section c questions and statements.
Response & action plan	1) The questionnaire will be split into two sections—Parts 1 and 2 (as Expert 5 also suggested). 2) Based on individual feedback from each expert and question analysis, some questions have been rephrased or removed in each of the sections. However, the three sections: Knowledge, Attitude, and Practices, will remain in the questionnaire.
Expert 2	I feel that the questions are really good. But few suggestions: 1. In attitude section c: questions 37 to 48 has the columns that has the options never/ rarely/ sometimes/often/ always. But the questions 19 to 36 has different options like strongly agree/ agree/ not certain/disagree/strongly disagree. If you need it that way its fine. But if you want to make it simple to avoid confusion to readers and look alike to make analysis easy, make it strongly agree/ agree/ not certain/disagree/strongly disagree, for all and change the statements from questions 40 to 48 from question form to general statement. like: Q40: My daily activity involves vigorous activities (e.g.) Q41: I walk for atleast 10 mins to get to and from places every day Q42: I spend my leisure time to exercise at least 20 minutes per session Q43 : I take Health supplements/ special diet that is not recommended by a health professional Q44 : I eat two fruit servings per day Q45: I take three vegetable servings per day

	Advisory team overall feedback about draft questionnaire
	Q46 : sometimes I eat dinner late in the night before I sleep Q47 : I eat in between main meals e.g. …. Q48 : I lead a stress full life Questions 49 to 58, I feel are more of knowledg/believe related questions than practice related. So may be they can be clubbed with knowlede questions. 3a. under demographic data, Q73 : change Questions as, In general, how would you consider your health condition to be? 3b. Q76 to 78 :smoking/alcohol/kava habbits - if Yes, in options, wondering if specifying quantity would be more beneficial in addition to times 3c. Q 92 : under option, medical term like Atrial fibrillation, I wonder how many will understand? Instead using irregular fast heart beat/rate/rhythm might be an option? 3d. Q95 : Not sure whther it is an applicable to ask people, because it may be difficult for them to say ? Can be removed.
Response & action plan	1–2) Relevant questions have been edited based on the individual feedback from experts and question data analysis 3a) Changed Q73 to, 'In general, how would you consider your health condition to be?' 3b) Only the question about alcohol will be rephrased to match the AUDIT screening tool as this is used in the clinical setting. The other two questions (smoking and kava) include a quantity component in the answer. 3c) Included the definition 'irregular fast heartbeat/rate/rhythm' in brackets next to 'atrial fibrillation' (Q92) 3d) I think it is important to know and understand your level of risk for CVD. People who have had their CVDRA done may or may not know or remember what their risk is despite having had an assessment.
Expert 3	simple and appropriate other changes are good simplified questions—appropriate.
Response & action plan	N/A—no other changes
Expert 4	Other changes are okay All the best
Response & action plan	N/A—no other changes
Expert 5	With the changes made, the questionnaire is easy to understand. The questionnaire will be quite helpful in understanding the current status of CV health in this community. Quite relevant to current health concerns within the particular community
Response and action plan	N/A—no other changes

Note. The wording and spelling of the expert feedback in this table are verbatim.

4.1.11 Final Questionnaire

The purpose of Phase One was to develop a questionnaire to assess the level of KAP towards CV health in the Fijian Indian community. There was a total of 92 questions divided into three parts to form the comprehensive CV health KAP survey. The final version of the study questionnaire is provided in Appendix 14. Its three parts were:

- Part 1—KAP of CV Health was comprised of 54 questions split into three sections. The purpose of this part of the survey was to assess the level of KAP of CV health in the community and to create a foundation upon which further studies or recommendations could be made to support this community in preventing CVD. The first section, Knowledge of CV Health, was comprised of 13 true/false statements about CV health and disease, and two multichoice questions about the known risk factors of a heart attack/heart disease and symptoms of a heart attack. The second section, Attitudes towards CV Health, was comprised of 17 questions to which participants were asked to indicate how much they agreed or disagreed with each statement. In the last section, Practices towards CV Health, there were two subgroups of questions. The first was comprised of 12 questions focused on physical/daily activities and the second was made up of 10 questions about perceptions/beliefs related to CV health. As in the attitudes section, participants were asked to indicate how much they agreed or disagreed with each statement.

- Part 2—Open-ended Questions, contained four questions. The purpose of this part of the survey was to ask the people of the Fijian Indian community for their feedback, ideas and suggestions on what they considered would help improve the community's understanding of heart disease and what health resources or services would be the most helpful for them to learn and understand more about

health disease/heart health. This would provide valuable information for future health promotion strategies and interventions.

- Part 3—Participant Demographics and Current Health Status, was comprised of 34 questions. The purpose of this section was to better understand the present characteristics of the Fijian Indian community and to assess if socio-demographic factors influenced the community's KAP towards CV health and disease prevention.

4.2 Chapter Summary

This chapter has illustrated the development of a KAP questionnaire to assess the level of KAP towards CV health in the Fijian Indian community. A comprehensive literature search was conducted to identify appropriate questions related to CV health and disease prevention. Questions were chosen and/or adapted for the draft questionnaire based on their appropriateness and relevance to the research aims and questions of this study. An advisory team consisting of five invited members of the local community was formed to assess the content validity of the questionnaire. Each advisory team member provided feedback on the selected questions, which were then analysed using Polit and Beck (2006) as a guide. Final analysis of the developed questionnaire revealed moderate to high content validity with a mean I-CVI of 0.94 for appropriateness, a mean I-CVI of 0.94 for relevance and a mean I-CVI of 0.86 for clarity. The overall S-CVI/Ave for this study questionnaire was 0.91. Furthermore, the advisory team provided positive feedback on the overall questionnaire. The study questionnaire was then finalised for the next phase of this study—the feasibility study (Phase Two).

Chapter 5: Phase Two Study

This chapter describes Phase Two of this study, in which the feasibility and appropriateness of the questionnaire was assessed with a group of participants from the Fijian Indian community. Following ethics approval, 30 members of the Auckland Fijian Indian community were recruited to complete the questionnaire and provide feedback on their experience. To assess the feasibility and reliability of the questionnaire, test–retest reliability testing was conducted. Data were collected over a two-week period with each participant completing the test once and then a second time two weeks later. The results were analysed to determine whether the developed questionnaire was feasible and appropriate to be used as a survey in the wider Fijian Indian community.

5.1 Methods

5.1.1 Recruitment Preparation

5.1.1.1 Participant Information Sheet, Consent form and Recruitment Flyer

A participant information sheet and consent form (Appendix 15 & 16) were created for Phase Two. A recruitment flyer was also created to advertise the study in the local community (Appendix 17).

5.1.1.2 Version and Distribution of the KAP Questionnaire

Two versions of the KAP questionnaire were prepared for this phase of the study. For their convenience, participants had the option of choosing to fill out a physical, printed copy of the questionnaire or an electronic version of the questionnaire via the well-known Qualtrics survey software (Qualtrics, Provo, UT). Qualtrics is a secure, cloud-based platform for creating and distributing web-based surveys. It is widely used for academic and market research (Qualtrics, 2022a). To ensure user friendliness, a simple version of the questionnaire was created. Care was taken to ensure that participants were able to go back and review any answers or skip any questions that they were not comfortable answering, just like someone who had a physical copy of the questionnaire would. Furthermore, the electronic version of the questionnaire could be

completed on any device available to the participant (Appendix 18). Both the hard copy and electronic versions of the questionnaire were checked, tested and approved by the research supervisors.

5.1.1.3 Scoring Instructions

To evaluate the results of the questionnaire in Phase Two, scoring instructions were created. For Section A (Knowledge of CV Health), Questions 1–13, the maximum score for the correct answer was 5. For Questions 14 and 15, 1 point was given for each multichoice option chosen as all options available were correct answers. Thus, the maximum score for this section was 87. For Section B (Attitudes towards CV Health), Questions 16–32, the maximum score for each positive response was 5; thus the maximum score for this section was 85. Similarly, for the last section (Practices towards CV Heath), the maximum score for each positive response was 5; therefore the maximum score for this section was 110 (Questions 33–54). To calculate the overall percentage of each section, the individual score was divided by the total score for each section and multiped by 100. A percentage of 0–50% represented poor, 51–80% was fair and 81–100% indicated good knowledge, attitude or practice towards CV health. The remaining questions in the questionnaire were not scored, but were numbered to enter them into the data analysis software, SPSS Version 28.0.1, for further analysis. Appendix 19 shows how each question in the questionnaire was scored for data analysis. To test whether the scoring instructions would work in practice, the researcher piloted them with four members of her family and found no issues in evaluating their responses or entering them into Microsoft Excel. Once again, the scoring instructions were checked and approved by the research supervisors.

5.1.2 Feasibility Study

5.1.2.1 Amendment to Auckland University of Technology Ethics Approval

As guided by the AUT ethics advisor, the researcher applied for an amendment to the AUT research ethics approval. A copy of the participant information sheet, consent form, recruitment flyer, scoring instructions, participant review form and both versions of the developed questionnaire were included in the application. Ethics approval for the collection and use of data during Phases Two and Three of this study was obtained from the AUT Ethics Committee (23/06/2020 AUTEC 19/63) (Appendix 20).

5.1.2.2 Recruitment Phase

The purpose of this feasibility study was to further refine the questionnaire, test for appropriateness and understanding, and evaluate timing and ambiguity. This study aimed to recruit 30 individuals from the Fijian Indian community in Auckland (Moore et al., 2011; Perneger et al., 2015). The anticipated number of participants during this phase of the study was discussed with an AUT biostatistician.

The recruitment flyer was promoted in the local community as well as via word-of-mouth to encourage voluntary participation. The inclusion criteria for this phase were:

- adult males and females (>18 years of age)

- individuals who identified as being part of the Fijian Indian ethnic group

- individuals who had not been diagnosed with a CVD or suffered from a CV condition such as heart attack

- individuals with sufficient proficiency in English

During this recruitment phase, initial contact was made by interested participants. The PR then provided a copy of the participant information sheet with a

consent form via email/post after confirming that an interested participant met the inclusion criteria.

Once the participants had been sent a participant information sheet and consent form, a follow-up call was made by the PR to confirm their understanding of the study and answer any questions regarding the study. If the participant wanted more information, was unable to provide an email address, or was not able to complete the questionnaire online, the PR arranged a convenient time/location to discuss the research study, and complete the consent process and study questionnaire. One-on-one participant meetings were held at either AUT North/South campus or a public venue such as a local library, depending on time and convenience of the interested participant.

Once consent forms were signed and returned to the PR, the participant was provided with a Qualtrics survey link or a printed copy of the questionnaire. Each participant was allocated a study number and their name and details added to a secured (password-protected) participant file to maintain anonymity in the study data. Recruitment for this phase of study ended once a total of 30 participants was reached.

5.1.2.3 Preference and Time/Duration

At baseline, this study found that participants preferred to complete an online version of the study questionnaire. Ten of the 30 participants completed the written version, and 20 participants completed the online version via the Qualtrics survey link. Based on this preference, the researcher decided that an online version of the survey would be the primary data collection tool for Phase Three of this study.

The Qualtrics software estimated that it would take 20 minutes to complete this questionnaire. Similarly, when the researcher piloted how long it would take to complete the written version of the questionnaire with four of her family members, she also found that it took an average of 20 minutes to complete the questionnaire.

At both timepoints, the time for questionnaire completion for each participant was recorded. For participants who opted for a written version, the researcher was able to record how long it took them to complete their questionnaire using a stopwatch. For participants who chose to complete their questionnaire online, the Qualtrics software electronically recorded the time at which they started the questionnaire and that when they completed it. At first, the results of this assessment were ambiguous. For participants who completed the written version, there was an average of 25 minutes at baseline (Timepoint 1) and 17 minutes at follow up (Timepoint 2). However, the average times for participants who completed the online version were quite different from each other at both timepoints. A small number of outliers in these results may have resulted from the participant closing the questionnaire at some point and recommencing at another time—possibly the next day. Upon reflection, this finding will be used to improve the data collection process in the next phase of the study (Phase Three). Luckily, this was not an issue with the participants who completed the written version. When these outliers (n = 5) were removed from the time results in the online participant group, the average time was 21 minutes at baseline (Timepoint 1) and 23 minutes at follow up (Timepoint 2). Overall, the average time was 22 minutes at baseline and 21 minutes at follow up for both groups, which is similar to the Qualtrics software estimation and the pilot test on the researcher's family prior to participant involvement.

5.1.2.4 Data Checking and Cleaning

Data were collated in Microsoft Excel and checked three times to ensure they were clean and there were no data entry errors. Participant data was matched for each timepoint and checked by the research supervisors before data analysis commenced. This study found less than 1% of the data were missing at both timepoints (Table 5.1). This was calculated by counting the number of missing values in each section (KAP) and dividing it by the total number of questions for 30 people. For the test-retest

reliability data analysis, two participants were excluded as there were several discrepancies in the data that made it difficult to accurately match their data. This was also checked and confirmed by research supervisors. The final number of participants in the test-retest reliability data analysis was 28. The proportion of missing values in this final test-retest reliability analysis data group was also less than 1% (Table 5.1). Microsoft Excel and SPSS software were used to complete all data analyses.

Table 5.1

Data Completeness for Part 1 KAP of CV Health Questionnaire

	Total number of questions	Baseline	Follow up
Original dataset (n = 30)	1,620 (30 participants × 54 questions)	11 missing values	9 missing values
Final dataset (n = 28)	1,512 (28 participants × 54 questions)	3 missing values	2 missing values

5.1.2.5 Questionnaire Reliability and Review

The two fundamental elements of evaluating an instrument such as a questionnaire are validity and reliability testing. By definition, 'construct validity' is the extent to which an instrument measures what it is intended to measure, and reliability is its ability to measure this consistently (Tavakol & Dennick, 2011). The literature offers several guidelines and examples on how to successfully pre-test an adapted questionnaire (Azraii et al., 2021; Collins, 2003; Coluci et al., 2009; ESCAP Statistics Division, 2010; Hyman et al., 2006; Nguyen et al., 2021b; Niu et al., 2022; Özden et al., 2022; Radhakrishna, 2007; Tsang et al., 2017). For this phase, this study focused on (1) determining the stability of the questionnaire via a test–retest reliability analysis and (2) a preliminary assessment of the internal consistency of the questionnaire as a measure of questionnaire reliability.

5.1.2.5.1 Test–Retest Reliability Analysis

Test–retest reliability refers to the stability and accuracy of a construct across time. This is typically assessed by administering the construct—in this case the study questionnaire—to each participant twice within a predetermined time (Salkind, 2007). The correlation between the two scores is then calculated to assess the stability and accuracy of the construct (Buelow, 2020).

In this study, participants were asked to complete the KAP questionnaire at two timepoints. Timepoint 1 was representative of baseline or pre-test data, which each participant provided following the consent process. At Timepoint 2, scheduled for two weeks later, post-test data, was collected. Research has shown that a one to three-week period between measurements is appropriate for testing the reliability of a questionnaire (Davey et al., 2016; Gambling & Long, 2021; Marx et al., 2003; Polit, 2014). Each participant was sent a reminder by the PR via email (or phone) one week and then one day before their second timepoint to complete their questionnaire. All participants completed their questionnaires at both timepoints.

To establish evidence of test–retest reliability, the Pearson's r value was interpreted using Cohen's criteria of 0.1 for a weak correlation, 0.3 for a moderate correlation and 0.5 for a strong correlation (Cohen, 1992; Salkind, 2007).

A Pearson's correlation coefficient was computed to assess the relationship between overall KAP score, total knowledge score, total attitude score and total practice score across the two timepoints. For the overall KAP score, there was a strong, positive correlation between the two timepoints, $r(28) = 0.65$, $p < 0.01$. For total knowledge scores, there was a strong, positive correlation between the two timepoints, $r(28) = 0.59$, $p = 0.01$, as was also true for the total attitude ($r(28) = 0.70$, $p < 0.01$) and total practice scores ($r(28) = 0.82$, $p < 0.01$). Despite the small sample size, the statistically significant

positive correlations seen in this analysis suggested reasonable stability and reliability of the KAP questionnaire.

These results were supported by similar average scores for each section and overall KAP score between the two timepoints. The average score for the overall KAP at Timepoint 1 was 204 and at Timepoint 2 was 206. The average total knowledge scores were 63 and 65; average total attitude scores were 68 and 67; and average practice scores were 73 and 74 for Timepoints 1 and 2, respectively (Appendix 21, Table 5.2).

Table 5.2

Test–Retest Reliability Analysis for the KAP Questionnaire at the Two Timepoints

		Overall KAP score (T1)	Total knowledge score (T1)	Total attitude score (T1)	Total practice score (T1)
Overall KAP score (T2)	Pearson's correlation	0.649[**]			
	Sig. (2-tailed)	<0.001			
	n	28			
Total knowledge score (T2)	Pearson's correlation		0.586[**]		
	Sig. (2-tailed)		0.001		
	n		28		
Total attitude score (T2)	Pearson's correlation			0.704[**]	
	Sig. (2-tailed)			<0.001	
	n			28	
Total practice score (T2)	Pearson's correlation				0.823[**]
	Sig. (2-tailed)				<0.001
	n				28

** Significant at the 0.01 level (2-tailed).

5.1.2.5.2 Internal Consistency

Internal consistency is defined as the extent to which all items in an instrument measure the same concept/construct and is determined by the interrelatedness of items

in the test (Tavakol & Dennick, 2011). Cronbach's alpha (α) is the most used measure of internal consistency and is expressed as a number between 0 and 1 (Bolarinwa, 2015; Taber, 2018; Tavakol & Dennick, 2011). If the items in a test are related to each other, the value of α is higher. Generally, α values of 0.6–0.7 indicate an acceptable level of reliability, while α of 0.8 or higher indicates very good reliability. However, α values greater than 0.95 may indicate a level of redundancy between items (questions); that is, replication of content across the questions (Hulin et al., 2001; Streiner, 2003; Taber, 2018; Ursachi et al., 2015).

Table 5.3 presents the preliminary results for tests of internal consistency for each section of the KAP questionnaire. The Knowledge and Practice section questions were divided based on the format of their answer options to enhance the accuracy of the test; for example, the answer options for knowledge Questions 1–13 were presented as a Likert scale and those for Questions 14 and 15 were multiple choice.

The Knowledge section consisted of 13 questions and two multiple choice questions, with α of 0.28 and 0.65 for these two types, respectively. The Attitudes section consisted of 17 questions with α of 0.27. The first part of the Practice section consisted of 12 questions and the second part had 10 questions, with α of 0.64 and 0.2, respectively (see Chapter 4). While some sections of the questionnaire recorded an acceptable α score (Table 5.3), these results suggest that the study was insufficiently powered to detect internal consistency of all sections in the feasibility study (n = 28).

Table 5.3

The Internal Consistency Measured by Cronbach's Alpha for Each Section of the KAP Questionnaire at Timepoint 1

	Number of questions	Cronbach's alpha (α)
Knowledge (Questions 1–13)	13	0.281
Knowledge (Question 14 & 15) *	2	0.650
Attitude (Questions 16–32)	17	0.271
Practice (Questions 33–44) *	12	0.640
Practice (Questions 45–54)	10	0.197

Most published KAP studies administered their developed questionnaire to a larger sample size before testing for internal consistency and construct validity. Given the complex nature of a KAP questionnaire, most development and validation studies performed a form of factor analysis (either exploratory or confirmatory factor analysis), alongside an assessment of internal consistency via Cronbach's alpha (α) to assess construct reliability and validity in a larger sample (Mallah et al., 2022; Ramírez-Trujillo et al., 2021; Retinasekharan et al., 2022; Watkins, 2018). The fundamental purpose of a factor analysis is 'to determine the number and nature of the underlying variables or factors that account for the variation and covariation among a set of observed measures' (Brown, 2015, p. 10). This was particularly important in the current study as KAP surveys are made up of associated questions that are intercorrelated because they share a common cause; that is, they are influenced by the same underlying construct (Brown, 2015). However, for a robust factor analysis a large dataset is needed to yield significant results.

5.1.3 Review Form Analysis

At Timepoint 2, participants in this study were asked to complete a brief review form (Appendix 22) to assess whether the questions were appropriate and easy to understand in each section; they had any suggestions on how the question/s in that section could be improved; or they had any additional feedback about the questionnaire/survey.

5.1.3.1 Knowledge

Overall, the participants found the questions in this section appropriate and easy to understand: 30/30 and 29/30 participants, respectively (Appendix 23). The one participant that found the knowledge questions difficult to understand did not leave any comments or indication of which question/s they found difficult to understand and why.

However, other participants had suggestions and comments for how to improve the questions in this section (Table 5.4). In this table, the action taken in response to this valuable feedback is also described.

Table 5.4

Participant Feedback on Questions in the Knowledge Section

Participant	Feedback	Action to be taken
10	*'N/A questions are very straightforward'.*	N/A
13	*'Maybe include some more medical jargon so people become aware of the wider possibilities of cause, but in saying that, I guess they were appropriate for people who just have basic/little knowledge of heart disease'.*	N/A
27	*'There were maybe one or two questions that I couldn't answer with yes or no, for example, I think there was a question that asked if I needed to reduce meat or add more vegies to my diet. I already don't eat meat and eat mostly vegies. Hence it wasn't a yes/no type question for me. But that's just specific to me'.*	It seems the participant is referring to Q9—'Eating a lot of red meat increases the risk of heart disease' but may have misunderstood what the question was asking, or they may be referring to another question in either the attitude or practices section. This question was a statement related to CV health to which a participant was meant to select 'true' if they agreed with the statement, 'false' if they did not and 'not sure' if they were uncertain. No action will be taken in response to this comment.
29	*'I think they are very well summed up'.*	N/A

5.1.3.2 Attitude

Overall, the participants found the questions in this section appropriate and easy to understand: 29/29 and 29/30 participants, respectively (Appendix 23). Like with the Knowledge section, one participant found the questions in this section difficult to understand but did not leave any comments or indication of which question/s they found difficult to understand and why. Other participants had some suggestions and comments

on how the questions in this section could be improved (Table 5.5). In this table, the

actions taken in response to this useful feedback are described as well.

Table 5.5

Participant Feedback on Questions in the Attitude Section

Participant	Feedback	Action to be taken
17	*'One of the questions was 'Do you prefer to spend more time in front of TV ... than exercising', which I found to be somewhat at ends, as yes, I don't like exercising and I would prefer to sit in front of the TV but I still exercise.'*	This comment is about Q28—'I prefer to spend more time on my electronic device(s) or watching tv rather than exercising'. I can see how this question can be confusing given this participant's context. However, they have indicated that they do prefer to sit in front of the tv. The key term in this question is 'prefer' regarding their attitude towards exercising. They would have an opportunity to indicate their exercise habits in the practice section. No action will be taken in response to this comment.
27	*No. Actually the questions were very good and asked a variety of things that I would normally not think about but do exist.*	N/A

5.1.3.3 Practices

Overall, the participants found the questions in this section appropriate and easy

to understand: 28/29 and 28/30 participants, respectively (Appendix 23). Similar to the

review of the Knowledge and Attitude section, one participant did not find the questions

in this section appropriate. They did not leave any comments or indication of which

question/s they found inappropriate and why. Two participants found the questions in

this section difficult to understand: one left no comments to clarify which question/s

they found difficult to understand and why, but Participant 10 said 'I often take health

supplements, or I am on a special diet. Special diet is too general'. Their comment was

about Question 39 ('How often do you take health supplements or are on a special diet

that is not recommended by a health professional?'). Their suggestion on how to

improve this question was as follows: 'perhaps listing examples of special diets after

may help'. Although this was a valued suggestion, the purpose of this question was to examine, in general, how many people in this community were taking health supplements and were on special diets without guidance or advice from a health professional. It would make sense to add a list of examples if this study wanted to identify which health supplements/special diets people in the community were taking or doing in their daily lives to maintain their health.

5.1.3.4 Additional Comments

Some participants also provided additional feedback about the survey/questionnaire on the review form. Table 5.6 summarises this feedback. In general, responses to this questionnaire/survey were positive and encouraging and it seemed to be well received by the participants in this phase of the study.

Participant 10's feedback was particularly interesting and might explain why this study results saw marginal differences in the overall and average KAP scores between the two timepoints:

> doing the questionnaire twice (after 2 weeks) was really helpful as the first time round you get a glimpse of what is going to be asked of you, so naturally you want to improve; for example, the question about how often you exercise, first time around was 1–2 times a week but knowing I was going to be asked it again I made a point to exercise more often. The open-ended questions forced me to go and research in my own time before doing the questionnaire again so I had a better idea of what was being asked of me.

Nevertheless, it is very encouraging to read that the questionnaire had such a positive impact on this participant.

Table 5.6

Participant Feedback on Questionnaire

Participant	Feedback
7	*'Good questionnaire/review; makes us reflect on what we do'.*
10	*'Doing the questionnaire twice (after 2 weeks) was really helpful as the first time round you get a glimpse of what is going to be asked of you, so naturally you want to improve; for example, the question about how often you exercise, first time around was 1–2 times a week but knowing I was going to be asked it again I made a point to exercise more often.*

	The open-ended questions forced me to go and research in my own time before doing the questionnaire again so I had a better idea of what was being asked of me'.
19	*'I feel the questions were appropriate and applicable for the survey. Thank you for including me in your research'.*
20	*'Everything was easy to follow and questions were all appropriate and understandable'.*
22	*'Fijian Indians are so bad at knowing all this info so it's great that you guys are doing these studies'.*
27	*'Pretty good questions. I love that question about health being in God's hands! Lol made me laugh both times ... but is so true too!'.*

Note. The wording and spelling of the participant feedback in this table are verbatim.

5.1.4 Analysis of Open-ended Questions

Thematic analysis was conducted to analyse the qualitative responses to the four open-ended questions in the study questionnaire (Braun & Clarke, 2022). The purpose of thematic analysis is to generate patterns of meaning; that is, 'themes' across a dataset that addresses a research question. In this study, this method of analysis was used to answer the final research question: *How should the KAP of CV health in this community be promoted and enhanced?*

According to Braun and Clarke (2022), there are six important phases in this analysis method: (1) familiarising yourself with the dataset; (2) coding; (3) generating initial themes; (4) developing and reviewing themes; (5) refining, defining and naming themes; and (6) writing up. Table 5.7 describes the overall process involved in each phase of this analysis method.

Table 5.7

The Six Phases of Thematic Analysis (Adapted From the Official Thematic Analysis Website of The University of Auckland, 2022).

	Phase	Description
1	Familiarising oneself with the dataset	This phase involves reading and re-reading the data, to become immersed and intimately familiar with its content, and making notes on initial analytic observations and insights, both in relation to each individual data item (e.g., an interview transcript) and in relation to the entire dataset.

2	Coding	This phase involves generating succinct labels (codes) that capture and evoke important features of the data that might be relevant to addressing the research question. It involves coding the entire dataset, with two or more rounds of coding, and then collating all codes and relevant data extracts for later stages of analysis.
3	Generating initial themes	This phase involves examining codes and collated data to begin to develop significant broader patterns of meaning (potential themes). It then involves collating data relevant to each candidate theme, so that the researcher can work with the data and review the viability of each candidate theme.
4	Developing and reviewing themes	This phase involves checking the candidate themes against the coded data and the entire dataset, to determine whether they tell a convincing story of the data that addresses the research question. In this phase, themes are further developed, which sometimes involves them being split, combined or discarded. In the thematic analysis approach applied here, themes are defined as patterns of shared meaning underpinned by a central concept or idea.
5	Refining, defining and naming themes	This phase involves developing a detailed analysis of each theme, working out the scope and focus of each theme, and identifying the 'story' of each. It also involves deciding on an informative name for each theme.
6	Writing up	This final phase involves weaving together the analytic narrative and data extracts and contextualising the analysis in relation to the literature.

Briefly, the responses to each of the open-ended questions were carefully read and coded by the PR. The coded items in the data were then grouped together and sorted into initial themes. These initial themes were then further refined to determine the scope and focus of the theme, and ensure that it addressed the research question. Appendix 24 illustrates the detailed process and results from this analysis. This was reviewed and supported by study supervisors.

5.2 Results: Preliminary Findings for the KAP of CV Health Survey

5.2.1 Participant Socio-demographics

The study participants were 14 males and 14 females. Most were aged 40–60 years (42.9%) and born in Fiji (85.7%). More than half of the participants were married (67.9%) and had five people in their family (39.3%). Almost all the participants were Hindu (89.3%) and had lived in NZ for 10 years or more (89.3%). Most had completed

a tertiary education (82.1%) and a high proportion were employed full time; that is, worked 40 hours or more a week. Lastly, English, Fiji Hindi and Hindi were the most fluently spoken languages in this group. Appendix 25, Table 1 lists the socio-demographic characteristics of the study participant group.

5.2.2 Participant Health-related Characteristics

In general, the participants considered their health to be 'good' (39.3%). The majority had a family doctor (89.3%) and had had their latest health check-up at a local health centre or family doctors in the previous three months (39.3%). At the time of the study, 14.3% of participants were diagnosed with high blood pressure, 17.9% of participants were diagnosed as pre-diabetic, 7.2% of participants were diagnosed with Type 1 or Type 2 diabetes and 14.3% of participants were diagnosed with high cholesterol, by a doctor or registered health professional. Furthermore, none of the participants had been hospitalised because of problems with their heart or blood vessels nor were current smokers.

When asked to describe their lifestyle, almost half of the participants said that their lifestyle was relatively stressful (46.4%), whereas others said it was free from stress (35.7%). This study found that in a typical week, most of the participants did at least 30 minutes of exercise (e.g., walking, running, cycling, jogging) on 1–2 days and ate fruit and vegetables on 5–6 days a week; foods high in trans-fats (e.g., baked goods, fried food, snacks, margarine) on 1–2 days a week; and foods high in saturated fat (e.g., dairy foods, meat) on 3–4 days a week. Most added salt to food during cooking for meals eaten at home (64.3%) but never added salt to their food at the table (64.3%). In terms of alcohol consumption, half of the participants drank alcohol on a monthly (or less) basis and only five (17.9%) drank kava, the (traditional) national drink of Fiji.

More than half of the participants (64.3%) indicated that they did not know their current BMI nor their level of risk for CVD despite the presence of serious medical

conditions/procedures in their immediate family such as hypertension (23.1%), heart

disease (22%), hypercholesterolemia (17.6%) and diabetes mellitus (16.5%).

Surprisingly, 27 of the 28 participants (96.4%) had not a cardiovascular risk assessment

undertaken of which they were aware. Appendix 25, Table 2 summarises the

abovementioned health-related characteristics of the study participants.

5.2.3 Knowledge of Cardiovascular Health

Most of the participants in this study were able to correctly answer each of the

knowledge-related statements (Appendix 21, Table 1). However, 50% thought that the

most common cause of heart attack was stress, and some were not certain about whether

eating a lot of red meat increased the risk of heart disease. In terms of identifying all the

risk factors for heart disease, the average score for this question was 9 from a maximum

of 13 points. Severe mental illness and impaired kidney function were the least

recognised risk factors for heart attack/heart disease (Appendix 21, Table 1).

Interestingly, the average score for identifying symptoms of a heart attack was 6 from a

possible 9 points. Vomiting tendency (nausea) and fatigue were the least recognised

symptoms among participants (Appendix 21, Table 1). The average total knowledge

score was 63 from a possible 87 points (Appendix 21, Table 4) among the study

participants (n = 28). The lowest total knowledge score for a participant was 49 and the

highest was 76 points (out of a possible 87 points). Although these findings will need to

be confirmed in a larger sample size, these preliminary results suggest that the study

population, on average, had a fair level of knowledge (72%) about CV health.

5.2.4 Attitudes towards Cardiovascular Health

In this section, there were many examples of the positive attitudes of the study

participants towards healthier lifestyles and CVD prevention. For instance, 96% of the

participants agreed that to maintain a healthy lifestyle they should be exercising and

eating less oily food. All agreed that they should include fruit or vegetables in their diets

to maintain their health and 92% knew to avoid drinking carbonated drinks. A total of 71% of participants indicated they were able to manage their stress and 85% said they made time to take care of themselves (Appendix 21, Table 2). As a result, the average total attitude score was 68 from a possible 85 points (Appendix 21, Table 4) among study participants (n = 28). The lowest total attitude score was 60 and the highest was 78 points (out of a possible 85 points). Overall, these initial findings suggest that the study population, on average, had a good attitude (80%) towards CV health. However, these results will also need to be confirmed in a larger sample size.

5.2.5 Practices towards Cardiovascular Health

This study has also shown that in the participant group there were some positive practices and beliefs towards CV Health. For example, most of the participants exercised more than 20 minutes, 3 times a week and rarely consumed fatty foods more than 3 times a week. Participants often walked for at least 10 minutes to get to and from places, and during their spare time, they sometimes exercised for at least 20 minutes. Most participants believed that increasing exercise and eating a healthy diet would reduce their chances of having a heart attack or stroke. Despite these examples, half of the participants were still concerned about the likelihood of having a heart attack or stroke in the near future. More than half of the participants also believed that having a heart attack or stroke was always fatal or that their whole life would change if they had a heart attack or stroke. As a result, the average total practice score was 73 out of a possible score of 110 (Appendix 21, Table 4) for the study participants (n = 28). The lowest total practice score was 58 and the highest, 89 (out of a possible 110 points). Overall, these results suggest that the study population, on average, had fair practices (66%) towards CV health.

5.2.6 Knowledge *v*. Attitudes

Using Cohen's criterion as a guide, this study found no statistically significant correlation between the Knowledge of CV health and Attitudes towards CV health in the study participants, $r(28) = -0.01$, $p = 0.96$ (Appendix 21, Table 5). A larger sample size is needed to determine the relationship between these two variables.

5.2.7 Knowledge *v*. Practices

Similarly, this study found no statistically significant correlation between the Knowledge of CV health and Practices towards CV health in the study participants, $r(28) = -0.01$, $p = 0.96$ (Appendix 21, Table 6). A larger sample size is needed to determine the relationship between these two variables.

5.2.8 Attitudes *v*. Practices

Lastly, this study found no statistically significant correlation between the Knowledge of CV health and Practices towards CV health in the study participants, $r(28) = -0.21$, $p = 0.28$ (Appendix 21, Table 7). A larger sample size is needed to determine the relationship between these two variables.

5.2.9 KAP *v*. Participant Socio-demographics

This study explored whether there was a difference between the level of KAP and gender in this study population. Although no differences were found in the average total knowledge scores (males: 63, n = 14; females: 63, n = 14; Appendix 21, Table 9), there were slight differences in the average total attitude and practice scores. Females in this study population had a slightly higher average total attitude score than males (males: 67, n = 14; females: 69, n = 14; Appendix 21, Table 10); whereas the males had a slightly higher average total practice score than the females (males: 76, n = 14; females: 71, n = 14; Appendix 21, Table 11). Thus, this study found a small difference in the average overall KAP score between males and females in the study population (males: 206, n = 14; females: 203, n = 14; Appendix 21, Table 8). Unfortunately, the

data for the remaining participant socio-demographics were too few and variable (Appendix 25, Table 1) to be able to compare their effects on the level of KAP towards CV Health in this community.

5.2.10 Open-ended Questions about Cardiovascular Health

The thematic analysis of the four open-ended questions in this survey generated three themes: (1) Managing Health Together; (2) Recognising Barriers to CV Health and (3) Targeted CV Health Promotion. Table 5.8 describes the characteristics of each of these themes.

Table 5.8

Characteristics of the Themes Developed Following Thematic Analysis

Theme	Characteristics
Managing Health Together	*This theme reflects how the community are aware of what they can do to look after their heart health but also the need for ongoing advice, guidance and support from health professionals. For people at risk of CVD, it is a journey on which they will need regular health checks to manage their health better and prevent the development of CVD.*
Recognising Barriers to CV Health	*This theme acknowledges the various challenges identified by participants towards the given KAP of CV health in the community.*
Targeted CV Health Promotion	*This theme recognises the suggestions by participants to promote and enhance the community's understanding of CV health and disease. Data suggest focusing on areas that are highly accessed by the community, building a relationship with community leaders and religious figures and increasing the presence of the health force in the community.*

5.2.10.1 Managing Health Together

The theme Managing Health Together acknowledges the awareness of positive health behaviours in the community. Some participants made suggestions around exercising regularly and eating healthy to support CV health. For example:

Regular exercise; eating healthy; drinking plenty if liquid (water). (Participant 2)

At least 3 days a week for 20 minutes would really help our people. (Participant 19)

A few participants also commented on the use of oil in the preparation of food and the importance of being stress free and considerate of one's health.

These findings suggests that there was an understanding in the community that health is not just about physical health but a person's mental health as well. More importantly, these comments show that the people participating in this community did care about their health and understood the need to be mindful of their health. For example:

Eat healthy food; less oil in cooking. (Participant 2)

Control your eating habits; exercise regularly; be stress free. (Participant 2)

Be considerate about your health. (Participant 13)

Equally, several participants indicated that they needed additional support from health professionals to be able to better understand their health and to learn ways to incorporate positive health behaviours. For example:

Regular check-up and advice with a follow up. (Participant 3)

Giving advice on keeping ourselves healthy by eating healthy and maintaining our diet. (Participant 4)

With regular check-ups to prevent it from happening in the first place. (Participant 10)

Coaching people in healthy diet. (Participant 13)

Giving me a better picture of my health issues. (Participant 24)

Advising us more on our diet plans. (Participant 2)

The encouragement of blood tests for 'at risk' patients. (Participant 16)

These comments reiterate that people in this community were concerned about their health, but some may not have had the skills or knowledge of how to manage their CV health, or health in general. For a population that is at a high risk of developing

CVD, this would significantly impact the level of KAP towards CV health in this community.

5.2.10.2 Recognising Barriers to Cardiovascular Health

The theme Recognising Barriers to CV Health highlights some of the challenges the community are facing when it comes to better understanding their CV health and knowing how to prevent CVD. This includes having time to look after themselves, current practices, self-motivation and access to health services. For example:

> People are usually so busy at work so they don't have time to do something for themselves. (Participant 13)

> Regular full check-ups and advice—at the moment they only do blood tests. (Participant 26)

> Well some Indians don't take health seriously so it's ideal to be accountable for them and their health. (Participant 10)

> It was an awesome survey. It refreshed my mind too about how crucial it is to look after your health. Normally, I work long hours and when I come home, I am tired. Therefore, I don't do anything for myself. (Participant 13)

> Schools not to participate in unhealthy options for fund raising; e.g., chocolate bars. (Participant 25)

> Having doctors ask about heart-related diseases after visits and just ensuring we are aware of what we can be doing to reduce the chances of developing such a disease. (Participant 23)

> I think there is enough information available to me to initiate a healthier lifestyle if and when I make the effort. (Participant 13)

> The history of our people should make us more conscious of our health risks but there are too many who are complacent; this includes me.
> (Participant 25)

> Free check-ups in communities (Participant 26)

Addressing misbeliefs and lack of awareness in the community was also recognised by participants in this study as a barrier to the KAP of CV health. For example:

> Reducing the misbeliefs of what ideal health is. And that medication will not cure all disease, but we have to make lifestyle changes. (Participant 14)

> More awareness at community events; e.g., free health check-ups/take surveys and follow up. (Participant 18)

Fijian Indians never exercise. (Participant 19)

Educating and addressing misbeliefs in the community about health. (Participant 14)

These examples and perspectives from the community are valuable for understanding the needs of this community and planning future interventions to support CV health and disease prevention in this community.

5.2.10.3 Targeted Cardiovascular Disease Promotion

The theme Targeted CV Health Promotion collates the participants' ideas around helpful resources and services; specifically, for the community to learn and understand more about CV health and CVD. There were a range of suggestions that grouped into several categories, as follows:

1. Simplifying and tailoring information

   Make it more streamlined to understand; most information out there is too complex for someone without a medical background or someone who is less literate to understand. Information is more targeted at an older audience; more information regarding youth/young adults would be helpful to reduce risks or help make lifestyle changes going forward. (Participant 1)

   Provide flyers on heart health. (Participant 17)

   Giving brochures out for them to read; instead of sales advertisement there should be health advertisements. (Participant 10)

   Possibly a website targeted at Fijian Indians where there is specific information targeted about the risks of heart disease and preventative measures (or how to reduce risks) that are tailored to the community as opposed to generic information' (Participant 1)

   More education in schools around it. (Participant 19)

   Through Facebook, as most Fijian Indians are on there. (Participant 19)

   Local advertising via social media; e.g., radio, TV & newspapers, cultural events. (Participant 25)

   Health professionals should create more awareness about the risks of heart disease. Maybe monthly newsletters to go around the community or hold talks/workshops to educate people. Health column in the local Indian newspapers should feature heart diseases and recommend diet recipes and exercises to control it better. Interview people who have heart disease and create awareness about the daily problems associated with it: people feel more inclined to change if it is coming from someone in their own community. Local Hindi

radio stations do not have a health-based programme where they discuss diseases that affect the Indo-Fijian community; easy to reach people through this especially the older generation as they are more inclined to listen to the radio than read the newspaper. Local Hindi TV station should have a similar programme. (Participant 18)

2. Bringing the health force to the people

Have workshops to address the growing rate of heart disease in the Fijian community. They can address ways to achieve a healthier lifestyle, more programmes on radio regarding the benefits of exercising, eating healthy and non-smoking. (Participant P27)

Having people go around to community-based events to give talks. (Participant 1)

3. Increasing presence in the community

Building awareness in the community by doing small campaigns etc. (Participant 17)

Maybe increasing the awareness at temples and Indian supermarkets with pamphlets or simple signs describing the common causes and potential options to reduce the likelihood of getting heart-related diseases. (Participant 23)

Target places where the community gathers, like religious events. Start by introducing healthy food items in the menu. Have workshops and lectures by health professionals. (Participant 27)

4. Building relationships with community and religious leaders to promote CV

health

Approach community leaders to make it compulsory to spend at least 10 min suggesting the health issues. (Participant 24)

Something to look into could be the inclusion of medical health practitioners within the religious community. Many Fijian Indians will often listen more to the words of religious figures within the community, and often are more open to discuss issues. If priests were more aware of symptoms, perhaps they could direct their people to the appropriate medical services. (Participant 6)

The advantage of these suggestions and ideas is that they came directly from members of the community. The participants believed that these resources would help support the community to learn more about their heart health and how to reduce their risk of CVD.

5.3 Chapter Summary

This chapter has described the second phase of this study, in which participants from the Fijian Indian community was recruited to complete the KAP questionnaire on two occasions (baseline and then two weeks later) and then provide feedback on their experience of completing the developed KAP questionnaire. An analysis of KAP scores at the two timepoints revealed excellent test–retest reliability as supported by the statistically significant correlations in the overall KAP, total knowledge, total attitude and total practice scores between the timepoints. The test-retest reliability correlations and the participant responses in the open-ended questions support that the KAP questionnaire is reliable, feasible and appropriate tool to be used as a survey in the wider Fijian Indian community. The preliminary findings of the questionnaire (at baseline) and thematic analysis of the open-ended questions are also described in this chapter.

Chapter 6: Discussion

This chapter discusses the significance of the findings in Phase One and Phase Two and how they relate to the study aims and research questions. The discussion in this chapter analyses how these findings compare with the existing body of knowledge and then the additional insights that the study findings add for the study population and the NZ health system. Lastly, this chapter describes the strengths and limitations of this study.

6.1 Revisiting the Aims and Hypotheses of This Study

The first aim of this study was to develop and test a questionnaire to measure the level of KAP towards CV health in the Fijian Indian community in NZ. The second aim was to assess the feasibility of applying the developed questionnaire to test the KAP towards CV health in the Fijian Indian community. The combined hypothesis for these two aims was that the developed questionnaire would effectively measure the level of KAP in the Fijian Indian community (Table 6.1).

In Phase One, this study developed a KAP questionnaire using a scientific process outlined by the WHO (World Health Organization, 2008). The PR systematically researched the questionnaire design by reviewing the literature and current CV health-related questionnaires to understand the appropriate format and structure of the KAP questionnaire for this study. Questions were developed, modified, and adapted from relevant questionnaires as well as feedback from peers within the Fijian Indian community and study supervisors. The purpose of this questionnaire was to identify the level of KAP towards CV health and use this information to inform strategies to support CV health promotion and disease prevention in the Fijian Indian community. Phase Two tested the reliability and feasibility of the questionnaire by recruiting members of the Fijian Indian community and completing a test–retest analysis as well as gathering feedback on the questionnaire using a review form. Considering the breadth of the work undertaken and the time allocated to complete this

PhD research, the final phase of this study (Phase Three) is proposed as a follow-up

study.

Table 6.1

The Aims and Hypotheses of Each Phase of This Study

	Aims	Hypotheses
Phase One	To develop and test a questionnaire to measure the level of KAP towards CV health in Fijian Indian community.	The developed questionnaire will effectively measure the level of knowledge, attitude and practices in the Fijian Indian community.
Phase Two	To assess the feasibility of applying the developed questionnaire to assess the KAP towards CV health in the Fijian Indian community.	
Phase Three (proposed; not actioned)	To assess the level of KAP (i.e., behaviour and beliefs) towards CV health in the Fijian Indian community in Auckland, NZ. To understand the relationship between KAP (i.e., behaviour and beliefs) and CV health among the Fijian Indian community in Auckland, NZ.	The level of KAP towards CV health among the Fijian Indian community is poor/low. There are positive relationships between CV health knowledge, attitude, and health practices and CV health in the Fijian Indian community.

6.2 Phase One: Developing the Cardiovascular KAP Questionnaire

Developing a survey questionnaire is a multifaceted process. Because the focus of this study was to determine the KAP towards CV health in the Fijian Indian community, the WHO's guidelines for developing a KAP survey were used along with other relevant resources (Andsoy et al. (2015); Arikan et al. (2009); Awad and Al-Nafisi (2014); Bergman et al. (2011); Ibrahim et al. (2016); Magalhães et al. (2015); Mayo Clinic (2020); MoH (2018a); Mirza et al. (2016); Tovar et al. (2010) and Vaidya et al. (2020).

The current study is one of the few to have used the WHO's guidelines to develop a novel CV health-related KAP questionnaire for an at risk population (Mirza et al., 2016; Vaidya et al., 2013). While other relevant studies have described the development of their CV health-related KAP questionnaire (Hertz et al., 2019; Mohammad et al., 2018; Shammi et al., 2021), the process involved in the development of these questionnaires was difficult to ascertain. Furthermore, a key focus of the current study was to develop a KAP questionnaire using a robust, scientific process as well as gain feedback from experts and peers in the Fijian Indian community.

Draft questions were selected or developed based on their relevance to the purpose, aims and research questions of this study. Similarly, the structure of the questions and questionnaire design in this study was guided by similar questionnaires (discovered in scoping and literature review), peers in the Fijian Indian community, experts in the field (advisory team) and the study supervisors (see Chapter 4.1.3 Draft Questionnaire).

Polit et al. (2007) was used as a guide to calculate content validity index of the questionnaire as a measure of content validity (Abdulkader Mohamed et al., 2022; Cheng et al., 2022; Kumar et al., 2022; Wu et al., 2022) contending two key recommendations for assessing content validity. The first was to carefully select a panel

of experts with relevant experience in the field or topic of interest. In this study, the PR invited 10 experts from the local community, with five consenting to commit their time and availability. These five experts had a range of experience in working with the Fijian Indian community, local community health services and health promotion.

Polit et al.'s (2007) second recommendation was for the questionnaire to be composed of items (questions) that have I-CVI of 0.78 or higher and S-CVI/Ave of 0.9 or higher. In this study, each member of the advisory team assessed whether the draft questions in Part 1—Knowledge, Attitude and Practices of CV Health were appropriate, relevant and stated clearly. The initial review found that most questions in each section were appropriate and relevant for the questionnaire, and the overall feedback from the advisory team was positive. However, six questions in the draft questionnaire needed improvements to meet the minimum I-CVI of 0.8 required for moderate to high content validity (Polit et al., 2007). These questions were revised and presented again to the advisory team for final review. A final analysis of the cardiovascular KAP questionnaire showed moderate to high content validity with mean I-CVI of 0.94 for appropriateness, mean I-CVI of 0.94 for relevance and mean I-CVI of 0.86 for clarity. The overall S-CVI/Ave for this study questionnaire was 0.91.

The first part of the questionnaire consisted of 15 knowledge-, 17 attitude- and 22 practice (behaviour and belief)-based questions. The number of questions in each section was similar to that in Mohammad et al.'s (2016) study questionnaire, but more than the study questionnaires in Hertz et al. (2019), Mirza et al. (2016) and Shammi et al. (2021). These differences may be due to the focus/topic of the questionnaires and expert opinion. For example, Shammi et al.'s (2021) KAP questionnaire has fewer questions per section since it focuses more on understanding the dietary patterns of participants and their association with CVD risk factors. While the purpose of the current study was to identify the level of KAP towards CV health in the Fijian Indian

community, to inform strategies to support CV health promotion and disease prevention in the Fijian Indian community.

Furthermore, Andrade et al. (2020) suggested that when creating a KAP questionnaire/survey, it is useful to include open-ended questions so that participants can express their thoughts regarding topics not addressed in the questionnaire. Therefore, a key feature of this study's questionnaire was that it included open-ended questions (Part 2) to gather the community's thoughts/suggestions around CV health promotion and community health support. Another key feature of the questionnaire was its extensive questions about the demographic and current health status of the participants (Part 3). The purpose of this section was to obtain a better understanding and profile of the community, as there is very limited information and scant literature on the CV health of Fijian Indian community in NZ. Other CV health-related KAP studies have used only 'generic' questions such as age, gender and education to create a basic profile of their participants (Hertz et al., 2019; Mirza et al., 2016; Mohammad et al., 2018; Shammi et al., 2021; Vaidya et al., 2013).

6.3 Phase Two: Feasibility Study

The purpose of the feasibility study in Phase Two was to help refine the developed questionnaire, test for appropriateness and understanding, and evaluate timing and ambiguity. By providing both written and electronic versions of the questionnaire, this approach was able to determine which method of administration was preferred/favoured by community members. Twenty of the 30 participants chose to complete the survey online, possibly because of the rapid growth and widespread use of the internet in countries such as NZ (Hohwü et al., 2013). Moreover, participants were able to easily access the questionnaire via the Qualtrics software (the online platform for the study questionnaire) from any device they preferred, including their phone, laptop, computer or tablet. The only drawback of this method is that some people who do not

have access to a device or internet—most likely the older age groups—will not be able to participate in the next phase of the research. Thus, it will be necessary to arrange alternative methods of reaching this cohort of the target population, such as by having the research team visit local general practices and temples or setting up one-on-one meetings with interested participants.

The length of a questionnaire is an important factor that determines its feasibility because this directly affects response rates and data quality (Galesic & Bosnjak, 2009; Hugick & Best, 2022; Kost & de Rosa, 2018). Research has shown that data quality suffers when surveys/questionnaires take longer than 20 minutes to complete (Deutskens et al., 2004; Galesic & Bosnjak, 2009; Liu & Wronski, 2018; Revilla & Ochoa, 2017). In this study, the Qualtrics software estimated that it would take 20 minutes for a participant to complete the study questionnaire online. Similarly, in a small pilot study conducted by the PR to estimate the completion time for the written version of the questionnaire the average time taken was 20 minutes. These results were supported by the average time it took participants to complete the questionnaire at baseline (Timepoint 1) and follow up (Timepoint 2) in the test–retest reliability analysis. Less than 1% of data (survey answers) were missing at both timepoints, suggesting that participants understood the questions and were interested in answering them.

In this study, a two-week interval was chosen between each timepoint. Similar studies have considered this timeframe to be appropriate for participants because it is neither too short to recall the responses nor too long to influence KAP (Al-lela et al., 2011; Koohi et al., 2021). The test–retest reliability analysis revealed statistically significant correlations between timepoints for the overall KAP, total knowledge, total attitude and total practice scores. These results were supported by similar average scores for each KAP section as well as total KAP score between timepoints. These findings suggest a certain degree of stability and reliability of the study questionnaire.

Unfortunately, these findings could not be compared with those of previous studies on the KAP of CV health or CVD because of inadequate information and clarity regarding the development and validation of the questionnaires reported in those studies (Hertz et al., 2019; Mirza et al., 2016; Mohammad et al., 2018; Shammi et al., 2021; Vaidya et al., 2013).

Participants in this study were also asked to openly provide feedback on the questionnaire at Timepoint 2. This was an important opportunity to seek feedback and suggestions from members of this community, which has not been done previously (Hertz et al., 2019; Mirza et al., 2016; Mohammad et al., 2018; Vaidya et al., 2013, 2013) and in this community. All but one participant found the questions in each of the sections appropriate and easy to understand. This participant did not leave any comments to indicate which question/s they found inappropriate or difficult to understand. Because the data were anonymised, the researcher was unable to follow up with the participant to clarify this point, which was a limitation of this study design. On reflection it may have been helpful if a focus group session/s had been held to gather feedback from participants on the developed questionnaire, as has been done in the previous studies (Geer et al., 2006; Woringer et al., 2017). Nevertheless, the developed questionnaire was well received and valued by the participant group.

The focus of this questionnaire was to not only understand the KAP towards CV health in the community but to gather information from the community on how health professionals could promote and support their understanding of CV health and disease, which was not done in the previous CV health-related KAP studies reviewed in Chapter 3. The current study is the first to gather feedback and determine whether the target population found the developed questionnaire easy to understand and appropriate for the community. Given the lack of research in the Fijian Indian community, this was a

crucial step for predicting the acceptance and success of the developed questionnaire in the next phase of this study.

As described in Chapter 3, Mirza et al. (2016), Mohammad et al. (2018), Hertz et al. (2019) and Vaidya et al. (2013) created their CV health-related KAP questionnaire from various approaches. Like the current study, Mohammad et al. (2018) and Hertz et al. (2019) assessed the content validity of their questionnaire using experts in the field. Unfortunately, the results of the current study cannot be compared with those studies because they did not publish or cite the findings of their content validity analysis. Vaidya et al. (2013) was the only study to assess the reliability of their questionnaire by measuring Cronbach's alpha (α) or internal consistency (among 777 participants). In the current study, there were too few participants to identify the true internal consistency of the questionnaire in Phase Two.

6.4 *Research Question 1*: Is the Developed Questionnaire Feasible and Appropriate to Assess the Level of KAP in the Fijian Indian Community?

This study was able to develop a questionnaire that was appropriate and feasible to assess the level of KAP towards CV health in this community. The participants in this study found the questions in each section relevant, appropriate and easy to understand. The estimated time to complete both the written and online questionnaire was an average of 20 minutes. The findings of both Phases One and Two provided support for the first hypothesis of this study; that is, that the developed questionnaire will effectively measure the level of KAP towards CV health in the Fijian Indian community.

To be able to use this questionnaire confidently in clinical practice and future research, additional psychometric testing is necessary. Thus, a key recommendation

from the findings is to determine the construct validity and internal consistency of the questionnaire in a larger sample size (described in Chapter 7).

6.5 Research Question 2: **What is the Level of Cardiovascular Health Knowledge among the Fijian Indian Community?**

Knowledge and understanding of heart health is an important prerequisite for enabling health-promoting behaviour and preventing CVD (Homko et al., 2008; Jafary et al., 2005). According to Aminde et al. (2017), adequate awareness of chronic diseases such as CVD, and their risk factors, is needed for the effective prevention and control of these diseases (Aminde et al., 2017). Health behaviour models such as the Health Belief Model state that behaviour change requires knowledge of the negative health consequences of a behaviour (Glanz et al., 2008; Janz & Becker, 1984; Rosenstock, 1990). It is this awareness or knowledge that motivates individuals to adopt healthy attitudes and practices/behaviours to reduce their risk of developing a chronic disease (Becker, 1974; Ford & Jones, 1991).

A major benefit of assessing the level of knowledge in a high-risk community is the ability to identify crucial knowledge gaps and to use this information to inform future interventions such as community health promotion/education programmes (Andrade et al., 2020). The preliminary results in this study suggest that the members of the Fijian Indian community surveyed had a fair level of knowledge (72%) about CV health, the risk factors for CVD and symptoms of a heart attack. Although a larger sample size is needed to confirm this finding, this is the first study to assess CV health knowledge in a high-risk NZ community.

In this study, 50% of the participants thought that the most common cause of a heart attack was stress. Some participants were also uncertain about whether eating large amounts of red meat increased the risk of heart disease, and when participants were asked to identify the common risk factors for heart disease, severe mental illness

and impaired kidney function were the least recognised risk factors. Similarly, vomiting tendency (nausea) and fatigue were the least recognised signs of a heart attack. These findings differed from those reported in the studies described in the scoping review in Chapter 3. For example, in Vaidya et al.'s (2013) study, only 20% of the participants identified chest pain as a warning sign of heart attack and almost 7% thought that fried food or saturated fat (such as ghee) were healthy options. Mohammad et al. (2018) found that only 37% of participants knew that obstructed blood vessels were associated with CVD and only 16% of participants knew the difference between good and bad cholesterol. The low level of knowledge in these studies compared with the current study can be attributed to several factors, including demographic differences in the study population, study location and data collection methods/tools (ul Haq et al., 2012). This underscores the need to explore the level of CV health knowledge in this community. To be able to improve the level the knowledge about CV health, it was important to first identify the gaps in knowledge in high-risk populations.

6.6 *Research Question 3*: What are the Attitudes Towards Cardiovascular Health among the Fijian Indian Community?

Knowledge alone cannot create behaviour change (Homko et al., 2008). This notion is based on the 'perceived susceptibility and perceived severity' components of the Health Belief Model (Rosenstock, 1974). As described in Chapter 2, perceived susceptibility refers to a person's perception of risk or susceptibility to contracting a condition or illness. Perceived severity relates to a person's concern regarding the seriousness of contracting the condition/illness and potential consequences (DeDonno et al., 2022).

The initial findings for this cohort of the Fijian Indian community suggest the community held a positive attitude (80%) towards CV health. This finding is consistent with those of other CV health-related KAP studies including (Mirza et al. (2016), Hertz

et al. (2019), Mohammad et al. (2018), and Shammi et al. (2021), but not with those of Vaidya et al. (2013). In the current study, 96% of the participants agreed that to maintain a healthy lifestyle they should be exercising and eating less oily food. All the participants agreed that they should include fruit or vegetables in their diets and 92% knew to avoid drinking carbonated drinks to maintain their health. In addition, 71% indicated they were able to manage their stress and 85% made time to take care of themselves. In Vaidya et al.'s (2013) study, most of the participants did not consider themselves to be at risk of CVD nor did they want to change their lifestyle. Almost 32% said they did not have time to take care of themselves and 59% did not think that changing their behaviour would reduce their risk of CVD. Importantly, as discussed above, these differences in study findings could be due to the different study population, study location and data collection method/tool used. However, these findings emphasise the likely influence these perceptions may have on behaviour change. Hence, there is a need to further explore the perceptions and attitudes towards CV health in high-risk populations.

6.7 *Research Question 4*: What are the Practices of the Fijian Indian Community Towards Cardiovascular Health?

The onset and progression of CVD can be delayed if known risk factors (modifiable factors) are minimised by adopting healthy lifestyle habits and undergoing appropriate treatments (Arnett et al., 2019; Carrington et al., 2009; Rippe, 2018). The initial results of this study suggest that the Fijian Indian community, on average, had fair practices (66%) towards CV health. Although a larger study is needed to confirm these findings, these results highlight the need to further promote the adoption of healthy lifestyles in this high-risk community.

Diet, physical activity, weight management and smoking cessation are four elements of a healthy lifestyle that can reduce the risk of CVD and other long-term

health conditions (Arnett et al., 2019; Claas & Arnett, 2016). Most participants in the current study exercised for more than 20 minutes (3 times a week) and often walked for at least 10 minutes to get to and from places. Some also exercised during their spare time, for at least 20 minutes. To some extent, these results are associated with the MoH's recommended activity levels of 'at least 2½ hours of moderate (or 1¼ hours of vigorous physical activity) spread throughout the week' (MoH, 2021e). However, this finding will need to be confirmed in the wider Fijian Indian community.

Considering the other CV health-related studies discussed in the scoping review (Chapter 3), this study's findings were vastly different from those of Mirza et al.'s (2016) study in which not only did most participants fail to allocate time for exercise, but only 22% believed that an active lifestyle could prevent coronary artery disease. Mohammad et al. (2018) discovered that many of their participants found it difficult to avoid fried food every day. However, participants in the current study indicated that they rarely consumed fatty foods more than three times a week, and none were current smokers. Vaidya et al. (2013), Mohammad et al. (2018) and Shammi et al. (2021) found that several of their participants were regular or occasional smokers. Aside from their obvious differences in terms of sample size, the tool/instrument used and the study environment, these studies demonstrate that practices towards CV health can vary from one community or population to another. Therefore, a better understanding of these practices will allow health professionals to develop new strategies and interventions, to enhance current skills and practices in the community.

6.7.1 How do These Preliminary Findings Align With the Health Belief Model?

Health beliefs play a key role in the adoption of preventative health practices and undergoing of health treatments (Ramaswamy et al., 2020). As described in Chapter 2, the Health Belief Model has been used to explain and predict the adoption of many preventative health behaviours and interventions (Carpenter, 2010). According to this

model, individuals are most likely to adopt preventative measures if they perceive CVD as a serious threat ('perceived severity'), feel they are personally susceptible to CVD ('perceived susceptibility'), feel confident in implementing the recommended preventative actions ('self-efficacy'), and perceive that engaging with these preventative measures has fewer costs than benefits ('perceived benefits').

Although the current study's questionnaire was not drawn from this theoretical framework, some questions aligned with its key elements. These include, 'I am concerned about the likelihood of having a heart attack/stroke in the near future' (Q46), 'my whole life would change if I had a heart attack or stroke' (Q48) and 'I should include fruit or vegetables in my diet for maintaining my health' (Q32).

In this study, half of the participants were concerned about the likelihood of having a heart attack or stroke in the near future. This finding relates to the 'perceived susceptibility' component of the Health Belief Model and thus may be related to current practices towards CV health in this participant group. Similarly, more than half of the participants believed that having a heart attack or stroke was always fatal and that their whole life would change if they had a heart attack or stroke. However, the relationship between these preliminary findings will need to be confirmed in a larger study.

6.8 *Research Question 5*: **What are the Relationships between KAP in the Fijian Indian Community and Cardiovascular Health?**

KAP studies have demonstrated an association between the elements of KAP beyond assessing the prevalence of each. For example, three studies reported that a higher level of knowledge is positively associated with the practice of preventative behaviours (Hoque et al., 2020; Vaidya et al., 2013; Verma et al., 2019). Similarly, studies have shown a positive association between attitudes and preventative behaviours (Lakshmi et al., 2020; Shammi et al., 2021; ul Haq et al., 2012). Understanding the relationships between the elements of KAP can be beneficial for the development of

effective health promotion strategies and interventions. This might include targeted community awareness interventions in populations where the level of knowledge is positively associated with attitudes and adherence to preventative health behaviours (Devkota et al., 2021). The current study found no statistically significant correlations between the elements of KAP towards CV health in this community at this time.

6.9 *Research Question 6*: What are the Demographic and Sociocultural Factors That Influence the Knowledge, Attitude and Practices of Cardiovascular Health in the Fijian Indian Community?

Demographic factors and sociocultural factors have been shown to influence the level of KAP in target populations. Shen et al. (2017) found that significant gender differences exist in the KAP towards CVD among Asian patients in Singapore. In their study of 1,000 participants, males were found to have lower knowledge, lower attitude and higher practice scores than females (Shen et al., 2017). In this study, there were slight differences in the average total attitude and practice scores between males and females and therefore, there was a small difference in overall KAP score. Although the differences were not statistically significant, the findings reveal a potential strategy for supporting CV health promotion in this community; for example, by adopting gender-specific educational programmes or public health campaigns that focus on building the KAP towards CV health (Muhamad et al., 2012).

Education levels have also been found to affect KAP levels. Duber et al. (2018) found that participants with a higher education level in Beijing and Shanghai were able to recognise more risk factors for CVD. However, participants in Bangalore, with lower educational attainment, demonstrated the opposite association (Duber et al., 2018). Though this current study was unable to identify more potential associations, it emphasises how multiple factors can influence the KAP towards CV health in different communities.

6.10 Research Question 7: How Should the KAP Towards Cardiovascular Health in This Community be Promoted and Enhanced?

To answer this research question, the feedback/opinions of the study participants in response to the open-ended questions was explored, using thematic analysis (Braun & Clarke, 2022). Thematic analysis is a popular method for analysing qualitative data in many disciplines/fields including social, behavioural and applied sciences. It is widely used by researchers to explore patterns of meaning ('themes') in a dataset. One of the advantages of using Braun and Clarke's (2006, 2012) method of thematic analysis is that it can be used to address different types of research question related to a person's experiences, views, perceptions, practices or behaviours. The current study found three themes that addressed the research question.

6.11 Theme One: Managing Health Together

The theme Managing Health Together showed examples of how participants knew of ways to manage their heart health and wellbeing; for example, by doing regular exercise, eating healthily, using less oil in the preparation of food and being stress free. However, several participants expressed the need for additional support from their local health professionals. Participants suggested regular/scheduled check-ups, coaching, encouragement and advice about maintaining a healthier lifestyle/diet, so they could have a 'better picture' of their health.

Regular health check-ups are important not only for the heart but for general health, serving to identify early signs of disease or illness, especially for people who are at a higher risk. According to the MoH's CVD *Risk Assessment and Management for Primary Care* guidelines, CV risk assessments for Māori, Pacific and South Asian populations (in which Fijian Indian people have been classified) should begin 15 years earlier than for other populations; that is, at 30 years of age for men and 40 years for

women. For individuals considered at a higher risk (>15%), it is recommended that risk management reviews take place annually, and for those individuals at a low–medium-level risk (<3–14%), repeat assessments of CVD risk could be every 2–10 years (MoH, 2018a; Wells et al., 2017).

Given the silent, progressive nature of CVD, it is the management of a person's daily health/lifestyle—especially those at higher risk of developing CVD—that is most important in preventing the development of CVD. Evidence of a benefits of a healthier lifestyle for CVD risk management is well documented in the literature (King et al., 2007; Li et al., 2020; Lv et al., 2017; Menotti et al., 2022; Tsai et al., 2020). In NZ, primary care physicians are advised to encourage a healthy lifestyle (regardless of CVD risk) and to effectively communicate risk to individuals as part of shared decision making and CVD risk management (MoH, 2018a).

The New Zealand Heart Foundation describes 'shared decision making' as core to patient-centred care and LTC management. It involves a:

> health professional and person working together to consider evidence-based clinical information about tests, treatment options, likely benefits and outcomes, and potential risks and then choosing, in collaboration, the course of treatment, management or support that best fits the person's informed preferences. (The Heart Foundation, 2022, p. 1)

The literature suggests that shared decision making not only improves health professional–patient communication, but also increases people's knowledge about their condition, treatment options for their participation in care and confidence in their knowledge and self-management skills (de Silva, 2012).

Similarly, health coaching and CVD prevention programmes globally have been shown to successfully educate, encourage, and support people at risk of, or living with CVD. Health coaching is an effective patient education method that improves the management of chronic diseases and have positive effects on a person's physiological, behavioural and psychological status, and significantly reduce overall mortality (Kivelä

et al., 2014). For example, Byrnes et al. (2018) found that participants (with CVD) enrolled in the *Coaching on Achieving CV Health* programme achieved a statistically significant decrease in overall mortality and hospital costs compared with participants who received usual care. This study, which was conducted in Australia, also found a dose–response effect on the overall mortality rate and hospital costs; that is, those who received four or more coaching sessions had a substantial reduction in mortality and hospital cost (Byrnes et al., 2018). By using the health coaching process, health professionals can 'assist patients to identify barriers to behaviour change, determine health-related goals and compose realistic plans for achieving these goals by listening, asking open-ended questions, and providing support and accommodating feedback' (Zuraida et al., 2022; p. 177). In the same way, several community- and hospital-based CVD prevention programmes have led to improvements in CVD risk factors and patient education (Eliasson et al., 2021; Gomes et al., 2021; Ramôa Castro et al., 2017; Soltani et al., 2021).

The theme Managing Health Together is about providing this community with ongoing, regular support from health professionals to manage their risk of CVD. Whether it is through scheduled follow-ups, engagement with a local health coach or a community prevention programme, there is a need and request for additional support.

6.12 Theme Two: Recognising Barriers to Cardiovascular Health

The second theme, Recognising Barriers to CV Health, highlights the need to address the challenges the community faces in better understanding CV health and disease prevention. Participants identified barriers such as the availability of time, self-motivation, access to health services, current practices in schools and health services, and misbeliefs in the community as influencing their KAP towards CV health.

Adopting a healthy lifestyle can often be difficult because of time constraints and loss of motivation (Aditama et al., 2015; Devine et al., 2009; Escoto et al., 2012;

Schutzer & Graves, 2004; Seguin et al., 2014). As Participant 13 in this study described, 'people are usually so busy at work, so they don't have time to do something for themselves' and 'normally, I work long hours and when I come home, I am tired. Therefore, I don't do anything for myself'. Caruso (2006) linked the effect of long work hours to less time to exercise, less time to prepare and consume a nutritious diet, and an increase in harmful behaviours such as tobacco and alcohol use (Caruso, 2006). Complacency or the loss of motivation can also lead to a disregard for health-promoting behaviours (Hardcastle et al., 2015; Ljubičić et al., 2022; National Academy of Sciences (US), 1995; West et al., 2011), thus increasing the risk of illness or disease. Hessler et al. (2019) suggested that there are often legitimate reasons why effective health-promoting behaviours are not performed. Reasons such as a perceived lack of urgency, fear of failure, lack of resources and/or a belief that it will not be effective or will cause harm can result in a person not making or maintaining a positive behaviour change (Hessler et al., 2018).

Misconceptions or misbeliefs about health can limit a person's ability to manage their risk of illness or disease. The misconceptions or misbeliefs around CVD are common and can arise from a person's preconceived ideas about the condition, or from well-intentioned friends and family members (Angus et al., 2012; Lin et al., 2012). According to Lin et al. (2012), 'a lack of understanding of illness may partly result in misconceptions about illness from their own experience and/or societal beliefs, for example, diabetes means the amount of sugar eaten, and heart attack is a sudden death' (p. 5). Although participants in the current study did not provide any specific example(s) of misconceptions/misbeliefs in the community, a classic example of a misconception among cardiac patients is that exercise can cause angina (chest pain), and that this is 'bad' for the heart. This notion could lead patients to avoid regular exercise to the detriment of their CV rehabilitation (Lewin, 1997, as cited in Angus et al., 2012).

Furthermore, participants in this study raised concerns about current fundraising practices in schools and follow-up services in healthcare: for example, 'schools should not participate in unhealthy options for fundraising, such as chocolate bars' (Participant 25). Richards et al. (2005) found that most schools in NZ participated in sponsorship, incentive and fundraising initiatives. Although some schools were found to deliver positive health messages in their study, others were linked with products or activities that were potentially harmful to health. This included the provision of foods high in sugar and fat to students, and funding from organisations that generated profits from gambling and alcohol sales (Richards et al., 2005). Schools provide the ideal environment for primary prevention and health promotion among young people. Health education in NZ is focused on encouraging young people to make healthy food choices and lead active lifestyles (Ministry of Education, 2022b). However, selling chocolate bars and holding sausage sizzles are the most common fundraising initiatives in NZ schools (Pledger et al., 2012). This greatly undermines the efforts of health promotion and health education in schools.

Lastly, participants proposed 'free check-ups in the community'. Healthcare costs are another barrier for people in receiving timely, appropriate support to manage their health and wellbeing (Lee et al., 2010; Parikh et al., 2014). Financial barriers to healthcare are not unusual. According to the Health Quality and Safety Commission of New Zealand (2020), appointment cost was the most common barrier to patients accessing health services or visiting a general practitioner or nurse (Health Quality & Safety Commission New Zealand, 2020). Moreover, patients who deferred primary healthcare (both doctor and dentist) because of costs had poorer self-rated health, and physical health and mental health summary scores (Jatrana & Crampton, 2021). Free health check-ups in the community may be the answer to this barrier because regular medical check-ups are vital, especially for those at considerable risk of LTCs.

Overall, recognising the barriers to CV health in the community will provide a better understanding of how to approach CV health promotion within this community. This could help find solutions or strategies to reduce these barriers, find new ways to promote CV health in the community, and reduce CVD risk.

6.13 Theme Three: Targeted Cardiovascular Health Promotion

This leads to the last theme, Targeted CV Health Promotion. Participants in this study offered a range of suggestions on how to educate the community on CV health and disease prevention. One of the key suggestions was to 'simplify and tailor information' to the community. Previous research has recommended tailoring health promotion initiatives to the realistic cultural norms and perspectives of individuals (Lawton et al., 2006). In 2010, Renzaho and colleagues published a systematic review of the effectiveness of prevention programmes for obesity and chronic disease among immigrants to developed countries. They found that interventions that (1) were tailored to the cultural needs of the population; that is, cultural norms, attitudes and beliefs, (2) were implemented in the community, and (3) used translated, culturally relevant educational tools and community-based trained educators led to significant improvements in health-related behaviours including changes in diet and exercise among participants (Renzaho et al., 2010). Similarly, Jiwani et al. (2018) reviewed the impact of culturally tailored interventions to reduce CVD in South Asians. Despite the limited number of studies, the review found foundational evidence for the effect of culturally competent interventions in improving CVD risk factors in the South Asian migrant community. Similar to Renzaho et al. (2010), this review also supported the use of trained community health workers as 'agents of change' in the implementation of culturally tailored interventions in the community (Jiwani et al., 2018).

More recently, Kandula et al. (2020) published a clinical trial protocol for a community-based, culturally adapted lifestyle intervention for South Asian adults. The

intervention, titled 'South Asian Healthy Lifestyle Intervention' was designed to improve healthy eating, physical activity and stress management via the use of evidence-based behaviour change strategies with culturally adapted strategies and group motivational interviewing. The findings of this promising study will inform community models to reduce atherosclerotic CVD risk in South Asians and deepen the evidence on lifestyle interventions for diverse communities in the USA (Kandula et al., 2020). Likewise, a conceptual shift from the 'one-size fits all' to a more tailored, individual approach could improve the KAP towards CV health in the Fijian Indian community.

Participants also suggested 'bringing the health force to the people' and 'increasing presence in the community' to promote CV health in the community (Bader et al., 2006). This could occur in several ways including community health screening and information sharing at community events, charity events and local Indian supermarkets. Community health screening provides an opportunity for targeted health education and free/inexpensive health assessments to determine risk of developing a medical condition such as diabetes or CVD (McKeirnan et al., 2015). Recently, Health Screening NZ has released a new, innovative heart screening and intervention management app, called Cardiaction. It displays and explains a person's heart screening results and offers tailored, educational information on the importance of improving these metrics for better heart health. While this screening service is currently only available in select pharmacies in Christchurch (NZ), it has the potential to identify people at risk of CVD and provide tailored support nationwide (Health Screening NZ, 2022). CV health promotion at community events, charity events and local supermarkets is also an effective way to motivate and disseminate information to families and the wider community (Martin et al., 2022). Increasing the presence of health professionals at Fijian Indian community events could provide an environment for people to learn more about how to manage their health, ask questions and have more

information about tools and resources that are available to them, such as the newly introduced Cardiaction screening service.

Another key sub-theme was to 'build relationships with community and religious leaders to promote CV health'. Like many ethnic groups, the Fijian Indian community respect and value the advice and guidance of their community and religious leaders. Research has demonstrated the positive role that community leaders, religious leaders and places of worship can play in raising awareness of medical conditions and promoting healthy lifestyle choices and behaviours (Adedini et al., 2018; Ali, 2021; Anshel & Smith, 2014; Hopoi & Nosa, 2020; Khalid et al., 2022; Kruger et al., 2010; Rivera-Hernandez, 2015; UNICEF, 2020). According to Islam and Patel (2018), the iterative engagement of community and religious leaders is key to implementing health promotion activities and providing access to activities such as hosting educational sessions. Successful examples of these relationships have been seen around the world, including NZ. In 2004, Simmons and colleagues presented the results of a two-year church-based diabetes risk reduction programme in four churches in South Auckland (NZ). In their study, they used the support of Pacific Island church leaders and committee members to adapt, enhance and prioritise various sessions on diabetes awareness, exercise and nutrition, so that it was tailored for their people. Overall, they found that diabetes knowledge significantly increased in both intervention churches. Furthermore, in one intervention church, weight, waist circumference and regular exercise improved over this time. These findings indicate that without the support of the individual church leaders and committee members, this programme would have been less successful (Simmons et al., 2004). Thus, building relationships with known community and religious leaders in the Fijian Indian community may also provide a valuable opportunity to improve the KAP towards CV health and disease prevention.

To conclude, the findings of this thematic analysis have highlighted that more effective strategies are needed to improve and enhance the KAP towards CV health in the Fijian Indian community. By 'managing health together', 'recognising barriers to CV health' and delivering more 'targeted CV health promotion', there is the potential to increase awareness of CV health; build relationships between the community and health providers to empower the community to take ownership of their health; and increase health service utilisation. More importantly, this will create a path to improve baseline health statistics in this high-risk population.

6.13.1 What Implications do These Preliminary Findings Have for Health Education and Health Promotion Practices in New Zealand?

This preliminary thematic analysis offers promising evidence for improving health education and health promotion practices in NZ. The findings align with most of the key action areas of the Ottawa Charter; that is, build healthy public policy, create supportive environments, strengthen community action and develop personal skills (described in Chapter 2). At present, health and physical education in the NZ School Curriculum focuses 'on the wellbeing of the students themselves, of other people, and society through learning in health-related and movement contexts' (Te Kete Ipurangi, 2014). At the heart of this learning is four underlying, interdependent concepts: '*hauora* or wellbeing', 'attitudes and values', 'socioecological perspectives' and 'health promotion' (Te Kete Ipurangi, 2014).

Many NZ schools have adopted the HPS approach, which is based on the principles of the Ottawa Charter (MoH, 2012; WHO, 2022c). However, without strong national leadership and direction, the implementation and development of this approach has been ad hoc, sporadic and disjointed, with schools lacking a clear understanding of the concept (Cushman, 2008; Cushman & Clelland, 2012). According to McHugh et al. (2021), HPS approaches need to be adaptive; that is, actively involving community

partners and linking to local initiatives where possible, with support from senior management and policy developers. They suggested starting with what teachers, students and their parents see as barriers to health to create a whole school ethos for wide-reaching and sustainable HPS programmes (McHugh et al., 2021).

In 2009, the NZ Government rescinded a policy requiring healthy foods to be sold in schools (Pledger et al., 2012). This change may have prevented the implementation of school-level policies and practices that were in line with the HPS approach (McIsaac et al., 2019). It is also possible that many school canteens returned to offering largely unhealthy 'occasional' foods, rather than following the previous recommendation of offering healthier food daily (Pledger et al., 2012). Equally, the current national guidance around food-related fundraising in schools is that as long as the food is safe and suitable, schools can use this food for fundraising up to 20 times a year without registering it under the NZ *Food Act 2014*. This includes chocolates, sausage sizzles and charity bake sales (Ministry of Education, 2022a).

Richards et al. (2005) found that most NZ schools were 'involved in some sort of sponsorship, incentive and fundraising initiatives, some of which had the potential to have a negative impact on the health of students' (p. 333). Given the lack of severe restrictions on these initiatives currently, it is the school's responsibility to have policies and practices around food sales/environment including fundraising.

Recently, D'Souza et al. (2022) evaluated the healthiness of NZ school food environments and found that the nutrition policies in NZ schools were weak, and that canteen and fundraising items were largely unhealthy, which diminished the other positive efforts schools were making towards health promotion. This study confirms the need for more robust national-level policies concerning school food environments (D'Souza et al., 2022).

A key to improving health promotion practices in NZ is 'community engagement'. The preliminary findings of this thematic analysis have provided evidence for future research and innovative ideas for engaging with the Fijian Indian community about their CV health. Traditionally, health professionals primarily designed health-related interventions or actions with little or no contribution from their intended population or community. Researchers, health professionals and policy makers have increasingly focused on the meaningful engagement and involvement of members of the community in public health interventions or programmes (Louise & Annette, 2019; O'Mara-Eves et al., 2015).

There are several examples of the benefits and success of community engagement in health-related interventions in the literature, including the *Apnee Sehat* project, an innovative community health and lifestyle intervention for a South Asian community in the UK (Coe & Boardman, 2008). This project aimed to identify and tackle the issue of premature diabetes and heart disease in a culturally sensitive and acceptable manner through a local Sikh temple. It was built on a partnership between the local Sikh community and local health professionals including the town mayor, local university and hospital. A range of activities and interventions held at the Sikh temple included health presentations, tailored posters, health fairs/lectures and various resources that supported and promoted healthy lifestyles and exercises. In Coe and Boardman's (2008) evaluation of this ongoing project, they found that participants welcomed the interventions and reported raised awareness, understanding and lifestyle changes at both individual and household levels (Coe & Boardman, 2008). A community-based initiative like this demonstrates the importance of engagement and co-design in initiating and sustaining change.

Given the growing and ageing Fijian Indian community in NZ, health professionals will be seeing more Fijian Indian clients. Therefore, there needs to be

more research focused on the health and wellbeing of this community, especially around the barriers to CV health and disease prevention. This may lead to the development of novel programs or approaches that are responsive to the health needs of this community and increase their potential for better health outcomes.

6.14 Recommendations to Te Whatu Ora—Health NZ

This study recommends that Te Whatu Ora—Health NZ considers the suggestions of the Asian Health Reform Advisory Group (2022) for the benefit of the Fijian Indian community and all other ethnic minority groups in NZ. The Fijian Indian community deserves recognition in the NZ health system as a growing and significant migrant population; not be hidden or lost in statistical representation, or during the transitional years of this new health system.

It is possible that the health needs of the Fijian Indian community are similar to those of larger ethnic communities in NZ, but more research is needed to support this theory. Therefore, a greater focus on the health needs of this community, through innovative research designs and intersectoral collaboration, is imperative for improving health services and outcomes across the NZ health system. This recommendation is also in line with the current *NZ Health Strategy* (described in Chapter 2).

The preliminary findings of this study support the five key themes of the *NZ Health Strategy* (Minister of Health, 2016). For example, Participant 3 suggested 'regular check-ups and advice with a follow up', which falls into the first theme of 'people powered'. Participant 18 suggested 'more awareness at community events; e.g., free health check-ups, take surveys and follow up', which relates to Theme Two, 'close to home' and Participant 27 recommended targeting 'places where the community gathers, like religious events … have workshops, lectures by health professionals', which fits into Theme Three, 'value and high performance'. Similarly, Participant 24 suggested approaching community leaders to promote CV health and Participant 1 had a

suggestion to create a website for the Fijian Indian community to learn more about CV health, in line with Themes Four and Five, 'one team' and 'smart system'. These are but a few examples of how this study's findings have the potential to support the *NZ Health Strategy*.

More research into the health needs of this migrant community (and other ethnic migrant groups) might further support the NZ health system to find ways to facilitate actions of the *NZ Health Strategy*. Te Whatu Ora—Health NZ is responsible for delivering a better health system for all New Zealanders (Te Whatu Ora, 2022). If they are to truly meet these intentions, they must acknowledge the health needs of this growing migrant population as well.

6.15 The Strengths and Limitations of this Research

6.15.1 Strengths

As this was the first study to develop a novel CV health-related KAP questionnaire for this community, the engagement of an advisory team with considerable experience in working with the Fijian Indian community was a major advantage. The participants in Phase One of this study were extremely professional, enthusiastic and committed to supporting the Fijian Indian community. They volunteered their time to develop this questionnaire motivated by the fact that future research using this questionnaire could provide a foundation of empirical evidence about this under-researched community.

Another major strength of this study was the successful recruitment of participants in Phase Two. Because of the lack of research on this study population, it was difficult to predict the recruitment and retention of participants from the Fijian Indian community. The PR was able to engage and retain all 30 participants in Phase Two of this study, with the exception of two participants whose data was incomplete in the final test-retest reliability data analysis. This showed that community members were

interested in this research topic and there is potential for recruiting more participants for the next phase of the study. Based on a search of the literature, this appears to be the first-time participants from the Fijian Indian community have been surveyed in this field.

Lastly, this study was able to provide unique insights into the level of KAP in the community as well as thoughts/views from community members on how the KAP towards CV health should be promoted and enhanced in their community. These findings are both encouraging and would contribute to the next phase of the study.

6.15.2 Limitations

This study has a few limitations. The first is that an expert on questionnaire/survey development was not consulted or included on the advisory team. Such expertise and feedback throughout the development and testing of the questionnaire would have been extremely valuable for this study (Davis, 1992). Second, two different methods—a stopwatch and a software timer—were used to record survey completion times in Phase Two. As a result, the average time to complete the developed survey may not be as accurate, relative to if only one method had been used to assess the completion time. The third limitation was the nature of the pre- and post-tests in Phase Two. Participants reflected on their answers and actively tried to improve their knowledge and their score on the post-test. While it was encouraging to see the questionnaire's positive impact on participants, this may explain why marginal differences were found between the two tests in terms of average and overall KAP scores. Finally, and most importantly, the last phase of this study could not be completed because of the rise in COVID-19 pandemic cases in NZ. With uncertainty around the nation's lockdown restrictions, recruitment and data collection during this time and phase would have been extremely difficult. A critical part of questionnaire development is determining the construct validity of the questionnaire. As a result,

construct validity could not be determined for the questionnaire developed in the study, which is a critical aspect of questionnaire development. Nonetheless, this study opted to use the baseline (Timepoint 1) results to understand the prospective level of KAP towards CV health in this community.

Furthermore, the sample size (n = 28) in Phase Two was too small to provide a good representation of the community or identify significant correlations between the KAP towards CV health. This limitation also meant that this study was unable to determine the internal consistency and construct validity of the developed questionnaire. The next chapter describes the learnings, next steps, and recommendations arisings from these findings, for this novel study.

6.16 Chapter Summary

This chapter has discussed the key findings of Phases One and Two and how they align with the research aims and questions of this study. This study developed a questionnaire that was appropriate and feasible to assess the level of KAP towards CV health in the Fijian Indian community. Phase One involved developing the KAP questionnaire as well as assessing the content validity of the study questionnaire, with the help of five experts with experience working with the Fijian Indian community, local health services and health promotion. The final analysis of the developed questionnaire indicated moderate to high content validity regarding appropriateness, relevance, and clarity. Phase Two assessed the feasibility of the questionnaire among 30 members of the Fijian Indian community via test–retest reliability analysis and a follow-up review form. The test–retest reliability analysis found significant correlations in the overall KAP, total knowledge, total attitude and total practice scores between timepoints. These findings were supported by similar average scores for each KAP section and the total KAP score between timepoints, suggesting a certain degree of stability and reliability of the study questionnaire. Similar to Phase One, participants

also found the questions in each section relevant, appropriate and easy to understand. Additionally, the preliminary findings of this study questionnaire revealed a better understanding of this under-researched community and potential ways in which health professionals can target KAP interventions towards CV health.

Chapter 7: Conclusions

This thesis concludes with a summary of the key findings of Phases One and Two, and possible directions for future research.

7.1 Summary of the Key Findings in this Research

Prior to this study, the KAP towards CV health had not been explored in high-risk communities in NZ. As a growing migrant community, the Fijian Indian community is under-represented in both health service policy and interventions, and research in NZ. The present study was designed to identify KAP of the Fijian Indian community towards CV health and disease prevention in order to inform targeted strategies to support the promotion of CV health in this high-risk community.

Generally, KAP surveys aim to identify what is known, believed and behaviourally acted upon regarding a specific issue in a given population. Thus, KAP surveys can reveal information about what is well known and attitudes that are widely held in a community about particular topics. To a certain extent, KAP surveys can identify factors that influence behaviour and attitudes, and lead to development of targeted strategies/interventions based on this information (Abdulkader Mohamed et al., 2022; Alhaj, 2018). A scoping review of the literature found five versions of KAP questionnaires related to CV health (discussed in Chapter 3). However, none of the previously developed questionnaires were specifically focused on the general KAP towards CV health and disease prevention or the Fijian Indian community. Thus, this study sought to develop its own questionnaire.

The first aim of this study was to develop and test the questionnaire to measure the level of KAP towards CV health in the NZ-based Fijian Indian community. In Phase One, a scientific approach using the method for KAP questionnaire development, recommended by the WHO (World Health Organization, 2008), was used. Attention was paid to the structure of the questions guided by similar questionnaires (identified in

scoping and literature review) and gaining feedback from peers in the Fijian Indian community and study supervisors about the developing of questions and the overall questionnaire. Five experts analysed the content validity of the questionnaire by assessing whether the questions in each section were appropriate, relevant, and stated clearly. Each expert provided feedback on the overall questionnaire and made suggestions to ensure the questionnaire was fit for purpose. In this study, the final analysis of the developed questionnaire showed moderate to high content validity for appropriateness, relevance and clarity. Experts also provided positive feedback on the overall questionnaire. Taken together, these results suggest that the developed cardiovascular KAP questionnaire was appropriate, relevant and comprehensible to assess the KAP towards CV health in this population.

The second aim of this study was to assess the feasibility of applying the developed questionnaire to test the KAP towards CV health in the Fijian Indian community.

In Phase Two, 30 members of the Fijian Indian community were recruited and asked to complete the developed questionnaire at two timepoints (two-week interval time). The purpose of this phase was to assess the reliability of the questionnaire, test for appropriateness and understanding, and evaluate timing. Test–retest reliability analysis found statistically significant correlations in the overall KAP, total knowledge, total attitude and total practice scores between the two timepoints. These results were supported by similar average scores for each KAP section, the total KAP score, and Cronbach alpha for internal stability. These findings suggest acceptable stability and reliability of the study questionnaire. At Timepoint 2 (follow up), participants were also asked to provide feedback on the questionnaire. This was an important opportunity for this study to receive feedback and suggestions from members of this community, which has not been done previously. In the qualitative evaluation of the questionnaire in Phase

Two, participants found the questions in each of the sections appropriate and easy to understand. The findings of Phase Two strengthened the content validity of the developed questionnaire and progressed the feasibility of conducting the next phase of this study (Phase Three) that will be undertaken as postdoctoral research.

The preliminary findings at Timepoint 1 (baseline) suggest fair knowledge, good attitude and fair practices towards CV health in the community. Thematic analysis of the open-ended questions also identified three themes for CV health promotion and disease prevention for this community: Managing Health Together, Recognising Barriers to CV Health and Targeted CV Health Promotion. Overall, the preliminary findings of Phase Two contribute in several ways to our understanding of the Fijian Indian community and provide insight into new strategies and ways to promote CV health and disease prevention in the community.

Figure 7.1 illustrates the process and development of the study and its findings.

Figure 7.1

Quorum Flowchart of the Current Study
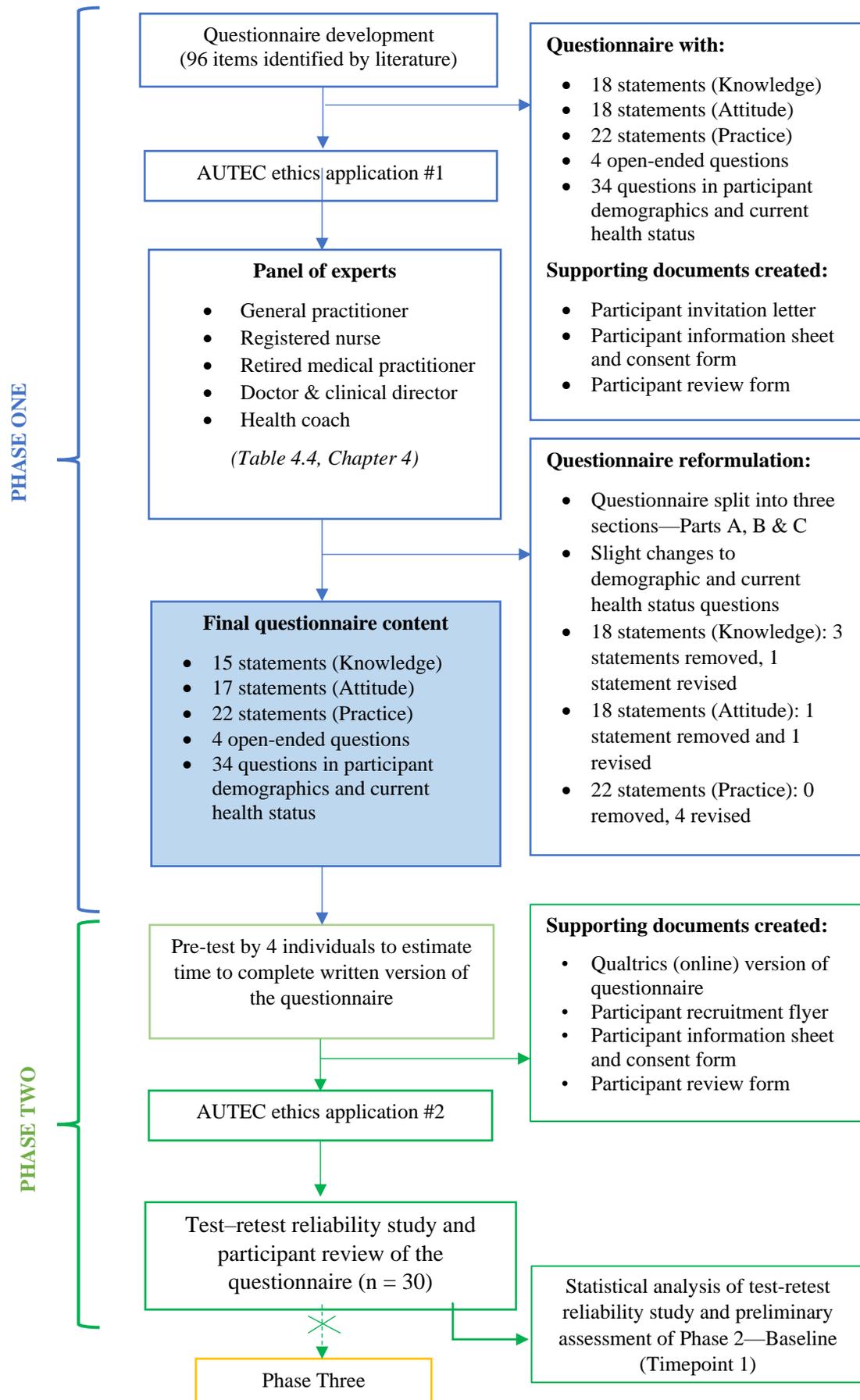
7.2 Future Research and Directions

A natural progression of this research is to analyse the construct validity of this questionnaire in a larger sample population (Phase Three). As a critical part of questionnaire development, this process ensures the construct measures what it is intended to measure and produces accurate and reliable results. This would involve first calculating an appropriate sample size based on the current population size, confidence level and margin of error (Cochran, 1977; Machaalani et al., 2022; Qualtrics, 2022b). The next phase will also need to consider recruiting additional participants to compensate for any incomplete data (Sakpal, 2010). Similarly, research assistants may be needed to recruit members of the community at local community events, temples etc (AshaRani et al., 2020; Hertz et al., 2019; Koohi et al., 2021; Vaidya et al., 2013). The expert advisory team that has been supporting this research will be consulted regarding guidance on the appropriate research assistants within the local Fijian Indian community. Steps will also be taken to ensure people with limited or no access to the internet or electronic devices are able to participate in the next phase of this study.

A common method of assessing the construct validity of a KAP questionnaire is to run a factor analysis, notably an exploratory factor analysis (Guad et al., 2021). This method is used by researchers to analyse whether a certain set of items (questions) measure and belong to an intended construct. It can also be used to explore the dimensionality, or factor structure, of the developed questionnaire (Knekta et al., 2019). Similarly, the internal consistency (Cronbach's alpha) of a questionnaire can be determined with a larger sample size. During Phase Three, the oversight and support of a biostatistician will be essential.

The findings from this larger study will have several important implications including the potential to inform migrant health policy makers and educate health professionals. Thus, a community presentation to the local Fijian Indian community of

the findings and focus group session following Phase Three would be beneficial. This community engagement session could help clarify any discrepancies in the data and explore the community's views on the study findings. More broadly, further research will also be needed to determine how these findings can inform and continue to support the current *NZ Health Strategy* and principles of the Ottawa Charter.

A key focus of the new NZ health system (Te Whatu Ora—Health NZ) is to deliver a better health system for all New Zealanders. However, the NZ health system has failed to prioritise and address the health needs of Asian and other ethnic minority migrant populations. The Fijian Indian community is a growing and significant migrant population that is under-represented in the current NZ health system. A greater emphasis on the health needs of this migrant community (and other ethnic migrant groups) is not only essential for developing health services, reducing the burden of chronic disease, and improving outcomes but for strengthening and diversifying the focus of the reformed NZ health system. Understanding the level of KAP towards CV health in this community creates the opportunity for novel interventions and targeted health promotion strategies to be developed. More importantly, it highlights the importance of health promotion and health seeking behaviours in the community, which can encourage members to take an active role in learning more about their CV health, risk factors and wellbeing. At this stage, the findings of this study represent a first step toward providing more targeted support for better CV health outcomes for this growing and significant migrant population.

References

Abdulkader Mohamed, R., Abdul Rahim, N. A., Mohamad, S. M., & Ahmad Yusof, H. (2022). Validity and reliability of knowledge, attitude, and practice regarding exercise and exergames experiences questionnaire among high school students. *BMC Public Health*, 22(1), 1743. https://doi.org/10.1186/s12889-022-14147-z

Abraham, C., & Sheeran, P. (2015). The Health Belief Model. In EBOOK: Predicting and Changing Health Behaviour: Research and Practice with Social Cognition Models (Vol. 2). McGraw-Hill Education.

Accident Compensation Corporation. (2021). *What we cover*. https://www.acc.co.nz/im-injured/what-we-cover/

Addo, M. K., Aboagye, R. G., & Tarkang, E. E. (2022). Factors influencing adherence to antiretroviral therapy among HIV/AIDS patients in the Ga West Municipality, Ghana. *IJID Regions*, 3, 218–225. https://doi.org/10.1016/j.ijregi.2022.04.009

Adedini, S. A., Babalola, S., Ibeawuchi, C., Omotoso, O., Akiode, A., & Odeku, M. (2018). Role of religious leaders in promoting contraceptive use in Nigeria: Evidence from the Nigerian Urban Reproductive Health Initiative. *Global Health, Science & Practice*, 6(3), 500–514. https://doi.org/10.9745/GHSP-D-18-00135

Aditama, L., Rahmawati, D., Parfati, N., & Susilo, A. P. (2015). Cardiovascular disease risk and barriers to physical activity. *The Indonesian Biomedical Journal*, 7, 43. https://doi.org/10.18585/inabj.v7i1.21

Advameg Inc. (2021). *Culture of Fiji. Countries and their cultures.* https://www.everyculture.com/Cr-Ga/Fiji.html

Akil, L., & Ahmad, H. A. (2011). Relationships between obesity and cardiovascular diseases in four southern states and Colorado. *Journal of Health Care for the Poor & Underserved*, 22(4 Suppl), 61–72. https://doi.org/10.1353/hpu.2011.0166

Akonor, P. Y., Ayanore, M. A., Anaman-Torgbor, J. A., & Tarkang, E. E. (2021). Psychosocial factors influencing contraceptive use among adolescent mothers in the Volta region of Ghana: Application of the Health Belief Model. *African Health Sciences*, 21(4), 1849–1859. https://doi.org/10.4314/ahs.v21i4.43

Alhaj, S. (2018). *KAP Surveys: How to develop knowledge, attitude and practice survey*. https://www.linkedin.com/pulse/kap-survey-how-develop-knowledge-attitude-practice-alhaj-/

Ali, A. (1977). Aspects of Fiji Indian history, 1879–1939: A society in transition: II. *Economic & Political Weekly*, 12(43), 1821–1830.

Ali, P. (2021). Places of worship can be health promotion spaces for faith-based black, Asian and minority ethnic (BAME) communities. *Evidence Based Nursing*, 24(1), 26. https://doi.org/10.1136/ebnurs-2019-103140

Alidu, L., & Grunfeld, E. A. (2018). A systematic review of acculturation, obesity and health behaviours among migrants to high-income countries. *Psychology & Health*, 33(6), 724–745. https://doi.org/10.1080/08870446.2017.1398327

Al-lela, O. Q. B., Bahari, M. B., Al-abbassi, M. G., & Basher, A. Y. (2011). Development of a questionnaire on knowledge, attitude and practice about immunization among Iraqi parents. *Journal of Public Health*, 19(6), 497–503. https://doi.org/10.1007/s10389-011-0411-9

Almaghaslah, D., Almanasef, M., Vasudevan, R., Kandasamy, G., Venkatesan, K., Batool, S., Alqadi, K. A., Alshehri, R. D., & Alasmari, S. Awdhah. (2021). Community pharmacists' knowledge, attitude and practice of oral health care in Asir region, Kingdom of Saudi Arabia. International Journal of Dental Hygiene, 20(4), 732–738. https://doi.org/10.1111/idh.12559

Al-Mawali, A. (2015). Non-communicable diseases: Shining a light on cardiovascular disease, Oman's biggest killer. *Oman Medical Journal*, *30*(4), 227–228. PubMed. https://doi.org/10.5001/omj.2015.47

Amdemariam, L. K., Watumo, A. M., Sibamo, E. L., & Agide, F. D. (2022). Perception towards cardiovascular diseases preventive practices among bank workers in Hossana town using the Health Belief Model. *PloS One*, *17*(2), e0264112. https://doi.org/10.1371/journal.pone.0264112

Aminde, L. N., Takah, N., Ngwasiri, C., Noubiap, J. J., Tindong, M., Dzudie, A., & Veerman, J. L. (2017). Population awareness of cardiovascular disease and its risk factors in Buea, Cameroon. *BMC Public Health*, *17*(1), 545. https://doi.org/10.1186/s12889-017-4477-3

Amini, M., Zayeri, F., & Salehi, M. (2021). Trend analysis of cardiovascular disease mortality, incidence, and mortality-to-incidence ratio: Results from Global Burden of Disease Study 2017. *BMC Public Health*, *21*(1), 401. https://doi.org/10.1186/s12889-021-10429-0

An, S., & Song, R. (2020). Effects of health coaching on behavioral modification among adults with cardiovascular risk factors: Systematic review and meta-analysis. *Patient Education & Counseling*, *103*(10), 2029–2038. https://doi.org/10.1016/j.pec.2020.04.029

Andrade, C., Menon, V., Ameen, S., & Kumar Praharaj, S. (2020). Designing and conducting knowledge, attitude, and practice surveys in psychiatry: Practical guidance. *Indian Journal of Psychological Medicine*, *42*(5), 478–481. https://doi.org/10.1177/0253717620946111

Andsoy, I. I., Sevinc Tastan, R., Emine Iyigun, R., & Kopp, L. R. (2015). Knowledge and attitudes towards cardiovascular disease in a population of North Western Turkey: A cross-sectional survey. International Journal of Caring Sciences, 8(1), 115.

Angus, N., Patience, F., Maclean, E., Corrigall, H., Bradbury, I., Thompson, D. R., Atherton, I., & Leslie, S. J. (2012). Cardiac misconceptions in healthcare workers. *European Journal of Cardiovascular Nursing*, *11*(4), 396–401. https://doi.org/10.1016/j.ejcnurse.2011.01.004

Anshel, M. H., & Smith, M. (2014). The role of religious leaders in promoting healthy habits in religious institutions. *Journal of Religion & Health*, *53*(4), 1046–1059. https://doi.org/10.1007/s10943-013-9702-5

Arafa, A., Lee, H.-H., Eshak, E. S., Shirai, K., Liu, K., Li, J., Anni, N. S., Shim, S. Y., Kim, H. C., & Iso, H. (2021). Modifiable risk factors for cardiovascular disease in Korea and Japan. *Korean Circulation Journal*, *51*(8), 643–655. https://doi.org/10.4070/kcj.2021.0121

Arija, V., Villalobos, F., Pedret, R., Vinuesa, A., Timón, M., Basora, T., Aguas, D., Basora, J., & Pas-a-Pas research group. (2017). Effectiveness of a physical activity program on cardiovascular disease risk in adult primary health-care users: The 'Pas-a-Pas' community intervention trial. *BMC Public Health*, *17*(1), 576–576. PubMed. https://doi.org/10.1186/s12889-017-4485-3

Arikan, I., Metintaş, S., Kalyoncu, C., & Yildiz, Z. (2009). The cardiovascular disease risk factors knowledge level (CARRF-KL) scale: A validity and reliability study. Turk Kardiyoloji Dernegi Arsivi: Turk Kardiyoloji Derneginin Yayin Organidir, 37(1), 35–40.

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Armstrong, T., Cohen, M., Eriksen, L., & Cleeland, C. (2005). Content Validity of Self-Report Measurement Instruments: An Illustration From the Development of the

Brain Tumor Module of the M.D. Anderson Symptom Inventory. Oncology Nursing Forum, 32, 669–676. https://doi.org/10.1188/05.ONF.669-676

Arnett, D. K., Blumenthal, R. S., Albert, M. A., Buroker, A. B., Goldberger, Z. D., Hahn, E. J., Himmelfarb, C. D., Khera, A., Lloyd-Jones, D., McEvoy, J. W., Michos, E. D., Miedema, M. D., Muñoz, D., Smith, S. C., Virani, S. S., Williams, K. A., Yeboah, J., & Ziaeian, B. (2019). 2019 ACC/AHA guideline on the primary prevention of cardiovascular disease: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation*, *140*(11), e596–e646. https://doi.org/10.1161/CIR.0000000000000678

Artino, A. R., La Rochelle, J. S., Dezee, K. J., & Gehlbach, H. (2014). Developing questionnaires for educational research: AMEE Guide No. 87. Medical Teacher, 36(6), 463–474. https://doi.org/10.3109/0142159X.2014.889814

AshaRani, P., Abdin, E., Kumarasan, R., Siva Kumar, F. D., Shafie, S., Jeyagurunathan, A., Chua, B. Y., Vaingankar, J. A., Fang, S. C., Lee, E. S., Van Dam, R., Chong, S. A., & Subramaniam, M. (2020). Study protocol for a nationwide knowledge, attitudes and practices (KAP) survey on diabetes in Singapore's general population. *BMJ Open*, *10*(6), e037125. https://doi.org/10.1136/bmjopen-2020-037125

Asian Health Reform Advisory Group. (2022). *Recommendations on the health system reform for Asian and ethnic communities in Aotearoa*. Public Health Association New Zealand.

Awad, A., & Al-Nafisi, H. (2014). Public knowledge of cardiovascular disease and its risk factors in Kuwait: A cross-sectional survey. BMC Public Health, 14(1), 1–11.

Azraii, A. B., Ramli, A. S., Ismail, Z., Abdul-Razak, S., Badlishah-Sham, S. F., Mohd-Kasim, N. A., Ali, N., Watts, G. F., & Nawawi, H. (2021). Validity and reliability of an adapted questionnaire measuring knowledge, awareness and practice regarding familial hypercholesterolaemia among primary care physicians in Malaysia. *BMC Cardiovascular Disorders*, *21*(1), 39. https://doi.org/10.1186/s12872-020-01845-y

Bader, A., Musshauser, D., Sahin, F., Bezirkan, H., & Hochleitner, M. (2006). The Mosque Campaign: A cardiovascular prevention program for female Turkish immigrants. *Wiener Klinische Wochenschrift*, *118*(7), 217. https://doi.org/10.1007/s00508-006-0587-0

Balegha, A. N., Yidana, A., & Abiiro, G. A. (2021). Knowledge, attitude and practice of hepatitis B infection prevention among nursing students in the Upper West Region of Ghana: A cross-sectional study. *PloS One*, *16*(10), e0258757.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Barz, R. K., & Siegel, J. (1988). *Language transplanted: The development of overseas Hindi* (Vol. 1). Otto Harrassowitz Verlag.

Becker, M. H. (1974). The Health Belief Model and sick role behavior. *Health Education Monographs*, *2*(4), 409–419. https://doi.org/10.1177/109019817400200407

Bergman, H. E., Reeve, B. B., Moser, R. P., Scholl, S., & Klein, W. M. (2011). Development of a comprehensive heart disease knowledge questionnaire. American Journal of Health Education, 42(2), 74–87.

Betancourt, J. R., Green, A. R., & Carrillo, J. E. (2002). *Cultural competence in health care: Emerging frameworks and practical approaches* (Vol. 576).

Commonwealth Fund, Quality of Care for Underserved Populations New York, NY.

Blair, Y., Macpherson, L., McCall, D., & McMahon, A. (2006). Dental health of 5-year-olds following community-based oral health promotion in Glasgow, UK. *International Journal of Paediatric Dentistry*, *16*(6), 388–398.

Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *The Nigerian Postgraduate Medical Journal*, *22*(4), 195–201. https://doi.org/10.4103/1117-1936.173959

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological. (pp. 57–71). American Psychological Association. https://doi.org/10.1037/13620-004

Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. Sage.

Brayne, C., Gill, C., Huppert, F. A., Barkley, C., Gehlhaar, E., Girling, D. M., O'Connor, D. W., & Paykel, E. S. (1995). Incidence of Clinically Diagnosed Subtypes of Dementia in an Elderly Population: Cambridge Project for Later Life. British Journal of Psychiatry, 167(2), 255–262. Cambridge Core. https://doi.org/10.1192/bjp.167.2.255

Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. Guilford Publications.

Bu, F., Steptoe, A., & Fancourt, D. (2021). Relationship between loneliness, social isolation and modifiable risk factors for cardiovascular disease: A latent class analysis. *Journal of Epidemiology & Community Health*, *75*(8), 749. https://doi.org/10.1136/jech-2020-215539

Buelow, M. (2020). *Risky decision making in psychological disorders*. Academic Press.

Byrnes, J., Elliott, T., Vale, M. J., Jelinek, M. V., & Scuffham, P. (2018). Coaching patients saves lives and money. *The American Journal of Medicine*, *131*(4), 415–421.e1. https://doi.org/10.1016/j.amjmed.2017.10.019

Callary, S. A., Solomon, L. B., Holubowycz, O. T., Campbell, D. G., Munn, Z., & Howie, D. W. (2015). Wear of highly crosslinked polyethylene acetabular components: A review of RSA studies. *Acta Orthopaedica*, *86*(2), 159–168.

Cammock, R., Tonumaipe'a, D., Conn, C., Sa'uLilo, L., Tautolo, E.-S., & Nayar, S. (2021). From individual behaviour strategies to sustainable food systems: Countering the obesity and non communicable diseases epidemic in New Zealand. *Health Policy*, *125*(2), 229–238. https://doi.org/10.1016/j.healthpol.2020.12.001

Carpenter, C. J. (2010). A meta-analysis of the effectiveness of Health Belief Model variables in predicting behavior. *Health Communication*, *25*(8), 661–669. https://doi.org/10.1080/10410236.2010.521906

Carrington, M. J., Retegan, C., Johnston, C. I., Jennings, G. L., & Stewart, S. (2009). Cholesterol complacency in Australia: Time to revisit the basics of cardiovascular disease prevention. *Journal of Clinical Nursing*, *18*(5), 678–686. https://doi.org/10.1111/j.1365-2702.2008.02507.x

Carter, K., Cornelius, M., Taylor, R., Ali, S. S., Rao, C., Lopez, A. D., Lewai, V., Goundar, R., & Mowry, C. (2011). Mortality trends in Fiji. *Australian & New Zealand Journal of Public Health*, *35*(5), 412–420.

Caruso, C. (2006). Possible broad impacts of long work hours. *Industrial Health*, *44*, 531–536. https://doi.org/10.2486/indhealth.44.531

Castellano, J. M., Narula, J., Castillo, J., & Fuster, V. (2014). Promoting cardiovascular health worldwide: Strategies, challenges, and opportunities. *Revista Española de Cardiología (English Edition)*, *67*(9), 724–730. https://doi.org/10.1016/j.rec.2014.01.023

Centers for Disease Control and Prevention. (2010). *How tobacco smoke causes disease: The biology and behavioral basis for smoking-attributable disease: A report of the surgeon general*.

Centers for Disease Control and Prevention. (2014). *Smoking and cardiovascular disease*. https://www.cdc.gov/tobacco/data_statistics/sgr/50th-anniversary/pdfs/fs_smoking_CVD_508.pdf

Challen, K., Lee, A. C., Booth, A., Gardois, P., Woods, H. B., & Goodacre, S. W. (2012). Where is the evidence for emergency planning: A scoping review. *BMC Public Health*, *12*(1), 1–7.

Chan, W. C., Jackson, G., & Papa, D. (2010). *Health care costs related to cardiovascular disease and diabetes in CMDHB in 2008*. Counties Manukau District Health Board.

Chan, W. C., Wright, C., Riddell, T., Wells, S., Kerr, A. J., Gala, G., & Jackson, R. (2008). Ethnic and socioeconomic disparities in the prevalence of cardiovascular disease in New Zealand. *The New Zealand Medical Journal*, *121*(1285), 11–20. PubMed.

Chand, S. S., Singh, B., & Kumar, S. (2020). The economic burden of non-communicable disease mortality in the South Pacific: Evidence from Fiji. *PloS One*, *15*(7), e0236068. https://doi.org/10.1371/journal.pone.0236068

Chang, J. T., Anic, G. M., Rostron, B. L., Tanwar, M., & Chang, C. M. (2021). Cigarette smoking reduction and health risks: A systematic review and meta-analysis. *Nicotine & Tobacco Research*, *23*(4), 635–642. https://doi.org/10.1093/ntr/ntaa156

Chareonrungrueangchai, K., Wongkawinwoot, K., Anothaisintawee, T., & Reutrakul, S. (2020). Dietary factors and risks of cardiovascular diseases: An umbrella review. *Nutrients*, *12*(4), 1088. https://doi.org/10.3390/nu12041088

Chaudhry, R., Miao, J. H., & Rehman, A. (2021). Physiology, cardiovascular. In *StatPearls* [Internet]. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK493197/?report=classic

Chen, X., Zhao, S., Hsue, C., Dai, X., Liu, L., Miller, J. D., Fang, Z., Feng, J., Huang, Y., & Wang, X. (2021). Effects of aerobic training and resistance training in reducing cardiovascular disease risk for patients with prediabetes: A multi-center randomized controlled trial. *Primary Care Diabetes*, *15*(6), 1063–1070.

Cheng, H.-C., Ke, L.-S., Chang, S.-Y., Huang, H.-Y., Ku, Y.-C., & Lee, M.-J. (2022). Knowledge, attitudes, and behavioral intentions of elderly individuals regarding advance care planning: Questionnaire development and testing. *PloS One*, *17*(7), e0272351–e0272351. https://doi.org/10.1371/journal.pone.0272351

Chiva-Blanch, G., & Badimon, L. (2019). Benefits and Risks of Moderate Alcohol Consumption on Cardiovascular Disease: Current Findings and Controversies. Nutrients, 12(1), 108. PubMed. https://doi.org/10.3390/nu12010108

Choi, S., Chang, J., Kim, K., Kim, S. M., Koo, H.-Y., Cho, M. H., Cho, I. Y., Lee, H., Son, J. S., Park, S. M., & Lee, K. (2020). Association of smoking cessation after atrial fibrillation diagnosis on the risk of cardiovascular disease: A cohort study of South Korean men. *BMC Public Health*, *20*(1), 168. https://doi.org/10.1186/s12889-020-8275-y

Çitak Bilgin, N., Coşkuner Potur, D., & Yildirim, G. (2022). Does group education affect mothers' knowledge and attitudes towards the HPV vaccine? *Health Care for Women International*, *43*(6), 686–704. https://doi.org/10.1080/07399332.2021.1982945

Claas, S. A., & Arnett, D. K. (2016). The role of healthy lifestyle in the primordial prevention of cardiovascular disease. *Current Cardiology Reports*, *18*(6), 56. https://doi.org/10.1007/s11886-016-0728-7

Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). John Wiley & Sons.

Coe, C., & Boardman, S. (2008). From temple to table: An innovative community health and lifestyle intervention aimed at a South Asian community. *Ethnicity & Inequalities in Health & Social Care*, *1*(2), 44–51. https://doi.org/10.1108/17570980200800020

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155–159. https://doi.org/10.1037//0033-2909.112.1.155

Collins, D. (2003). Pretesting survey instruments: An overview of cognitive methods. *Quality of Life Research*, *12*(3), 229–238. https://doi.org/10.1023/A:1023254226592

Colquhoun, H. L., Levac, D., O'Brien, K. K., Straus, S., Tricco, A. C., Perrier, L., Kastner, M., & Moher, D. (2014). Scoping reviews: Time for clarity in definition, methods, and reporting. *Journal of Clinical Epidemiology*, *67*(12), 1291–1294.

Coluci, M. Z. O., Alexandre, N. M. C., & Rosecrance, J. (2009). Reliability and validity of an ergonomics-related Job Factors Questionnaire. *International Journal of Industrial Ergonomics*, *39*(6), 995–1001. https://doi.org/10.1016/j.ergon.2009.08.011

Conner, M., & Norman, P. (2015). *EBOOK: Predicting and changing health behaviour: Research and practice with social cognition models*. McGraw-Hill Education. https://books.google.co.nz/books?id=pMkvEAAAQBAJ

Counties Manukau DHB. (2001). *Plan for chronic care management in counties Manukau 2001–6*. https://silo.tips/download/plan-for-chronic-care-management-in-counties-manukau

Curtis, E., Jones, R., Tipene-Leach, D., Walker, C., Loring, B., Paine, S.-J., & Reid, P. (2019). Why cultural safety rather than cultural competency is required to achieve health equity: A literature review and recommended definition. *International Journal for Equity in Health*, *18*(1), 1–17.

Cushman, P. (2008). Health promoting schools: A New Zealand perspective. *Pastoral Care in Education*, *26*(4), 231–241. https://doi.org/10.1080/02643940802472163

Cushman, P., & Clelland, T. (2012). Addressing health issues in New Zealand schools. *International Journal of Health Promotion & Education*, *50*(4), 159–168. https://doi.org/10.1080/14635240.2012.702504

D'Souza, E., Vandevijvere, S., & Swinburn, B. (2022). The healthiness of New Zealand school food environments: A national survey. *Australian & New Zealand Journal of Public Health*, *46*(3), 325–331. https://doi.org/10.1111/1753-6405.13210

Davey, A. F., Roberts, M. J., Mounce, L., Maramba, I., & Campbell, J. L. (2016). Test–retest stability of patient experience items derived from the national GP patient survey. *SpringerPlus*, *5*(1), 1755. https://doi.org/10.1186/s40064-016-3377-9

Davies, A., Mosca, D., & Frattini, C. (2010). Migration and health service delivery. *World Hospital Health Service*, *46*(3), 5–7.

Davis, L. L. (1992). Instrument review: Getting the most from a panel of experts. *Applied Nursing Research*, *5*(4), 194–197. https://doi.org/10.1016/S0897-1897(05)80008-4

de Silva, D. (2012). *Helping people share decision making*. The Health Foundation.

Dearie, C., Linhart, C., Rafai, E., Nand, D., Morrell, S., & Taylor, R. (2021). Trends in mortality and life expectancy in Fiji over 20 years. *BMC Public Health*, *21*(1), 1185. https://doi.org/10.1186/s12889-021-11186-w

Deaton, C., Froelicher, E. S., Wu, L. H., Ho, C., Shishani, K., & Jaarsma, T. (2011). The global burden of cardiovascular disease. *European Journal of Cardiovascular Nursing*, *10*(2_suppl), S5–S13. https://doi.org/10.1016/S1474-5151(11)00111-3

DeDonno, M. A., Longo, J., Levy, X., & Morris, J. D. (2022). Perceived susceptibility and severity of COVID-19 on prevention practices, early in the pandemic in the State of Florida. *Journal of Community Health*, *47*(4), 627–634. https://doi.org/10.1007/s10900-022-01090-8

Deng, H., Seelig, M. I., & Sun, L. Y. (2022). Understanding Chinese international students' perception of flu vaccination on U.S. college campuses. *Journal of American College Health*, 1–9. https://doi.org/10.1080/07448481.2022.2103381

Department of the Prime Minister and Cabinet. (2021a). *Our health and disability system*. https://dpmc.govt.nz/sites/default/files/2021-04/heallth-reform-white-paper-summary-apr21.pdf

Department of the Prime Minister and Cabinet. (2021b). *Our health and disability system: Factsheet*. https://dpmc.govt.nz/sites/default/files/2021-04/htu-factsheet-health-new-zealand-en-apr21.pdf

Deutskens, E., de ruyter, Ko, Wetzels, M., & Oosterveld, P. (2004). Response rate and response quality of internet-based surveys: An experimental study. *Marketing Letters*, *15*, 21–36. https://doi.org/10.1023/B:MARK.0000021968.86465.00

Devi, M. A. (2013). *The twice-migrants: Origins of the Indo-Fijian American identity in the East Bay (CA)* [Master's thesis, The California State University]. ScholarWorks. https://scholarworks.calstate.edu/concern/theses/t148fj06m?locale=en

Devine, C. M., Farrell, T. J., Blake, C. E., Jastran, M., Wethington, E., & Bisogni, C. A. (2009). Work conditions and the food choice coping strategies of employed parents. *Journal of Nutrition Education & Behavior*, *41*(5), 365–370. https://doi.org/10.1016/j.jneb.2009.01.007

Devkota, H. R., Sijali, T. R., Bogati, R., Clarke, A., Adhikary, P., & Karkee, R. (2021). How Does Public Knowledge, Attitudes, and Behaviors Correlate in Relation to COVID-19? A Community-Based Cross-Sectional Study in Nepal. Frontiers in Public Health, 8, 1–7.

Dillon, C., & Taragano, F. E. (2016). Activity and lifestyle factors in the elderly: Their relationship with degenerative diseases and depression. *AIMS Medical Science*, *3*(2), 213–216.

Douglas, H., Eti-Tofinga, B., & Singh, G. (2018). Contextualising social enterprise in Fiji. *Social Enterprise Journal*, *14*(2), 208–224. https://doi.org/10.1108/SEJ-05-2017-0032

Dowling, A., Kunin, M., & Russell, G. (2022). The impact of migration upon the perceived health of adult refugees resettling in Australia: A phenomenological study. *Journal of Ethnic & Migration Studies*, *48*(7), 1536–1553. https://doi.org/10.1080/1369183X.2020.1771173

Duber, H. C., McNellan, C. R., Wollum, A., Phillips, B., Allen, K., Brown, J. C., Bryant, M., Guptam, R. B., Li, Y., Majumdar, P., Roth, G. A., Thomson, B., Wilson, S., Woldeab, A., Zhou, M., & Ng, M. (2018). Public knowledge of

cardiovascular disease and response to acute cardiac events in three cities in China and India. *Heart*, *104*(1), 67. https://doi.org/10.1136/heartjnl-2017-311388

Ebbert, J. O., Elrashidi, M. Y., & Jensen, M. D. (2014). Managing overweight and obesity in adults to reduce cardiovascular disease risk. Current Atherosclerosis Reports, 16(10), 445–445. PubMed. https://doi.org/10.1007/s11883-014-0445-x

Eliasson, A., Kashani, M., & Vernalis, M. (2021). Results of a prospective cardiovascular disease prevention program. *Preventive Medicine Reports*, *22*, 101344. https://doi.org/10.1016/j.pmedr.2021.101344

Engelen, M. M., van Dulmen, S., Puijk-Hekman, S., Vermeulen, H., Nijhuis-van der Sanden, M. W., Bredie, S. J., & van Gaal, B. G. (2020). Evaluation of a web-based self-management program for patients with cardiovascular disease: Explorative randomized controlled trial. *Journal of Medical Internet Research*, *22*(7), e17422. https://doi.org/10.2196/17422

ESCAP Statistics Division. (2010). *Guidelines for cognitive and pilot testing of questions for use in surveys*. United Nations Economic and Social Commission for Asia Pacific Region. https://hdl.handle.net/20.500.12870/144

Escoto, K. H., Laska, M. N., Larson, N., Neumark-Sztainer, D., & Hannan, P. J. (2012). Work hours and perceived time barriers to healthful eating among young adults. *American Journal of Health Behavior*, *36*(6), 786–796. https://doi.org/10.5993/AJHB.36.6.6

Evans, D. (2008). Teaching patients to manage their asthma. In M. Castro & M. Kraft (Eds.), *Clinical asthma* (pp. 221–228). Mosby. https://doi.org/10.1016/B978-032304289-5.10025-6

Evason, N. (2016). Fijian culture. *The cultural atlas*. https://culturalatlas.sbs.com.au/fijian-culture/fijian-culture-business-culture

Falkner, B., & Lurbe, E. (2020). Primordial prevention of high blood pressure in childhood. *Hypertension*, *75*(5), 1142–1150. https://doi.org/10.1161/HYPERTENSIONAHA.119.14059

Fan, Y., Zhang, S., Li, Y., Li, Y., Zhang, T., Liu, W., & Jiang, H. (2018). Development and psychometric testing of the Knowledge, Attitudes and Practices (KAP) questionnaire among student Tuberculosis (TB) Patients (STBP-KAPQ) in China. BMC Infectious Diseases, 18(1), 213–213. PubMed. https://doi.org/10.1186/s12879-018-3122-9

Fernandez-Jimenez, R., Jaslow, R., Bansilal, S., Diaz-Munoz, R., Fatterpekar, M., Santana, M., Clarke-Littman, A., Latina, J., Soto, A. V., Hill, C. A., Al-Kazaz, M., Samtani, R., Vedanthan, R., Giannarelli, C., Kovacic, J. C., Bagiella, E., Kasarskis, A., Fayad, Z. A., & Fuster, V. (2019). Different Lifestyle Interventions in Adults From Underserved Communities: The FAMILIA Trial. Journal of the American College of Cardiology, 75(1), 42–56. https://doi.org/10.1016/j.jacc.2019.10.021

Fiji Bureau of Statistics. (2021). *Religion*. https://www.statsfiji.gov.fj/statistics/social-statistics/religion

Fiji Bureau of Statistics. (2022). Fiji Bureau of Statistics. Top Ten Causes of Mortality. https://www.statsfiji.gov.fj/statistics/social-statistics/major-causes-of-death.html

Fiji Girmit Foundation NZ. (2022). *Home* [Facebook Page]. https://www.facebook.com/FijiGirmitFoundationNz/

Fiji High Commission. (2021). *About Fiji*. http://www.fijihighcommission.org.uk/about_1.html

Flora, D. G., & Nayak, K. M. (2019). A brief review of cardiovascular diseases, associated risk factors and current treatment regimes. *Current Pharmaceutical*

Design, *25*(38), 4063–4084.
https://doi.org/10.2174/1381612825666190925163827

Ford, E. S., & Jones, D. H. (1991). Cardiovascular health knowledge in the United States: Findings from the National Health Interview Survey, 1985. *Preventive Medicine*, *20*(6), 725–736. https://doi.org/10.1016/0091-7435(91)90067-E

Frąk, W., Wojtasińska, A., Lisińska, W., Młynarska, E., Franczyk, B., & Rysz, J. (2022). Pathophysiology of cardiovascular diseases: New insights into molecular mechanisms of atherosclerosis, arterial hypertension, and coronary artery disease. *Biomedicines*, *10*(8), 1938. https://doi.org/10.3390/biomedicines10081938

Frieden, T. R., & Jaffe, M. G. (2018). Saving 100 million lives by improving global treatment of hypertension and reducing cardiovascular disease risk factors. *Journal of Clinical Hypertension*, *20*(2), 208–211. https://doi.org/10.1111/jch.13195

Fry, D., & Zask, A. (2017). Applying the Ottawa Charter to inform health promotion programme design. *Health Promotion International*, *32*(5), 901–912. https://doi.org/10.1093/heapro/daw022

Galesic, M., & Bosnjak, M. (2009). Effects of questionnaire length on participation and indicators of response quality in a web survey. *The Public Opinion Quarterly*, *73*(2), 349–360.

Gambling, T. S., & Long, A. F. (2021). Test–retest reliability and clinical and research validity of the 'Quality of Life Impact and Concerns' (QoLI&C) Measure. *Patient Related Outcome Measures*, *12*, 77–81. https://doi.org/10.2147/PROM.S303978

Gaziano, T. (2005). Cardiovascular disease in the developing world and its cost-effective management. *Circulation*, *112*(23), 3547–3553. https://doi.org/10.1161/CIRCULATIONAHA.105.591792

Gaziano, T., Reddy, K., Paccaud, F., Horton, S., & Chaturvedi, V. (2006). Chapter 33. Cardiovascular Disease. In D. T. Jamison, J. G. Breman, & A. R. Measham (Eds.), Disease Control Priorities in Developing Countries (2nd ed.). The International Bank for Reconstruction and Development / The World Bank, Washington (DC); Oxford University Press, New York. https://www.ncbi.nlm.nih.gov/books/NBK11767/

Geer, L. A., Curbow, B. A., Anna, D. H., Lees, P. S., & Buckley, T. J. (2006). Development of a questionnaire to assess worker knowledge, attitudes and perceptions underlying dermal exposure. *Scandinavian Journal of Work, Environment & Health*, *32*(3), 209–218.

Gerritsen, A., Bocquier, P., White, M., Mbacké, C., Alam, N., Beguy, D., Odhiambo, F., Sacoor, C., Dang Phuc, H., Punpuing, S., & A. Collinson, M. (2013). Health and demographic surveillance systems: Contributing to an understanding of the dynamics in migration and health. *Global Health Action*, *6*(1), 21496. https://doi.org/10.3402/gha.v6i0.21496

Gheorghe, A., Griffiths, U., Murphy, A., Legido-Quigley, H., Lamptey, P., & Perel, P. (2018). The economic burden of cardiovascular disease and hypertension in low- and middle-income countries: A systematic review. *BMC Public Health*, *18*(1), 975. https://doi.org/10.1186/s12889-018-5806-x

Gillion, K. L. (1958). A history of Indian immigration and settlement in Fiji [Doctoral thesis, The Australian National University]. Australian National University Open Research Library. https://openresearch-repository.anu.edu.au/handle/1885/16380

Glanz, K. (2001). Current theoretical bases for nutrition intervention and their uses. In A. M. Coulston, C. L. Rock, & E. R. Monsen (Eds.), *Nutrition in the prevention*

and treatment of disease (pp. 83–93). Academic Press. https://doi.org/10.1016/B978-012193155-1/50008-8

Glanz, K., Rimer, B. K., & Viswanath, K. (2008). *Health behavior and health education: Theory, research, and practice*. John Wiley & Sons.

Gomes, L., Liébana-Presa, C., Araújo, B., Marques, F., & Fernández-Martínez, E. (2021). Heart disease, now what? Improving quality of life through education. *International Journal of Environmental Research & Public Health*, *18*(6), 3077. PubMed. https://doi.org/10.3390/ijerph18063077

Grey, C., Jackson, R., Wells, S., Wu, B., Poppe, K., White, H., Chan, W. C., & Kerr, A. J. (2018). First and recurrent ischaemic heart disease events continue to decline in New Zealand, 2005–2015. *Heart*, *104*(1), 51. https://doi.org/10.1136/heartjnl-2017-311613

Grey, C., Wells, S., Riddell, T., Kerr, A., Gentles, D., Pylypchuk, R., Marshall, R., Ameratunga, S., Drury, P., & Elley, C. R. (2010). A comparative analysis of the cardiovascular disease risk factor profiles of Pacific peoples and Europeans living in New Zealand assessed in routine primary care: PREDICT CVD-11. *New Zealand Medical Journal*, *123*(1309), 62–75.

Grinberg, K., & Sela, Y. (2021). What Affects Maternal Response to Measles Vaccinations? Examining the Health Beliefs Model (HBM). Sci, 3(20), 1–12. https://doi.org/10.3390/sci3020020

Guad, R. M., Mangantig, E., Low, W. Y., Taylor-Robinson, A. W., Azzani, M., Sekaran, S. D., Sim, M. S., & Azizan, N. (2021). Development and validation of a structured survey questionnaire on knowledge, attitude, preventive practice, and treatment-seeking behaviour regarding dengue among the resident population of Sabah, Malaysia: An exploratory factor analysis. *BMC Infectious Diseases*, *21*(1), 893. https://doi.org/10.1186/s12879-021-06606-6

Gürol, S., & Turfan, E. C. (2019). The effects of migration on women's health and reproductive health in Turkey. *Nursing Journal*, *10*, 37–42.

Gyaneshwar, R., Naidu, S., Raban, M. Z., Naidu, S., Linhart, C., Morrell, S., Tukana, I., & Taylor, R. (2016). Absolute cardiovascular risk in a Fiji medical zone. BMC Public Health, 16(1), 1–9.

Haase, C. L., Lopes, S., Olsen, A. H., Satylganova, A., Schnecke, V., & McEwan, P. (2021). Weight loss and risk reduction of obesity-related outcomes in 0.5 million people: Evidence from a UK primary care database. *International Journal of Obesity*, *45*(6), 1249–1258. https://doi.org/10.1038/s41366-021-00788-4

Hajar, R. (2017). Risk factors for coronary artery disease: Historical perspectives. *Heart Views*, *18*(3), 109–114. https://doi.org/10.4103/HEARTVIEWS.HEARTVIEWS_106_17

Handtke, O., Schilgen, B., & Mösko, M. (2019). Culturally competent healthcare—A scoping review of strategies implemented in healthcare organizations and a model of culturally competent healthcare provision. *PloS One*, *14*(7), e0219971. https://doi.org/10.1371/journal.pone.0219971

Hardcastle, S. J., Hancox, J., Hattar, A., Maxwell-Smith, C., Thøgersen-Ntoumani, C., & Hagger, M. S. (2015). Motivating the unmotivated: How can health behavior be changed in those unwilling to change? *Frontiers in Psychology*, *6*, 835. https://doi.org/10.3389/fpsyg.2015.00835

Harfield, S. G., Davy, C., McArthur, A., Munn, Z., Brown, A., & Brown, N. (2018). Characteristics of Indigenous primary health care service delivery models: A systematic scoping review. *Globalization & Health*, *14*(1), 1–11.

Harrison, R., Walton, M., Chitkara, U., Manias, E., Chauhan, A., Latanik, M., & Leone, D. (2020). Beyond translation: Engaging with culturally and linguistically

diverse consumers. *Health Expectations*, *23*(1), 159–168. https://doi.org/10.1111/hex.12984

Harrold, L., Mazor, K., Peterson, D., Naz, N., Firneno, C., & Yood, R. (2012). Patients knowledge and beliefs concerning gout and its treatment: A population based study. *BMC Musculoskeletal Disorders*, *13*, 180. https://doi.org/10.1186/1471-2474-13-180

Health Navigator. (2021). Pacific models of health. https://www.healthnavigator.org.nz/healthy-living/p/pacific-models-of-health/

Health Quality & Safety Commission New Zealand. (2020). *Updated data shows cost the main barrier to accessing health services*. https://www.hqsc.govt.nz/news/updated-data-shows-cost-the-main-barrier-to-accessing-health-services/#:~:text=other%20ethnic%20groups.-,',those%20aged%20under%2065%20years.

Health Quality and Safety Commission New Zealand. (2021). *Cultural safety and cultural competence*. https://www.hqsc.govt.nz/our-programmes/patient-safety-day/previous-psw-campaigns/psw-2019/cultural-safety-and-cultural-competence/

Health Screening NZ. (2022). *CardiAction*. https://www.healthscreeningnz.com/

Helou, M. A., DiazGranados, D., Ryan, M. S., & Cyrus, J. W. (2020). Uncertainty in decision-making in medicine: A scoping review and thematic analysis of conceptual models. *Academic Medicine: Journal of the Association of American Medical Colleges*, *95*(1), 157.

Hertz, J. T., Sakita, F. M., Manavalan, P., Mmbaga, B. T., Thielman, N. M., & Staton, C. A. (2019). Knowledge, attitudes, and preventative practices regarding ischemic heart disease among emergency department patients in northern Tanzania. *Public Health*, *175*, 60–67.

Hessler, D. M., Fisher, L., Polonsky, W. H., Bowyer, V., & Potter, M. (2018). Motivation and attitudes toward changing health (MATCH): A new patient-reported measure to inform clinical conversations. *Journal of Diabetes & Its Complications*, *32*(7), 665–669. https://doi.org/10.1016/j.jdiacomp.2018.04.009

Hines, D., Modi, N., Lee, S. K., Isayama, T., Sjörs, G., Gagliardi, L., Lehtonen, L., Vento, M., Kusuda, S., & Bassler, D. (2017). Scoping review shows wide variation in the definitions of bronchopulmonary dysplasia in preterm infants and calls for a consensus. *Acta Paediatrica*, *106*(3), 366–374.

Hogan, S., & Siddharth, P. (2020). The social and economic costs of stroke in New Zealand (pp. 1–109). New Zealand Institute of Economic Research. https://www.think-asia.org/bitstream/handle/11540/12343/social_and_economic_costs_of_stroke_-_2020_update.pdf?sequence=1

Hohwü, L., Lyshol, H., Gissler, M., Jonsson, S. H., Petzold, M., & Obel, C. (2013). Web-based versus traditional paper questionnaires: A mixed-mode survey with a Nordic perspective. *Journal of Medical Internet Research*, *15*(8), e173–e173. PubMed. https://doi.org/10.2196/jmir.2595

Homko, C. J., Santamore, W. P., Zamora, L., Shirk, G., Gaughan, J., Cross, R., Kashem, A., Petersen, S., & Bove, A. A. (2008). Cardiovascular disease knowledge and risk perception among underserved individuals at increased risk of cardiovascular disease. *Journal of Cardiovascular Nursing*, *23*(4), 332–337. PubMed. https://doi.org/10.1097/01.jcn.0000317432.44586.aa

Hooper, C., Hardie-Boys, N., White, E., Marwick, J., Cumming, J., McDonald, J., Wilson, D., & Mann, S. (2016). *More heart and diabetes checks evaluation*. Ministry of Health.

Hopoi, N., & Nosa, V. (2020). A qualitative study of the role of Samoan Church ministers in health literacy messages and health promotion in Auckland, New Zealand. Australian and New Zealand Journal of Public Health, 44, 404–409. https://doi.org/10.1111/1753-6405.13027

Hoque, M., Buckus, S., Nunan, N., Hoque, M., Hoque, M., & Van Hal, G. (2020). Knowledge, Attitudes, Practices and Blood Pressure Control of Hypertensive Patients at a South African Primary Health Care Centre. Cardiovascular Disorder and Medicine, 2(1), 1–8. https://doi.org/10.31487/j.CDM.2020.01.06

Hotkar, A. J., & Balinsky, W. (2012). Stem cells in the treatment of cardiovascular disease—An overview. *Stem Cell Reviews & Reports*, *8*(2), 494–502. https://doi.org/10.1007/s12015-011-9302-2

Hu, L., Sae-Sia, W., & Kitrungrote, L. (2021). Intensive care nurses' knowledge, attitude, and practice of pressure injury prevention in China: A cross-sectional study. *Risk Management & Healthcare Policy*, *14*, 4257.

Hu, S., Xiong, R., Hu, Q., & Li, Q. (2022). Effects of nursing intervention based on health belief model on self-perceived burden, drug compliance, and quality of life of renal transplant recipients. *Contrast Media & Molecular Imaging*, *2022*, 3001780. https://doi.org/10.1155/2022/3001780

Hugick, L., & Best, J. (Eds.). (2022). Questionnaire Length. In Encyclopedia of Survey Research Methods (Vol. 1–0, pp. 660–660). Sage Publications, Inc. https://doi.org/10.4135/9781412963947

Hulin, C., Netemeyer, R., & Cudeck, R. (2001). Can a reliability coefficient be too high? *Journal of Consumer Psychology*, *10*, 55–58. https://doi.org/10.2307/1480474

Hundt, M. (2019). 'My language, my identity': Negotiating language use and attitudes in the New Zealand Fiji Indian diaspora. *Asian Englishes*, *21*(1), 2–21. https://doi.org/10.1080/13488678.2018.1463148

Hyman, L., Lamb, J., & Bulmer, M. (2006). The use of pre-existing survey questions: Implications for data quality. Proceedings of the European Conference on Quality in Survey Statistics, 1–8. https://ec.europa.eu/eurostat/documents/64157/4374310/22-Use-of-pre-existing-survey-questions-implications-for-data-quality-2006.pdf/e953a39e-50be-40b3-910f-6c0d83f55ed4

Ibrahim, M. M., Rahman, N. A. A., Rahman, N. I. A., & Haque, M. (2016). Knowledge, attitude and practice of Malaysian public university students on risk factors for cardiovascular diseases. J Appl Pharm Sci, 6(02), 056–063.

Indian Newslink. (2020, May 1). *Lest we forget: Girmit Anniversary*. https://indiannewslink.co.nz/lest-we-forget-girmit-anniversary/

Islam, N., & Patel, S. (2018). Best practices for partnering with ethnic minority-serving religious organizations on health promotion and prevention. *AMA Journal of Ethics*, *20*(7), E643–E654. PubMed. https://doi.org/10.1001/amajethics.2018.643

Jafary, F. H., Aslam, F., Mahmud, H., Waheed, A., Shakir, M., Afzal, A., Qayyum, M. A., Akram, J., Khan, I. S., & Haque, I. U. (2005). Cardiovascular health knowledge and behavior in patient attendants at four tertiary care hospitals in Pakistan—A cause for concern. *BMC Public Health*, *5*(1), 124. https://doi.org/10.1186/1471-2458-5-124

Janz, N. K., & Becker, M. H. (1984). The Health Belief Model: A decade later. *Health Education Quarterly*, *11*(1), 1–47. https://doi.org/10.1177/109019818401100101

Jatrana, S., & Crampton, P. (2021). Do financial barriers to access to primary health care increase the risk of poor health? Longitudinal evidence from New Zealand.

Social Science & Medicine, *288*, 113255.
https://doi.org/10.1016/j.socscimed.2020.113255

Jensen, R. V., Hjortbak, M. V., & Bøtker, H. E. (2020). Ischemic heart disease: An update. *Developments in Cardiac Imaging, Part 1*, *50*(3), 195–207. https://doi.org/10.1053/j.semnuclmed.2020.02.007

Jiwani, R., Gerry, S., & Patel, D. (2018). A review of culturally tailored interventions to reduce cardiovascular disease in South Asians. Cardiovascular Disorders and Medicine, 3, 1–6. https://doi.org/10.15761/CDM.1000168

Jongen, C., McCalman, J., & Bainbridge, R. (2018). Health workforce cultural competency interventions: A systematic scoping review. *BMC Health Services Research*, *18*(1), 232. https://doi.org/10.1186/s12913-018-3001-5

Joseph, P., Leong, D., McKee, M., Anand, S. S., Schwalm, J.-D., Teo, K., Mente, A., & Yusuf, S. (2017). Reducing the global burden of cardiovascular disease, Part 1. *Circulation Research*, *121*(6), 677–694. https://doi.org/10.1161/CIRCRESAHA.117.308903

Journath, G., Hammar, N., Vikström, M., Linnersjö, A., Walldius, G., Krakau, I., Lindgren, P., de Faire, U., & Hellenius, M.-L. (2020). A Swedish primary healthcare prevention programme focusing on promotion of physical activity and a healthy lifestyle reduced cardiovascular events and mortality: 22-year follow-up of 5761 study participants and a reference group. *British Journal of Sports Medicine*, *54*(21), 1294. https://doi.org/10.1136/bjsports-2019-101749

Joynt, K. E. (2015). Health policy and cardiovascular medicine. *Circulation*, *131*(12), 1098–1105. https://doi.org/10.1161/CIRCULATIONAHA.114.013606

Kamacooko, O., Kitonsa, J., Bahemuka, U. M., Kibengo, F. M., Wajja, A., Basajja, V., Lumala, A., Kakande, A., Kafeero, P., & Ssemwanga, E. (2021). Knowledge, attitudes, and practices regarding COVID-19 among healthcare workers in Uganda: A cross-sectional survey. *International Journal of Environmental Research & Public Health*, *18*(13), 7004.

Kandula, N. R., Dave, S., De Chavez, P. J., Bharucha, H., Patel, Y., Seguil, P., Kumar, S., Baker, D. W., Spring, B., & Siddique, J. (2015). Translating a heart disease lifestyle intervention into the community: The South Asian Heart Lifestyle Intervention (SAHELI) study; a randomized control trial. BMC Public Health, 15(1), 1–10.

Kandula, N. R., Bernard, V., Dave, S., Ehrlich-Jones, L., Counard, C., Shah, N., Kumar, S., Rao, G., Ackermann, R., Spring, B., & Siddique, J. (2020). The South Asian Healthy Lifestyle Intervention (SAHELI) trial: Protocol for a mixed-methods, hybrid effectiveness implementation trial for reducing cardiovascular risk in South Asians in the United States. *Contemporary Clinical Trials*, *92*, 105995. https://doi.org/10.1016/j.cct.2020.105995

Kanengoni, B., Andajani-Sutjahjo, S., & Holroyd, E. (2018). Setting the stage: Reviewing current knowledge on the health of New Zealand immigrants—An integrative review. *PeerJ*, *6*, e5184. https://doi.org/10.7717/peerj.5184

Kanna, B., Ukudeyeva, A., Faiz, M., Roques, E., Washington, T., Ramirez, L., Shariff, M. A., & Espejo, M. (2020). Qualitative study of knowledge, perception, behavior and barriers associated with cardiovascular disease risk among overweight and obese Hispanic taxi drivers of South Bronx, NYC. *BMC Public Health*, *20*(1), 683. https://doi.org/10.1186/s12889-020-08751-0

Kelly, J. D. (1988). From Holi to Diwali in Fiji: An essay on ritual and history. *Man*, *23*(1), 40–55. JSTOR. https://doi.org/10.2307/2803032

Khalid, A., Haque, S., Alvi, S., Ferdous, M., Genereux, O., Chowdhury, N., & Turin, T. C. (2022). Promoting Health Literacy About Cancer Screening Among Muslim Immigrants in Canada: Perspectives of Imams on the Role They Can Play in

Community. *Journal of Primary Care & Community Health*, 13, 1–9. https://doi.org/10.1177/21501319211063051

Khan, S. S., Ning, H., Wilkins, J. T., Allen, N., Carnethon, M., Berry, J. D., Sweis, R. N., & Lloyd-Jones, D. M. (2018). Association of Body Mass Index with lifetime risk of cardiovascular disease and compression of morbidity. *JAMA Cardiology*, *3*(4), 280–287. https://doi.org/10.1001/jamacardio.2018.0022

Khan, W. A. (1967). A study of knowledge, attitude and practice of family planning in West Pakistan. *Pakistan Journal of Family Planning*, *1*, 1–10.

Khodaveisi, M., Azizpour, B., Jadidi, A., & Mohammadi, Y. (2021). Education based on the health belief model to improve the level of physical activity. *Physical Activity & Nutrition*, *25*(4), 17–23. https://doi.org/10.20463/pan.2021.0022

King, D. E., Mainous, A. G., & Geesey, M. E. (2007). Turning back the clock: Adopting a healthy lifestyle in middle age. *The American Journal of Medicine*, *120*(7), 598–603. https://doi.org/10.1016/j.amjmed.2006.09.020

Kirk-Gardner, R., & Steven, D. (2003). Hearts for Life: A community program on heart health promotion. *Canadian Journal of Cardiovascular Nursing*, *13*, 5–10.

Kivelä, K., Elo, S., Kyngäs, H., & Kääriäinen, M. (2014). The effects of health coaching on adult patients with chronic diseases: A systematic review. *Patient Education & Counseling*, *97*(2), 147–157. https://doi.org/10.1016/j.pec.2014.07.026

Klein, J., & von dem Knesebeck, O. (2018). Inequalities in health care utilization among migrants and non-migrants in Germany: A systematic review. *International Journal for Equity in Health*, *17*(1), 160. https://doi.org/10.1186/s12939-018-0876-z

Knekta, E., Runyon, C., & Eddy, S. (2019). One size doesn't fit all: Using factor analysis to gather validity evidence when using surveys in your research. *CBE—Life Sciences Education*, *18*(1), rm1. https://doi.org/10.1187/cbe.18-04-0064

Kökény, M. (2011). Ottawa revisited: 'Enable, mediate and advocate'. *Health Promotion International*, *26*(suppl_2), ii180–ii182. https://doi.org/10.1093/heapro/dar065

Koohi, F., Amiri, P., Mehrabi, Y., Karimi, M., & Khalili, D. (2021). Development and validation of a knowledge, attitude, and practice questionnaire regarding cardiovascular diseases in an Iranian general population. *BMC Public Health*, *21*(1), 2050. https://doi.org/10.1186/s12889-021-12135-3

Koohpayeh, S. A., Estebsari, F., Lashani, F., Homayouni, A., & Nasiri, M. (2021). Relationship between health literacy and knowledge, attitude, and performance regarding cancer warning signs. *Iranian Journal of Nursing & Midwifery Research*, *26*(5), *5*. http://ijnmr.mui.ac.ir/index.php/ijnmr/article/view/1827

Koonisetty, K. S., Aghamohammadi, N., Urmi, T., Yavaşoglu, S. İ., Rahman, M., Nandy, R., & Haque, U. (2021). Assessment of knowledge, attitudes, and practices regarding dengue among physicians: A web-based cross-sectional survey. *Behavioral Sciences*, *11*(8), 105.

Kost, R. G., & de Rosa, J. C. (2018). Impact of survey length and compensation on validity, reliability, and sample characteristics for ultrashort-, short-, and long-research participant perception surveys. *Journal of Clinical & Translational Science*, *2*(1), 31–37. https://doi.org/10.1017/cts.2018.18

Kruger, D. J., Lewis, Y., & Schlemmer, E. (2010). Mapping a message for faith leaders: Encouraging community health promotion with local health data. *Health Promotion Practice*, *11*(6), 837–844. https://doi.org/10.1177/1524839908328995

Kumar, A., Rajendran, A., Usman, M., Ahuja, J., Samad, S., Mittal, A., Garg, P., Baitha, U., Ranjan, P., & Wig, N. (2022). Development and validation of a

questionnaire to evaluate the knowledge, attitude and practices regarding travel medicine amongst physicians in an apex tertiary hospital in Northern India. *Tropical Diseases, Travel Medicine & Vaccines*, *8*(1), 13–13. https://doi.org/10.1186/s40794-022-00170-w

Kumar, K. K., & Kumar, S. L. (2022). Roots and routes: Tracing the trends of Indo-Fijian fiction. *Journal of Migration Affairs*, *4*(2), 34–45.

Kurtz, D. L. M., Janke, R., Vinek, J., Wells, T., Hutchinson, P., & Froste, A. (2018). Health sciences cultural safety education in Australia, Canada, New Zealand, and the United States: A literature review. *International Journal of Medical Education*, *9*, 271–285. https://doi.org/10.5116/ijme.5bc7.21e2

Kwak, W., Won, J. U., Rhie, J., Lee, M. S., Kang, E. J., & Roh, J. (2019). A workplace cardiovascular health promotion program and its short-term health effects. *Kjoem*, *21*(1), 46–52. https://doi.org/10.35371/kjoem.2009.21.1.46

Lakshmi, K. P. D., Bharath, C., Venkatalakshmi, S., & Saravanan, N. (2020). Correlation of pharmacy students' knowledge, attitude, and practices with their oral health status in Salem city—A cross-sectional survey. *Journal of Family Medicine & Primary Care*, *9*(4), 1944–1949. https://doi.org/10.4103/jfmpc.jfmpc_1172_19

Launiala, A. (2009). How much can a KAP survey tell us about people's knowledge, attitudes and practices? Some observations from medical anthropology research on malaria in pregnancy in Malawi. Anthropology Matters, 11(1), 1–13. https://doi.org/10.22582/am.v11i1.31

Lavie, C., Milani, R., & Ventura, H. (2009). Obesity and cardiovascular disease. *Journal of the American College of Cardiology*, *53*(21), 1925–1932. https://doi.org/10.1016/j.jacc.2008.12.068

Lawton, J., Ahmad, N., Hanna, L., Douglas, M., & Hallowell, N. (2006). 'I can't do any serious exercise': Barriers to physical activity amongst people of Pakistani and Indian origin with Type 2 diabetes. *Health Education Research*, *21*(1), 43–54. https://doi.org/10.1093/her/cyh042

Lebano, A., Hamed, S., Bradby, H., Gil-Salmerón, A., Durá-Ferrandis, E., Garcés-Ferrer, J., Azzedine, F., Riza, E., Karnaki, P., Zota, D., & Linos, A. (2020). Migrants' and refugees' health status and healthcare in Europe: A scoping literature review. *BMC Public Health*, *20*(1), 1039. https://doi.org/10.1186/s12889-020-08749-8

Leckie, J. (2015). *Fijians. Te Ara—The encyclopedia of New Zealand.* https://teara.govt.nz/en/fijians

Ledoux, C., Pilot, E., Diaz, E., & Krafft, T. (2018). Migrants' access to healthcare services within the European Union: A content analysis of policy documents in Ireland, Portugal and Spain. *Globalization & Health*, *14*(1), 57. https://doi.org/10.1186/s12992-018-0373-6

Lee, M., Kim, K., Rhew, K., & Choi, K.-H. (2021). A knowledge, attitude, and practice survey on medication safety in Korean older adults: An analysis of an ageing society. *Healthcare (Basel, Switzerland)*, *9*(10), 1365. https://doi.org/10.3390/healthcare9101365

Lee, S., Martinez-Garcia, G., Ma, G., Hsu, C., Robinson, E., Bawa, J., & Juon, H.-S. (2010). Barriers to health care access in 13 Asian American communities. *American Journal of Health Behavior*, *34*, 21–30. https://doi.org/10.5993/AJHB.34.1.3

Leow, N., Nor, A., Ong, Q., Ovenden, C., Allon, C., O'Rourke, C., & Stevenson, E. (2011). *One Heart Many Lives evaluation report* [Unpublished manuscript]. Wellington School of Medicine, University of Otago.

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, *5*(1), 1–9.

Levenson, J. W., Skerrett, P. J., & Gaziano, J. M. (2002). Reducing the global burden of cardiovascular disease: The role of risk factors. *Preventive Cardiology*, *5*(4), 188–199. https://doi.org/10.1111/j.1520-037X.2002.00564.x

Lever, M. J. (2005). The cardiovascular system. In L. L. Hench & J. R. Jones (Eds.), *Biomaterials, artificial organs and tissue engineering* (pp. 90–96). Woodhead Publishing. https://doi.org/10.1533/9781845690861.2.90

Lewin, B. (1997). The psychological and behavioral management of angina. *Journal of Psychosomatic Research*, *43*(5), 453–462. https://doi.org/10.1016/S0022-3999(97)00143-8

Li, N., Tuomilehto, J., Dowse, G., Virtala, E., & Zimmet, P. (1994). Prevalence of coronary heart disease indicated by electrocardiogram abnormalities and risk factors in developing countries. Journal of Clinical Epidemiology, 47(6), 599–611. https://doi.org/10.1016/0895-4356(94)90208-9

Li, Y., Schoufour, J., Wang, D. D., Dhana, K., Pan, A., Liu, X., Song, M., Liu, G., Shin, H. J., Sun, Q., Al-Shaar, L., Wang, M., Rimm, E. B., Hertzmark, E., Stampfer, M. J., Willett, W. C., Franco, O. H., & Hu, F. B. (2020). Healthy lifestyle and life expectancy free of cancer, cardiovascular disease, and Type 2 diabetes: Prospective cohort study. *BMJ*, *368*, l6669. https://doi.org/10.1136/bmj.l6669

Liao, R. (2019). In the shadow of exclusion: The state of New Zealand Asian health. *New Zealand Medical Student Journal*, *29*, 32–36.

Lim, J. U., Lee, J. H., Kim, J. S., Hwang, Y. I., Kim, T.-H., Lim, S. Y., Yoo, K. H., Jung, K.-S., Kim, Y. K., & Rhee, C. K. (2017). Comparison of World Health Organization and Asia-Pacific Body Mass Index classifications in COPD patients. *International Journal of Chronic Obstructive Pulmonary Disease*, *12*, 2465–2475. https://doi.org/10.2147/COPD.S141295

Lin, Y.-P., Wang, T.-J., Tung, H.-H., & Furze, G. (2012). Coronary heart disease beliefs and misconceptions among cardiac patients and people with chronic illness. Open Journal of Nursing, 2(1), 1–7. https://doi.org/10.4236/ojn.2012.21001

Liu, L., Liu, Y.-P., Wang, J., An, L.-W., & Jiao, J.-M. (2016). Use of a knowledge–attitude–behaviour education programme for Chinese adults undergoing maintenance haemodialysis: Randomized controlled trial. *The Journal of International Medical Research*, *44*(3), 557–568. https://doi.org/10.1177/0300060515604980

Liu, M., & Wronski, L. (2018). Examining completion rates in web surveys via over 25,000 real-world surveys. *Social Science Computer Review*, *36*(1), 116–124. https://doi.org/10.1177/0894439317695581

Ljubičić, M., Sarić, M. M., Klarin, I., Rumbak, I., Barić, I. C., Ranilović, J., EL-Kenawy, A., Papageorgiou, M., Vittadini, E., Bizjak, M. Č., & Guiné, R. (2022). Motivation for health behaviour: A predictor of adherence to balanced and healthy food across different coastal Mediterranean countries. *Journal of Functional Foods*, *91*, 105018. https://doi.org/10.1016/j.jff.2022.105018

Louise, L., & Annette, B. (2019). Drawing straight lines along blurred boundaries: Qualitative research, patient and public involvement in medical research, co-production and co-design. *Evidence & Policy*, *15*(3), 409–421. https://doi.org/10.1332/174426419X15552999451313

Lozano, R., Naghavi, M., Foreman, K., Lim, S., Shibuya, K., Aboyans, V., Abraham, J., Adair, T., Aggarwal, R., & Ahn, S. Y. (2012). Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: A systematic analysis for the Global Burden of Disease Study 2010. The Lancet, 380(9859), 2095–2128.

Lusis, A. J. (2000). Atherosclerosis. *Nature*, *407*(6801), 233–241. https://doi.org/10.1038/35025203

Lv, J., Yu, C., Guo, Y., Bian, Z., Yang, L., Chen, Y., Tang, X., Zhang, W., Qian, Y., Huang, Y., Wang, X., Chen, J., Chen, Z., Qi, L., Li, L., & China Kadoorie Biobank Collaborative Group. (2017). Adherence to Healthy Lifestyle and Cardiovascular Diseases in the Chinese Population. Journal of the American College of Cardiology, 69(9), 1116–1125. PubMed. https://doi.org/10.1016/j.jacc.2016.11.076

Lynn, M. R. (1986). Determination and quantification of content validity. Nursing Research, 35(6), 382–386.

Machaalani, M., Fakhry, B., Zwaideh, M., Mendelek, K., Mahmoud, N., Hammoud, T., & Chahine, M. N. (2022). Knowledge, attitude, and practice toward cardiovascular diseases in the Lebanese population. *Global Heart*, *17*(1), 47. https://doi.org/10.5334/gh.1138

Magalhães, P., Sanhangala, E. J., Dombele, I. M., Ulundo, H. S., Capingana, D. P., & Silva, A. B. (2015). Knowledge, attitude and behaviour regarding dietary salt intake among medical students in Angola. Cardiovascular Journal of Africa, 26(2), 57.

Mahindarathne, P. P. (2021). Assessing COVID-19 preventive behaviours using the health belief model: A Sri Lankan study. *Journal of Taibah University Medical Sciences*, *16*(6), 914–919. https://doi.org/10.1016/j.jtumed.2021.07.006

Makamu-Beteck, S. J., Moss, S. J., Watson, F. G., & Cameron, M. (2022). Exercise intervention changes the perceptions and knowledge of non-communicable disease risk factors among women from a low-resourced setting. *International Journal of Environmental Research & Public Health*, *19*(6), 3474. https://doi.org/10.3390/ijerph19063474

Mallah, N., Rodríguez-Cano, R., Badro, D. A., Figueiras, A., Gonzalez-Barcala, F.-J., & Takkouche, B. (2022). Development and Validation of a Knowledge, Attitude and Practice Questionnaire on Antibiotic Use in Arabic and French Languages in Lebanon. International Journal of Environmental Research and Public Health, 19(2), 687. PubMed. https://doi.org/10.3390/ijerph19020687

Mann, C. (2003). Observational research methods. Research design II: Cohort, cross sectional, and case-control studies. *Emergency Medicine Journal*, *20*(1), 54–60.

Martin, S., Hofer, K. M., & Grüb, B. (2022). Motives for attending cardiovascular health promotion events: An explorative analysis of the Austrian "Heart Health Day". International Review on Public and Nonprofit Marketing. https://doi.org/10.1007/s12208-022-00335-5

Marx, R. G., Menezes, A., Horovitz, L., Jones, E. C., & Warren, R. F. (2003). A comparison of two time intervals for test–retest reliability of health status instruments. *Journal of Clinical Epidemiology*, *56*(8), 730–735. https://doi.org/10.1016/S0895-4356(03)00084-2

Mauri Ora. (2021). *Foundation Course in Cultural Competency (Maori)*. https://members.mauriora.co.nz/course/foundation-course-in-cultural-competency-maori/

McHugh, C. A., Lloyd, J., Logan, S., & Wyatt, K. (2021). Implementing a set of health promoting processes in English secondary schools: A comparative case study. *Public Health in Practice*, *2*, 100214. https://doi.org/10.1016/j.puhip.2021.100214

McIsaac, J.-L. D., Spencer, R., Chiasson, K., Kontak, J., & Kirk, S. F. L. (2019). Factors influencing the implementation of nutrition policies in schools: A scoping review. *Health Education & Behavior*, *46*(2), 224–250. https://doi.org/10.1177/1090198118796891

McKeirnan, K. C., Panther, S. G., & Akers, J. M. (2015). Redesigning the traditional community health screening model to provide blood glucose screening and interdisciplinary health education. *Clinical Diabetes*, *33*(4), 189–192. https://doi.org/10.2337/diaclin.33.4.189

Medical Council of New Zealand. (2019). *Statement on cultural safety*. https://www.mcnz.org.nz/assets/standards/b71d139dca/Statement-on-cultural-safety.pdf

Mehta, S. (2012). Health needs assessment of Asian people living in the Auckland region (pp. 1–140). Auckland: Northern DHB Support Agency. https://www.countiesmanukau.health.nz/assets/About-CMH/Performance-and-planning/health-status/79875e5978/2012-health-needs-of-asian-people.pdf

Mehta, S., Jackson, R., Wells, S., Harrison, J., Exeter, D. J., & Kerr, A. J. (2018). Cardiovascular medication changes over 5 years in a national data linkage study: Implications for risk prediction models. *Clinical Epidemiology*, *10*, 133–141. https://doi.org/10.2147/CLEP.S138100

Menotti, A., Puddu, P. E., & Catasta, G. (2022). Lifestyle behaviours predicting major cardiovascular diseases mortality in a practically extinct cohort of middle-aged men followed-up for 61 years. *Acta Cardiologica*, 1–8. https://doi.org/10.1080/00015385.2022.2101876

Mentrup, S., Harris, E., Gomersall, T., Köpke, S., & Astin, F. (2020). Patients' experiences of cardiovascular health education and risk communication: A qualitative synthesis. *Qualitative Health Research*, *30*(1), 88–104. https://doi.org/10.1177/1049732319887949

Messner, B., & Bernhard, D. (2014). Smoking and cardiovascular disease. *Arteriosclerosis, Thrombosis, & Vascular Biology*, *34*(3), 509–515. https://doi.org/10.1161/ATVBAHA.113.300156

Millar, E., & Richards, R. (2017). Strategic and Operational Plan for the Prevention of Long Term Conditions in Greater Wellington. Preventive Health and Chronic Disease Group, Regional Public Health. https://www.rph.org.nz/public-health-topics/long-term-condition-prevention/strategic-and-operational-ltc-prevention-plan-for-distribution.pdf

Minister of Health. (2016a). *New Zealand Health Strategy: Future direction.* Ministry of Health. https://www.health.govt.nz/system/files/documents/publications/new-zealand-health-strategy-futuredirection-2016-apr16.pdf

Minister of Health. (2016b). *New Zealand Health Strategy: Roadmap of actions*. Ministry of Health. https://www.health.govt.nz/system/files/documents/publications/new-zealand-health-strategy-roadmapofactions-2016-apr16.pdf

Ministry of Education. (2022a). *Food safety for schools and kura (Food Act 2014)*. https://www.education.govt.nz/school/health-safety-and-wellbeing/managing-risks-and-hazards-at-school/food-safety-for-schools-and-kura-food-act-requirements/#Fundraising

Ministry of Education. (2022b). *Health and physical education in the curriculum*. https://hpe.tki.org.nz/

Ministry of Health and Medical Services. (2014). *Non-communicable diseases strategic plan 2015–2019*. https://www.health.gov.fj/wp-content/uploads/2018/03/Final-NCD-Strategic-Plan-2015-2019.pdf

Ministry of Health. (2006). *Asian health chart book 2006*. https://www.health.govt.nz/system/files/documents/publications/asian-health-chart-book-2006.pdf

Ministry of Health. (2008). *Diabetes and cardiovascular disease quality improvement plan.* https://www.health.govt.nz/system/files/documents/publications/diabetes-cardio-quality-improvement-plan-feb08-v2.pdf

Ministry of Health. (2011). *The National Health Promotion Framework and implementation planning guide for screening programmes.* https://www.health.govt.nz/publication/national-health-promotion-framework-and-implementation-planning-guide-screening-programmes

Ministry of Health. (2012). *Health Promoting Schools.* https://www.health.govt.nz/our-work/life-stages/child-health/health-promoting-schools

Ministry of Health. (2014). *Tagata Pasifika in New Zealand.* https://www.health.govt.nz/our-work/populations/pacific-health/tagata-pasifika-new-zealand

Ministry of Health. (2016). *Health loss in New Zealand 1990–2013: A report from the New Zealand Burden of Diseases, Injuries and Risk Factors Study.* https://www.health.govt.nz/publication/health-loss-new-zealand-1990-2013

Ministry of Health. (2017a). *A cardiovascular assessment model worth following.* https://www.health.govt.nz/our-work/diseases-and-conditions/cardiovascular-disease/auckland-dhb-staff-assessments-cardiovascular-disease/cardiovascular-assessment-model-worth-following

Ministry of Health. (2017b). *Annual update of key results 2016/17: New Zealand Health Survey.* https://www.health.govt.nz/publication/annual-update-key-results-2016-17-new-zealand-health-survey

Ministry of Health. (2017c). *National expectations for the prevention and management of long term conditions.* https://nsfl.health.govt.nz/dhb-planning-package/long-term-conditions-outcomes-framework

Ministry of Health. (2017d). *Overview of the health system.* https://www.health.govt.nz/new-zealand-health-system/overview-health-system

Ministry of Health. (2018a). *Cardiovascular disease risk assessment and management for primary care.* https://www.health.govt.nz/system/files/documents/publications/cardiovascular-disease-risk-assessment-management-primary-care-feb18-v4_0.pdf

Ministry of Health. (2018b). *Major causes of death.* https://www.health.govt.nz/our-work/populations/maori-health/tatau-kahukura-maori-health-statistics/nga-mana-hauora-tutohu-health-status-indicators/major-causes-death

Ministry of Health. (2020a). *Longer, healthier lives: New Zealand's health 1990–2017. A report on the health loss estimates of the 2017 Global Burden of Disease Study.* https://www.health.govt.nz/publication/longer-healthier-lives-new-zealands-health-1990-2017

Ministry of Health. (2020b). *Health promotion | Whakatairanga hauora.* https://www.health.govt.nz/our-work/life-stages/breastfeeding/national-breastfeeding-strategy-new-zealand-aotearoa-rautaki-whakamana-whangote/further-reading-panui-atu/health-promotion-whakatairanga-hauora

Ministry of Health. (2020c). *Key health sector organisations and people.* https://www.health.govt.nz/new-zealand-health-system/key-health-sector-organisations-and-people?mega=NZ%20health%20system&title=Key%20organisations

Ministry of Health. (2020d). *Long-term conditions.* https://www.health.govt.nz/our-work/diseases-and-conditions/long-term-conditions

Ministry of Health. (2020e). *'Ola Manuia: Pacific health and wellbeing action plan 2020–2025.* https://www.health.govt.nz/system/files/documents/publications/ola_manuia-phwap-22june.pdf

Ministry of Health. (2021a). *Annual update of key results 2020/21: New Zealand Health Survey*. https://minhealthnz.shinyapps.io/nz-health-survey-2020-21-annual-data-explorer/

Ministry of Health. (2021b). *Mortality web tool*. https://www.health.govt.nz/publication/mortality-web-tool

Ministry of Health. (2021c). *New Zealand Health Survey*. https://www.health.govt.nz/nz-health-statistics/national-collections-and-surveys/surveys/new-zealand-health-survey

Ministry of Health. (2021d). *Strategic frameworks*. https://www.health.govt.nz/our-work/populations/pacific-health/strategic-frameworks

Ministry of Health. (2021e). *How much activity is recommended?* https://www.health.govt.nz/your-health/healthy-living/food-activity-and-sleep/physical-activity/how-much-activity-recommended

Minority Rights Group International. (2021). *World directory of minorities and Indigenous peoples*. *Indo-Fijians*. https://minorityrights.org/minorities/indo-fijians/

Mirza, A., Aslam, S., Perrin, K., Curtis, T., Stenback, J., Gipson, J., & Alrabaa, S. (2016). Knowledge, attitudes and practices among patients with coronary artery disease in Dhaka, Bangladesh. *International Journal of Community Medicine and Public Health*, *3*(10), 2740–2748.

Mohammad, N. B., Rahman, N. A. A., & Haque, M. (2018). Knowledge, attitude, and practice regarding the risk of cardiovascular diseases in patients attending outpatient clinic in Kuantan, Malaysia. *Journal of Pharmacy & Bioallied Sciences*, *10*(1), 7.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *BMJ*, *339*, b2535. https://doi.org/10.1136/bmj.b2535

Moore, C. G., Carter, R. E., Nietert, P. J., & Stewart, P. W. (2011). Recommendations for planning pilot studies in clinical and translational research. *Clinical & Translational Science*, *4*(5), 332–337. https://doi.org/10.1111/j.1752-8062.2011.00347.x

Mounsey, S., Waqa, G., McKenzie, B., Reeve, E., Webster, J., Bell, C., & Thow, A. M. (2022). Strengthening implementation of diet-related non-communicable disease prevention strategies in Fiji: A qualitative policy landscape analysis. *Globalization & Health*, *18*(1), 79. https://doi.org/10.1186/s12992-022-00859-9

Muhamad, R., Yahya, R., & Yusoff, H. M. (2012). Knowledge, attitude and practice on cardiovascular disease among women in North-Eastcoast Malaysia. International Journal of Collaborative Research on Internal Medicine & Public Health, 4(1), 85–98.

Mugler, F. (2003). The spice of life: Borrowing and Fiji's Indian languages. In Borrowing: A Pacific perspective. Pacific Linguistics.

Mukhtar, I. G., Abdullahi, A. T., Muhammad, S. M., Sabiu, N. H., & Salisu, A. I. (2022). Prevalence of modifiable cardiovascular risk factors among undergraduate students in Kano Nigeria: A need for action. Journal of Taibah University Medical Sciences, 17(4), 578–586. https://doi.org/10.1016/j.jtumed.2021.10.013

Mulchandani, R., Chandrasekaran, A. M., Shivashankar, R., Kondal, D., Agrawal, A., Panniyammakal, J., Tandon, N., Prabhakaran, D., Sharma, M., & Goenka, S. (2019). Effect of workplace physical activity interventions on the cardio-metabolic health of working adults: Systematic review and meta-analysis. *International Journal of Behavioral Nutrition & Physical Activity*, *16*(1), 134. https://doi.org/10.1186/s12966-019-0896-0

Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, *18*(1), 143. https://doi.org/10.1186/s12874-018-0611-x

Murray, C. J. L., Aravkin, A. Y., Zheng, P., Abbafati, C., Abbas, K. M., Abbasi-Kangevari, M., Abd-Allah, F., Abdelalim, A., Abdollahi, M., Abdollahpour, I., Abegaz, K. H., Abolhassani, H., Aboyans, V., Abreu, L. G., Abrigo, M. R. M., Abualhasan, A., Abu-Raddad, L. J., Abushouk, A. I., Adabi, M., … Lim, S. S. (2020). Global burden of 87 risk factors in 204 countries and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, *396*(10258), 1223–1249. https://doi.org/10.1016/S0140-6736(20)30752-2

Naidu, V., Matadradra, A., Sahib, M., & Osborne, J. (2013). Fiji: The challenges and opportunities of diversity (pp. 1–44). Minority Rights Group International. https://www.semanticscholar.org/paper/Fiji%3A-the-challenges-and-opportunities-of-diversity-Naidu-Matadradra/bef45a5b9ecb7f72e463ba9bb021dad01e9eb8ad

National Academy of Sciences (US). (1995). *National academies collection: Reports funded by National Institutes of Health*. National Academies Press (US). https://books.google.co.nz/books?id=LxAatAEACAAJ

National Health Committee. (2013). *Strategic overview—Cardiovascular disease in New Zealand*. https://www.moh.govt.nz/notebook/nbbooks.nsf/0/FAC55041FD6DBDADCC257F7F006CDC16/$file/strategic-verview-cardiovascular-disease-in-nz.pdf

New Zealand Guidelines Group. (2003). *The assessment and management of cardiovascular risk. Best practice 6 evidence-based guidelines*.

Newbold, K. B., & McKeary, M. (2018). Journey to health: (Re) Contextualizing the health of Canada's refugee population. *Journal of Refugee Studies*, *31*(4), 687–704. https://doi.org/10.1093/jrs/fey009

Nguyen, T. T. L., Pham, T. T. H., So, S., Hoang, T. H. V., Nguyen, T. T. U., Ngo, T. B., Nguyen, M. P., Thai, Q. H., Nguyen, N. K., & Le Ho, T. Q. A. (2021a). Knowledge, attitudes and practices toward hepatitis b virus infection among students of medicine in Vietnam. *International Journal of Environmental Research & Public Health*, *18*(13), 7081.

Nguyen, T. V., Nguyen, K. T., Nguyen, P. M., Nguyen, N. M., Ly, C. L., Nguyen, T., Nguyen, M. T., Le, H. M., Nguyen, X. T., Duong, N. H., Veith, R. C., & Nguyen, T. V. (2021). Vietnamese Version of the Geriatric Depression Scale (30 Items): Translation, Cross-Cultural Adaptation, and Validation. Geriatrics, 6(4), 116. https://doi.org/10.3390/geriatrics6040116

Niu, X., Yung, A. K. C., Strickertsson, T. I. B., Stoustrup, P., Cornelis, M. A., & Cattaneo, P. M. (2022). Translation and cross-cultural adaptation of the sleep-related breathing disorder scale of the Pediatric Sleep Questionnaire into Danish language. Acta Odontologica Scandinavica, 80(6), 411–418. https://doi.org/10.1080/00016357.2021.2023755

Noroozi, F., Fararouei, M., Kojuri, J., Ghahremani, L., & Ghodrati, K. (2022). Salt consumption and blood pressure in rural hypertensive participants: A community field trial. *The Scientific World Journal*, *2022*, 2908811. https://doi.org/10.1155/2022/2908811

Nutrition Research Australia. (2018). *Healthcare and productivity savings from increased intake of grain fibre in New Zealand.* https://www2.deloitte.com/content/dam/Deloitte/nz/Documents/Economics/dae-nz-fibre-economics.PDF

O'Mara-Eves, A., Brunton, G., Oliver, S., Kavanagh, J., Jamal, F., & Thomas, J. (2015). The effectiveness of community engagement in public health interventions for disadvantaged groups: A meta-analysis. *BMC Public Health*, *15*(1), 129. https://doi.org/10.1186/s12889-015-1352-y

Olaya Guzmán, B., Moneta, M. V., Bobak, M., Haro Abad, J. M., & Demakakos, P. (2019). Cardiovascular risk factors and memory decline in middle-aged and older adults: The English Longitudinal Study of Ageing. *BMC Geriatrics, 19,* 337.

Oranga Tamariki. (2019). *Va'aifetu—Working with Fijian and Fijian Indian families*. https://practice.orangatamariki.govt.nz/assets/practice/Working-with-pacific-peoples/vaaifetu-fijian-fijian-indian-families.pdf

Organisation for Economic Co-operation and Development. (2022). *Foreign-born population (indicator)*. https://data.oecd.org/migration/foreign-born-population.htm

Otsuka, S. (2006). Cultural influences on academic performance in Fiji: A case study in the Nadroga/Navosa province [Doctoral Thesis, The University of Sydney]. Sydney Digital Theses (Open Access). http://hdl.handle.net/2123/1416

Özden, F., Karaman, Ö. N., Tuğay, N., Savaş, Ö., Sözen, T., & Üçüncü, H. (2022). The reliability and validity of the Turkish version of the Facial Disability Index. *Disability & Rehabilitation*, *44*(1), 148–157. https://doi.org/10.1080/09638288.2020.1762768

Parikh, P. B., Yang, J., Leigh, S., Dorjee, K., Parikh, R., Sakellarios, N., Meng, H., & Brown, D. L. (2014). The impact of financial barriers on access to care, quality of care and vascular morbidity among patients with diabetes and coronary heart disease. *Journal of General Internal Medicine*, *29*(1), 76–81. https://doi.org/10.1007/s11606-013-2635-6

Parr-Brownlie, L. C., Waters, D. L., Neville, S., Neha, T., & Muramatsu, N. (2020). Aging in New Zealand: Ka haere ki te ao pakeketanga. *The Gerontologist*, *60*(5), 812–820. https://doi.org/10.1093/geront/gnaa032

Pearce, A., & Longhurst, G. (2021). The Role of the Clinical Exercise Physiologist in Reducing the Burden of Chronic Disease in New Zealand. International Journal of Environmental Research and Public Health, 18(3), 859. https://doi.org/10.3390/ijerph18030859

Pernambuco, C. S., Rodrigues, B. M., Bezerra, J. C. P., Carrielo, A., Fernandes, A., Vale, R., & Dantas, E. (2012). Quality of life, elderly and physical activity. *Health*, *4*(2), 88–93.

Perneger, T. V., Courvoisier, D. S., Hudelson, P. M., & Gayet-Ageron, A. (2015). Sample size for pre-tests of questionnaires. *Quality of Life Research*, *24*(1), 147–151. https://doi.org/10.1007/s11136-014-0752-2

Peters, M. D., Godfrey, C. M., Khalil, H., McInerney, P., Parker, D., & Soares, C. B. (2015). Guidance for conducting systematic scoping reviews. *JBI Evidence Implementation*, *13*(3), 141–146.

PHARMAC. (2021). *One Heart Many Lives*. https://pharmac.govt.nz/te-tiriti-o-waitangi/programmes-to-support-maori-health/one-heart-many-lives/

Piano, M. R. (2017). Alcohol's effects on the cardiovascular system. *Alcohol Research : Current Reviews*, *38*(2), 219–241.

Pledger, M., McDonald, J., & Cumming, J. (2012). Increases in support structures for healthy eating especially in low decile schools in New Zealand. *Australian & New Zealand Journal of Public Health*, *36*(6), 543–549.

Pogosova, N. (2019). Costs associated with cardiovascular disease create a significant burden for society and they seem to be globally underestimated. *European*

Journal of Preventive Cardiology, *26*(11), 1147–1149.
https://doi.org/10.1177/2047487319842578

Polit, D., Beck, C., & Owen, S. (2007). Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Research in Nursing & Health*, *30*, 459–467. https://doi.org/10.1002/nur.20199

Polit, D. F. (2014). Getting serious about test–retest reliability: A critique of retest research and some recommendations. *Quality of Life Research*, *23*(6), 1713–1720. https://doi.org/10.1007/s11136-014-0632-9

Polit, D. F., & Beck, C. T. (2006). The Content Validity Index: Are you sure you know what's being reported? Critique and recommendations. *Research in Nursing & Health*, *29*(5), 489–497.

Pottie, K., Hui, C., Rahman, P., Ingleby, D., Akl, E. A., Russell, G., Ling, L., Wickramage, K., Mosca, D., & Brindis, C. D. (2017). Building responsive health systems to help communities affected by migration: An international Delphi consensus. *International Journal of Environmental Research & Public Health*, *14*(2), 144. https://doi.org/10.3390/ijerph14020144

Proper, K. I., & van Oostrom, S. H. (2019). The effectiveness of workplace health promotion interventions on physical and mental health outcomes—A systematic review of reviews. *Scandinavian Journal of Work, Environment & Health*, *45*(6), 546–559.

Qualtrics. (2022a). *Qualtrics*. https://www.qualtrics.com

Qualtrics. (2022b). *Determining sample size: How to make sure you get the correct sample size*. https://www.qualtrics.com/au/experience-management/research/determine-sample-size/

Queensland Health, Access & Capacity-building Team—Metro South Health, & Good Start Program. (2017). *Food and cultural practices of the Fiji Indian community in Australia—A community resource*. https://www.childrens.health.qld.gov.au/wp-content/uploads/PDF/good-start/cultural-fiji-indian.pdf

Queensland Health. (2011). *The health of Queensland's Fijian population 2009*. Division of the Chief Health Officer. https://www.health.qld.gov.au/__data/assets/pdf_file/0028/388513/health-data-fijian.pdf

Radhakrishna, R. B. (2007). Tips for developing and testing questionnaires/instruments. Journal of Extension, 45(1). https://tigerprints.clemson.edu/joe/vol45/iss1/25

Raghuram, P., Sahoo, A., Maharaj, B., & Sangha, D. (Eds.). (2013). Tracing an Indian Diaspora: Contexts, Memories, Representations. SAGE Publications India Pvt Ltd. https://doi.org/10.4135/9788132100393

Rakhshanderou, S., Maghsoudloo, M., Safari-Moradabadi, A., & Ghaffari, M. (2020). Theoretically designed interventions for colorectal cancer prevention: A case of the Health Belief Model. *BMC Medical Education*, *20*(1), 270. https://doi.org/10.1186/s12909-020-02192-4

Ramaswamy, P., Mathew Joseph, N., & Wang, J. (2020). Health beliefs regarding cardiovascular disease risk and risk reduction in South Asian immigrants: An integrative review. *Journal of Transcultural Nursing*, *31*(1), 76–86. https://doi.org/10.1177/1043659619839114

Ramesh, S. (2017). Indo-Fijian counter hegemony in Fiji: A historical structural approach. Journal of Interdisciplinary Research, 1(1), 66–85. http://dx.doi.org/10.26021/888

Ramírez-Trujillo, M., de los Á., Villanueva-Vilchis, M. del C., Aguilar-Díaz, F. del C., de la Fuente-Hernández, J., Faustino-Silva, D. D., & Gaitán-Cepeda, L. A. (2021). Validation of an instrument to determine oral health knowledge,

attitudes, and practices during pregnancy. *BMC Oral Health*, *21*(1), 554. https://doi.org/10.1186/s12903-021-01898-1

Ramôa Castro, A., Oliveira, N. L., Ribeiro, F., & Oliveira, J. (2017). Impact of educational interventions on primary prevention of cardiovascular disease: A systematic review with a focus on physical activity. *The European Journal of General Practice*, *23*(1), 59–68. https://doi.org/10.1080/13814788.2017.1284791

Ratcliffe, J. W. (1976). Analyst biases in KAP surveys: A cross-cultural comparison. *Studies in Family Planning*, *7*(11), 322–330.

Ravi, K., Indrapriyadharshini, K., & Madankumar, P. (2021). Application of health behavioral models in smoking cessation–A systematic review. *Indian Journal of Public Health*, *65*(2), 103.

Razak, F. N., & Prasad, B. C. (2007). Poverty, health and nutrition in Fiji. *Fijian Studies: A Journal of Contemporary Fiji*, *5*(2), 80–99.

Redding, C., Rossi, J., Rossi, S., Susan, P., Rossi, R., Velicer, W., James, P., & Prochaska, O. (2000). Health Behavior Models. The International Electronic Journal of Health Education, 3(Special Issue), 180–193.

Reed, H. E., & Barbosa, G. Y. (2017). Investigating the refugee health disadvantage among the U.S. immigrant population. *Journal of Immigrant & Refugee Studies*, *15*(1), 53–70. https://doi.org/10.1080/15562948.2016.1165329

Renzaho, A. M., Mellor, D., Boulton, K., & Swinburn, B. (2010). Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed countries—A systematic review. *Public Health Nutrition*, *13*(3), 438–450. https://doi.org/10.1017/S136898000999111X

Retinasekharan, S., Md Shukri, N., Ismail, A. F., & Abdullah, B. (2022). Knowledge, Attitude, and Practice of Intranasal Corticosteroid in Allergic Rhinitis Patients: Development of a New Questionnaire. *Healthcare*, 10(1), 8. https://doi.org/10.3390/healthcare10010008

Revilla, M., & Ochoa, C. (2017). Ideal and maximum length for a web survey. *International Journal of Market Research*, *59*(5), 557–565. https://doi.org/10.2501/IJMR-2017-039

Ricci, C., Wood, A., Muller, D., Gunter, M. J., Agudo, A., Boeing, H., van der Schouw, Y. T., Warnakula, S., Saieva, C., Spijkerman, A., Sluijs, I., Tjønneland, A., Kyrø, C., Weiderpass, E., Kühn, T., Kaaks, R., Sánchez, M.-J., Panico, S., Agnoli, C., … Ferrari, P. (2018). Alcohol intake in relation to non-fatal and fatal coronary heart disease and stroke: EPIC-CVD case-cohort study. *BMJ*, *361*, k934. https://doi.org/10.1136/bmj.k934

Richards, R., Darling, H., & Reeder, A. I. (2005). Sponsorship and fund-raising in New Zealand schools: Implications for health. *Australian & New Zealand Journal of Public Health*, *29*(4), 331–336. https://doi.org/10.1111/j.1467-842X.2005.tb00203.x

Rippe, J. M. (2018). Lifestyle strategies for risk factor reduction, prevention, and treatment of cardiovascular disease. *American Journal of Lifestyle Medicine*, *13*(2), 204–212. https://doi.org/10.1177/1559827618812395

Rivera-Hernandez, M. (2015). The role of religious leaders in health promotion for older Mexicans with diabetes. *Journal of Religion & Health*, *54*(1), 303–315. https://doi.org/10.1007/s10943-014-9829-z

Rodrigues, I. B., Adachi, J. D., Beattie, K. A., & MacDermid, J. C. (2017). Development and validation of a new tool to measure the facilitators, barriers and preferences to exercise in people with osteoporosis. *BMC Musculoskeletal Disorders*, *18*(1), 540–540. https://doi.org/10.1186/s12891-017-1914-5

Rosenstock, I. M. (1974). Historical origins of the Health Belief Model. *Health Education Monographs*, *2*(4), 328–335.

Rosenstock, I. M. (1990). The health belief model: Explaining health behavior through expectancies. In K. Glanz, F. M. Lewis, & B. K. Rimer (Eds.), Health behavior and health education: Theory, research, and practice. (pp. 39–62). Jossey-Bass/Wiley.

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social Learning Theory and the Health Belief Model. *Health Education Quarterly*, *15*(2), 175–183. https://doi.org/10.1177/109019818801500203

Rosenthal, T. (2014). The effect of migration on hypertension and other cardiovascular risk factors: A review. *Journal of the American Society of Hypertension*, *8*(3), 171–191. https://doi.org/10.1016/j.jash.2013.12.007

Rosenthal, T., Touyz, R. M., & Oparil, S. (2022). Migrating Populations and Health: Risk Factors for Cardiovascular Disease and Metabolic Syndrome. Current Hypertension Reports, 24(9), 325–340. https://doi.org/10.1007/s11906-022-01194-5

Roth, G. A., Mensah, G. A., Johnson, C. O., Addolorato, G., Ammirati, E., Baddour, L. M., Barengo, N. C., Beaton, A. Z., Benjamin, E. J., Benziger, C. P., Bonny, A., Brauer, M., Brodmann, M., Cahill, T. J., Carapetis, J., Catapano, A. L., Chugh, S. S., Cooper, L. T., Coresh, J., … Fuster, V. (2020). Global burden of cardiovascular diseases and risk factors, 1990–2019: Update from the GBD 2019 Study. *Journal of the American College of Cardiology*, *76*(25), 2982–3021. https://doi.org/10.1016/j.jacc.2020.11.010

Rovoi, C. (2021). *NZ's Fijian-Indians want to be recognised as Pasifika, not Asians*. https://www.rnz.co.nz/international/pacific-news/439637/nz-s-fijian-indians-want-to-be-recognised-as-pasifika-not-asians

Saadia, Z., Rushdi, S., Alsheha, M., Saeed, H., & Rajab, M. (2010). A study of knowledge attitude and practices of Saudi women towards diabetes mellitus. A (KAP) study in Al-Qassim region. The Internet Journal of Health, 11(2), 7.

Saffari, M., Sanaeinasab, H., Jafarzadeh, H., Sepandi, M., O'Garo, K.-G. N., Koenig, H. G., & Pakpour, A. H. (2020). Educational intervention based on the Health Belief Model to modify risk factors of cardiovascular disease in police officers in Iran: A quasi-experimental study. *Journal of Preventive Medicine & Public Health*, *53*(4), 275–284. https://doi.org/10.3961/jpmph.20.095

Sakpal, T. V. (2010). Sample size estimation in clinical trial. *Perspectives in Clinical Research*, *1*(2), 67–69.

Salkind, N. (2007). Encyclopedia of Measurement and Statistics. Sage Publications, Inc. https://doi.org/10.4135/9781412952644

Sargeant, J. M., & O'Connor, A. M. (2020). Scoping Reviews, Systematic Reviews, and Meta-Analysis: Applications in Veterinary Medicine. *Frontiers in Veterinary Science*, 7, 11. https://doi.org/10.3389/fvets.2020.00011

Schroeder, E. C., Franke, W. D., Sharp, R. L., & Lee, D. (2019). Comparative effectiveness of aerobic, resistance, and combined training on cardiovascular disease risk factors: A randomized controlled trial. *PloS One*, *14*(1), e0210292. https://doi.org/10.1371/journal.pone.0210292

Schutzer, K. A., & Graves, B. S. (2004). Barriers and motivations to exercise in older adults. *Preventive Medicine*, *39*(5), 1056–1061. https://doi.org/10.1016/j.ypmed.2004.04.003

Schwalm, J.-D., McCready, T., Lopez-Jaramillo, P., Yusoff, K., Attaran, A., Lamelas, P., Camacho, P. A., Majid, F., Bangdiwala, S. I., Thabane, L., Islam, S., McKee, M., & Yusuf, S. (2019). A community-based comprehensive intervention to reduce cardiovascular risk in hypertension (HOPE 4): A cluster-randomised

controlled trial. *The Lancet*, *394*(10205), 1231–1242.
https://doi.org/10.1016/S0140-6736(19)31949-X

Scragg, R., & Maitra, A. (2005). Asian health in Aotearoa: An analysis of the 2002-2003 New Zealand Health Survey. *Auckland: The Asian Network Inc*.

Seguin, R., Connor, L., Nelson, M., LaCroix, A., & Eldridge, G. (2014). Understanding barriers and facilitators to healthy eating and active living in rural communities. *Journal of Nutrition and Metabolism*, *2014*, 146502–146502. PubMed. https://doi.org/10.1155/2014/146502

Shammi, F. A., Shuvo, S. D., & Josy, M. S. K. (2021). Dietary patterns and their association with CVD risk factors among Bangladeshi adults: A cross-sectional study. *Journal of the American College of Nutrition*, *40*(4), 358–366.

Shen, T., Teo, T. Y., Yap, J. J., & Yeo, K. K. (2017). Gender differences in knowledge, attitudes and practices towards cardiovascular disease and its treatment among Asian patients. *Annals of the Academy of Medicine Singapore*, *46*(1), 20–28.

Shi, J., Mo, X., & Sun, Z. (2012). Content validity index in scale development. *Journal of Central South University. Medical Sciences*, *37*, 152–155. https://doi.org/10.3969/j.issn.1672-7347.2012.02.007

Shiraishi, M., Matsuzaki, M., Tsunematsu, R., Watanabe, S., Kobayashi, R., & Haruna, M. (2021). Effects of individual dietary intervention on nutrient intake in postpartum Japanese women: A randomized controlled trial. *Nutrients*, *13*(9), 3272. https://doi.org/10.3390/nu13093272

Siegel, J. (1998). Indian languages in Fiji: Past, present and future. *South Asia: Journal of South Asian Studies*, *21*(sup001), 181–214. https://doi.org/10.1080/00856409808723355

Simmons, D., Voyle, J., Fou, F., Feo, S., & Leakehe, L. (2004). Tale of two churches: Differential impact of a church-based diabetes control programme among Pacific Islands people in New Zealand. *Diabetic Medicine*, *21*, 122–128. https://doi.org/10.1111/j.1464-5491.2004.01020.x

Sinclair, D. (2006). *One Heart Many Lives; PHARMAC's cardiovascular disease risk reduction campaign. Programme evaluation summary.* PHARMAC.

Sisti, L. G., Dajko, M., Campanella, P., Shkurti, E., Ricciardi, W., & de Waure, C. (2018). The effect of multifactorial lifestyle interventions on cardiovascular risk factors: A systematic review and meta-analysis of trials conducted in the general population and high risk groups. *Preventive Medicine*, *109*, 82–97. https://doi.org/10.1016/j.ypmed.2017.12.027

Snetselaar, L. G. (2001). Nutrition intervention: Lessons from clinical trials. In A. M. Coulston, C. L. Rock, & E. R. Monsen (Eds.), *Nutrition in the prevention and treatment of disease* (pp. 95–104). Academic Press. https://doi.org/10.1016/B978-012193155-1/50009-X

Snowdon, W., Waqa, G., Raj, A., Kanungo, A., & Robinson, H. (2013). *Non-communicable diseases and health system responses in Fiji.* The Nossal Institute, University of Melbourne.

Soltani, S., Saraf-Bank, S., Basirat, R., Salehi-Abargouei, A., Mohammadifard, N., Sadeghi, M., Khosravi, A., Fadhil, I., Puska, P., & Sarrafzadegan, N. (2021). Community-based cardiovascular disease prevention programmes and cardiovascular risk factors: A systematic review and meta-analysis. *Public Health*, *200*, 59–70. https://doi.org/10.1016/j.puhe.2021.09.006

Spencer, G., Smith, M., Hoare, K., Fouché, C., & Thompson, J. (2022). Health experiences of child migrants in the Western Pacific region. *Journal of the Royal Society of New Zealand*, *52*(1), 25–37. https://doi.org/10.1080/03036758.2020.1776739

Stanifer, J. W., Karia, F., Voils, C. I., Turner, E. L., Maro, V., Shimbi, D., Kilawe, H., Lazaro, M., & Patel, U. D. (2015). Development and validation of a cross-cultural knowledge, attitudes, and practices survey instrument for chronic kidney disease in a Swahili-speaking population. *PloS One*, *10*(3), e0121722.

Stanifer, J. W., Turner, E. L., Egger, J. R., Thielman, N., Karia, F., Maro, V., Kilonzo, K., Patel, U. D., & Yeates, K. (2016). Knowledge, attitudes, and practices associated with chronic kidney disease in northern Tanzania: A community-based study. *PloS One*, *11*(6), e0156336–e0156336. https://doi.org/10.1371/journal.pone.0156336

Stats NZ. (2020a). *2013 Census ethnic group profiles: Fijian Indian.* https://www.stats.govt.nz/tools/2013-census-ethnic-group-profiles

Stats NZ. (2020b). *2018 Census data allows users to dive deep into New Zealand's diversity*. https://www.stats.govt.nz/news/2018-census-data-allows-users-to-dive-deep-into-new-zealands-diversity/

Stats NZ. (2021a). *2018 Census ethnic group summaries*. https://www.stats.govt.nz/tools/2018-census-ethnic-group-summaries

Stats NZ. (2021b). *Fijian Indian ethnic group*. https://www.stats.govt.nz/tools/2018-census-ethnic-group-summaries/fijian-indian

Stats NZ. (2022). *Subnational ethnic population projections: 2018(base)–2043*. https://www.stats.govt.nz/information-releases/subnational-ethnic-population-projections-2018base2043/

Stewart, J., Manmathan, G., & Wilkinson, P. (2017). Primary prevention of cardiovascular disease: A review of contemporary guidance and literature. *JRSM Cardiovascular Disease*, *6*, 2048004016687211. https://doi.org/10.1177/2048004016687211

Streiner, D. L. (2003). Starting at the beginning: An introduction to coefficient alpha and internal consistency. *Journal of Personality Assessment*, *80*(1), 99–103. https://doi.org/10.1207/S15327752JPA8001_18

Sulat, J. S., Prabandari, Y. S., Sanusi, R., Hapsari, E. D., & Santoso, B. (2018). The validity of Health Belief Model variables in predicting behavioral change: A scoping review. *Health Education*, *118*(6), 499–512. https://doi.org/10.1108/HE-05-2018-0027

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Tarkang, E. E., & Zotor, F. B. (2015). Application of the Health Belief Model (HBM) in HIV prevention: A literature review. *Central African Journal of Public Health*, *1*(1), 1–8.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, *2*, 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd

Taylor, R., Carter, K., Naidu, S., Linhart, C., Azim, S., Rao, C., & Lopez, A. D. (2013). Divergent mortality trends by ethnicity in Fiji. *Australian & New Zealand Journal of Public Health*, *37*(6), 509–515. https://doi.org/10.1111/1753-6405.12116

Te Kete Ipurangi. (2014). *The New Zealand Curriculum—Health and physical education*. https://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum/Health-and-physical-education/What-is-HPE-about

Te Whatu Ora. (2022). *Who we're working with*. https://www.tewhatuora.govt.nz/our-health-system/who-were-working-with/

The Heart Foundation. (2022). *Shared decision making in cardiovascular risk assessment and management—Position statement.*

https://www.heartfoundation.org.nz/resources/shared-decision-making-cardiovascular-risk-position-statement

The Institute for Health Metrics and Evaluation. (2022). *Fiji*. https://www.healthdata.org/fiji

The Joanna Briggs Institute. (2015). *Joanna Briggs Institute reviewers' manual: 2015 edition/Supplement*.

The University of Auckland. (2022). *Doing reflexive TA*. https://www.thematicanalysis.net/doing-reflexive-ta/

Thompson, S. R., Watson, M. C., & Tilford, S. (2018). The Ottawa Charter 30 years on: Still an important standard for health promotion. *International Journal of Health Promotion & Education*, *56*(2), 73–84. https://doi.org/10.1080/14635240.2017.1415765

Tiatia, J. (2008). *Pacific cultural competencies: A literature review*. Ministry of Health. Wellington.

Tiwaskar, M., & Sholapuri, D. (2021). An assessment of knowledge, attitude, and practices of physicians in the management of hyperuricemia in India: A questionnaire-based study. *The Journal of the Association of Physicians of India*, *69*(4), 11–12.

Tovar, E. G., Rayens, M. K., Clark, M., & Nguyen, H. (2010). Development and psychometric testing of the Health Beliefs Related to Cardiovascular Disease Scale: Preliminary findings. Journal of Advanced Nursing, 66(12), 2772–2784.

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D., Horsley, T., & Weeks, L. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, *169*(7), 467–473.

Trnka, S. (2005). Land, life and labour: Indo-Fijian claims to citizenship in a changing Fiji. *Oceania*, *75*(4), 354–367.

Tsai, M.-C., Lee, C.-C., Liu, S.-C., Tseng, P.-J., & Chien, K.-L. (2020). Combined healthy lifestyle factors are more beneficial in reducing cardiovascular disease in younger adults: A meta-analysis of prospective cohort studies. *Scientific Reports*, *10*(1), 18165. https://doi.org/10.1038/s41598-020-75314-z

Tsang, S., Royse, C. F., & Terkawi, A. S. (2017). Guidelines for developing, translating, and validating a questionnaire in perioperative and pain medicine. *Saudi Journal of Anaesthesia*, *11*(Suppl 1), S80–S89. https://doi.org/10.4103/sja.SJA_203_17

ul Haq, N., Hassali, M. A., Shafie, A. A., Saleem, F., Farooqui, M., & Aljadhey, H. (2012). A cross sectional assessment of knowledge, attitude and practice towards Hepatitis B among healthy population of Quetta, Pakistan. *BMC Public Health*, *12*(1), 692. https://doi.org/10.1186/1471-2458-12-692

UNICEF. (2020). *Engagement with religious leaders in South Asia*. https://www.unicef.org/rosa/reports/engagement-religious-leaders-south-asia

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Globalization & Higher Education in Economics & Business Administration—GEBA 2013*, *20*, 679–686. https://doi.org/10.1016/S2212-5671(15)00123-9

Vaidya, A., Aryal, U. R., & Krettek, A. (2013). Cardiovascular health knowledge, attitude and practice/behaviour in an urbanising community of Nepal: A population-based cross-sectional study from Jhaukhel-Duwakot Health Demographic Surveillance Site. *BMJ Open*, *3*(10), e002976.

Vaidya, A., Shakya, S., & Krettek, A. (2010). Obesity prevalence in Nepal: Public health challenges in a low-income nation during an alarming worldwide trend.

International Journal of Environmental Research & Public Health, 7(6), 2726–2744. https://doi.org/10.3390/ijerph7062726

Vaidya, B., Bhochhibhoya, M., Baral, R., & Nakarmi, S. (2020). Knowledge, attitudes, and practice regarding COVID-19 among patients with musculoskeletal and rheumatic diseases in Nepal: A web-based cross-sectional study. *Open Access Rheumatology: Research and Reviews*, 12, 167–173. https://doi.org/10.2147/OARRR.S265816

Verma, A., Mehta, S., Mehta, A., & Patyal, A. (2019). Knowledge, attitude and practices towards health behavior and cardiovascular disease risk factors among the patients of metabolic syndrome in a teaching hospital in India. *Journal of Family Medicine & Primary Care*, 8(1), 178–183. https://doi.org/10.4103/jfmpc.jfmpc_257_18

Villablanca, A. C., McDonald, J. M., & Rutledge, J. C. (2000). Smoking and cardiovascular disease. *Clinics in Chest Medicine*, 21(1), 159–172. https://doi.org/10.1016/S0272-5231(05)70015-0

Virupaksha, H. G., Kumar, A., & Nirmala, B. P. (2014). Migration and mental health: An interface. *Journal of Natural Science, Biology, & Medicine*, 5(2), 233–239. PubMed. https://doi.org/10.4103/0976-9668.136141

Voigt-Graf, C. (2008). Transnationalism and the Indo-Fijian diaspora: The relationship of Indo-Fijians to India and its people. *Journal of Intercultural Studies*, 29(1), 81–109. https://doi.org/10.1080/07256860701759956

Wagman, P., Håkansson, C., & Jonsson, H. (2015). Occupational balance: A scoping review of current research and identified knowledge gaps. *Journal of Occupational Science*, 22(2), 160–169.

Wagner, J., Lacey, K., Chyun, D., & Abbott, G. (2005). Development of a questionnaire to measure heart disease risk knowledge in people with diabetes: The Heart Disease Fact Questionnaire. *Patient Education & Counseling*, 58(1), 82–87.

Waitemata District Health Board. (2021). *ECALD*. https://www.ecald.com/about-us/about-ecald/

Walker, A. R. (2005). Indians in Fiji. In M. Ember, C. R. Ember, & I. Skoggard (Eds.), *Encyclopedia of diasporas: Immigrant and refugee cultures around the world* (pp. 836–850). Springer US. https://doi.org/10.1007/978-0-387-29904-4_86

Wang, J., Chen, L., Yu, M., & He, J. (2020). Impact of knowledge, attitude, and practice (KAP)-based rehabilitation education on the KAP of patients with intervertebral disc herniation. Annals of Palliative Medicine, 9(2), 388–393. https://doi.org/10.21037/apm.2020.03.01.

Wang, R., Yang, Y., Chen, R., Kan, H., Wu, J., Wang, K., Maddock, J., & Lu, Y. (2015). Knowledge, attitudes, and practices (KAP) of the relationship between air pollution and children's respiratory health in Shanghai, China. *International Journal of Environmental Research & Public Health*, 12, 1834–1848. https://doi.org/10.3390/ijerph120201834

Watkins, M. W. (2018). Exploratory factor analysis: A guide to best practice. *Journal of Black Psychology*, 44(3), 219–246. https://doi.org/10.1177/0095798418771807

Watson, M. (2008). Going for gold: The health promoting general practice. *Quality in Primary Care*, 16(3), 177–185.

Wells, S., Riddell, T., Kerr, A., Pylypchuk, R., Chelimo, C., Marshall, R., Exeter, D. J., Mehta, S., Harrison, J., Kyle, C., Grey, C., Metcalf, P., Warren, J., Kenealy, T., Drury, P. L., Harwood, M., Bramley, D., Gala, G., & Jackson, R. (2017). Cohort profile: The PREDICT cardiovascular disease cohort in New Zealand primary care (PREDICT-CVD 19). *International Journal of Epidemiology*, 46(1), 22–22. https://doi.org/10.1093/ije/dyv312

West, D. S., Gorin, A. A., Subak, L. L., Foster, G., Bragg, C., Hecht, J., Schembri, M., Wing, R. R., & the Program to Reduce Incontinence by Diet and Exercise (PRIDE) Research Group. (2011). A motivation-focused weight loss maintenance program is an effective alternative to a skill-based approach. *International Journal of Obesity*, *35*(2), 259–269. https://doi.org/10.1038/ijo.2010.138

Willis, A., Davies, M., Yates, T., & Khunti, K. (2012). Primary prevention of cardiovascular disease using validated risk scores: A systematic review. *Journal of the Royal Society of Medicine*, *105*(8), 348–356. https://doi.org/10.1258/jrsm.2012.110193

Wilson, C., & Stock, J. (2019). The impact of living with long-term conditions in young adulthood on mental health and identity: What can help? *Health Expectations*, *22*(5), 1111–1121. https://doi.org/10.1111/hex.12944

Wong, A. (2015). *Challenges for Asian health and Asian health promotion in New Zealand.* Health Promotion Forum of New Zealand.

Woringer, M., Nielsen, J. J., Zibarras, L., Evason, J., Kassianos, A. P., Harris, M., Majeed, A., & Soljak, M. (2017). Development of a questionnaire to evaluate patients' awareness of cardiovascular disease risk in England's National Health Service Health Check preventive cardiovascular programme. *BMJ Open*, *7*(9), e014413.

World Health Organization. (1986). *Ottawa charter for health promotion.* https://www.euro.who.int/__data/assets/pdf_file/0004/129532/Ottawa_Charter.pdf

World Health Organization. (2000). *The Asia-Pacific perspective: Redefining obesity and its treatment.*

World Health Organization. (2001). *AUDIT: The Alcohol Use Disorders Identification Test: Guidelines for use in primary health care.*

World Health Organization. (2008). Advocacy, communication and social mobilization for TB control- A guide to developing knowledge, attitude and practice surveys. http://whqlibdoc.who.int/publications/2008/9789241596176_eng.pdf

World Health Organization. (2009). *Milestones in health promotion: Statements from global conferences* (No. 6161115336).

World Health Organization. (2011). *The Fiji Islands health system review*. Regional Office for the Western Pacific.

World Health Organization. (2012). *Ottawa charter for health promotion.* https://www.who.int/publications/i/item/ottawa-charter-for-health-promotion

World Health Organization. (2013). *Global action plan for the prevention and control of noncommunicable diseases 2013–2020.*

World Health Organization. (2021a). *Cardiovascular diseases (CVDs).* https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)

World Health Organization. (2021b). *The 1st International Conference on Health Promotion, Ottawa, 1986.* https://www.who.int/teams/health-promotion/enhanced-wellbeing/first-global-conference

World Health Organization, E. (2022a). *Data and statistics.* https://www.euro.who.int/en/health-topics/noncommunicable-diseases/cardiovascular-diseases/data-and-statistics

World Health Organization, E. (2022b). *Migration and health: Key issues.* https://www.euro.who.int/__data/assets/pdf_file/0005/293270/Migration-Health-Key-Issues-.pdf

World Health Organization. (2022c). *Health Promoting Schools.* https://www.who.int/health-topics/health-promoting-schools#tab=tab_1

World Health Organization Regional Office for Europe. (2018). *Health promotion for improved refugee and migrant health: Technical guidance*. https://apps.who.int/iris/handle/10665/342287

World Population Review. (2021). *World population review—Fiji population 2021* (Live). http://worldpopulationreview.com/countries/fiji-population/

World Population Review. (2022). *World population review—Fiji population 2022* (Live). https://worldpopulationreview.com/countries/fiji-population/

Wu, Q., Ge, T., Emond, A., Foster, K., Gatt, J. M., Hadfield, K., Mason-Jones, A. J., Reid, S., Theron, L., Ungar, M., & Wouldes, T. A. (2018). Acculturation, resilience, and the mental health of migrant youth: A cross-country comparative study. *Public Health*, *162*, 63–70. https://doi.org/10.1016/j.puhe.2018.05.006

Wu, X., Li, X., Su, T., Liang, J., Wang, L., Huang, Q., Zhang, J., Wang, S., Wang, N., & Xiang, R. (2022). Development and validation of a questionnaire to evaluate the knowledge, attitude, behaviour and care preference of family members of Chinese older adults related to palliative care. Nursing Open, 00, 1–14. https://doi.org/10.1002/nop2.1334

Xu, W.-H., Zhang, X.-L., Gao, Y.-T., Xiang, Y.-B., Gao, L.-F., Zheng, W., & Shu, X.-O. (2007). Joint effect of cigarette smoking and alcohol consumption on mortality. *Preventive Medicine*, *45*(4), 313–319. https://doi.org/10.1016/j.ypmed.2007.05.015

Yakubu, I., Garmaroudi, G., Sadeghi, R., Tol, A., Yekaninejad, M. S., & Yidana, A. (2019). Assessing the impact of an educational intervention program on sexual abstinence based on the Health Belief Model amongst adolescent girls in Northern Ghana, a cluster randomised control trial. *Reproductive Health*, *16*(1), 124. https://doi.org/10.1186/s12978-019-0784-8

Yaman Güncan, N., Kurcer, M. A., & Erdogan, Z. (2021). The evaluation of the smoking cessation behaviors of coal miners according to the Health Belief Model: A cross-sectional study. *Archives of Environmental & Occupational Health*, *76*(8), 539–546. https://doi.org/10.1080/19338244.2021.1950598

Yang, H., Gao, J., Ren, L., Li, S., Chen, Z., Huang, J., Zhu, S., & Pan, Z. (2017). Association between knowledge-attitude-practices and control of blood glucose, blood pressure, and blood lipids in patients with Type 2 diabetes in Shanghai, China: A cross-sectional study. *Journal of Diabetes Research*, *2017*, 3901392. https://doi.org/10.1155/2017/3901392

Young, P., Peiris-John, R., Zhou, L., Ryu, G., Gao, G., Rishi, V., Yeo, I., Adhikari, R., Ma, T., & Singh, G. (2022). *Statement on the health system reform for Asian and ethnic communities.* Public Health Association New Zealand. https://www.pha.org.nz/page-18200/12829612

Yusuf, S., Reddy, S., Ôunpuu, S., & Anand, S. (2001). Global burden of cardiovascular diseases. *Circulation*, *104*(22), 2746–2753. https://doi.org/10.1161/hc4601.099487

Zimmet, P., Taylor, R., Ram, P., King, H., Sloman, G., Raper, L. R., & Hunt, D. (1983). Prevalence of diabetes and impaired glucose tolerance in the biracial (Melanesian and Indian) population of Fiji: A rural-urban comparison. American Journal of Epidemiology, 118(5), 673–688.

Zuraida, E., Irwan, A. M., & Sjattar, E. L. (2022). Self-care management education through health coaching for heart failure patients. *The Journal for Nurse Practitioners*, *18*(2), 172–178. https://doi.org/10.1016/j.nurpra.2021.09.017

Appendices

Appendix 1: Fijian Indian Community Statistics

A. Population Counts, over time for Fijian Indian and Indian ethnic group, 2006–2018 Censuses (Stats NZ, 2021b).

	2006 (count)	2013 (count)	2018 (count)
Fijian Indian	5,619	10,926	15,132
Indian	104,583	155,178	239,193

B. Population, by age and sex, for Fijian Indian ethnic group, 2018 Census (Stats NZ, 2021b).

Population, by age and sex, for the Fijian Indian ethnic group, 2018 Census
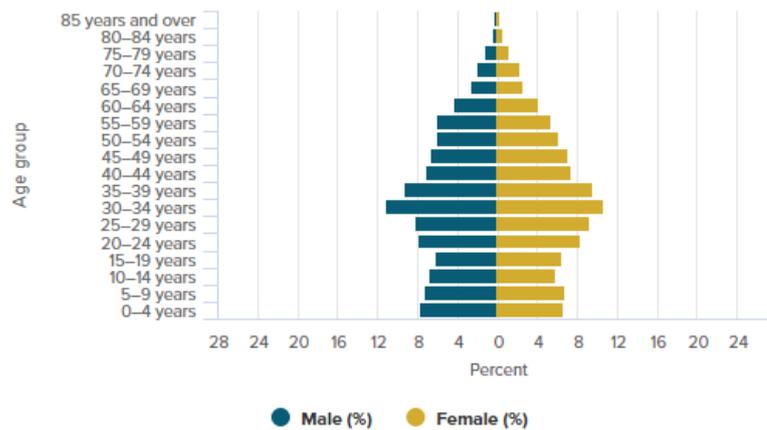
C. Number of languages spoken by the Fijian Indian ethnic group, 2006–2018 Censuses (Stats NZ, 2021b).

Number of languages spoken by the Fijian Indian ethnic group, 2006–18 Censuses
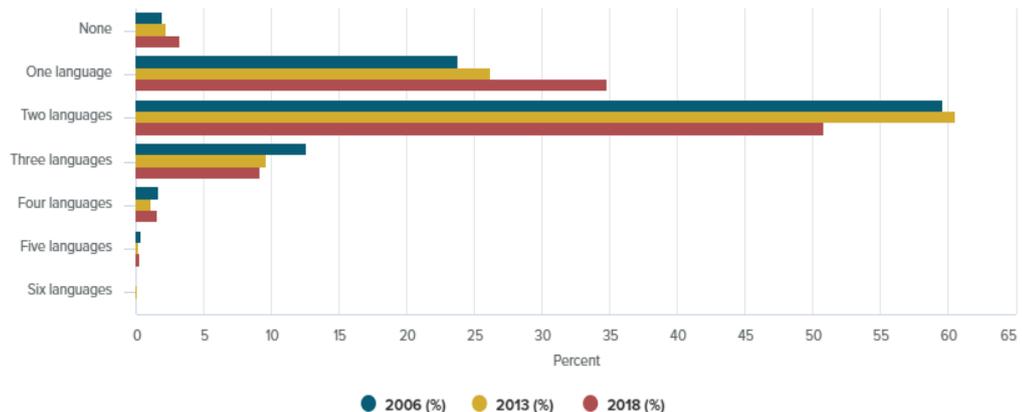
D. Population, by regional council, for the Fijian Indian and Indian ethnic groups, 2018 Census (Stats NZ, 2021b).

Population, by regional council, for the Fijian Indian and Indian ethnic groups, 2018 Census
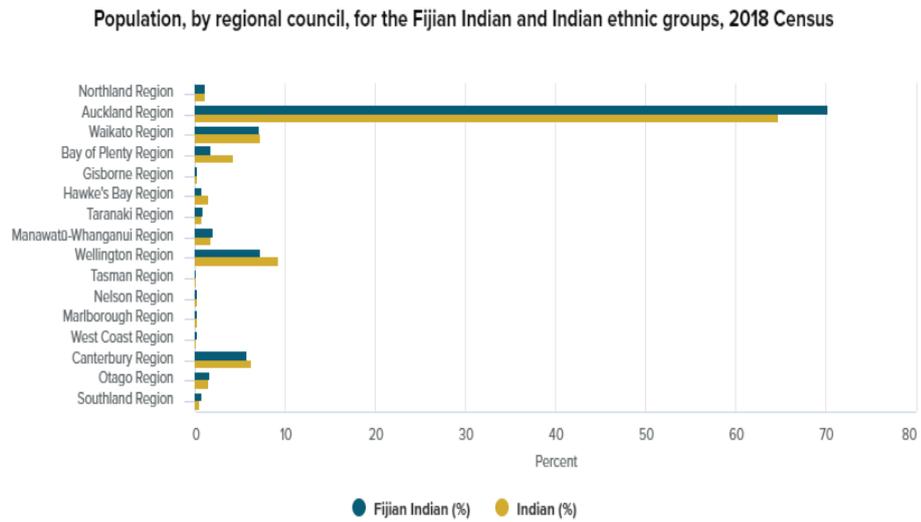
E. Years since arrival in NZ for the Fijian Indian ethnic group, 2006–2018 Censuses (Stats NZ, 2021b)

Years since arrival in New Zealand for the Fijian Indian ethnic group, 2006–18 Censuses
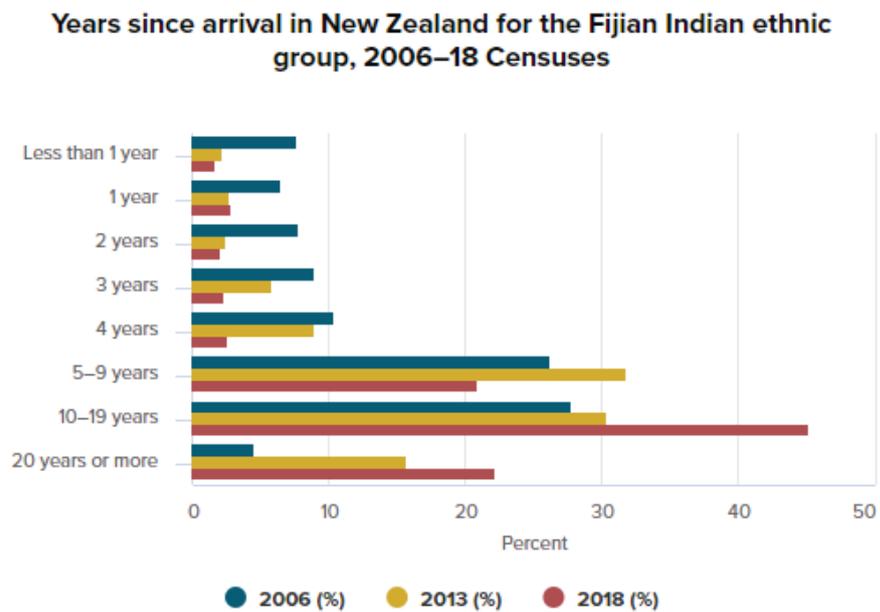
F. Birthplace for the Fijian Indian ethnic group, 2006-18 Censuses (Stats NZ, 2021b).

Birthplace for the Fijian Indian ethnic group, 2006–18 Censuses
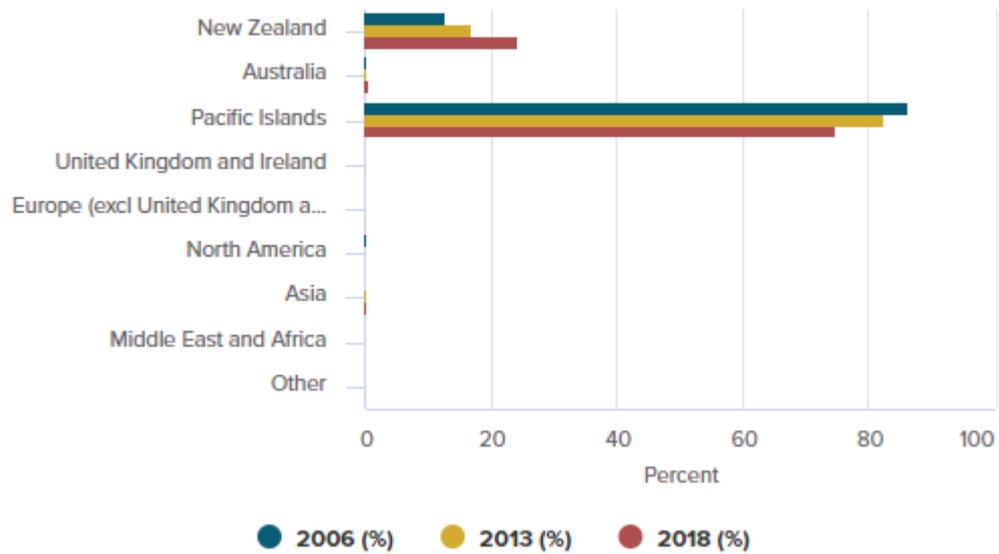
G. Religious affiliation for the Fijian Indian ethnic group, 2006-2018 Censuses (Stats NZ, 2021b).

Religious affiliation for the Fijian Indian ethnic group, 2006–18 Censuses
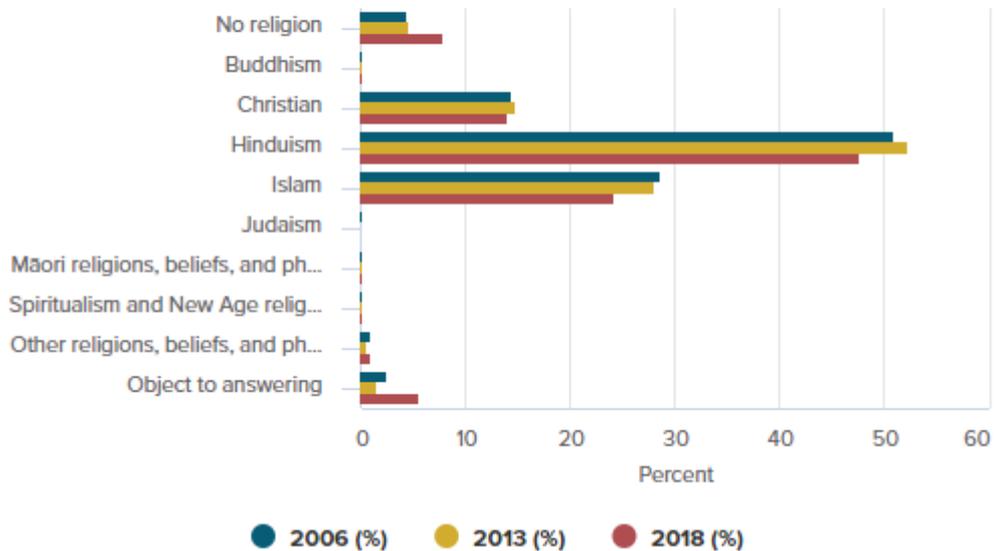
H. Number of children born to each female for the Fijian Indian ethnic group, 2006-2018 Censuses (Stats NZ, 2021b).

Number of children born to each female for the Fijian Indian ethnic group, 2006–18 Censuses
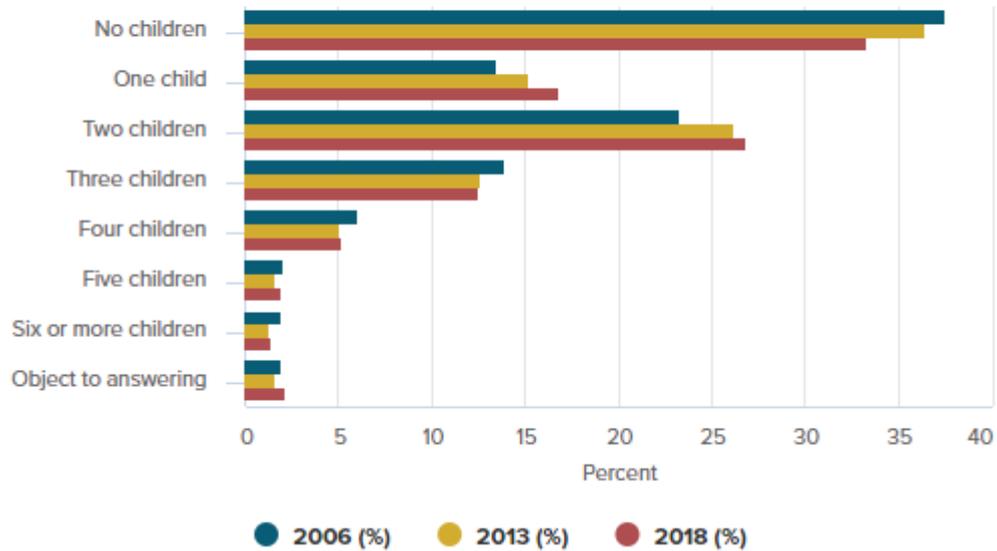
I. Occupations for the Fijian Indian and Indian ethnic groups in NZ, 2018 Census (Stats NZ, 2021b).

Occupations for the Fijian Indian and Indian ethnic groups, 2018 Census
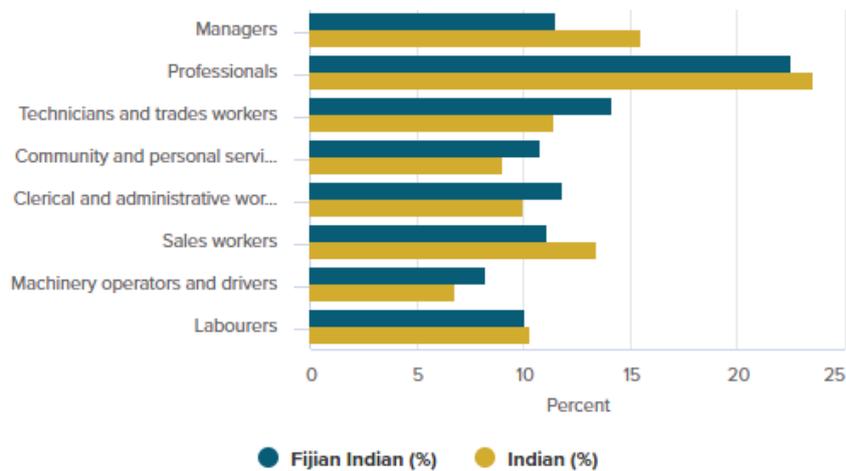
J. Sources of personal income, by birthplace for the Fijian Indian ethnic group, 2018 Census (Stats NZ, 2021b).

Sources of personal income	NZ born (%)	Overseas born (%)
No source of income during that time	19	8.6
Wages, salary, commissions, bonuses etc	65.9	69.6
Self-employment or business	5.1	10.9
Interest, dividends, rent, other investments	4.9	5.4
Payments from a work accident insurer	1.2	1.2
NZ superannuation or veterans pension	0.7	5.7
Other superannuation, pensions, or annuities	0	1.3
Jobseeker support	7.3	3.8
Sole parent support	1.7	0.9
Supported living payment	1.9	1.9
Student allowance	12.2	2.1
Other government transfers	3.4	4.8
Other sources of income	1.9	0.5

K. Highest qualifications for the Fijian Indian and Indian ethnic groups, 2018 Census (Stats NZ, 2021b).

Highest qualifications for the Fijian Indian and Indian ethnic groups, 2018 Census
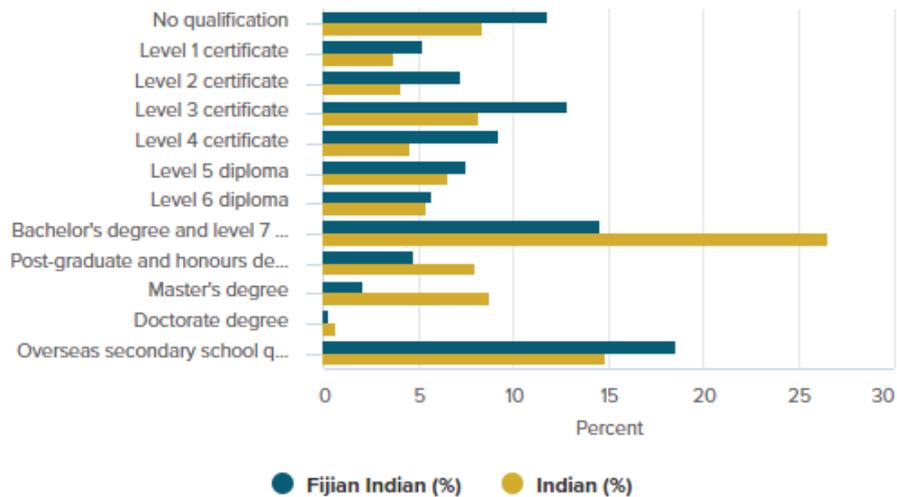
L. Study participation, for the Fijian Indian and Indian ethnic groups, 2018 Census (Stats NZ, 2021b).

Study participation, for the Fijian Indian and Indian ethnic groups, 2018 Census
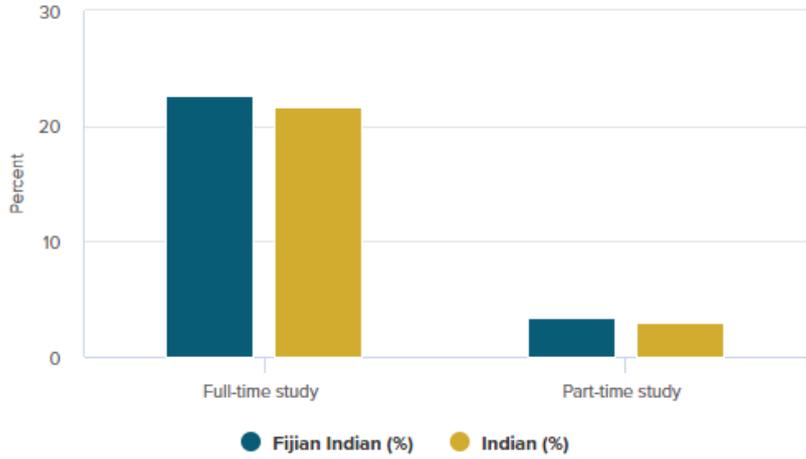
Appendix 2: New Zealand Health System

A. The future of the New Zealand Health System (Department of the Prime Minister and Cabinet, 2021a).
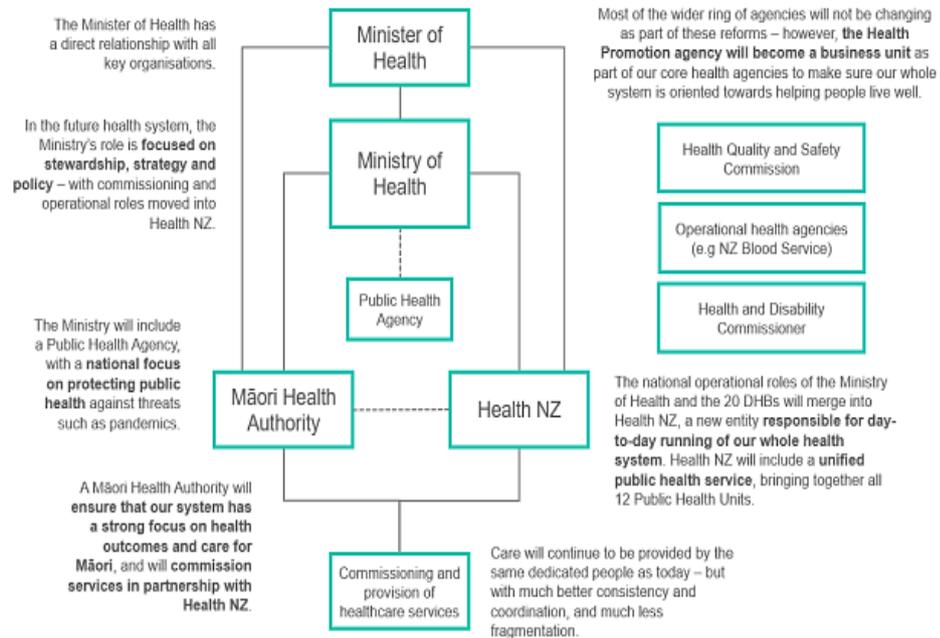
B. All New Zealanders live well, stay well, get well in a system that is people-powered, provides services close to home, is designed for value and high performance, and works as one team in a smart system (Minister of Health, 2016a).

C. Summary of Actions under the themes—People-powered and Closer to Home in New Zealand Health Strategy—Roadmap of Actions 2016 (Minister of Health, 2016b).

People-powered *Mā te iwi hei kawe*	1.	Inform people about public and personal health services so they can be 'health smart' and have greater control over their health and wellbeing.
	2.	Make the health system more responsive to people.
	3.	Engage the consumer voice by reporting progress against measures important to the public, building local responses and increasing participation of priority groups.
	4.	Promote people-led service design, including for high-need priority populations.
	5.	In selected high-need communities, build on, align, clarify and simplify multiple programmes of social investment.
Closer to home *Ka aro mai ki te kāinga*	6.	Ensure the right services are delivered at the right location in an equitable and clinically and financially sustainable way.
	7.	Enable all people working in the health system to add the greatest value by providing the right care at the earliest time, fully utilising their skills and training.
	8.	Increase the effort on prevention, early intervention, rehabilitation and wellbeing for people with long-term conditions. This includes addressing common risk factors.
	9.	Collaborate across government agencies, using social investment approaches, to improve the health outcomes and equity of health and social outcomes for children, young people, families and whānau, particularly those at risk.
	10.	Involve health and other social services in developing shared care for older people with high and complex needs in residential care facilities or those needing support at home.
	11.	Support clinicians and people in developing advance care plans and advance directives.
	12.	Review adult palliative care services to ensure all those who would benefit from palliative care at the end of their life are able to access high-quality care and have a seamless experience.

Value and high performance *Te whāinga hua me te tika o ngā mahi*	13. Enable people to be partners in the search for value by developing measures of service user experience and improving public reporting of performance.
	14. Implement a framework focused on health outcomes to better reflect links between people, their needs and outcomes of services.
	15. Work with the system to develop a performance management approach with reporting that makes the whole system publicly transparent.
	16. Maintain the direction set by the Strategy through monitoring and evaluation, and advice from a Strategy Leadership Group.
	17. Align funding across the system to get the best value from health investment.
	18. Continue to develop the application of the social investment approach to health investment with DHBs. Consider using this approach to improve overall outcomes for high-need priority populations, while developing and spreading better practices.
	19. Continuously improve system quality and safety.
One team *Kotahi te tīma*	20. Improve governance and decision-making processes across the system in order to improve overall outcomes, by focusing on capability, innovation and best practice.
	21. Clarify roles, responsibilities and accountabilities across the system as part of the process of putting the Strategy into action.
	22. Create a 'one-team' approach to health in New Zealand through an annual forum for the whole system to share best practice and help build a culture of trust and partnership.
	23. Put in place a system leadership and talent management programme to enhance capacity, capability, diversity and succession planning throughout the sector.
	24. Put in place workforce development initiatives to enhance capacity, capability, diversity and succession planning and build workforce flexibility.
Smart system *He atamai te whakaraupapa*	25. Increase New Zealand's national data quality and analytical capability to make the whole health system more transparent and provide useful information for designing and delivering effective services.
	26. Establish a national electronic health record that is accessed through certified systems including patient portals, health provider portals and mobile applications.
	27. Develop capability for effectively identifying, developing, prioritising, regulating and introducing knowledge and technologies.

Appendix 3: Draft KAP of CVD Survey Questions

DRAFT SURVEY—PART 1 (PARTICIPANT DEMOGRAPHICS & CURRENT HEALTH STATUS)

Question	Answer Options	Justification/Comments
1. Which gender do you identify most with?	o Male o Female o Transgender Female o Transgender Male o Gender Variant/Non-conforming o Not listed (please specify) o I prefer not to disclose	*General demographics—total sample population*
2. Age (in years)	*n* years	"
3. Country of Birth?	*(Type Field)*	"
4. What is your marital status?	o Single o Married o Widowed o Divorced	"
5. What is your highest level of education attained	o No schooling completed o Primary School o High School o Diploma/Certificate o Trade/Technical training o Bachelor's Degree o Postgraduate Diploma o Master's Degree o Doctor of Philosophy	"
6. In what languages can you speak fluently? (Please select all that apply)	o English o Fiji Hindustani (Fiji Hindi) o Hindi o Fijian o Other (please specify)	"

	Question	Options		Reference	Comment
7.	What is your current employment status?	o o o o o o o o	Unable to work Employed full time (40 or more hours per week) Employed part time (up to 39 hours per week) Unemployed Self-employed Student Homemaker Retired		*Indication of social economic status*

The next section is about your current health status, your family history and awareness of cardiovascular disease.

Question		*Options*		*Reference*	*Comment*
8.	In general, you would consider your health to be?	o o o o o	Excellent Very Good Good Fair Poor	Andsoy et al (2015)	*Relevant to perception of their own health*
9.	Do you have a family doctor?	o o	Yes No	Andsoy et al (2015)	*Indication of health care seeking behaviour*
10.	When was your latest health check-up at your local health centre or family doctor's?	o o o o o	Within the last 3 months Within the last 6 months Within 1 year In the last 2 years and over Not sure	Andsoy et al (2015)	*Relevant to practice— general health awareness*
11.	Are you a smoker?	o o o	Yes No Ex-smoker		*Relevant to practice— health behaviours*
	If yes,	o o o o o	I am a social smoker Up to 5 times a week Up to 10 per day Up to 11−19 per day More than 20 per day	Ministry of Health— CVDRA and Management of Primary Care	

12. Do you drink alcohol?	o Yes o No		*Relevant to practice—health behaviours*
If yes,	o Every day o 3−5 times a week o Once a week o Only on weekends o On special occasions		
13. Do you drink kava?	o Yes o No		*Relevant to practice—health behaviours + relevant to target community*
If yes,	o Every day o 3−5 times a week o Once a week o Only on weekends o On special occasions		
14. Have you been diagnosed by a doctor or registered health professional as having high blood pressure?	o Yes o No o Not sure	Andsoy et al (2015)	*Relevant to CVD risk factors*
If yes, Are you currently taking medications to control your blood pressure?	o Yes o No o Not sure		
If yes, how long have you been taking this medication?	o 1 to 3 months o Less than 6 months o 6 months to 1 year o 2 to 5 years o More than 5 years		
15. Have you had a fasting blood glucose test before?	o Yes o No o Not sure	Andsoy et al (2015)	*Relevant to practice—general health awareness*

16. Have you been diagnosed by a doctor or registered health professional as being pre-diabetic?	○ Yes ○ No ○ Not sure		*Relevant to CVD risk factors*
If yes, Are you currently taking medications to control your blood glucose levels?	○ Yes ○ No ○ Not sure		
If yes, how long have you been taking this medication?	○ 1 to 3 months ○ Less than 6 months ○ 6 months to 1 year ○ 2 to 5 years ○ More than 5 years		
17. Have you been diagnosed by a doctor or registered health professional as having Type 1 or Type 2 Diabetes?	○ Yes ○ No ○ Not sure	Andsoy et al (2015)	*Relevant to CVD risk factors*
If yes, Which of the following have you been diagnosed with?	○ Type 1 Diabetes ○ Type 2 Diabetes		
Following selection, Are you currently taking medications to control your blood sugar levels?	○ Yes ○ No ○ Not sure	Andsoy et al (2015)	
If yes, how long have you been taking this medication?	○ 1 to 3 months ○ Less than 6 months ○ 6 months to 1 year ○ 2 to 5 years ○ More than 5 years		
18. Have you been diagnosed by a doctor or registered health professional as having high cholesterol?	○ Yes ○ No ○ Not sure	Andsoy et al (2015)	*Relevant to CVD risk factors*
If yes, Are you currently taking medications to control your cholesterol levels?	○ Yes ○ No ○ Not sure	Andsoy et al (2015)	

If yes, how long have you been taking this medication?	o 1 to 3 months o Less than 6 months o 6 months to 1 year o 2 to 5 years o More than 5 years		
19. In a typical week, how many days do you do at least 30 minutes of exercise (such as walking, running, cycling, jogging)?	o 0 days o 1−2 days o 3−4 days o 5−6 days o 7 days	Awad & Al-Nafisi (2014)	*Relevant to practice—health behaviours*
20. How often do you eat healthy food? (Plenty of fruits and vegetables, foods low in saturated fat, cholesterol, salt and high fibre?)	o Not every day o Every day	Awad & Al-Nafisi (2014	*Relevant to practice—health behaviours*
21. Do you know what your current Body Mass Index (BMI) is?	o Not sure o Less than 18.5 o 18.5–25 o 25−30 o 30−35 o 35−40 o More than 40		*Relevant to CVD risk factors*
22. How do you describe your lifestyle?	o Very stressful o Stressful o Relatively stressful o Free from stress	Awad & Al-Nafisi (2014)	*Perception and Relevant to practice—health behaviours*
23. Please indicate if any of the following medical conditions/procedures are known in your <u>immediate family</u> history (i.e. parents, grandparents and siblings):	o Hypertension (High blood pressure) o Diabetes Mellitus o Hypercholesterolemia (High cholesterol) o Heart Disease o Cardiovascular Surgery o Atrial Fibrillation o Stroke	Andsoy et al (2015)	*Family history—CVD risk factor*

24. Have you ever been hospitalised due to problems with your heart or blood pressure?	o Yes o No o Not sure		*Relevant to practice—general health awareness*
25. In the past, have you had a cardiovascular risk assessment done?	o Yes o No o Not sure		*"*
26. What do you think your level of risk is for cardiovascular disease?	o Not sure o <3% o 3−9% o 10−14% o 15+%	Andsoy et al (2015) + MOH CVDRA and Management of Primary Care	*"*
27. What sources have you used to find out more about cardiovascular health and disease?	o None o Physician/Family Doctor/GP o Radio/Television o Family/Friends o Nurse o Internet o Written information i.e. pamphlet, information booklet o Other (please specify)	Andsoy et al (2015)	*Relevant to future improvements of resources—indication of best information source*

PART 2 (KNOWLEDGE, ATTITUDES AND PRACTICES OF CV HEALTH AND DISEASE)

SECTION 1: KNOWLEDGE OF CARDIOVASCULAR HEALTH & DISEASE					
Question	*Options*	*Correct/Expected Response*	*Reference*	*Comment*	*Relevant to RQ1?*
Cardiovascular disease is a disease that is related to heart and blood vessels	o True o False	True	Ibrahim et al (2016)	*Merged two questions from the original reference* *Basic knowledge of the term*	✓
Which of the following factors increase the risk of a heart attack or heart disease?	o High blood pressure o High blood sugar o High cholesterol o Physical inactivity o Overweight o Cigarette/Smoking o Smokeless tobacco o Excessive alcohol o Excess stress o Family history of a heart attack o All of the above	All of the above	Vaidya et al (2013) Mayo Clinic	*Addresses knowledge of the common/known risk factors*	✓
Symptoms of a heart attack can include…	o Difficulty in breathing o Pain in the chest, teeth and jaw o Pain or numbness in the arms o Excessive sweating/cold sweat o Vomiting tendency (nausea) o Dizziness or light-headedness o Heartburn/Indigestion o Fatigue o Loss of consciousness	All of the above	Vaidya et al (2013) Mayo Clinic	*Knowledge of the signs and symptoms of a heart attack are really important*	✓

	o All of the above				✓
A person always knows when they have heart disease	o True o False	False	Wagner et al (2006)		✓
If you have a family history of heart disease, you are at risk of developing heart disease	o True o False	True	Wagner et al (2006)		✓
The older a person is, the greater their risk of having heart disease	o True o False	True	Wagner et al (2006)		✓
Smoking is a risk factor for heart disease	o True o False	True	Wagner et al (2006)		✓
A person who stops smoking will lower their risk of developing heart disease	o True o False	True	Wagner et al (2006)		✓
High blood pressure is a risk factor for heart disease	o True o False	True	Wagner et al (2006)		✓
Keeping blood pressure under control will reduce a person's risk for developing heart disease	o True o False	True	Wagner et al (2006)		✓
High cholesterol is a risk factor for developing heart disease	o True o False	True	Wagner et al (2006)		✓
Eating fatty foods does not affect blood cholesterol levels	o True o False	False	Wagner et al (2006)		✓
If your 'good' cholesterol (HDL) is high you are at risk for heart disease	o True o False	False	Wagner et al (2006)		✓
If your 'bad' cholesterol (LDL) is high you are at risk for heart disease	o True o False	True	Wagner et al (2006)		✓
Being overweight increases a person's risk for heart disease	o True o False	True	Wagner et al (2006)		✓
Regular physical activity will lower a person's chance of getting heart disease	o True o False	True	Wagner et al (2006)		✓

Only exercising at a gym or in an exercise class will lower a person's chance of developing heart disease	o True o False	False	Wagner et al (2006)		✓
Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease	o True o False	True	Wagner et al (2006)		✓
Diabetes is a risk factor for developing heart disease	o True o False	True	Wagner et al (2006)		✓
Irregular eating patterns has no harm to your health	o True o False	False	Ibrahim et al (2016)		✓
Doing housework as an exercise is enough for a day	o True o False	False	Ibrahim et al (2016)		✓
If you have a slim body, you don't need to exercise	o True o False	False	Ibrahim et al (2016)		✓
Cardiovascular disease can occur to young people	o True o False	True	Ibrahim et al (2016)		✓
Eating a lot of red meat increases heart disease risk.	o True o False	True	Bergman et al (2011)		✓
Most people can tell whether or not they have high blood pressure.	o True o False	False	Bergman et al (2011)		✓
The most important cause of heart attacks is stress.	o True o False	False	Bergman et al (2011)		✓
The healthiest exercise for the heart involves rapid breathing for a sustained period of time.	o True o False	True	Bergman et al (2011)		✓
Men and women experience many of the same symptoms of a heart attack	o True o False	True	Bergman et al (2011)		✓
Heart disease is better defined as a short-term illness than a chronic, long-term illness.	o True o False	False	Bergman et al (2011)		✓

SECTION 2: ATTITUDE TOWARDS CARDIOVASCULAR HEALTH & DISEASE

Question	Options	Reference	Comment	Relevant to RQ2?
I don't perceive myself to be at risk of heart disease	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Vaidya et al (2013)	*Changed answer options for consistency*	✔
I don't want to change my lifestyle	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Vaidya et al (2013)	*Removed example in question—made question sound antagonizing*	✔
I feel the amount of food I eat is too much, and I would like to cut down	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Vaidya et al (2013)		✔
I feel my present weight is too high for my health	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Vaidya et al (2013)		✔
I don't think changing my behaviour will reduce my risk of developing heart disease	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Vaidya et al (2013)		✔
I don't have time to take care of myself	Strongly Disagree Disagree Uncertain Agree	Vaidya et al (2013)		✔

	Strongly Agree			✓
God or a higher power ultimately determines my health	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Vaidya et al (2013)		✓
I should be doing exercise to maintain a healthy lifestyle	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)		✓
If I need to go to places somewhere near, I choose to walk rather than taking any other mean of transportation.	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)	*Removed the example*	✓
I know smoking is bad for health.	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)		✓
I should maintain my weight according to my body mass index (BMI)	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)		✓
I should take less oily food for a healthy lifestyle	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)		✓
I prefer to spend more time on my electronic device(s) or watching tv rather than exercising	Strongly Disagree Disagree	Ibrahim et al (2016)	*Reworded the question*	✓

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	Uncertain Agree Strongly Agree			
I read the nutrition information of each product that I intended to buy	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)		✓
I choose to eat or buy fast food when going out with family or friends	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)	*Added family or friends to the question*	✓
I can manage my stress	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)		✓
I should avoid drinking carbonated drinks	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)		✓
Sometimes I eat dinner late at night before sleep	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)	*Changed supper to dinner*	✓
I believe walking a lot can give benefits to my health	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)	*As above.*	✓

I should take fruit or vegetable in my diet for maintaining my health	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)	*As above.*	✓
I should control my stress to avoid from getting any disease	Strongly Disagree Disagree Uncertain Agree Strongly Agree	Ibrahim et al (2016)	*As above.*	✓

SECTION 3: PRACTISE/BEHAVIOUR TOWARDS CARDIOVASCULAR HEALTH & DISEASE				
Question	*Options*	*Reference*	*Comment*	*Relevant to RQ3?*
Do you exercise more than 20mins 3x/week?	Never Rarely Sometimes Often Always	Mirza et al (2016)	*Added answer options*	✔
Do you use more than 3 teaspoons salt/day?	Never Rarely Sometimes Often Always	Mirza et al (2016)	*As above*	✔
Consume fatty foods more than 3x/week?	Never Rarely Sometimes Often Always	Mirza et al (2016)	*As above*	✔
Does your daily activity involve vigorous activity? (E.g. heavy lifting, digging)	Never Rarely Sometimes Often Always	Ibrahim et al (2016)	*Changed the Likert scale from 4 options to 5 options—for consistency.*	✔
Do you walk for at least 10 minutes to get to and from places such as café, classes, mosque etc.?	Never Rarely Sometimes Often Always	Ibrahim et al (2016)	*As above.*	✔
Do you spend your leisure time to exercise at least 20 minutes per session?	Never Rarely Sometimes Often	Ibrahim et al (2016)	*As above*	✔

	Always			
Do you take any health supplements or on a special diet? i.e. that is not recommended by a health professional	Never Rarely Sometimes Often Always	Ibrahim et al (2016)	*Reworded the question*	✓
How often do you take fruits in your diet?	Never Rarely Sometimes Often Always	Ibrahim et al (2016)	*As above*	✓
How often do you take vegetables in your diet?	Never Rarely Sometimes Often Always	Ibrahim et al (2016)	*As above*	✓
How often do you eat fast food?	Never Rarely Sometimes Often Always	Ibrahim et al (2016)	*As above*	✓
Do you take fried food as your main course?	Never Rarely Sometimes Often Always	Ibrahim et al (2016)	*As above*	✓
Do you like to eat in between main meals? (E.g. snacking, eating biscuits, etc.)	Never Rarely Sometimes Often Always	Ibrahim et al (2016)	*As above*	✓
Do you lead a stressful life?	Extremely Very	Ibrahim et al (2016)	*Changed the answer options in the question*	✓

	Moderately Slightly Not at all			

SECTION 4: BELIEFS TOWARDS CARDIOVASCULAR HEALTH & DISEASE				
Question	*Options*	*Reference*	*Comment*	*Relevant to RQ3?*
It is likely that I will suffer from a heart attack or stroke in the future	Strongly Disagree Disagree Not Certain/Sometimes Agree Strongly Agree	Tovar et al (2010)	*Changed answer option to for 5-point Likert scale—2 positives, 1 neutral and 2 negatives* *Not certain or Sometimes?*	✓
I am concerned about the likelihood of having a heart attack/stroke in the near future	Strongly Disagree Disagree Not Certain/Sometimes Agree Strongly Agree	Tovar et al (2010)		✓
Having a heart attack or stroke is always fatal	Strongly Disagree Disagree Not Certain/Sometimes Agree Strongly Agree	Tovar et al (2010)		✓
My whole life would change if I had a heart attack or stroke	Strongly Disagree Disagree Not Certain/Sometimes Agree Strongly Agree	Tovar et al (2010)		✓
Increasing my exercise will decrease my chances of having a heart attack or stroke	Strongly Disagree Disagree Not Certain/Sometimes Agree Strongly Agree	Tovar et al (2010)		✓
Eating a healthy diet will decrease my chance of having a heart attack or stroke	Strongly Disagree Disagree	Tovar et al (2010)		✓

	Not Certain/Sometimes Agree Strongly Agree			
I don't know appropriate exercises to perform to reduce my risk of developing cardiovascular disease	Strongly Disagree Disagree Not Certain/Sometimes Agree Strongly Agree	Tovar et al (2010)		✓
I don't have time to exercise for 30 minutes a day on most days of the week	Strongly Disagree Disagree Not Certain/Sometimes Agree Strongly Agree	Tovar et al (2010)		✓
I don't know what is considered a healthy diet that would prevent me from developing cardiovascular disease	Strongly Disagree Disagree Not Certain/Sometimes Agree Strongly Agree	Tovar et al (2010)		✓
I have other problems more important than worrying about diet and exercise	Strongly Disagree Disagree Not Certain/Sometimes Agree Strongly Agree	Tovar et al (2010)		✓

PART 3 (OPEN-ENDED QUESTIONS)

Question	*Comments*
1) What ideas or suggestions do you have for improving our community's understanding of heart disease?	
2) What would be the most beneficial health resource or service for our Fijian Indian community?	*I believe these 4 questions are our chance to ask the community about what they think is the best approach to educating/helping the community.*
3) How could local health professionals support you to better understand your heart health?	
4) Do you have any other comments?	

On behalf of the Research Team at AUT, we would like to thank you for taking time out today to complete this survey.

We truly appreciate your contribution to understanding the knowledge, attitudes and practice of CVD within our community.

In order to be able to send you a summary of the results at the end of the study, please provide us with your best contact number and email address:

- Contact number—

- Email address—

Please note, your personal information will only be accessible to the primary researcher and the Research Team during the time of the study.

Recontact Request—if we would like to clarify any of your answers in the survey, do you mind if we contact you via phone or email? - Yes /No

Main References:

Author	Title	Validated?	How was it been validated?	Comment
Andsoy et al (2015)	Knowledge and Attitudes towards Cardiovascular Disease in a Population of North Western Turkey: A Cross-Sectional Survey https://www.journalagent.com/tkd/pdfs/TKDA_37_1_35_40%5BA%5D.pdf	No		This reference I have only used for Part 1 (Participant Demographics) They used Arikan et al (2009) to assess knowledge in their study (see below).
Arikan et al (2009)	The Cardiovascular Disease Risk Factors Knowledge Level (CARRF-KL) Scale: a validity and reliability study https://www.journalagent.com/tkd/pdfs/TKDA_37_1_35_40%5BA%5D.pdf	Yes	Recent literature data, patient education materials and prevention guidelines of national and international cardiology societies were reviewed to prepare the scale. 16 items from the Heart Disease Fact Questionnaire (HDFQ) and 4 items from the 40-Item Coronary Heart Disease Knowledge Test were added and a scale with 28 items in total were prepared To determine its validity and reliability, the scale was administered to 200 participants older than 20 years, of whom 144 individuals were involved in test-retest evaluations. Internal consistency was estimated using the Cronbach's alpha. To determine the validity of the scale, individuals with CVD and/or family history were compared with those without CVD and/or family history.	Developed in Turkey Sample—biased? "Scale-item weight for the incidence of existing risk factors in our country. For instance, there was only one question about obesity, although it is an increasing public health problem in Turkey"
Wagner et al (2016)	Development of a questionnaire to measure heart disease risk knowledge in people with diabetes: the Heart Disease Fact Questionnaire	Yes	Based on extensive pilot data, the current study analysed responses from 524 people with diabetes to assess the psychometric properties. The HDFQ is readable to an average 13-year old and imposes little burden. It shows good content and face validity. It	This questionnaire measures heart disease risk knowledge in people with diabetes.

			demonstrates adequate internal consistency, with Kuder–Richardson-20 formula = 0.77 and good item-total correlations. Item analysis showed a desirable range in *P*-values. In discriminant function analyses, HDFQ scores differentiated respondents by knowledge of their own cardiovascular health, use of lipid lowering medications, health insurance status, and educational attainment, thus indicating good criterion related validity.	Sample—biased?
	https://www.sciencedirect.com/science/article/pii/S073839910400 2290?via%3Dihub			The HDFQ requires additional development. Test–retest reliability must be assessed in a larger sample.
Ibrahim et al (2016)	Knowledge, Attitude and Practice of Malaysian Public University Students on Risk Factors for Cardiovascular Diseases https://www.researchgate.net/profile/Mainul_Haque2/publication/296618703_Knowledge_Attitude_and_Practice_of_Malaysian _Public_University_Students_on_Risk_Factors_for_Cardiovascular_Diseases/links/56d6dbaf08 aebabdb402e45f.pdf	Yes	A set of KAP questionnaire was developed and distributed to the participants. The questionnaire was validated by conducting the pre-testing among 15 students in a pilot study. The content validity of the questionnaire was verified by expert of IIUM.	
Bergman et al (2011)	Development of a Comprehensive Heart Disease Knowledge Questionnaire https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3124098/	Yes	The questionnaire was developed in 2 phases. The first phase (Phase I) was exploratory; we developed and tested a paper and pencil 84-item questionnaire with a university student sample. The primary goals were to validate the questionnaire's five-domain structure and to reduce the number of items. We also included additional items that evaluated participants' perceptions of their heart disease knowledge. In Phase II, we validated a refined version of the scale with a second university student sample.	The way that they have conducted the study may be the way to do it.

			An ad hoc panel was created to address and review the content validity and face validity of the domains and items selected for the finalized questionnaire (as seen in Phase II methods and results). The group was composed of 3 experts in cardiovascular disease, health psychology, and psychometrics. The 3 experts were asked to independently check to see if the items had the correct response, fit under the pre-established domain, and were up-to-date.	
Vaidya et al (2003)	Cardiovascular health knowledge, attitude and practice/behaviour in an urbanising community of Nepal: a population-based cross-sectional study from Jhaukhel-Duwakot Health Demographic Surveillance Site https://bmjopen.bmj.com/content/3/10/e002976	No		This study conducted in-home interviews using a questionnaire based on the WHO STEPwise approach to surveillance (STEPS; STEP 1 and 2 questionnaires) for demographic information, behavioural and physical measurements and other sources for addressing knowledge, attitude and practice/behaviour issues. STEPS Instrument: http://www.who.int/ncds/surveillance/steps/instrument/en/
Mirza et al (2016)	Knowledge, attitudes and practices among patients with coronary artery disease in Dhaka, Bangladesh	Yes/No?	The KAP study questionnaire was first piloted in both our home institution (5 patients) and in the host hospital (15 patients) where it was translated and back translated for comprehension and response consistency. The survey follows the format from the	Example of a KAP survey on CAD in a Indian population.

			Behavioral Risk Factor Surveillance System (BRFSS) of the North Dakota Department of Health, which assessed the knowledge and behaviors regarding CVD risk factors in their population.10 Survey guidelines from a WHO guide for KAP on Tuberculosis were followed and questions were taken from a Malaysian survey regarding women's KAP toward CVD.7,11	
	http://www.ijcmph.com/index.php/ijcmph/article/viewFile/211/211			
Awad & Al-Nafisi (2014)	Public Knowledge of cardiovascular disease and its risk factors in Kuwait: a cross-sectional survey https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4237772/	Yes	A literature review of previous studies regarding CVD knowledge was conducted to identify potential items for the study instrument. Based on the literature search, the study questionnaire was adapted from validated surveys that were previously used The accuracy and meaning of the translated versions both forward and backward were checked, and recommended amendments where necessary were discussed before being finalized. It was pretested for content, design, readability, and comprehension on 16 Kuwaiti subjects, and modifications were made as necessary so that the questionnaire was simple to understand and answer yet gave accurate data.	Used this reference for current health status section
Tovar et al (2010)	Development and psychometric testing of the Health Beliefs Related to Cardiovascular Disease Scale: preliminary findings. https://www.ncbi.nlm.nih.gov/pubmed/20831570	Yes	Development of the HBCVD occurred in three stages. The first consisted of item development followed by pilot testing. The final stage included psychometric evaluation of the HBCVD in a larger sample. An extensive review of the literature and our clinical expertise in diabetes guided initial item development. The initial item pool consisted of 25 items divided into four subscales measuring four components of the	"Future studies may be needed to fine-tune item content to make subscales more reliable, which would lead to a more consistent measure of Health Beliefs related to CVD." "the revised instrument should be re-evaluated

			HBM: perceived susceptibility, severity, benefits and barriers. Next, a panel of six doctorly prepared experts in the areas of diabetes, CVD, health behaviours and behaviour change evaluated the items for representativeness, appropriateness and relevance. The panel agreed with our definitions of the constructs, evaluated the items for clarity and conciseness, and suggested alternative ways of capturing the construct. At this stage, the original 25 items remained but the wording of a few was revised to improve clarity. Finally, a focus group of 10 adults with diabetes who reviewed the items for relevance and clarity approved of the instrument and offered no additional suggestions.	with a larger, more diverse sample."
NZ Ministry of Health: CVDRA and Management of Primary Care	https://www.health.govt.nz/system/files/documents/publications/cvd-risk-assessment-and-management-for-primary-care-feb18-v3.pdf			
Mayo Clinic	https://www.mayoclinic.org/diseases-conditions/heart-attack/symptoms-causes/syc-20373106			
Use for salt question	https://pdfs.semanticscholar.org/509f/e783a395e9d7868e05385a6a9e924a9bf3d9.pdf			

Other relevant references but not used in draft questionnaire:		
Woringer et al (2017)	https://bmjopen.bmj.com/content/7/9/e014413	The questions in the reference were similar to scales used above.
Chung et al (2018)	https://www.mdpi.com/1660-4601/15/6/1251	The questions in the reference were similar to scales used above.
Walker et al (1995)	https://deepblue.lib.umich.edu/handle/2027.42/85349	The questions in this reference were not specific to cardiovascular health or disease.
Maeland & Havik (1986)	https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1471-6712.1987.tb00296.x	The questionnaire was developed to measure coronary heart patient's knowledge of their disease. Questions a bit too in depth.
Smith et al (1991)	https://scholar.google.co.nz/scholar?cluster=12606438691774341777&hl=en&as_sdt=0,5	The questions in this test were specific to coronary heart disease and relevant to their cardiac rehabilitation programme.

Appendix 4: Draft Review Form

For question 19 through to question 36, we would like you to review each question using the following criteria as a guide.
You will need to refer to the survey questionnaire for the multiple choice options for each question.

Criteria:
1. **Appropriateness** for the questions for the **category** it is classified in.
2. The **relevance** of the question for **assessing the knowledge, attitude and practises of cardiovascular health.**
3. The **wording** of the question and whether it is **stated clearly.**

*For each criteria, please select **one** option in the drop-down box to indicate how much you agree or disagree with each question.*

Category: Attitude towards Cardiovascular Health					
No	Question	Appropriate category classification?	Relevant to assess attitudes towards cardiovascular health?	Question stated clearly?	Any comment?
19	I don't perceive myself to be at risk of heart disease				
20	I don't want to change my lifestyle				
21	I feel the amount of food I eat is too much, and I would like to cut down				
22	I feel my present weight is too high for my health				
23	I don't think changing my behaviour will reduce my risk of developing heart disease				
24	I don't have time to take care of myself				
25	God or a higher power ultimately determines my health				

#					
26	I should be doing exercise to maintain a healthy lifestyle				
27	If I need to go to places somewhere near, I choose to walk rather than taking any other form of transport				
28	I know smoking is bad for health.				
29	I should maintain my weight according to my body mass index (BMI)				
30	I should take less oily food for a healthy lifestyle				
31	I prefer to spend more time on my electronic device(s) or watching TV rather than exercising				
32	I read the nutrition panel information of each product that I intended to buy				
33	I choose to eat or buy fast food when going out with family or friends				
34	I can manage my stress				
35	I should avoid drinking carbonated drinks				
36	I should include fruit or vegetables in my diet for maintaining my health				

Appendix 5: AUT Ethics Approval–Phase One

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

5 March 2019

Eleanor Holroyd
Faculty of Health and Environmental Sciences

Dear Eleanor

Re Ethics Application: **19/63 Examining cardiovascular health knowledge, attitude & practices among the Fijian Indian Community in New Zealand**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Subcommittee (AUTEC).

Your ethics application has been approved in stages for three years until 5 March 2022.

Non-Standard Conditions of Approval

1. As well as stating that the validation of the questionnaire will take 1 hour in the section 'What will happen…' in the Information Sheet also include 'we would require no more than two hours in total of your time, spread out over the next few months' to align with the initiation letter.

Non-standard conditions must be completed before commencing your study. Non-standard conditions do not need to be submitted to or reviewed by AUTEC before commencing your study.

Standard Conditions of Approval

1. A progress report is due annually on the anniversary of the approval date, using form EA2, which is available online through http://www.aut.ac.nz/research/researchethics.
2. A final report is due at the expiration of the approval period, or, upon completion of project, using form EA3, which is available online through http://www.aut.ac.nz/research/researchethics.
3. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form: http://www.aut.ac.nz/research/researchethics.
4. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
5. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.

Please quote the application number and title on all future correspondence related to this project.

AUTEC grants ethical approval only. If you require management approval for access for your research from another institution or organisation then you are responsible for obtaining it. You are reminded that it is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

For any enquiries, please contact ethics@aut.ac.nz

Yours sincerely,

Kate O'Connor
Executive Manager
Auckland University of Technology Ethics Committee

Cc: , thrishilaparshuram@gmail.com; jagamaya.shrestha@aut.ac.nz; gael.mearns@aut.ac.nz

Appendix 6: Advisory Team Invitation Letters

Advisory Team Invitation Letter

Project title: **Examining cardiovascular health knowledge, attitude and practises among the Fijian Indian community in New Zealand**

Project Supervisor: **Professor Eleanor Holroyd**

Researcher: **Thrishila Parshu Ram**

Dear [NAME],

My name is Thrishila Parshu Ram and I'm a PhD candidate at the Auckland University of Technology.

My supervisors and I would like to invite you as a known leader/member in the Fijian Indian Community to participate in our research study.

The aims of this doctoral research are to (1) assess the level of knowledge, attitude and practices (i.e. behaviour and beliefs) towards cardiovascular health and (2) understand the relationship between knowledge, attitude and practices (i.e. behaviour and beliefs) towards cardiovascular health among the Fijian Indian community in Auckland, New Zealand.

We hope to develop and implement a cross-sectional survey drawing on your expert opinion on the knowledge, attitude practises and health seeking barriers in respect to cardiovascular health for the Fijian Indian community in New Zealand.

We recognise that the professionals we are approaching are extremely busy in their respective fields, however feel your input is critical to improve the cardiovascular health of this growing population. We would be very honoured if you could agree to participate.

Your involvement in the research will include reviewing drafts of the questionnaire developed by our team. In practical terms, we would require no more than two hours in total of your time, spread out over the next few months.

Please find attached a Participant Information Sheet about our study for your perusal.

Please let us know via email by [DATE] if you are willing to participate by contacting me on trishparshuram.aut@outlook.com or 0211032931.

If you have questions about this project: Please do not hesitate to contact me or you may "reply" to this email and we will respond to your questions as soon as possible.

Thank you for considering participating in this project.

Kind regards,

Thrishila Parshu Ram   Professor. Eleanor Holroyd

AUT PhD Candidate   *AUT Project Supervisor*

Advisory Team Invitation Letter

Project title: **Examining cardiovascular health knowledge, attitude and practises among the Fijian Indian community in New Zealand**

Project Supervisor: **Professor Eleanor Holroyd**

Researcher: **Thrishila Parshu Ram**

Dear [NAME],

My name is Thrishila Parshu Ram and I'm a PhD candidate at the Auckland University of Technology.

My supervisors and I would like to invite you as an expert in the field of cardiovascular health to participate in our research study.

The aims of this doctoral research are to (1) assess the level of knowledge, attitude and practices (i.e. behaviour and beliefs) towards cardiovascular health and (2) understand the relationship between knowledge, attitude and practices (i.e. behaviour and beliefs) towards cardiovascular health among the Fijian Indian community in Auckland, New Zealand.

We hope to develop and implement a cross-sectional survey drawing on your expert opinion on the knowledge, attitude practises and health seeking barriers in respect to cardiovascular health for the Fijian Indian community in New Zealand.

We recognise that the professionals we are approaching are extremely busy in their respective fields, however feel your input   is critical to improve the cardiovascular health of this growing population. We would be very honoured if you could agree to participate.

Your involvement in the research will include reviewing drafts of the questionnaire developed by our team. In practical terms, we would require no more than two hours in total of of your time, spread out over the next few months.

Please find attached a Participant Information Sheet about our study for your perusal.

Please let us know via email by [DATE] if you are willing to participate by contacting me on trishparshuram.aut@outlook.com or 0211032931.

If you have questions about this project:

Please do not hesitate to contact me or you may "reply" to this email and we will respond to your questions as soon as possible.

Thank you for considering participating in this project.

Kind regards,

Thrishila Parshu Ram   Professor. Eleanor Holroyd

AUT PhD Candidate   *AUT Project Supervisor*

Appendix 7: Advisory Team Participant Information Sheet

Advisory Team Participant Information Sheet

Date Information Sheet Produced:

5ᵗʰ March 2019

Project Title

Examining cardiovascular health knowledge, attitudes and practises among the Fijian Indian community in New Zealand

An Invitation

Hello, I'm Thrishila Parshu Ram and I am conducting a research project for my Doctor of Philosophy degree at Auckland University of Technology. The focus of my research is on cardiovascular health among the Fijian Indian community in Auckland, New Zealand.

You are kindly invited to participate in a project exploring the knowledge, attitude and practise, including behaviour and beliefs, of cardiovascular health among the Fijian Indian community in Auckland, New Zealand.

What is the purpose of this research?

Cardiovascular disease is one of the leading causes of death and illness in the world today. In New Zealand, the risk of developing cardiovascular disease is increasing, where anyone is at risk but some more than others.

As it is well known, people of Pacific and Indian descent experience cardiovascular disease earlier on in their lives. The Fijian Indian population, who relate to both the Indian and Pacific ethnic groups, is one such community that has considerable risk of developing cardiovascular disease.

By looking into the understanding and practises (i.e. behaviour and beliefs) related to cardiovascular health in the Fijian Indian community, we are hoping to develop a preventative strategy for future use.

This will be the first study to consider the knowledge, attitudes and practices of cardiovascular health in the Fijian Indian community. Finally, findings from this study may be used in academic publications and/or presentations that aim to promote cardiovascular health in this population.

How was I identified and why am I being invited to participate in this research?

I am seeking

(a) health professionals (medical, nursing, health educators and counsellors) that are experts in the field of cardiovascular health and have experience with working with the Fijian Indian Community

AND

(b) local members and known leaders of the Fijian Indian community

to join our advisory group and to participate in our exciting and novel research. Participants will be included in this phase of the study in order of application and recruitment will complete once the maximum number of participants is reached.

How do I agree to participate in this research?

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time.

If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

If you wish to participate in this study, a consent form has been attached at the end of this information sheet. Please complete this and direct it back to me at your earliest convenience.

What will happen in this research?

If you choose to participate, you will be a part of an advisory group and your participation in this study will involve sharing your thoughts, knowledge and ideas to mutually develop and validate a questionnaire that will be used to assess the understanding and practices of cardiovascular health within the Fijian Indian Community.

You will be provided with an electronic PDF version of the questionnaire for review and an Excel spreadsheet to provide your answers and suggestions. The validation of the questionnaire will take approximately an hour of your time.

An updated questionnaire will be sent back to you for your final approval, once all data has been analysed and revised. Overall, we would require no more than two hours in total of your time, spread out over the next few months.

Please note, only my supervisors and I will have access to the data collected for this study. Only results from this study will be published and no personal information will be made identifiable.

What are the benefits?

There is no direct benefit in participating in this research. However, we are hoping that the information gained in this research will be of value to future research and understanding of how best to prevent cardiovascular disease in our Fijian Indian community.

This research may be beneficial to health service providers and community health educators who are working actively to prevent the development of cardiovascular disease in high risk populations as well as help improve their understanding of the current knowledge and practises within the Fijian Indian community. Lastly, this study will contribute towards achieving my Doctor of Philosophy qualification.

How will my privacy be protected?

Your privacy and confidentiality will be a key priority throughout the study. Numbers NOT names will be used, and any identifiable information will be excluded in any results obtained in this research.

Only my supervisors and I will have access to the data that has been collected and analysed. All data collected will be stored securely for a period of six years, after which it will be deleted (electronic) and destroyed (written).

What are the costs of participating in this research?

There are no financial costs involved in participating in this study. However, it is anticipated that the questionnaire will take approximately an hour of your time.

What opportunity do I have to consider this invitation?

Interested participants are encouraged to respond within two weeks of receiving information about the study.

Will I receive feedback on the results of this research?

A written summary of the findings of this study will be provided back to all participants via email or post. You may wish to receive or not receive the summary by indicating on the consent form attached.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the primary Project Supervisor, *Professor Eleanor Holroyd on* eleanor.holroyd@aut.ac.nz *or (09) 921 9999 ext. 5298*.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, ethics@aut.ac.nz , 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Thrishila Parshu Ram
Email: trishparshuram.aut@outlook.com
Contact: 0211032931

Project Supervisor Contact Details:

Professor Eleanor Holroyd
Email: eleanor.holroyd@aut.ac.nz
Phone: (09) 921 9999 ext. 5298

Approved by the Auckland University of Technology Ethics Committee on *5th March 2019*, AUTEC Reference number *19/63*.

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Appendix 8: Advisory Team Consent Form

Advisory Team Consent Form

Project title:	***Examining cardiovascular health knowledge, attitude and practises among the Fijian Indian community in New Zealand***
Project Supervisor:	***Professor Eleanor Holroyd***
Researcher:	***Thrishila Parshu Ram***

○ I have read and understood the information provided about this research project in the Information Sheet dated 5th March 2019.

○ I have had an opportunity to ask questions and to have them answered.

○ I understand that identity of my fellow team members and our correspondence in during the research is confidential to the group and I agree to keep this information confidential.

○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.

○ I understand that if I withdraw from the study then, while it may not be possible to destroy all records of the correspondence of which I was part, I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.

○ I agree to take part in this research.

○ I wish to receive a summary of the research findings (please tick one): Yes   ○   No   ○

Signature : ....

Name : ....

Date:

Approved by the Auckland University of Technology Ethics Committee on 5th March 2019, AUTEC Reference number 19/63

Appendix 9: Draft Questionnaire

PART 1 – Knowledge, Attitudes and Practices of Cardiovascular Health

Section A: Knowledge of Cardiovascular Health

Which of the following statements are true, and which are false?

1) Cardiovascular disease is a disease that is related to heart and blood vessels	☐ True* ☐ False ☐ Don't know
2) A person always knows when they have heart disease	☐ True ☐ False* ☐ Don't know
3) If you have a family history of heart disease, you are at risk of developing heart disease	☐ True* ☐ False ☐ Don't know
4) The older a person is, the greater their risk of having heart disease	☐ True* ☐ False ☐ Don't know
5) Eating fatty foods does not affect blood cholesterol levels	☐ True ☐ False* ☐ Don't know
6) If your 'good' cholesterol (HDL) is high you are at risk for heart disease	☐ True ☐ False* ☐ Don't know
7) Only exercising at a gym or in an exercise class will lower a person's chance of developing heart disease	☐ True ☐ False* ☐ Don't know
8) Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease	☐ True* ☐ False ☐ Don't know
9) Irregular eating patterns has no harm to your health	☐ True ☐ False* ☐ Don't know
10) Cardiovascular disease can occur to young people	☐ True* ☐ False ☐ Don't know
11) Eating a lot of red meat increases heart disease risk	☐ True* ☐ False ☐ Don't know
12) Most people can tell whether or not they have high blood pressure.	☐ True ☐ False* ☐ Don't know

13) The most common cause of heart attacks is stress.	☐ True ☐ False* ☐ Don't know
14) The healthiest exercise for the heart involves rapid breathing for a sustained period of time	☐ True* ☐ False ☐ Don't know
15) Men and women experience many of the same symptoms of a heart attack	☐ True* ☐ False ☐ Don't know
16) Heart disease is a short-term illness	☐ True ☐ False* ☐ Don't know

correct/expected response – not to be included in final questionnaire

17) Which of the following factors increase the risk of a heart attack or heart disease?

    correct/expected response

☐ High blood pressure
☐ High blood sugar
☐ High cholesterol
☐ Physical inactivity
☐ Overweight
☐ Cigarette/Smoking
☐ Smokeless tobacco
☐ Excessive alcohol
☐ Excess stress
☐ Family history of a heart attack
☐ All the above*

18) Symptoms of a heart attack can include…
    correct/expected response

☐ Difficulty in breathing
☐ Pain in the chest, teeth and jaw
☐ Pain or numbness in the arms
☐ Excessive sweating/cold sweat
☐ Vomiting tendency (nausea)
☐ Dizziness or light-headedness
☐ Heartburn/Indigestion
☐ Fatigue
☐ Loss of consciousness
☐ All of the above*

Section B: Attitudes towards Cardiovascular Health

Please select only ONE box to indicate how much you agree or disagree with each statement below

		Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
19)	I don't perceive myself to be at risk of heart disease					
20)	I don't want to change my lifestyle					
21)	I feel the amount of food I eat is too much, and I would like to cut down					
22)	I feel my present weight is too high for my health					
23)	I don't think changing my behaviour will reduce my risk of developing heart disease					
24)	I don't have time to take care of myself					
25)	God or a higher power ultimately determines my health					
26)	I should be doing exercise to maintain a healthy lifestyle					
27)	If I need to go to places somewhere near, I choose to walk rather than taking any other form of transport					
28)	I know smoking is bad for health.					
29)	I should maintain my weight according to my body mass index (BMI)					
30)	I should take less oily food for a healthy lifestyle					
31)	I prefer to spend more time on my electronic device(s) or watching TV rather than exercising					
32)	I read the nutrition panel information of each product that I intended to buy					
33)	I choose to eat or buy fast food when going out with family or friends					
34)	I can manage my stress					
35)	I should avoid drinking carbonated drinks					
36)	I should include fruit or vegetables in my diet for maintaining my health					

Section C: Practices towards Cardiovascular Health
Please select only ONE box to for each of question below

		Never	Rarely	Sometimes	Often	Always
37)	I exercise more than 20mins 3x/week					
38)	I use more than 3 teaspoons of salt/day					
39)	I consume fatty foods more than 3x/week					
40)	Does your daily activity involve vigorous activity? (E.g. heavy lifting, digging)					
41)	Do you walk for at least 10 minutes to get to and from places such as café, classes, mosque etc.?					
42)	Do you spend your leisure time to exercise at least 20 minutes per session?					
43)	How often do you take any health supplements or are on a special diet? i.e. that is not recommended by a health professional					
44)	How often do you eat two fruit servings per day?					
45)	How often do you eat three vegetables servings per day?					
46)	Sometimes I eat dinner late at night before I sleep					
47)	Do you eat in between main meals? (E.g. snacking, eating biscuits, etc.)					
48)	Do you lead a stressful life?					

Please select only ONE box to indicate how much you agree or disagree for each statement below

		Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
49)	It is likely that I will suffer from a heart attack or stroke in the future					
50)	I am concerned about the likelihood of having a heart attack/stroke in the near future					
51)	Having a heart attack or stroke is always fatal					
52)	My whole life would change if I had a heart attack or stroke					
53)	I believe walking a lot can give benefits to my health					
54)	Increasing my exercise will decrease my chances of having a heart attack or stroke					
55)	Eating a healthy diet will decrease my chance of having a heart attack or stroke					
56)	I don't have time to exercise for 30 minutes a day on most days of the week					
57)	I don't know what is considered a healthy diet that would prevent me from developing cardiovascular disease					
58)	I have other problems more important than worrying about diet and exercise					

59)   What ideas or suggestions do you have for improving our community's understanding of heart disease?

_____
_____
_____
_____
_____
_____
_____

60)   What would be the most helpful health resource or service for our Fijian Indian community to learn and understand more about heart disease?

_____
_____
_____
_____
_____
_____
_____

61)   How could local health professionals support you to better understand your heart health?

_____
_____
_____
_____
_____
_____
_____

62)   Do you have any other comments?

_____
_____
_____
_____
_____
_____
_____

PART 1 – Participant Demographics & Current Health Status

63) Which gender do you identify most with?
- ☐ Male
- ☐ Female
- ☐ Gender diverse

64) Age (in years)

65) Country of Birth?

66) What is your marital status?
- ☐ Single
- ☐ Long term relationship/partnership/de facto
- ☐ Married
- ☐ Widowed
- ☐ Divorced

67) What is your present religion, if any?
- ☐ No religion
- ☐ Christian
- ☐ Hindu
- ☐ Islam/Muslim
- ☐ Not listed (please specify)
- ☐ I prefer not to dislose

68) How many people, including you, are there in your family or household?
- ☐ 1 (I am single)
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 5 or more

69) Length of residency in New Zealand?
- ☐ One year or less
- ☐ 1-3 years
- ☐ 3-5 years
- ☐ 5-10 years
- ☐ 10 years or more

70) What is your highest level of education attained
- ☐ No schooling completed
- ☐ Primary School
- ☐ High School
- ☐ Diploma/Certificate
- ☐ Trade/Technical training
- ☐ Bachelor's Degree
- ☐ Postgraduate Diploma
- ☐ Master's Degree
- ☐ Doctorate

71) In what languages can you speak fluently?
(Please select all that apply)
- ☐ English
- ☐ Fiji Hindustani (Fiji Hindi)
- ☐ Hindi
- ☐ Fijian
- ☐ Other (please specify)

72) What is your current employment status?
- ☐ Unable to work
- ☐ Employed full time
  (40 or more hours per week)
- ☐ Employed part time
  (up to 39 hours per week)

	☐ Unemployed
	☐ Self-employed
	☐ Student
	☐ Homemaker
	☐ Retired
73) In general, you would consider your health to be?	☐ Excellent
	☐ Very Good
	☐ Good
	☐ Fair
	☐ Poor
74) Do you have a family doctor?	☐ Yes
	☐ No
75) When was your latest health check-up at your local health centre or family doctor's?	☐ Within the last 3 months
	☐ Within the last 6 months
	☐ Within 1 year
	☐ In the last 2 years and over
	☐ Not sure
76) Are you a smoker?	☐ Yes
	☐ No
	☐ Ex-smoker
If yes,	☐ I am a social smoker
	☐ Up to 5 times a week
	☐ Up to 10 per day
	☐ Up to 11-19 per day
	☐ More than 20 per day
77) Do you drink alcohol?	☐ Yes
	☐ No
If yes,	☐ Every day
	☐ 3-5 times a week
	☐ Once a week
	☐ Only on weekends
	☐ On special occasions
78) Do you drink kava?	☐ Yes
	☐ No
If yes,	☐ Every day
	☐ 3-5 times a week
	☐ Once a week
	☐ Only on weekends
	☐ On special occasions

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79) Have you been diagnosed by a doctor or registered health professional as having high blood pressure?	☐ Yes ☐ No ☐ Not sure
If yes, *Are you currently taking medications to control your blood pressure?*	☐ Yes ☐ No ☐ Not sure
If yes, *how long have you been taking this medication?*	☐ 1 to 3 months ☐ Less than 6 months ☐ 6 months to 1 year ☐ 2 to 5 years ☐ More than 5 years
80) Have you had a fasting blood glucose test before?	☐ Yes ☐ No ☐ Not sure
81) Have you been diagnosed by a doctor or registered health professional as being pre-diabetic?	☐ Yes ☐ No ☐ Not sure
If yes, *Are you currently taking medications to control your blood glucose levels?*	☐ Yes ☐ No ☐ Not sure
If yes, *(a) What medication are you taking to control your blood glucose level?*	
(b) how long have you been taking this medication?	☐ 1 to 3 months ☐ Less than 6 months ☐ 6 months to 1 year ☐ 2 to 5 years ☐ More than 5 years
82) Have you been diagnosed by a doctor or registered health professional as having Type 1 or Type 2 Diabetes?	☐ Yes ☐ No ☐ Not sure
If yes, *Which of the following have you been diagnosed with?*	☐ Type 1 Diabetes ☐ Type 2 Diabetes
Following selection, *Are you currently taking medications to control your blood sugar levels?*	☐ Yes ☐ No ☐ Not sure
If yes, *(a) What medication/s are you taking to control your blood glucose level?*	
(b) how long have you been taking this medication?	☐ 1 to 3 months ☐ Less than 6 months

		☐ 6 months to 1 year
		☐ 2 to 5 years
		☐ More than 5 years
83)	Have you been diagnosed by a doctor or registered health professional as having high cholesterol?	☐ Yes ☐ No ☐ Not sure
	If yes, *Are you currently taking medications to control your cholesterol levels?*	☐ Yes ☐ No ☐ Not sure
	If yes, *(a) What medication/s are you taking to control your cholesterol levels?*	
	(b) how long have you been taking this medication?	☐ 1 to 3 months ☐ Less than 6 months ☐ 6 months to 1 year ☐ 2 to 5 years ☐ More than 5 years
84)	In a typical week, how many days do you do at least 30 minutes of exercise (such as walking, running, cycling, jogging)?	☐ 0 days ☐ 1-2 days ☐ 3-4 days ☐ 5-6 days ☐ 7 days
85)	In a typical week, how often do you eat fruits and vegetables?	☐ 0 days ☐ 1-2 days ☐ 3-4 days ☐ 5-6 days ☐ 7 days
86)	In a typical week, how often do you eat foods that are high in saturated fat e.g. dairy foods (butter, ghee, cream, regular-fat milk, cheese etc), meat (fatty beef, pork, chicken, lamb and sausages etc)	☐ 0 days ☐ 1-2 days ☐ 3-4 days ☐ 5-6 days ☐ 7 days
87)	In a typical week, how often do you eat foods that are high in trans-fat e.g. baked goods (cakes, pies, cookies), fried food, snacks (potato chips), margarine etc?	☐ 0 days ☐ 1-2 days ☐ 3-4 days ☐ 5-6 days ☐ 7 days
88)	Is salt added in the cooking of food that you eat at home?	☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always
89)	Do you add salt to your food at the table?	☐ Never ☐ Rarely ☐ Sometimes

		☐ Often
		☐ Always
90)	**Do you know what your current Body Mass Index (BMI) is?**	☐ Not sure
		☐ Less than 18.5
		☐ 18.5-25
		☐ 25-30
		☐ 30-35
		☐ 35-40
		☐ More than 40
91)	**How do you describe your lifestyle?**	☐ Very stressful
		☐ Stressful
		☐ Relatively stressful
		☐ Free from stress
92)	**Please indicate if any of the following medical conditions/procedures are known in your immediate family history (i.e. parents, grandparents and siblings):**	☐ Hypertension (High blood pressure)
		☐ Diabetes Mellitus
		☐ Hypercholesterolemia (High cholesterol)
		☐ Heart Disease
		☐ Cardiovascular Surgery
		☐ Atrial Fibrillation
		☐ Stroke
93)	**Have you ever been hospitalised due to problems with your heart or blood pressure?**	☐ Yes
		☐ No
		☐ Not sure
94)	**In the past, have you had a cardiovascular risk assessment done?**	☐ Yes
		☐ No
		☐ Not sure
95)	**What do you think your level of risk is for cardiovascular disease?**	☐ Not sure
		☐ <3%
		☐ 3-9%
		☐ 10-14%
		☐ 15+%
96)	**What sources have you used to find out more about cardiovascular health and disease?**	☐ None
		☐ Physician/Family Doctor/GP
		☐ Radio/Television
		☐ Family/Friends
		☐ Nurse
		☐ Internet
		☐ Written information i.e. pamphlet, information booklet
		☐ Other (please specify)

Appendix 10: Advisory Team Feedback and Data Analysis

ANALYSIS

Table 1

Overall assessment of how appropriate the questions were in the Section A (Knowledge).

ADVISORY TEAM - DRAFT QUESTIONNAIRE REVIEW - SECTION A (KNOWLEDGE)							
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
Question 1	1	1	1	1	1	5	1
Question 2	0	1	1	1	1	4	0.8
Question 3	1	1	1	1	1	5	1
Question 4	1	1	1	1	1	5	1
Question 5	1	1	1	1	1	5	1
Question 6	0	1	1	1	1	4	0.8
Question 7	0	1	1	1	1	4	0.8
Question 8	1	1	1	1	1	5	1
Question 9	1	1	1	1	1	5	1
Question 10	1	1	1	1	1	5	1
Question 11	1	1	1	1	1	5	1
Question 12	0	1	1	1	1	4	0.8
Question 13	1	1	1	1	1	5	1
Question 14	0	1	0	1	1	3	*0.6*
Question 15	1	1	1	1	1	5	1
Question 16	1	1	1	1	1	5	1
Question 17	1	1	1	1	1	5	1
Question 18	1	1	1	1	1	5	1
Proportion: "Appropriate"	0.72	1.00	0.94	1.00	1.00	**Mean I-CVI**	**0.93**
						S-CVI/Ave	**0.93**
						S-CVI/UA	0.72

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions deemed appropriate/total number of questions in this section
S-CVI/Ave	Sum of the proportion appropriate/total number of experts (overall scale CVI)

Table 2

Overall assessment of how relevant the questions were in the Section A (Knowledge).

ADVISORY TEAM – DRAFT QUESTIONNAIRE REVIEW - SECTION A (KNOWLEDGE)							
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
Question 1	1	1	1	1	1	5	1
Question 2	1	1	1	1	1	5	1
Question 3	1	1	1	1	1	5	1
Question 4	1	1	1	1	1	5	1
Question 5	1	1	1	1	1	5	1
Question 6	0	1	1	1	1	4	0.8
Question 7	0	1	1	1	1	4	0.8
Question 8	1	1	1	1	1	5	1
Question 9	1	1	0	1	1	4	0.8
Question 10	1	1	1	1	1	5	1
Question 11	1	1	1	1	1	5	1
Question 12	1	1	1	1	1	5	1
Question 13	1	1	1	1	1	5	1
Question 14	1	1	0	1	1	4	0.8
Question 15	1	1	1	1	1	5	1
Question 16	1	1	1	1	1	5	1
Question 17	1	1	1	1	1	5	1
Question 18	1	1	1	1	1	5	1
Proportion: "Relevant"	0.89	1.00	0.89	1.00	1.00	**Mean I-CVI**	**0.96**
						S-CVI/Ave	**0.96**
						S-CVI/UA	0.78

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions deemed relevant/total number of questions in this section
S-CVI/Ave	Sum of the proportion relevant/total number of experts (overall scale CVI)

Table 3

Overall assessment of how clearly stated the questions were in the Section A (Knowledge).

ADVISORY TEAM – DRAFT QUESTIONNAIRE REVIEW - SECTION A (KNOWLEDGE)							
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
Question 1	1	1	0	0	0	2	*0.4*
Question 2	0	1	1	1	1	4	0.8
Question 3	1	1	1	1	1	5	1
Question 4	1	1	1	1	1	5	1
Question 5	0	1	1	1	1	4	0.8
Question 6	0	1	0	1	0	2	*0.4*
Question 7	0	1	0	1	1	3	*0.6*
Question 8	1	1	1	1	1	5	1
Question 9	0	1	0	1	1	3	*0.6*
Question 10	1	1	0	1	0	3	*0.6*
Question 11	0	1	1	1	1	4	0.8
Question 12	0	1	1	1	1	4	0.8
Question 13	1	1	1	1	1	5	1
Question 14	0	1	0	1	1	3	*0.6*
Question 15	1	1	1	1	1	5	1
Question 16	0	1	1	1	1	4	0.8
Question 17	1	1	1	1	1	5	1
Question 18	1	1	1	1	1	5	1
Proportion: "Stated clearly"	0.50	1.00	0.67	0.94	0.83	**Mean I-CVI**	**0.79**
						S-CVI/Ave	**0.79**
						S-CVI/UA	0.39

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions stated clearly /total number of questions in this section
S-CVI/Ave	Sum of the proportion stated clearly/total number of experts (overall scale CVI)

Table 4

Overall assessment of how appropriate the questions were in the Section B (Attitudes).

ADVISORY TEAM – DRAFT QUESTIONNAIRE REVIEW - SECTION B (ATTITUDES)							
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
Question 19	0	1	1	1	1	4	0.8
Question 20	0	1	1	1	1	4	0.8
Question 21	0	1	1	1	1	4	0.8
Question 22	0	1	1	1	1	4	0.8
Question 23	0	1	1	1	1	4	0.8
Question 24	0	1	1	1	1	4	0.8
Question 25	0	1	1	1	1	4	0.8
Question 26	1	1	1	1	1	5	1
Question 27	1	1	1	1	1	5	1
Question 28	1	1	1	1	1	5	1
Question 29	1	1	1	1	1	5	1
Question 30	1	1	1	1	1	5	1
Question 31	1	1	1	1	1	5	1
Question 32	0	1	0	1	1	3	*0.6*
Question 33	0	1	1	1	1	4	0.8
Question 34	0	1	1	1	1	4	0.8
Question 35	1	1	1	1	1	5	1
Question 36	1	1	1	1	1	5	1
Proportion: "Appropriate"	0.44	1.00	0.94	1.00	1.00	**Mean I-CVI**	**0.88**
						S-CVI/Ave	**0.88**
						S-CVI/UA	0.44

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions deemed appropriate/total number of questions in this section
S-CVI/Ave	Sum of the proportion appropriate/total number of experts (overall scale CVI)

Table 5

Overall assessment of how relevant the questions were in the Section B (Attitudes).

ADVISORY TEAM – DRAFT QUESTIONNAIRE REVIEW - SECTION B (ATTITUDES)							
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
Question 19	0	1	1	1	1	4	0.8
Question 20	0	1	1	1	1	4	0.8
Question 21	0	1	1	1	1	4	0.8
Question 22	0	1	1	1	1	4	0.8
Question 23	0	1	1	1	1	4	0.8
Question 24	0	1	1	1	1	4	0.8
Question 25	0	1	1	1	1	4	0.8
Question 26	1	1	1	1	1	5	1
Question 27	1	1	1	1	1	5	1
Question 28	1	1	1	1	1	5	1
Question 29	1	1	1	1	1	5	1
Question 30	1	1	1	1	1	5	1
Question 31	1	1	1	1	1	5	1
Question 32	0	1	0	1	1	3	*0.6*
Question 33	1	1	1	1	1	5	1
Question 34	0	1	1	1	1	4	0.8
Question 35	1	1	1	1	1	5	1
Question 36	1	1	1	1	1	5	1
Proportion: "Relevant"	0.50	1.00	0.94	1.00	1.00	**Mean I-CVI**	**0.89**
						S-CVI/Ave	**0.89**
						S-CVI/UA	0.50

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions deemed relevant/total number of questions in this section
S-CVI/Ave	Sum of the proportion relevant/total number of experts (overall scale CVI)

Table 6

Overall assessment of how clearly stated the questions were in the Section B (Attitudes).

ADVISORY TEAM – DRAFT QUESTIONNAIRE REVIEW - SECTION B (ATTITUDES)							
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
Question 19	0	1	0	1	1	3	*0.6*
Question 20	0	1	1	1	1	4	0.8
Question 21	0	1	1	1	1	4	0.8
Question 22	0	1	1	1	1	4	0.8
Question 23	0	1	1	1	1	4	0.8
Question 24	0	1	1	1	1	4	0.8
Question 25	0	1	1	1	1	4	0.8
Question 26	1	1	1	1	1	5	1
Question 27	0	1	1	1	1	4	0.8
Question 28	1	1	1	1	1	5	1
Question 29	1	1	0	1	0	3	*0.6*
Question 30	1	1	1	1	1	5	1
Question 31	1	1	1	1	1	5	1
Question 32	0	1	1	1	1	4	0.8
Question 33	0	1	1	1	1	4	0.8
Question 34	0	1	1	1	1	4	0.8
Question 35	0	1	1	1	1	4	0.8
Question 36	0	1	1	1	1	4	0.8
Proportion: "Stated clearly"	0.28	1.00	0.89	1.00	0.94	**Mean I-CVI**	**0.82**
						S-CVI/Ave	**0.82**
						S-CVI/UA	0.22

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions stated clearly /total number of questions in this section
S-CVI/Ave	Sum of the proportion stated clearly/total number of experts (overall scale CVI)

Table 7

Overall assessment of how appropriate the questions were in the Section C (Practices).

ADVISORY TEAM – DRAFT QUESTIONNAIRE REVIEW - SECTION C (PRACTICES)							
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
Question 37	1	1	1	1	1	5	1
Question 38	1	1	1	1	1	5	1
Question 39	1	1	1	1	1	5	1
Question 40	0	1	1	1	1	4	0.8
Question 41	1	1	1	1	1	5	1
Question 42	1	1	1	1	1	5	1
Question 43	0	1	1	1	1	4	0.8
Question 44	1	1	1	1	1	5	1
Question 45	1	1	1	1	1	5	1
Question 46	1	1	1	1	1	5	1
Question 47	0	1	1	1	1	4	0.8
Question 48	1	1	1	1	1	5	1
Question 49	0	1	1	1	1	4	0.8
Question 50	1	1	1	1	1	5	1
Question 51	0	1	1	1	1	4	0.8
Question 52	1	1	1	1	1	5	1
Question 53	1	1	1	1	1	5	1
Question 54	1	1	1	1	1	5	1
Question 55	0	1	1	1	1	4	0.8
Question 56	1	1	1	1	1	5	1
Question 57	1	1	1	1	1	5	1
Question 58	0	1	1	1	1	4	0.8
Proportion: "Appropriate"	0.68	1.00	1.00	1.00	1.00	**Mean I-CVI**	**0.94**
						S-CVI/Ave	**0.94**
						S-CVI/UA	0.68

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions deemed appropriate/total number of questions in this section
S-CVI/Ave	Sum of the proportion appropriate/total number of experts (overall scale CVI)

Table 8

Overall assessment of how relevant the questions were in the Section C (Practices).

ADVISORY TEAM – DRAFT QUESTIONNAIRE REVIEW - SECTION C (PRACTICES)							
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
Question 37	1	1	1	1	1	5	1
Question 38	1	1	1	1	1	5	1
Question 39	1	1	1	1	1	5	1
Question 40	0	1	1	1	1	4	0.8
Question 41	1	1	1	1	1	5	1
Question 42	1	1	1	1	1	5	1
Question 43	0	1	1	1	1	4	0.8
Question 44	1	1	1	1	1	5	1
Question 45	1	1	1	1	1	5	1
Question 46	0	1	1	1	1	4	0.8
Question 47	1	1	1	1	1	5	1
Question 48	1	1	1	1	1	5	1
Question 49	0	1	1	1	1	4	0.8
Question 50	1	1	1	1	1	5	1
Question 51	0	1	1	1	1	4	0.8
Question 52	1	1	1	1	1	5	1
Question 53	1	1	1	1	1	5	1
Question 54	1	1	1	1	1	5	1
Question 55	0	1	1	1	1	4	0.8
Question 56	1	1	1	1	1	5	1
Question 57	1	1	1	1	1	5	1
Question 58	0	1	1	1	1	4	0.8
Proportion: "Relevant"	0.682	1	1	1	1	**Mean I-CVI**	**0.94**
						S-CVI/Ave	**0.94**
						S-CVI/UA	0.68

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions deemed relevant/total number of questions in this section
S-CVI/Ave	Sum of the proportion relevant/total number of experts (overall scale CVI)

Table 9

Overall assessment of how clearly stated the questions were in the Section C (Practices).

ADVISORY TEAM – DRAFT QUESTIONNAIRE REVIEW - SECTION C (PRACTICES)							
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
Question 37	1	1	1	1	1	5	1
Question 38	1	1	0	1	1	4	0.8
Question 39	0	1	1	1	1	4	0.8
Question 40	0	1	1	1	1	4	0.8
Question 41	1	1	1	1	1	5	1
Question 42	1	1	1	1	0	4	0.8
Question 43	0	1	1	1	1	4	0.8
Question 44	1	1	1	1	1	5	1
Question 45	1	1	1	1	1	5	1
Question 46	0	1	1	1	1	4	0.8
Question 47	1	1	1	1	1	5	1
Question 48	0	1	1	1	1	4	0.8
Question 49	0	1	1	1	1	4	0.8
Question 50	1	1	1	1	1	5	1
Question 51	0	1	1	1	1	4	0.8
Question 52	1	1	1	1	1	5	1
Question 53	0	1	1	1	1	4	0.8
Question 54	0	1	1	1	1	4	0.8
Question 55	0	1	1	1	1	4	0.8
Question 56	1	1	1	1	1	5	1
Question 57	1	1	1	0	0	3	*0.6*
Question 58	0	1	1	1	1	4	0.8
Proportion: "Stated clearly"	0.50	1.00	0.95	0.95	0.91	**Mean I-CVI**	**0.86**
						S-CVI/Ave	**0.86**
						S-CVI/UA	0.36

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions stated clearly /total number of questions in this section
S-CVI/Ave	Sum of the proportion stated clearly/total number of experts (overall scale CVI)

Table 10

Feedback from each of the experts on Section A (Knowledge) including our response/plan of action to each.

ADVISORY TEAM - QUESTIONNAIRE REVIEW - SECTION A (KNOWLEDGE)					
ADVISORY TEAM	**Expert 1**	**Expert 2**	**Expert 3**	**Expert 4**	**Expert 5**
Question 1: Cardiovascular disease is a disease that is related to heart and blood vessels					
Feedback			Would a lay person understand the term cvd - use heart disease instead	CVD - term unknown. It is not necessary to know either. Use heart disease instead. Avoid medical terminology - easier to understand and for them to complete the task/questionnaire	change medical term
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, the term "cardiovascular disease" will be changed to "heart disease" in the questionnaire as this will make the question "easier to understand" and for the participants to "complete the questionnaire".*				
Question 2: A person always knows when they have heart disease					
Feedback	appropriate to study. What will this achieve	I have ticked agree here because in few cases, the congenital heart diseses remain asymptomatic and diagnosed at later stages in adulthood. So they may not know until they are diagnosed incidently or become symptomatic later in life.			
Action:	*No change will be made to this question as the experts agreed that it was an appropriate question for this section. The purpose of this question is to test whether a person understands, like Expert 2 describes that "congenital heart disease remain asymptomatic and are diagnosed at later stages in adulthood... so they may not know until they are diagnosed incidentally or become symptomatic later in life".*				
Question 3: If you have a family history of heart disease, you are at risk of developing heart disease					
Feedback	N/A				
Action:	N/A				

Question 4: The older a person is, the greater their risk of having heart disease					
Feedback		Though it depends upon several other factors and their lifestyle it can be considered as a Knowledge question.	FALSE	not necessarily. In this time/trend, young people are also being diagnosed with CVD/heart disease	
Action:	*No change will be made to this question as 5/5 experts agreed that the question was appropriate, relevant, and stated clearly.*				
Question 5: Eating fatty foods does not affect blood cholesterol levels					
Feedback	Types of fatty food matter. Have good fats and bad fats				
Action:	*No change will be made to this question as all experts agreed that is question was appropriate and relevant and 4/5 experts agreed that the question was stated clearly.*				
Question 6: If your 'good' cholesterol (HDL) is high you are at risk for heart disease					
Feedback	To technical for general population	Also if a question related to the catogories/ differences between good and bad cholesterol can be added here or with MCQ type questions would create an awareness among them if they do not know about them.	not necessary to know. The GP should know and educate the person. The average person from Fiji may not know the distinction between the two. Say "Do you know the difference between good and bad chloestrol?"		HDL - medical term
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be removed from the questionnaire. Reasons: (1) "too technical for general population" i.e., the use of a "medical term" (2) rephrasing the question would change the format of the questions and answers in the knowledge section i.e., statement = true/false/don't know and (3) it is "not necessary to know".*				

Question 7: Only exercising at a gym or in an exercise class will lower a person's chance of developing heart disease					
Feedback	who is this questionaire directed.	Just a suggestion : Can the sentence be started as Only by doing vigorous exercises like exercising at a gym or…...	Using the term "exercising" only		
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be rephrased to say, "only exercising will lower a person's chance of developing heart disease". This will maintain the format of the question/answer structure of this section and test whether they (participants) understand the importance of a disease prevention and management. In response to Expert 1's feedback, this questionnaire is directed to people of all ages.*				

Question 8: Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease					
Feedback		instead if heart disease make it as cardiovascular disease at the end			
Action:	*No change will be made to this question as the 5/5 experts agreed that the question was appropriate, relevant, and stated clearly.*				

Question 9: Irregular eating patterns has no harm to your health					
Feedback	depends on what somenoe considers irregular.		This question should be more open. What do you know about eating habits and cvd. More of a discussion question not a statement question		
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be removed from the questionnaire. Reason: too vague. Especially that it does "depend on what someone considers irregular". Different lifestyles/work conditions etc influence our eating patterns. I agree that this is more of a "discussion question" not a statement question.*				

Question 10: Cardiovascular disease can occur to young people					
Feedback			heart disease - use this term. Repetitive question - not needed.		change medical term
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be rephrased in the questionnaire. Reason: it is a similar/repetitive statement to Question 4 " the older a person is, the greater their risk of having heart disease". The participant would be answering the same fact in both questions i.e., as Expert 3 said, "in this time/trend, young people are also being diagnosed with CVD/heart disease" and that this question is not needed. The question will be rephrased to say "heart disease can occur to young people" as 3/5 experts agreed that the question was appropriate, relevant, and stated clearly.*				

Question 11: Eating a lot of red meat increases heart disease risk					
Feedback	what is a lot will mean differently to different groups.	instead of heart disease, make it as cardiovascular diseases			

Action:	*No change will be made to this question as all experts agreed that it was an appropriate and relevant question for this section of the questionnaire. The term "heart disease" will not be changed in order to maintain consistency and ease of understanding throughout the questionnaire. I agree, "a lot will mean differently to different groups". However, if read in a general sense, "a lot" can be referred to as "large amounts" and it is important to know the benefits of a balanced, healthy diet when discussing/learning about cardiovascular disease.*				

Question 12: Most people can tell whether or not they have high blood pressure.

Feedback	knowing high bp can affect cvs is different from just knowing you have high blood	complete the sentence by adding, when they have the symptoms			
Action:	*No change will be made to this question as 4/5 experts agreed that it was an appropriate and clearly stated question. 5/5 experts agreed this question was relevant. I agree with Expert 1 and 2's feedback and that is why I have included questions about the risk factors and symptoms of heart disease at the end of the section.*				

Question 13: The most common cause of heart attacks is stress.

Feedback	N/A
Action:	N/A

Question 14: The healthiest exercise for the heart involves rapid breathing for a sustained period of time

Feedback	what is sustained breathing. What is proper breathing.		Unnecessary and inappropriate		
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be removed from the questionnaire. Reasons: (1) too vague i.e., "what is sustained breathing or proper breathing" (2) it is "unnecessary and inappropriate" for this section of the questionnaire.*				

Question 15: Men and women experience many of the same symptoms of a heart attack

Feedback	N/A
Action:	N/A

Question 16: Heart disease is a short-term illness					
Feedback	once you have heart disease- do you have it always				
Action:	*No change will be made to this question as all experts agreed that it was an appropriate and relevant question and 4/5 experts said that it was stated clearly. In response to Expert 1's feedback - yes, by that stage, it is about managing your disease. However, the answer to this question is false. Heart disease is a long-term illness.*				
Question 17: Which of the following factors increase the risk of a heart attack or heart disease?					
Feedback	This questions on its own could give indication of knowledge and behaviour re CVDisease	in the question add factors increases,			
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be rephrased in the questionnaire. Reason: grammatical error. The question will be rephrased to say "Which of the following factors increases the risk of a heart attack or heart disease"*				
Question 18: Symptoms of a heart attack can include…					
Feedback	N/A				
Action:	N/A				

Table 11

Feedback from each of the experts on Section B (Attitudes) including our response/plan of action to each.

ADVISORY TEAM	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5
ADVISORY TEAM - QUESTIONNAIRE REVIEW - SECTION B (ATTITUDE)					
Question 19: I don't perceive myself to be at risk of heart disease					
Feedback	who is this Q directed to		"perceive" probably wont understand this term. I don't think of myself to be at risk of heart disease.		
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be rephrased to " I don't think of myself to be at risk of heart disease". In response to Expert 1's feedback, this question is more-or-less a self-reflection type of question. Their perception of their own attitudes towards cardiovascular health.*				
Question 20: I don't want to change my lifestyle					
Feedback	N/A				
Action:	*N/A*				
Question 21: I feel the amount of food I eat is too much, and I would like to cut down					
Feedback	to vaque,				
Action:	*No change will be made to this question as 4/5 experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				
Question 22: I feel my present weight is too high for my health					
Feedback	what is the benchmark, to many people aleady have disapropriate expectation of weight	is it too high for my health ? Or for my height or age?			
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be rephrased to "I feel my present weight is too high for my height or age". I agree with Expert 1's feedback that "people already have disappropriate expectations of weight" but on a positive note, it does show that they are aware of this risk factor. Therefore, creates an avenue for discussion in the management of their health.*				
Question 23: I don't think changing my behaviour will reduce my risk of developing heart disease					
Feedback	N/A				
Action:	*N/A*				
Question 24: I don't have time to take care of myself					
Feedback	N/A				
Action:	*N/A*				
Question 25: God or a higher power ultimately determines my health					
Feedback	N/A				
Action:	*N/A*				
Question 26: I should be doing exercise to maintain a healthy lifestyle					
Feedback	N/A				
Action:	*N/A*				
Question 27: If I need to go to places somewhere near, I choose to walk rather than taking any other form of transport					

Feedback	N/A				
Action:	N/A				

Question 28: I know smoking is bad for health.

Feedback	N/A				
Action:	N/A				

Question 29: I should maintain my weight according to my body mass index (BMI)

Feedback		I wonder how many will know the term BMI, so using it in simple term like within bracket right weight for my height would explain?	Define BMI in the question in lay terms	Knowing what BMI would need to be pre-requisite to answering this question	change wording - less medical terminology
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be rephrased to " I should maintain my weight according to my body mass index (BMI) i.e., the right weight for my height" for better understanding of the question.*				

Question 30: I should take less oily food for a healthy lifestyle

Feedback	N/A				
Action:	N/A				

Question 31: I prefer to spend more time on my electronic device(s) or watching TV rather than exercising

Feedback		suggestion :change this statement as ' I spend more time on my…........TV". And add this as practice question instead of having it as attitude question			
Action:	*No change will be made to this question as all experts agreed that it was an appropriate, relevant, and clearly stated question in this section. Although, I agree with Expert 2, this question can also be a "practice" related question. This question has been included in this section to better understand the concept of "attitude/perception/intention" and how that relates to knowledge and practice towards cardiovascular health.*				

Question 32: I read the nutrition panel information of each product that I intended to buy					
Feedback	do people have enough knowledge of general category of foods		unneccessary		
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be removed from the questionnaire. Reason: (1) 3/5 experts agreed that this question was appropriate and relevant to this section and (2) it may not be necessary to do this to be able to understand a participant's attitude towards cardiovascular health. Expert 1 also questioned whether people would "have enough knowledge of general category of foods".*				
Question 33: I choose to eat or buy fast food when going out with family or friends					
Feedback	too vaque a question		good question		
Action:	*No change will be made to this question as 4/5 experts agreed that it was an appropriate and clearly stated question and all experts agreed that it was a relevant question in this section.*				
Question 34: I can manage my stress					
Feedback	vaque Q		good question		
Action:	*No change will be made to this question as 4/5 experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				
Question 35: I should avoid drinking carbonated drinks					
Feedback			good question		
Action:	*No change will be made to this question as all experts agreed that it was an appropriate and relevant and 4/5 experts agreed that is question was clearly stated.*				
Question 36: I should include fruit or vegetables in my diet for maintaining my health					
Feedback	quantity matters.		good question		
Action:	*No change will be made to this question as all experts agreed that it was an appropriate and relevant and 4/5 experts agreed that is question was clearly stated.*				

Table 12

Feedback from each of the experts on Section C (Practices) including our response/plan of action to each.

ADVISORY TEAM - QUESTIONNAIRE REVIEW - SECTION C (PRACTICES)					
ADVISORY TEAM	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5
Question 37: I exercise more than 20mins 3x/week					
Feedback	N/A				
Action:	N/A				
Question 38: I use more than 3 teaspoons of salt/day					
Feedback			I use more than 3 teapsons/day of salt in my diet	All foods have natural salt - is that taken into account when they/we cook.	
Action:	*Although 4/5 experts agreed that it was an appropriate, relevant, and clearly stated question in this section, the question will be rephrased to "I use more than 3 teaspoons of salt per day" to improve the clarity of the question.*				
Question 39: I consume fatty foods more than 3x/week					
Feedback	different people will consider fatty food differently				
Action:	*Although 4/5 experts agreed that it was an appropriate, relevant, and clearly stated question in this section, the question will be rephrased to "I consume fatty foods more than 3 times a week" to improve the clarity of the question. Also, I do agree with Expert 1, that "different people will consider fatty foods differently". However, in this context, we are hoping to evaluate how often a participant consumes food high in fat in a week.*				
Question 40: Does your daily activity involve vigorous activity? (E.g. heavy lifting, digging)					
Feedback	N/A				
Action:	N/A				
Question 41: Do you walk for at least 10 minutes to get to and from places such as café, classes, mosque etc.?					
Feedback		add the word daily			
Action:	*No change will be made to this question as all the experts agreed that it was an appropriate, relevant and clearly stated question in this section.*				

Question 42: Do you spend your leisure time to exercise at least 20 minutes per session?					
Feedback			per day instead of per session		change to "spare time"
Action:	*Although 4/5 experts agreed that it was an appropriate, relevant, and clearly stated question in this section, the question will be rephrased to "During your spare time, do you exercise for at least 20 minutes (per session)?" to improve the clarity of the question. The reason why I have kept "per session" despite the suggestion to change to "per day" as you cannot guarantee that a person will have leisure/spare time every day. For example, they may only have it every other day due to work/personal commitments. For this question, I think that it is more focused on understanding whether they (participants) would choose to exercise when they do get some leisure/spare time.*				

Question 43: How often do you take any health supplements or are on a special diet? i.e., that is not recommended by a health professional					
Feedback		supplements or special diet that is not recommended, also, question and response has often as choices which may confuse.			
Action:	*Although 4/5 experts agreed that it was an appropriate, relevant, and clearly stated question in this section, the question will be rephrased to "How often do you take any health supplements or are on a special diet that is not recommended by a health professional?" to improve the clarity of the question.*				

Question 44: How often do you eat two fruit servings per day?					
Feedback		I take two fruit servings per day. And also OFTEN is there as question and in option in this and in next question which may confuse people.			
Action:	*No change will be made to this question as all the experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				

Question 45: How often do you eat three vegetables servings per day?					
Feedback		I eat three vegetable servings per day			
Action:	*No change will be made to this question as all the experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				

Question 46: Sometimes I eat dinner late at night before I sleep					
Feedback		sometimes is there in question and in option…..			
Action:	*No change will be made to this question as 4/5 the experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				

Question 47: Do you eat in between main meals? (E.g., snacking, eating biscuits, etc.)	
Feedback	N/A
Action:	N/A

Question 48: Do you lead a stressful life?	
Feedback	N/A
Action:	N/A

Question 49: It is likely that I will suffer from a heart attack or stroke in the future					
Feedback		It is likely that I may suffer …...			
Action:	*No change will be made to this question as 4/5 the experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				

Question 50: I am concerned about the likelihood of having a heart attack/stroke in the near future	
Feedback	N/A
Action:	N/A

Question 51: Having a heart attack or stroke is always fatal					
Feedback		having a heart attack or strike is often fatal			
Action:	*No change will be made to this question as 4/5 the experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				

Question 52: My whole life would change if I had a heart attack or stroke	
Feedback	N/A
Action:	N/A

Question 53: I believe walking a lot can give benefits to my health					
Feedback				good question	
Action:	*No change will be made to this question as 4/5 the experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				

Question 54: Increasing my exercise will decrease my chances of having a heart attack or stroke					
Feedback	how much exercise, + what people classify as exercise will differ				
Action:	*Although I agree with Expert 1 that what people classify as exercise and how much exercise they do will differ, no change will be made to this question as 4/5 the experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				

Question 55: Eating a healthy diet will decrease my chance of having a heart attack or stroke					
Feedback	how does one classify healthy diet .				
Action:	*No change will be made to this question as 4/5 the experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				

Question 56: I don't have time to exercise for 30 minutes a day on most days of the week					
Feedback				good question	

Action:	*No change will be made to this question as all the experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				

Question 57: I don't know what is considered a healthy diet that would prevent me from developing cardiovascular disease

Feedback			excellent question - should be asked	Change to "heart disease" or stroke	change medical term to heart disease
Action:	*Based on the feedback and the I-CVI scores for appropriateness, relevance and clarity, this question will be rephrased to " I don't know what is considered a healthy diet that would prevent me from developing heart disease" to improve the clarity and understanding of the question.*				

Question 58: I have other problems more important than worrying about diet and exercise

Feedback	what will this Q achieve. Too general				
Action:	*No change will be made to this question as 4/5 the experts agreed that it was an appropriate, relevant, and clearly stated question in this section.*				

Appendix 11: Advisory Team Final Review Document

FINAL REVIEW OF CARDIOVASCULAR HEALTH KNOWLEDGE, ATTITUDE AND PRACTICES QUESTIONNAIRE

Thank you once again for completing the first review of our cardiovascular health knowledge, attitude and practices questionnaire.

Based on your individual feedback and our statistical analysis, 6 questions have been rephrased/reworded to meet the standards in each review category - appropriateness, relevance and clarity.

Please find attached the final review sheet and revised questionnaire.

For the final review, please indicate how much you agree or disagree with each revised question in each of the following categories:

1. **Appropriateness** of the question for the category it is classified in.
2. The **relevance** of the question for assessing the knowledge, attitude and practices of cardiovascular health.
3. The wording of the question and whether it is **stated clearly**.

You may want to refer to the revised questionnaire for the multiple-choice answer options for each question.

The **following changes have also been made** to the questionnaire based on your initial feedback and statistical analysis:

	Original Question	Action / Revised
Section A: Knowledge	*Original Question (6):* If your 'good' cholesterol (HDL) is high you are at risk for heart disease	Action: This question has been removed from the questionnaire.
	Original Question (9): Irregular eating patterns has no harm to your health	Action: This question has been removed from the questionnaire.
	Original Question (14): The healthiest exercise for the heart involves rapid breathing for a sustained period of time	Action: This question has been removed from the questionnaire.
	Original Question (17): Which of the following factors increase the risk of a heart attack or heart disease?	Revised Question (17): The question has been rephrased to "Which of the following factors increases the risk of a heart attack or heart disease" Action: Add the options "Severe Mental Illness, Heart Failure and "Impaired Renal Function" to the answer selection
Section B: Attitude	*Original Question (22):* I feel my present weight is too high for my health	Revised Question (22): The question has been rephrased to"I feel my present weight is too high for my height or age".
	Original Question (32): I read the nutrition panel information of each product that I intended to buy	Action: This question has been removed from the questionnaire.
Section C: Practice	*Original Question (38):* I use more than 3 teaspoons of salt/day	Revised Question (38): The question has been rephrased to "I use more than 3 teaspoons of salt per day"

	Original Question (39): I consume fatty foods more than 3x/week	<u>Revised Question (39):</u> The question has been rephrased to "I consume fatty foods more than 3 times a week"
	Original Question (42): Do you spend your leisure time to exercise at least 20 minutes per session?	<u>Revised Question (42):</u> The question has been rephrased to "During your spare time, do you exercise for at least 20 minutes (per session)?"
	Original Question (43): How often do you take any health supplements or are on a special diet? i.e. that is not recommended by a health professional	<u>Revised Question (43):</u> The question has been rephrased to "How often do you take any health supplements or are on a special diet that is not recommended by a health professional?"
Patient Demographics & Current Health Status	<u>Original Question (73):</u> In general, you would consider your health to be?	<u>Revised Question (73):</u> The question has been rephrased to "In general, how would you consider your health condition to be?"
	<u>Original Question (77):</u> Do you drink alcohol?	<u>Revised Question (77):</u> The question has been rephrased to include the AUDIT screening tool questions (used in clinical settings). 1. How often do you drink? (multiple choice answer) If patient selects an option apart from "never", then the following questions will emerge: 2. How many per day? (multiple choice answer) 3. 6 or more one day? (multiple choice answer)
	<u>Question (92):</u> Please indicate if any of the following medical conditions/procedures are known in your immediate family history (i.e. parents, grandparents and siblings):	<u>Action 1:</u> The definition "irregular fast heart beat/rate/rhythm" has been added in brackets next to Atrial fribrillation (one of the answer options) <u>Action 2:</u> Add the option "Not Sure" to the answer selection
Overall	Action 1: Split the questionnaire into two parts i.e. two separate documents	

We would appreciate any further feedback or suggestions you may have before we finalise our questionnaire for the next phase in our research (see second tab of final review sheet).

Thank you once again for your time, guidance and co-operation during the development of our questionnaire.

If you require any further information, please do not hesitate to contact me.

Kind regards,
Thrishila Parshu Ram
AUT PhD Candidate

Appendix 12: Advisory Team Final Review Form

Advisory Team Final Review of Cardiovascular Health Knowledge, Attitude and Practises Questionnaire

Thank you once again for completing the first review of our questionnaire.

Based on your individual feedback and our statistical analysis, the following 6 questions have been rephrased/reworded to meet the standards in each review category - appropriateness, relevance and clarity.

For question 1 to question 6, we would like you to review each question using the following criteria as a guide.
You may want to refer to the revised questionnaire (attached) for the multiple choice answer options for each question.
Criteria:
1. **Appropriateness** for the questions for the **category** it is classified in.
2. The **relevance** of the question for **assessing the knowledge, attitude and practises of cardiovascular health.**
3. The **wording** of the question and whether it is **stated clearly.**

For each criteria, please select **one** *option in the drop-down box to indicate how much you* *agree or disagree* *with each question.*

Section	No	Question	Appropriate category classification?	Relevant to assess cardiovascular health?	Question stated clearly?	Any comments?
KNOWLEDGE	1	Heart disease is a disease that is related to heart and blood vessels				
	6	Only exercising will lower a person's chance of developing heart disease				
	8	Heart disease can occur to young people				
ATTITUDE	16	I don't think of myself to be at risk of heart disease				
	26	I should maintain my weight according to my body mass index (BMI) i.e. the right weight for my height				
PRACTICE	53	I don't know what is considered a healthy diet that would prevent me from developing heart disease				

Please see attached review document for details of the all the changes made to the questionnaire based on your feedback and our statistical analysis.

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Final Review Feedback

Please provide any further comments you think would be helpful, including any issues that you would like to be addressed before we finalise the questionnaire.
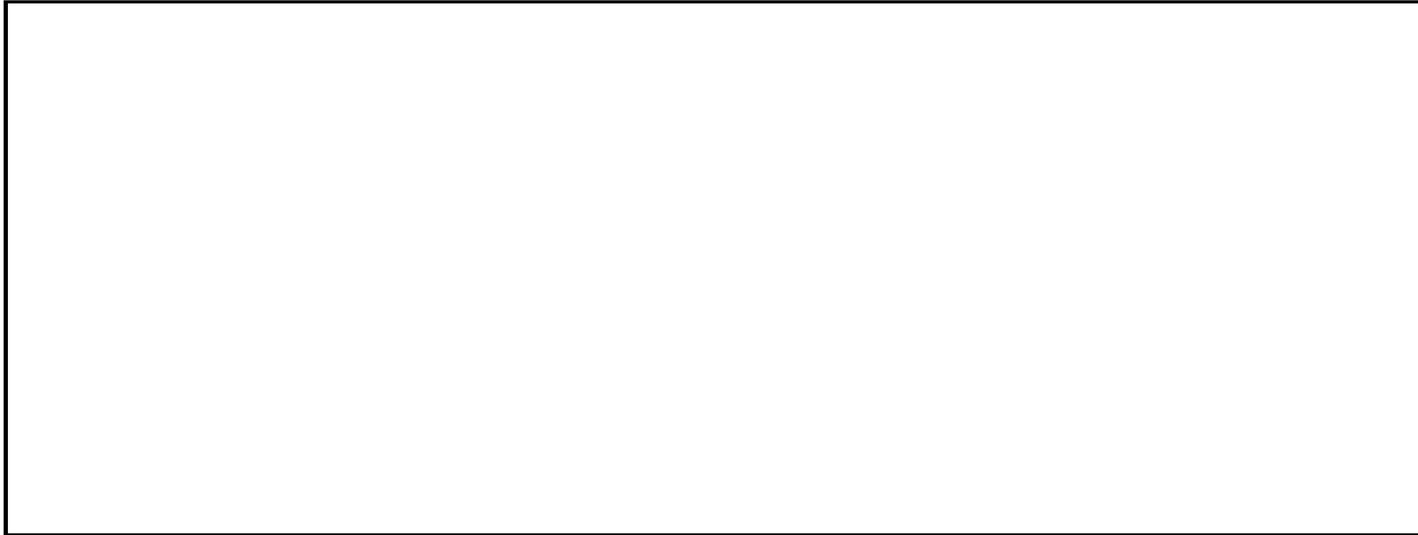
Appendix 13: Final Advisory Team Feedback and Data Analysis

Table 1

Overall assessment of how appropriate the revised questions in each section of the questionnaire.

			Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
ADVISORY TEAM - FINAL QUESTIONNAIRE REVIEW - APPROPRIATENESS									
KNOWLEDGE	1	Heart disease is a disease that is related to heart and blood vessels	1	1	1	1	1	5	1
	6	Only exercising will lower a person's chance of developing heart disease	0	1	1	1	1	4	0.8
	8	Heart disease can occur to young people	1	1	1	1	1	5	1
ATTITUDE	16	I don't think of myself to be at risk of heart disease	1	1	1	1	1	5	1
	26	I should maintain my weight according to my body mass index (BMI) i.e., the right weight for my height	1	1	1	1	1	5	1
PRACTICE	53	I don't know what is considered a healthy diet that would prevent me from developing heart disease	1	1	1	1	1	5	1
Proportion: "Appropriate"			0.8	1	1	1	1	**Mean I-CVI**	**0.97**
								S-CVI/Ave	**0.97**
								S-CVI/UA	0.83

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions deemed appropriate/total number of questions in this section
S-CVI/Ave	Sum of the proportion appropriate/total number of experts (overall scale CVI)

Table 2

Overall assessment of how relevant the revised questions in each section of the questionnaire.

			Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
ADVISORY TEAM - FINAL QUESTIONNAIRE REVIEW - RELEVANCY									
KNOWLEDGE	1	Heart disease is a disease that is related to heart and blood vessels	1	1	1	1	1	5	1
KNOWLEDGE	6	Only exercising will lower a person's chance of developing heart disease	0	1	1	1	1	4	0.8
KNOWLEDGE	8	Heart disease can occur to young people	1	1	1	1	1	5	1
ATTITUDE	16	I don't think of myself to be at risk of heart disease	1	1	1	1	1	5	1
ATTITUDE	26	I should maintain my weight according to my body mass index (BMI) i.e., the right weight for my height	1	1	1	1	1	5	1
PRACTICE	53	I don't know what is considered a healthy diet that would prevent me from developing heart disease	1	1	1	1	1	5	1
Proportion: "Relevant"			0.8	1	1	1	1	**Mean I-CVI**	**0.97**
								S-CVI/Ave	**0.97**
								S-CVI/UA	0.83

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions deemed relevant/total number of questions in this section
S-CVI/Ave	Sum of the proportion relevant/total number of experts (overall scale CVI)

Table 3

Overall assessment of how clearly stated the revised questions in each section of the questionnaire.

			Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in agreement	Item CVI
ADVISORY TEAM - FINAL QUESTIONNAIRE REVIEW - CLARITY									
KNOWLEDGE	1	Heart disease is a disease that is related to heart and blood vessels	1	1	1	1	1	5	1
	6	Only exercising will lower a person's chance of developing heart disease	0	1	1	1	1	4	0.8
	8	Heart disease can occur to young people	1	1	1	1	1	5	1
ATTITUDE	16	I don't think of myself to be at risk of heart disease	1	1	1	1	0	4	0.8
	26	I should maintain my weight according to my body mass index (BMI) i.e. the right weight for my height	1	1	1	0	0	3	0.6
PRACTICE	53	I don't know what is considered a healthy diet that would prevent me from developing heart disease	1	1	1	1	0	4	0.8
Proportion: "Stated Clearly"			0.8	1	1	0.8	0.5	**Mean I-CVI**	**0.8**
								S-CVI/Ave	**0.8**
								S-CVI/UA	0.8

Key:	
0	Strongly disagree or disagree
1	Strongly agree or agree
Item CVI	Number in agreement/total of experts
S-CVI/UA	Total number of questions that received agreement by all experts/total number of questions in this section
Proportion Relevant	Number of questions stated clearly /total number of questions in this section
S-CVI/Ave	Sum of the proportion stated clearly/total number of experts (overall scale CVI)

Appendix 14: Final Questionnaire

PART 1 – Knowledge, Attitudes and Practices of Cardiovascular Health

Section A: Knowledge of Cardiovascular Health
Which of the following statements are true, and which are false?

1)	Heart disease is a disease that is related to heart and blood vessels	☐ True ☐ False ☐ Don't know
2)	A person always knows when they have heart disease	☐ True ☐ False ☐ Don't know
3)	If you have a family history of heart disease, you are at risk of developing heart disease	☐ True ☐ False ☐ Don't know
4)	The older a person is, the greater their risk of having heart disease	☐ True ☐ False ☐ Don't know
5)	Eating fatty foods does not affect blood cholesterol levels	☐ True ☐ False ☐ Don't know
6)	Only exercising will lower a person's chance of developing heart disease	☐ True ☐ False ☐ Don't know
7)	Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease	☐ True ☐ False ☐ Don't know
8)	Heart disease can occur to young people	☐ True ☐ False ☐ Don't know
9)	Eating a lot of red meat increases heart disease risk	☐ True ☐ False ☐ Don't know
10)	Most people can tell whether or not they have high blood pressure.	☐ True ☐ False ☐ Don't know
11)	The most common cause of heart attacks is stress.	☐ True ☐ False ☐ Don't know
12)	Men and women experience many of the same symptoms of a heart attack	☐ True ☐ False ☐ Don't know
13)	Heart disease is a short-term illness	☐ True ☐ False ☐ Don't know

Section A: Knowledge of Cardiovascular Health

14) Which of the following factors increases the risk of a heart attack or heart disease?

(Please tick all that apply)

- ☐ High blood pressure
- ☐ High blood sugar
- ☐ High cholesterol
- ☐ Physical inactivity
- ☐ Overweight
- ☐ Cigarette/Smoking
- ☐ Smokeless tobacco
- ☐ Excessive alcohol
- ☐ Excess stress
- ☐ Family history of a heart attack
- ☐ Severe mental illness
- ☐ Heart failure
- ☐ Impaired kidney function
- ☐ All the above

15) Symptoms of a heart attack can include...
(Please tick all that apply)

- ☐ Difficulty in breathing
- ☐ Pain in the chest, teeth and jaw
- ☐ Pain or numbness in the arms
- ☐ Excessive sweating/cold sweat
- ☐ Vomiting tendency (nausea)
- ☐ Dizziness or light-headedness
- ☐ Heartburn/Indigestion
- ☐ Fatigue
- ☐ Loss of consciousness
- ☐ All of the above

Section B: Attitudes towards Cardiovascular Health
Please select only ONE box to indicate how much you agree or disagree with each statement below

		Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
16)	I don't think I'm at risk of having heart disease					
17)	I don't want to change my lifestyle					
18)	I feel the amount of food I eat is too much, and I would like to cut down					
19)	I feel my present weight is too high for my height or age					
20)	I don't think changing my behaviour will reduce my risk of developing heart disease					
21)	I don't have time to take care of myself					
22)	God or a higher power ultimately determines my health					
23)	I should be doing exercise to maintain a healthy lifestyle					
24)	If I need to go to places somewhere near, I choose to walk rather than taking any other form of transport					
25)	I know smoking is bad for health.					
26)	I should ensure that my weight is appropriate for my height					
27)	I should take less oily food for a healthy lifestyle					
28)	I prefer to spend more time on my electronic device(s) or watching TV rather than exercising					
29)	I choose to eat or buy fast food when going out with family or friends					
30)	I can manage my stress					
31)	I should avoid drinking carbonated drinks					
32)	I should include fruit or vegetables in my diet for maintaining my health					

Section C: Practices towards Cardiovascular Health
Please select only ONE box to for each of question below

		Never	Rarely	Sometimes	Often	Always
33)	Do you exercise more than 20mins 3x/week					
34)	Do you use more than 3 teaspoons of salt per day					
35)	Do you consume fatty foods more than 3 times a week					
36)	Does your daily activity involve vigorous activity? (E.g. heavy lifting, digging)					
37)	Do you walk for at least 10 minutes to get to and from places such as café, classes, mosque etc.?					
38)	During your spare time, do you exercise for at least 20 minutes (per session)?					
39)	How often do you take any health supplements or are on a special diet that is not recommended by a health professional?					
40)	How often do you eat two fruit servings per day?					
41)	How often do you eat three vegetables servings per day?					
42)	Do you eat dinner late at night before you sleep?					
43)	Do you eat in between main meals? (E.g. snacking, eating biscuits, etc.)					
44)	Do you lead a stressful life?					

Please select only ONE box to indicate how much you agree or disagree for each statement below

		Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
45)	It is likely that I will suffer from a heart attack or stroke in the future					
46)	I am concerned about the likelihood of having a heart attack/stroke in the near future					
47)	Having a heart attack or stroke is always fatal					
48)	My whole life would change if I had a heart attack or stroke					
49)	I believe walking a lot can give benefits to my health					
50)	Increasing my exercise will decrease my chances of having a heart attack or stroke					
51)	Eating a healthy diet will decrease my chance of having a heart attack or stroke					
52)	I don't have time to exercise for 30 minutes a day on most days of the week					
53)	I don't know about healthy diets that would prevent me from developing heart disease					
54)	I have other problems more important than worrying about diet and exercise					

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55) What ideas or suggestions do you have for improving our community's understanding of heart disease?

56) What would be the most helpful health resource or service for our Fijian Indian community to learn and understand more about heart disease?

57) How could local health professionals support you to better understand your heart health?

58) Do you have any other comments?

PART 3 – Participant Demographics & Current Health Status

59) Which gender do you identify most with?	☐ Male ☐ Female ☐ Gender Diverse
60) Age (in years)	
61) Country of Birth?	
62) What is your marital status?	☐ Single ☐ Long term relationship/partnership/de facto ☐ Married ☐ Widowed ☐ Divorced
63) What is your present religion, if any?	☐ No religion ☐ Christian ☐ Hindu ☐ Islam/Muslim ☐ Not listed (please specify) ☐ I prefer not to disclose
64) How many people, including you, are there in your family or household?	☐ 1 (I am single) ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 5 or more
65) Length of residency in New Zealand?	☐ One year or less ☐ 1-3 years ☐ 3-5 years ☐ 5-10 years ☐ 10 years or more
66) What is your highest level of education attained?	☐ No Formal Education ☐ Primary School Education ☐ Secondary School Education ☐ Tertiary Education
67) In what languages can you speak fluently? **(Please select all that apply)**	☐ English ☐ Fiji Hindustani (Fiji Hindi) ☐ Hindi ☐ Fijian ☐ Other (please specify)

68) What is your current employment status?	☐ Unable to work ☐ Employed full time (40 or more hours per week) ☐ Employed part time (up to 39 hours per week) ☐ Unemployed ☐ Self-employed ☐ Student ☐ Homemaker ☐ Retired
69) In general, how would you consider your health condition to be?	☐ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor
70) Do you have a family doctor?	☐ Yes ☐ No
71) When was your latest health check-up at your local health centre or family doctor's?	☐ Within the last 3 months ☐ Within the last 6 months ☐ Within 1 year ☐ In the last 2 years and over ☐ Not sure
72) Are you a smoker?	☐ Yes ☐ No ☐ Ex-smoker
If yes,	☐ I am a social smoker ☐ Up to 5 times a week ☐ Up to 10 per day ☐ Up to 11-19 per day ☐ More than 20 per day
73) How often do you drink alcohol?	☐ Never ☐ Monthly or less ☐ 2-4 times a week ☐ 2-3 times a week ☐ 4 or more times a week
If selected option 2 to 4 in Question 77, How many per day?	☐ None, 1 or 2 ☐ 3 or 4 ☐ 5 or 6 ☐ 7, 8 or 9 ☐ 10 or more
If selected option 2 to 4 in Question 77, 6 or more one day?	☐ Never ☐ Less than monthly ☐ Monthly ☐ Weekly ☐ Daily or almost daily

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74) Do you drink kava?	☐	Yes
	☐	No
If yes,	☐	Every day
	☐	3-5 times a week
	☐	Once a week
	☐	Only on weekends
	☐	On special occasions
75) Have you been diagnosed by a doctor or registered health professional as having high blood pressure?	☐	Yes
	☐	No
	☐	Not sure
If yes, *Are you currently taking medications to control your blood pressure?*	☐	Yes
	☐	No
	☐	Not sure
If yes, *how long have you been taking this medication?*	☐	1 to 3 months
	☐	Less than 6 months
	☐	6 months to 1 year
	☐	2 to 5 years
	☐	More than 5 years
76) Have you had a fasting blood glucose test before?	☐	Yes
	☐	No
	☐	Not sure
77) Have you been diagnosed by a doctor or registered health professional as being pre-diabetic?	☐	Yes
	☐	No
	☐	Not sure
If yes, *Are you currently taking medications to control your blood glucose levels?*	☐	Yes
	☐	No
	☐	Not sure
If yes, *(a) What medication are you taking to control your blood glucose level?*		
(b) how long have you been taking this medication?	☐	1 to 3 months
	☐	Less than 6 months
	☐	6 months to 1 year
	☐	2 to 5 years
	☐	More than 5 years
78) Have you been diagnosed by a doctor or registered health professional as having Type 1 or Type 2 Diabetes?	☐	Yes
	☐	No
	☐	Not sure
If yes, *Which of the following have you been diagnosed with?*	☐	Type 1 Diabetes
	☐	Type 2 Diabetes
Following selection, *Are you currently taking medications to control your blood sugar levels?*	☐	Yes
	☐	No
	☐	Not sure

If yes, *(a) What medication/s are you taking to control your blood glucose level?*		
(b) how long have you been taking this medication?	☐ 1 to 3 months ☐ Less than 6 months ☐ 6 months to 1 year ☐ 2 to 5 years ☐ More than 5 years	
79) Have you been diagnosed by a doctor or registered health professional as having high cholesterol?	☐ Yes ☐ No ☐ Not sure	
If yes, *Are you currently taking medications to control your cholesterol levels?*	☐ Yes ☐ No ☐ Not sure	
If yes, *(a) What medication/s are you taking to control your cholesterol levels?*		
(b) how long have you been taking this medication?	☐ 1 to 3 months ☐ Less than 6 months ☐ 6 months to 1 year ☐ 2 to 5 years ☐ More than 5 years	
80) In a typical week, how many days do you do at least 30 minutes of exercise (such as walking, running, cycling, jogging)?	☐ 0 days ☐ 1-2 days ☐ 3-4 days ☐ 5-6 days ☐ 7 days	
81) In a typical week, how often do you eat fruits and vegetables?	☐ 0 days ☐ 1-2 days ☐ 3-4 days ☐ 5-6 days ☐ 7 days	
82) In a typical week, how often do you eat foods that are high in saturated fat e.g. dairy foods (butter, ghee, cream, regular-fat milk, cheese etc), **meat** (fatty beef, pork, chicken, lamb and sausages etc)	☐ 0 days ☐ 1-2 days ☐ 3-4 days ☐ 5-6 days ☐ 7 days	
83) In a typical week, how often do you eat foods that are high in trans-fat e.g. baked goods (cakes, pies, cookies), **fried food, snacks** (potato chips), **margarine etc?**	☐ 0 days ☐ 1-2 days ☐ 3-4 days ☐ 5-6 days ☐ 7 days	
84) Is salt added in the cooking of food that you eat at home?	☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always	

85)	**Do you add salt to your food at the table?**	☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always
86)	**Do you know what your current Body Mass Index (BMI) is?**	☐ Not sure ☐ Less than 18.5 ☐ 18.5-25 ☐ 25-30 ☐ 30-35 ☐ 35-40 ☐ More than 40
87)	**How do you describe your lifestyle?**	☐ Very stressful ☐ Stressful ☐ Relatively stressful ☐ Free from stress
88)	**Please indicate if any of the following medical conditions/procedures are known in your immediate family history (i.e. parents, grandparents and siblings):**	☐ Hypertension (High blood pressure) ☐ Diabetes Mellitus ☐ Hypercholesterolemia (High cholesterol) ☐ Heart Disease ☐ Cardiovascular Surgery ☐ Atrial Fibrillation (irregular fast heart beat/rate/rhythm) ☐ Stroke ☐ Not Sure
89)	**Have you ever been hospitalised due to problems with your heart or blood pressure?**	☐ Yes ☐ No ☐ Not sure
90)	**In the past, have you had a cardiovascular risk assessment done?**	☐ Yes ☐ No ☐ Not sure
91)	**What do you think your level of risk is for cardiovascular disease?**	☐ Not sure ☐ <3% ☐ 3-9% ☐ 10-14% ☐ 15+%
92)	**What sources have you used to find out more about cardiovascular health and disease?**	☐ None ☐ Physician/Family Doctor/GP ☐ Radio/Television ☐ Family/Friends ☐ Nurse ☐ Internet ☐ Written information (i.e. pamphlet, information booklet) ☐ Other (please specify)

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On behalf of our Research Team at AUT, we would like to thank you for taking time out today to complete this questionnaire.

We truly appreciate your contribution to understanding the knowledge, attitudes and practices of cardiovascular health within our community.

In order to be able to send you a summary of the results at the end of the study, please provide us with your best contact number and email address:

- Contact number: _____

- Email address: _____

or, ☐ I do not wish to receive a summary of the results at the end of the study

Please note, your personal information will only be accessible to the Primary Researcher and the Research Team during the time of the study.

Appendix 15: Phase Two Participant Information Sheet

Phase Two Participant Information Sheet

Date Information Sheet Produced:

23 June 2020

Project Title

Examining cardiovascular health knowledge, attitudes and practises among the Fijian Indian community in New Zealand

An Invitation

Hello, I'm Thrishila Parshu Ram and I am conducting a research project for my Doctor of Philosophy degree at Auckland University of Technology. The focus of my research is on cardiovascular health among the Fijian Indian community in Auckland, New Zealand; and I would like to invite you to participate in this research.

What is the purpose of this research?

Cardiovascular disease is one of the leading causes of death and illness in the world today. In New Zealand, the risk of developing cardiovascular disease is increasing, where anyone is at risk but some more than others.

As it is well known, people of Pacific and Indian descent experience cardiovascular disease earlier on in their lives than Western populations. The Fijian Indian population, who relate to both the Indian and Pacific ethnic groups, is one such community that has considerable risk of developing cardiovascular disease.

By looking into the understanding and practises (i.e. behaviour and beliefs) related to cardiovascular health in the Fijian Indian community, we are hoping to develop a preventative strategy for future use.

This will be the first study to consider the knowledge, attitudes and practices of cardiovascular health in the Fijian Indian community. Finally, findings from this study may be used in academic publications and/or presentations that aim to promote cardiovascular health in this population.

How was I identified and why am I being invited to participate in this research?

You have responded to an advertisement or personal invitation in the local community. Those interested in participating in this study will need to meet the following criteria:

- be aged 18 years or above

- must identify with the Fijian Indian ethnic group

- have not been diagnosed with cardiovascular disease or suffered from a cardiovascular condition e.g. a heart attack

- live in Auckland, New Zealand

- have sufficient proficiency in English to complete the study questionnaire

Interested participants have been asked to contact me directly for more information about the research. Participants will be included in the study in order of application and recruitment will be complete once the maximum number of participants is reached.

How do I agree to participate in this research?

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time.

If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

If you wish to participate in this study, a consent form has been attached at the end of this information sheet. Please complete this along with your study questionnaire and direct it back to me *within three weeks* of receiving the study information/material.

What will happen in this research?

If you choose to participate, you will be kindly asked to complete a questionnaire about your knowledge, attitude and practises towards cardiovascular health at two time points – *Baseline* and *Follow Up*.

At the *Baseline time point*, you will be asked to fill in the questionnaire.

The questionnaire will take approximately 30 minutes of your time.

Depending on your preference, the questionnaire can be completed either:

1. Electronic version via online survey link

2. Written or hard-copy version via postage

Two weeks later (*Follow Up* time point), you will be asked to complete the questionnaire again and a brief review form to provide feedback on our questionnaire. The questionnaire and review form will take approximately 40 minutes of your time.

Please note, only my supervisors and I will have access to the data collected for this study. Only results from this study will be published and no personal information will be made identifiable.

What are the benefits?

There is no direct benefit in participating in this research. However, we are hoping that the information gained in this research will be of value to future research and understanding of how best to prevent cardiovascular disease in our Fijian Indian community.

This research may be beneficial to health service providers and community health educators who are working actively to prevent the development of cardiovascular disease in high risk populations as well as help improve their understanding of the current knowledge and practises within the Fijian Indian community. Lastly, this study will contribute towards achieving my Doctor of Philosophy qualification.

What are the discomforts and risks?

As the research project is intended to record your current understanding and practises towards cardiovascular health, we do not anticipate any form of risk in taking part in this study.

However, we are aware that it may evoke a feeling of hesitance or discomfort in you. Please be assured that I will be mindful of managing any discomfort as much as possible.

How will these discomforts and risks be alleviated?

If you experience any distress/discomfort while completing the questionnaire or following the completion of the questionnaire, you will have access to counselling support through Auckland University of Technology, at no cost.

AUT Health Counselling and Wellbeing is able to offer three free sessions of confidential counselling support for adult participants in an AUT research project. These sessions are only available for issues that have arisen directly as a result of participation in the research and are not for other general counselling needs. To access these services, you will need to:

- drop into our centres at WB219 or AS104 or phone 921 9992 City Campus or 921 9998 North Shore campus to make an appointment. Appointments for South Campus can be made by calling 921 9992

- let the receptionist know that you are a research participant, and provide the title of my research and my name and contact details as given in this Information Sheet

You can find out more information about AUT counsellors and counselling on http://www.aut.ac.nz/being-a-student/current-postgraduates/your-health-and-wellbeing/counselling

How will my privacy be protected?

Your privacy and confidentiality will be a key priority throughout the study. Numbers NOT names will be used, and any identifiable information will be excluded in any results obtained in this research.

Only my supervisors and I will have access to the data that has been collected and analysed. All data collected will be stored securely for a period of six years, after which it will be deleted (electronic) and destroyed (written).

What are the costs of participating in this research?

There are no financial costs involved in participating in this study. However, it is anticipated that the questionnaire will take approximately 30 minutes of your time.

What opportunity do I have to consider this invitation?

Interested participants are encouraged to respond within three weeks of receiving information about the study.

Will I receive feedback on the results of this research?

A summary of the findings of this study will be provided back to all participants via email or post. You may wish to receive or not receive the summary by indicating on the consent form attached.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the primary Project Supervisor, *Dr Gael Mearns on* gael.mearns@aut.ac.nz or *(09) 921 9999 ext. 7108.*

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, *Dr Carina Meares,* ethics@aut.ac.nz , 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference.

You are also able to contact the research team as follows:

Researcher Contact Details:

Thrishila Parshu Ram
Email: trishparshuram.aut@outlook.com
Contact: 0211032931

Project Supervisor Contact Details:

Dr Gael Mearns
Email: gael.mearns@aut.ac.nz
Phone: (09) 921 9999 ext. 7108

Approved by the Auckland University of Technology Ethics Committee on *23 June 2020,* AUTEC Reference number *19/63.*

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Appendix 16: Phase Two Participant Consent Form

Participant Consent Form

Project title:	***Examining cardiovascular health knowledge, attitude and practises among the Fijian Indian community in New Zealand***
Project Supervisor:	***Dr Gael Mearns***
Researcher:	***Thrishila Parshu Ram***

○ I have read and understood the information provided about this research project in the Participant Information Sheet dated 23rd June 2020.

○ I have had an opportunity to ask questions and to have them answered.

○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.

○ I understand that if I withdraw from the study then, while it may not be possible to destroy all records of the correspondence of which I was part, I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.

○ I agree to take part in this research.

Signature : ....

Name : ....

Date:

Approved by the Auckland University of Technology Ethics Committee on 23rd June 2020. AUTEC Reference number 19/63.

Appendix 17: Participant Recruitment Flyer

Interested in cardiovascular health research?

☑ Do you identify with the **Fijian Indian** ethnic group?

☑ Are you aged **18 years or above**?

☑ Do you **live in Auckland**?

☑ And have **not** been diagnosed with cardiovascular disease or suffered from a cardiovascular condition e.g. a heart attack?

☑ have sufficient proficiency in English

Then, **we would like to hear from you!**

This research project will be looking at the current understanding and practices towards cardiovascular health among this community.

To participate, simply **complete a questionnaire today** about knowledge, attitude and practises towards cardiovascular health**!**

Thrishila Parshu Ram
Phone: 0211032931
E-mail: trishparshuram.att@outlook.com

Thrishila Parshu Ram
Phone: 0211032931
E-mail: trishparshuram.att@outlook.com

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Phone: 0211032931
E-mail: trishparshuram.att@outlook.com

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E-mail: trishparshuram.att@outlook.com

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E-mail: trishparshuram.att@outlook.com

Thrishila Parshu Ram
Phone: 0211032931
E-mail: trishparshuram.att@outlook.com

Appendix 18: Qualtrics Version of KAP Survey

AUT

PART 1 - Section A: Knowledge of Cardiovascular Health

Heart disease is a disease that is related to heart and blood vessels

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

A person always knows when they have heart disease

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

If you have a family history of heart disease, you are at risk of developing heart disease

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

The older a person is, the greater their risk of having heart disease

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Eating fatty foods does not affect blood cholesterol levels

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Only exercising will lower a person's chance of developing heart disease

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Heart disease can occur to young people

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Eating a lot of red meat increases heart disease risk

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Most people can tell whether or not they have high blood pressure

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

The most common cause of heart attacks is stress

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Men and women experience many of the same symptoms of a heart attack

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Heart disease is a short-term illness

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Which of the following factors increases the risk of a heart attack or heart disease?

(Please tick all that apply)

☐ High blood pressure

☐ High blood sugar

☐ High cholesterol

☐ Physical inactivity

☐ Overweight

☐ Cigarette/Smoking

☐ Smokeless tobacco

☐ Excessive alcohol

☐ Excessive stress

☐ Family history of a heart attack

☐ Severe mental illness

☐ Heart failure

☐ Impaired kidney function

Symptoms of a heart attack can include…

(Please tick all that apply)

☐ Difficulty in breathing

☐ Pain in chest, teeth and jaw

☐ Pain or numbness in the arms

☐ Excessive sweating/cold sweat

☐ Vomiting tendency (nausea)

☐ Dizziness or light-headedness

☐ Heartburn/Indigestion

☐ Fatigue

☐ Loss of consciousness

PART 1 - Section B: Attitudes towards Cardiovascular Health

I don't think I'm at risk of having heart disease

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I don't want to change my lifestyle

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I feel the amount of food I eat is too much, and I would like to cut down

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I feel my present weight is too high for my height or age

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I don't think changing my behaviour will reduce my risk of developing heart disease

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I don't have time to take care of myself

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

God or a higher power ultimately determines my health

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I should be doing exercise to maintain a healthy lifestyle

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

If I need to go to places somewhere nearby, I choose to walk rather than taking any other form of transport

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree

◯   ◯   ◯   ◯   ◯

I know smoking is bad for health

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
◯	◯	◯	◯	◯

I should ensure that my weight is appropriate for my height

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
◯	◯	◯	◯	◯

I should take less oily food for a healthy lifestyle

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
◯	◯	◯	◯	◯

I prefer to spend more time on my electronic device(s) or watching TV rather than exercising

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
◯	◯	◯	◯	◯

I choose to eat or buy fast food when going out with family or friends

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
◯	◯	◯	◯	◯

I can manage my stress

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
◯	◯	◯	◯	◯

I should avoid drinking carbonated drinks

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
◯	◯	◯	◯	◯

I should include fruit or vegetables in my diet for maintaining my health

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree

  ◯   ◯   ◯   ◯   ◯

PART 1 - Section C: Practices towards Cardiovascular Health

I exercise more than 20 minutes, 3 times a week

Always	Often	Sometimes	Rarely	Never
◯	◯	◯	◯	◯

I use more than 3 teaspoons of salt per day

Always	Often	Sometimes	Rarely	Never
◯	◯	◯	◯	◯

I consume fatty foods more than 3 times a week

Always	Often	Sometimes	Rarely	Never
◯	◯	◯	◯	◯

My daily activity involve vigorous activity? (E.g. heavy lifting, digging)

Always	Often	Sometimes	Rarely	Never
◯	◯	◯	◯	◯

I walk for at least 10 minutes to get to and from places such as café, classes, mosque etc.?

Always	Often	Sometimes	Rarely	Never
◯	◯	◯	◯	◯

During my spare time, I exercise for at least 20 minutes (per session)?

Always	Often	Sometimes	Rarely	Never
◯	◯	◯	◯	◯

I often take any health supplements or I am on a special diet
(that is not recommended by a health professional)

Always	Often	Sometimes	Rarely	Never
◯	◯	◯	◯	◯

I eat two fruit servings per day

Always	Often	Sometimes	Rarely	Never
○	○	○	○	○

I eat three vegetables servings per day

Always	Often	Sometimes	Rarely	Never
○	○	○	○	○

I eat dinner late at night before I sleep

Always	Often	Sometimes	Rarely	Never
○	○	○	○	○

I eat in between main meals

(E.g. snacking, eating biscuits, etc.)

Always	Often	Sometimes	Rarely	Never
○	○	○	○	○

I lead a stressful life

Always	Often	Sometimes	Rarely	Never
○	○	○	○	○

It is likely that I will suffer from a heart attack or stroke in the future

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I am concerned about the likelihood of having a heart attack/stroke in the near future

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Having a heart attack or stroke is always fatal

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree

○　　　　　　○　　　　　　○　　　　　　○　　　　　　○

My whole life would change if I had a heart attack or stroke

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I believe walking a lot can benefit my health

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Increasing my exercise will decrease my chances of having a heart attack or stroke

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

Eating a healthy diet will decrease my chance of having a heart attack or stroke

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I don't have time to exercise for 30 minutes a day on most days of the week

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I don't know about healthy diets that would prevent me from developing heart disease

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

I have other problems more important than worrying about diet and exercise

Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
○	○	○	○	○

PART 2 - Open-Ended Questions

How could local health professionals support you to better understand your heart health?

What ideas or suggestions do you have for improving our community's understanding of heart disease?

What would be the most helpful health resource or service for our Fijian Indian community to learn and understand more about heart disease?

Do you have any other comments?

PART 3 - Participant Demographics & Current Health Status

Which gender do you identify most with?

- ◯ Male
- ◯ Female

○ Gender Diverse

Age (in years)

[   ]

Country of Birth?

[   ]

What is your marital status?

○ Single

○ Long term relationship/partnership/de facto

○ Married

○ Widowed

○ Divorced

What is your present religion, if any?

○ No religion

○ Christian

○ Hindu

○ Islam/Muslim

○ [   ] Not listed (please specify)

○ I prefer not to disclose

How many people, including you, are there in your family or household?

○ 1 (I am single)

○ 2

○ 3

○ 4

○ 5

○ 6 or more

Length of residency in New Zealand?

- ○ One year or less
- ○ 1-3 years
- ○ 3-5 years
- ○ 5-10 years
- ○ 10 years or more

What is your highest level of education attained?

- ○ No Formal Education
- ○ Primary School Education
- ○ Secondary School Education
- ○ Tertiary Education

In what languages can you speak fluently?
(Please select all that apply)

- ☐ English
- ☐ Fiji Hindustani (Fiji Hindi)
- ☐ Hindi
- ☐ Fijian
- ☐ [   ] Other (please specify)

What is your current employment status?

- ○ Unable to work
- ○ Employed full time (40 or more hours per week)
- ○ Employed part time (up to 39 hours per week)
- ○ Unemployed
- ○ Self-employed
- ○ Student
- ○ Homemaker
- ○ Retired

In general, how would you consider you health condition to be?

○ Excellent

○ Very Good

○ Good

○ Fair

○ Poor

Do you have a family doctor?

○ Yes

○ No

When was your latest health check-up at your local health centre or family doctor's?

○ Within the last 3 months

○ Within the last 6 months

○ Within 1 year

○ In the last 2 years and over

○ Not sure

Are you a smoker?

○ Yes

○ No

○ Ex-smoker

If yes,

○ I am a social smoker

○ Up to 5 times a week

○ Up to 10 per day

○ Up to 11-19 per day

○ More than 20 per day

How often do you drink alcohol?

○ Never

○ Monthly or less

○ 2 to 4 times a week

○ 2-3 times a week

○ 4 or more times a week

How many per day?

○ None, 1 or 2

○ 3 or 4

○ 5 or 6

○ 7, 8 or 9

○ 10 or more

6 or more one day?

○ Never

○ Less than monthly

○ Monthly

○ Weekly

○ Daily or almost daily

Do you drink kava?

○ Yes

○ No

If yes,

○ Every day

○ 3-5 times a week

○ Once a week

○ Only on weekends

○ On special occasions

Have you been diagnosed by a doctor or registered health professional as having high blood pressure?

○ Yes

○ No

○ Not Sure

If yes, are you currently taking medications to control your blood pressure?

○ Yes

○ No

○ Not Sure

If yes, how long have you been taking this medication?

○ 1 to 3 months

○ Less than 6 months

○ 6 months to 1 year

○ 2 to 5 years

○ More than 5 years

Have you had a fasting blood glucose test before?

○ Yes

○ No

○ Not Sure

Have you been diagnosed by a doctor or registered health professional as being pre-diabetic?

○ Yes

○ No

○ Not Sure

If yes, are you currently taking medications to control your blood glucose levels?

○ Yes

○ No

○ Not Sure

If yes, what medication are you taking to control your blood glucose level?

[   ]

How long have you been taking this medication?

○ 1 to 3 months

○ Less than 6 months

○ 6 months to 1 year

○ 2 to 5 years

○ More than 5 years

Have you been diagnosed by a doctor or registered health professional as having Type 1 or Type 2 Diabetes?

○ Yes

○ No

○ Not Sure

If yes, which of the following have you been diagnosed with?

○ Type 1 Diabetes

○ Type 2 Diabetes

Are you currently taking medications to control your blood sugar levels?

○ Yes

○ No

○ Not Sure

If yes, what medication/s are you taking to control your blood glucose level?

[   ]

How long have you been taking this medication?

○ 1 to 3 months
○ Less than 6 months
○ 6 months to 1 year
○ 2 to 5 years
○ More than 5 years

Have you been diagnosed by a doctor or registered health professional as having high cholesterol?

○ Yes
○ No
○ Not Sure

If yes, are you currently taking medications to control your cholesterol levels?

○ Yes
○ No
○ Not Sure

If yes, what medication/s are you taking to control your cholesterol levels?

[   ]

How long have you been taking this medication?

○ 1 to 3 months
○ Less than 6 months
○ 6 months to 1 year
○ 2 to 5 years
○ More than 5 years

In a typical week, how many days do you do at least 30 minutes of exercise (such as walking, running, cycling, jogging)?

○ 0 days
○ 1-2 days
○ 3-4 days
○ 5-6 days
○ 7 days

In a typical week, how often do you eat fruits and vegetables?

○ 0 days
○ 1-2 days
○ 3-4 days
○ 5-6 days
○ 7 days

In a typical week, how often do you eat foods that are high in saturated fat e.g. dairy foods (butter, ghee, cream, regular-fat milk, cheese etc), meat (fatty beef, pork, chicken, lamb and sausages etc)

○ 0 days
○ 1-2 days
○ 3-4 days
○ 5-6 days
○ 7 days

In a typical week, how often do you eat foods that are high in trans-fat e.g. baked goods (cakes, pies, cookies), fried food, snacks (potato chips), margarine etc?

○ 0 days
○ 1-2 days
○ 3-4 days
○ 5-6 days
○ 7 days

Is salt added in the cooking of food that you eat at home?

○ Never

○ Rarely

○ Sometimes

○ Often

○ Always

Do you add salt to your food at the table?

○ Never

○ Rarely

○ Sometimes

○ Often

○ Always

Do you know what your current Body Mass Index (BMI) is?

○ Not Sure

○ Less than 18.5

○ 18.5 - 25

○ 25 - 30

○ 30 - 35

○ 35 - 40

○ More than 40

How do you describe your lifestyle?

○ Very stressful

○ Stressful

○ Relatively stressful

○ Free from stress

Please indicate if any of the following medical conditions/procedures are known in your immediate family history (i.e. parents, grandparents and siblings):

- ☐ Hypertension (High blood pressure)
- ☐ Diabetes Mellitus
- ☐ Hypercholesterolemia (High cholesterol)
- ☐ Heart Disease
- ☐ Cardiovascular Surgery
- ☐ Atrial Fibrillation (Irregular fast heart beat/rate/rhythm)
- ☐ Stroke
- ☐ Not Sure

Have you ever been hospitalised due to problems with your heart or blood pressure?

- ○ Yes
- ○ No
- ○ Not Sure

In the past, have you had a cardiovascular risk assessment done?

- ○ Yes
- ○ No
- ○ Not Sure

What do you think your level of risk is for cardiovascular disease?

- ○ Not Sure
- ○ < 3%
- ○ 3 - 9 %
- ○ 10 - 14 %
- ○ 15 + %

What sources have you used to find out more about cardiovascular health and disease?

- ☐ None

☐ Physician/Family Doctor/GP

☐ Radio/Television

☐ Family/Friends

☐ Nurse

☐ Internet

☐ Written Information (i.e pamphlet, information booklet)

☐ [   ] Other (please specify)

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Appendix 19: Scoring Instructions

PART 1 – Knowledge, Attitudes and Practices of Cardiovascular Health

Section A: Knowledge of Cardiovascular Health
Please select only ONE box to indicate how much you agree or disagree with each statement below

		Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
1)	Heart disease is a disease that is related to heart and blood vessels	5	4	3	2	1
2)	A person always knows when they have heart disease	1	2	3	4	5
3)	If you have a family history of heart disease, you are at risk of developing heart disease	5	4	3	2	1
4)	The older a person is, the greater their risk of having heart disease	5	4	3	2	1
5)	Eating fatty foods does not affect blood cholesterol levels	1	2	3	4	5
6)	Only exercising will lower a person's chance of developing heart disease	1	2	3	4	5
7)	Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease	5	4	3	2	1
8)	Heart disease can occur to young people	5	4	3	2	1
9)	Eating a lot of red meat increases heart disease risk	5	4	3	2	1
10)	Most people can tell whether or not they have high blood pressure.	1	2	3	4	5
11)	The most common cause of heart attacks is stress.	1	2	3	4	5
12)	Men and women experience many of the same symptoms of a heart attack	5	4	3	2	1
13)	Heart disease is a short-term illness	1	2	3	4	5

Section A: Knowledge of Cardiovascular Health

14) **Which of the following factors increases the risk of a heart attack or heart disease?**

   (Please tick all that apply)

   - ☐ High blood pressure
   - ☐ High blood sugar
   - ☐ High cholesterol
   - ☐ Physical inactivity
   - ☐ Overweight
   - ☐ Cigarette/Smoking
   - ☐ Smokeless tobacco
   - ☐ Excessive alcohol
   - ☐ Excess stress
   - ☐ Family history of a heart attack
   - ☐ Severe mental illness
   - ☐ Heart failure
   - ☐ Impaired kidney function

15) **Symptoms of a heart attack can include…**
   (Please tick all that apply)

   - ☐ Difficulty in breathing
   - ☐ Pain in the chest, teeth and jaw
   - ☐ Pain or numbness in the arms
   - ☐ Excessive sweating/cold sweat
   - ☐ Vomiting tendency (nausea)
   - ☐ Dizziness or light-headedness
   - ☐ Heartburn/Indigestion
   - ☐ Fatigue
   - ☐ Loss of consciousness

For Q1 to 13 :

- Correct answer = maximum of 5 points then ascending or descending points in that order

For Q14 (Risk Factors):

- 1 point for each option chosen
- Maximum = 13 points

For Q15 (Heart Attack Symptoms):

- 1 point for each option chosen
- Maximum = 9 points

Total : 87 points

Individual score ÷ total score = n → calculate percentage

- Poor Knowledge = 0 - 50%
- Fair Knowledge = 51 – 80%
- Good Knowledge = 81 -100%

Section B: Attitudes towards Cardiovascular Health
Please select only ONE box to indicate how much you agree or disagree with each statement below

		Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
16)	I don't think I'm at risk of having heart disease	1	2	3	4	5
17)	I don't want to change my lifestyle	1	2	3	4	5
18)	I feel the amount of food I eat is too much, and I would like to cut down	5	4	3	2	1
19)	I feel my present weight is too high for my height or age	5	4	3	2	1
20)	I don't think changing my behaviour will reduce my risk of developing heart disease	1	2	3	4	5
21)	I don't have time to take care of myself	1	2	3	4	5
22)	God or a higher power ultimately determines my health	1	2	3	4	5
23)	I should be doing exercise to maintain a healthy lifestyle	5	4	3	2	1
24)	If I need to go to places somewhere nearby, I choose to walk rather than taking any other form of transport	5	4	3	2	1
25)	I know smoking is bad for health	5	4	3	2	1
26)	I should ensure that my weight is appropriate for my height	5	4	3	2	1
27)	I should take less oily food for a healthy lifestyle	5	4	3	2	1
28)	I prefer to spend more time on my electronic device(s) or watching TV rather than exercising	1	2	3	4	5
29)	I choose to eat or buy fast food when going out with family or friends	1	2	3	4	5
30)	I can manage my stress	5	4	3	2	1
31)	I should avoid drinking carbonated drinks	5	4	3	2	1
32)	I should include fruit or vegetables in my diet for maintaining my health	5	4	3	2	1

For Q16 - 32 :

- Positive response = maximum of 5 points then ascending or descending points in that order

Total : 85 points

Individual score ÷ total score = n → calculate percentage

- *Poor Attitude = 0 - 50%*
- *Fair Attitude = 51 – 80%*
- *Good Attitude = 81 -100%*

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Section C: Practices towards Cardiovascular Health
Please select only ONE box to for each of question below

		Always	Often	Sometimes	Rarely	Never
33)	I exercise more than 20mins 3x/week	5	4	3	2	1
34)	I use more than 3 teaspoons of salt per day	1	2	3	4	5
35)	I consume fatty foods more than 3 times a week	1	2	3	4	5
36)	My daily activity involve vigorous activity? (E.g. heavy lifting, digging)	5	4	3	2	1
37)	I walk for at least 10 minutes to get to and from places such as café, classes, mosque etc.?	5	4	3	2	1
38)	During my spare time, I exercise for at least 20 minutes (per session)?	5	4	3	2	1
39)	I often take any health supplements or I am on a special diet *(that is not recommended by a health professional)*	1	2	3	4	5
40)	I eat two fruit servings per day	5	4	3	2	1
41)	I eat three vegetables servings per day	5	4	3	2	1
42)	I eat dinner late at night before I sleep	1	2	3	4	5
43)	I eat in between main meals *(E.g. snacking, eating biscuits, etc.)*	1	2	3	4	5
44)	I lead a stressful life	1	2	3	4	5

Please select only ONE box to indicate how much you agree or disagree for each statement below

		Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
45)	It is likely that I will suffer from a heart attack or stroke in the future	1	2	3	4	5
46)	I am concerned about the likelihood of having a heart attack/stroke in the near future	1	2	3	4	5
47)	Having a heart attack or stroke is always fatal	1	2	3	4	5
48)	My whole life would change if I had a heart attack or stroke	1	2	3	4	5
49)	I believe walking a lot can benefit my health	5	4	3	2	1
50)	Increasing my exercise will decrease my chances of having a heart attack or stroke	5	4	3	2	1
51)	Eating a healthy diet will decrease my chance of having a heart attack or stroke	5	4	3	2	1
52)	I don't have time to exercise for 30 minutes a day on most days of the week	1	2	3	4	5
53)	I don't know about healthy diets that would prevent me from developing heart disease	1	2	3	4	5
54)	I have other problems more important than worrying about diet and exercise	1	2	3	4	5

For Q33 - 54 :

- Positive response = maximum of 5 points then ascending or descending points in that order

Total : 110 points

Individual score ÷ total score = n → calculate percentage

- *Poor Practices = 0 - 50%*
- *Fair Practices = 51 − 80%*
- *Good Practices = 81 -100%*

PART 3 – Participant Demographics & Current Health Status

Since the final part of the survey is to gather participant demographics and their current health status, the answer options in this section are ordered numerically.

Please note, the "number" assigned is not representative of a point/score. It is just a number that represents the answer option.

1)	Which gender do you identify most with?	1.	Male
		2.	Female
		3.	Gender Diverse
2)	Age (in years)	1.	18-24 years
		2.	25-39 years
		3.	40-60 years
		4.	60+ years
3)	Country of Birth?	1.	Fiji
		2.	New Zealand
4)	What is your marital status?	1.	Single
		2.	Long term relationship/partnership/de facto
		3.	Married
		4.	Widowed
		5.	Divorced
5)	What is your present religion, if any?	1.	No religion
		2.	Christian
		3.	Hindu
		4.	Islam/Muslim
		5.	Not listed (please specify)
		6.	I prefer not to disclose
6)	How many people, including you, are there in your family or household?	1.	1 (I am single)
		2.	2
		3.	3
		4.	4
		5.	5
		6.	6 or more
7)	Length of residency in New Zealand?	1.	One year or less
		2.	1-3 years
		3.	3-5 years
		4.	5-10 years
		5.	10 years or more
8)	What is your highest level of education attained?	1.	No Formal Education
		2.	Primary School Education
		3.	Secondary School Education
		4.	Tertiary Education
9)	In what languages can you speak fluently? (Please select all that apply)	1.	English
		2.	Fiji Hindustani (Fiji Hindi)
		3.	Hindi
		4.	Fijian
		5.	Other (please specify)

10) What is your current employment status?	1. Unable to work 2. Employed full time (40 or more hours per week) 3. Employed part time (up to 39 hours per week) 4. Unemployed 5. Self-employed 6. Student 7. Homemaker 8. Retired
11) In general, how would you consider your health condition to be?	1. Excellent 2. Very Good 3. Good 4. Fair 5. Poor
12) Do you have a family doctor?	1. Yes 2. No
13) When was your latest health check-up at your local health centre or family doctor's?	1. Within the last 3 months 2. Within the last 6 months 3. Within 1 year 4. In the last 2 years and over 5. Not sure
14) Are you a smoker?	1. Yes 2. No 3. Ex-smoker
If yes,	1. I am a social smoker 2. Up to 5 times a week 3. Up to 10 per day 4. Up to 11-19 per day 5. More than 20 per day
15) How often do you drink alcohol?	1. Never 2. Monthly or less 3. 2 to 4 times a month 4. 2-3 times a week 5. 4 or more times a week
If selected option 2 to 4 in Question 73, How many per day?	1. None, 1 or 2 2. 3 or 4 3. 5 or 6 4. 7, 8 or 9 5. 10 or more
If selected option 2 to 4 in Question 73, 6 or more one day?	1. Never 2. Less than monthly 3. Monthly 4. Weekly 5. Daily or almost daily

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16) Do you drink kava?	**1.** Yes **2.** No
If yes,	**1.** Every day **2.** 3-5 times a week **3.** Once a week **4.** Only on weekends **5.** On special occasions
17) Have you been diagnosed by a doctor or registered health professional as having high blood pressure?	**1.** Yes **2.** No **3.** Not sure
If yes, *Are you currently taking medications to control your blood pressure?*	**1.** Yes **2.** No **3.** Not sure
If yes, *how long have you been taking this medication?*	**1.** 1 to 3 months **2.** Less than 6 months **3.** 6 months to 1 year **4.** 2 to 5 years **5.** More than 5 years
18) Have you had a fasting blood glucose test before?	**1.** Yes **2.** No **3.** Not sure
19) Have you been diagnosed by a doctor or registered health professional as being pre-diabetic?	**1.** Yes **2.** No **3.** Not sure
If yes, *Are you currently taking medications to control your blood glucose levels?*	**1.** Yes **2.** No **3.** Not sure
If yes, *(a) What medication are you taking to control your blood glucose level?*	**TEXT ONLY (NO CODING)**
(b) how long have you been taking this medication?	**1.** 1 to 3 months **2.** Less than 6 months **3.** 6 months to 1 year **4.** 2 to 5 years **5.** More than 5 years
20) Have you been diagnosed by a doctor or registered health professional as having Type 1 or Type 2 Diabetes?	**1.** Yes **2.** No **3.** Not sure
If yes, *Which of the following have you been diagnosed with?*	**1.** Type 1 Diabetes **2.** Type 2 Diabetes
Following selection, *Are you currently taking medications to control your blood sugar levels?*	**1.** Yes **2.** No **3.** Not sure

	If yes, *(a) What medication/s are you taking to control your blood glucose level?*	**TEXT ONLY (NO CODING)**
	(b) how long have you been taking this medication?	1. 1 to 3 months 2. Less than 6 months 3. 6 months to 1 year 4. 2 to 5 years 5. More than 5 years
21)	**Have you been diagnosed by a doctor or registered health professional as having high cholesterol?**	1. Yes 2. No 3. Not sure
	If yes, *Are you currently taking medications to control your cholesterol levels?*	1. Yes 2. No 3. Not sure
	If yes, *(a) What medication/s are you taking to control your cholesterol levels?*	**TEXT ONLY (NO CODING)**
	(b) how long have you been taking this medication?	1. 1 to 3 months 2. Less than 6 months 3. 6 months to 1 year 4. 2 to 5 years 5. More than 5 years
22)	**In a typical week, how many days do you do at least 30 minutes of exercise (such as walking, running, cycling, jogging)?**	1. 0 days 2. 1-2 days 3. 3-4 days 4. 5-6 days 5. 7 days
23)	**In a typical week, how often do you eat fruits and vegetables?**	1. 0 days 2. 1-2 days 3. 3-4 days 4. 5-6 days 5. 7 days
24)	**In a typical week, how often do you eat foods that are high in saturated fat e.g. dairy foods** (butter, ghee, cream, regular-fat milk, cheese etc), **meat** (fatty beef, pork, chicken, lamb and sausages etc)	1. 0 days 2. 1-2 days 3. 3-4 days 4. 5-6 days 5. 7 days
25)	**In a typical week, how often do you eat foods that are high in trans-fat e.g. baked goods** (cakes, pies, cookies)**, fried food, snacks** (potato chips)**, margarine etc?**	1. 0 days 2. 1-2 days 3. 3-4 days 4. 5-6 days 5. 7 days
26)	**Is salt added in the cooking of food that you eat at home?**	1. Never 2. Rarely 3. Sometimes 4. Often 5. Always

27)	Do you add salt to your food at the table?	1. Never
		2. Rarely
		3. Sometimes
		4. Often
		5. Always
28)	Do you know what your current Body Mass Index (BMI) is?	1. Not sure
		2. Less than 18.5
		3. 18.5-25
		4. 25-30
		5. 30-35
		6. 35-40
		7. More than 40
29)	How do you describe your lifestyle?	1. Very stressful
		2. Stressful
		3. Relatively stressful
		4. Free from stress
30)	Please indicate if any of the following medical conditions/procedures are known in your immediate family history (i.e. parents, grandparents and siblings):	1. Hypertension (High blood pressure)
		2. Diabetes Mellitus
		3. Hypercholesterolemia (High cholesterol)
		4. Heart Disease
		5. Cardiovascular Surgery
		6. Atrial Fibrillation (irregular fast heart beat/rate/rhythm)
		7. Stroke
		8. Not Sure
31)	Have you ever been hospitalised due to problems with your heart or blood pressure?	1. Yes
		2. No
		3. Not sure
32)	In the past, have you had a cardiovascular risk assessment done?	1. Yes
		2. No
		3. Not sure
33)	What do you think your level of risk is for cardiovascular disease?	1. Not sure
		2. <3%
		3. 3-9%
		4. 10-14%
		5. 15+%
34)	What sources have you used to find out more about cardiovascular health and disease?	1. None
		2. Physician/Family Doctor/GP
		3. Radio/Television
		4. Family/Friends
		5. Nurse
		6. Internet
		7. Written information (i.e. pamphlet, information booklet)
		8. Other (please specify)

Appendix 20: AUT Ethics Approval–Phase Two

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

23 June 2020

Gael Mearns
Faculty of Health and Environmental Sciences

Dear Gael

Re: Ethics Application: **19/63 Examining cardiovascular health knowledge, attitude & practices among the Fijian Indian Community in New Zealand**

Thank you for responses to the conditions for the recruitment of phase two and three of your ethics application.

The recruitment for Phase Two - assess feasibility and the appropriateness of the questionnaire in a small population of the target community and Phase Three within the target community as a survey is approved.

I remind you of the **Standard Conditions of Approval**.

1. The research is to be undertaken in accordance with the Auckland University of Technology Code of Conduct for Research and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted. When the research is undertaken outside New Zealand, you need to meet all ethical, legal, and locality obligations or requirements for those jurisdictions.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through http://www.aut.ac.nz/research/researchethics

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

Cc: thrishilaparshuram@gmail.com; jagamaya.shrestha@aut.ac.nz

Appendix 21: Preliminary Findings

Table 1

Knowledge of CV Health (n=28)

		Frequency	Percent (%)
1. Heart disease is a disease that is related to the heart and blood vessels	*Agree*	3	10.7
	Strongly Agree	25	89.3
2. A person always knows when they have heart disease	*Agree*	8	28.6
	Not Certain	4	14.3
	Disagree	13	46.4
	Strongly Disagree	3	10.7
3. If you have a family history of heart disease, you are at risk of developing heart disease	*Not Certain*	2	7.1
	Agree	17	60.7
	Strongly Agree	9	32.1
4. The older a person is, the greater their risk of having heart disease	*Disagree*	5	17.9
	Not Certain	5	17.9
	Agree	13	46.4
	Strongly Agree	4	14.3
5. Eating Fatty foods does not affect blood cholesterol levels	*Strongly Agree*	1	3.6
	Agree	1	3.6
	Disagree	12	42.9
	Strongly Disagree	14	50.0
6. Only exercising will lower a person's chance of developing heart disease	*Strongly Agree*	3	10.7
	Agree	6	21.4
	Not Certain	4	14.3
	Disagree	14	50.0
	Strongly Disagree	1	3.6
7. Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease	*Disagree*	1	3.6
	Not Certain	3	10.7
	Agree	20	71.4
	Strongly Agree	4	14.3
8. Heart disease can occur to young people	*Not Certain*	2	7.1
	Agree	16	57.1
	Strongly Agree	10	35.7
9. Eating a lot of red meat increases heart disease risk	*Disagree*	3	10.7
	Not Certain	11	39.3
	Agree	11	39.3
	Strongly Agree	3	10.7
10. Most people can tell whether or not they have high blood pressure	Agree	10	35.7
	Not Certain	5	17.9
	Disagree	12	42.9
	Strongly Disagree	1	3.6
11. The most common cause of heart attacks is stress	*Strongly Agree*	2	7.1
	Agree	12	42.9
	Not Certain	8	28.6
	Disagree	6	21.4
12. Men and woman experience many of the same symptoms of a heart attack	*Disagree*	1	3.6
	Not Certain	8	28.6
	Agree	16	57.1
	Strongly Agree	3	10.7
13. Heart disease is a short-term illness	*Strongly Agree*	1	3.6
	Not Certain	2	7.1
	Disagree	17	60.7
	Strongly Disagree	8	28.6

		N, Responses	% Of Participants
14. Which of the following factors increases the risk of a heart attack or heart disease? (Please tick all that apply_)	High Blood Pressure	25	89.3
	High Blood Sugar	18	64.3
	High Cholesterol	27	96.4
	Physical Inactivity	21	75.0
	Overweight	27	96.4
	Cigarette/ Smoking	22	78.6
	Smokeless Tobacco	12	42.9
	Excessive Alcohol	21	75.0
	Excessive Stress	22	78.6
	Family History of Heart Attack	27	96.4
	Severe Mental Illness	5	17.9
	Heart Failure	25	89.3
	Impaired Kidney Function	9	32.1

		N, Responses	% Of Participants
15. Symptoms of a heart attack can include… (Please tick all that apply)	Difficulty Breathing	27	96.4
	Pain in Chest, Teeth, and Jaw	27	96.4
	Pain or numbness in the arms	24	85.7
	Excessive Sweating/ Cold Sweats	19	67.9
	Vomiting Tendency	5	17.9
	Dizziness or Light-Headedness	15	53.6
	Heartburn/ Indigestion	15	53.6
	Fatigue	9	32.1
	Loss of Consciousness	18	64.3

Table 2

Attitudes towards CV Health (n=28)

		Frequency	Percent (%)
16. I don't think im at risk of having heart disease	*Strongly Agree*	2	7.1
	Agree	5	17.9
	Not Certain	9	32.1
	Disagree	7	25.0
	Strongly Disagree	5	17.9
17. I don't want to change my lifestyle	*Strongly Agree*	1	3.6
	Agree	4	14.3
	Not Certain	4	14.3
	Disagree	7	25.0
	Strongly Disagree	5	17.9
18. I feel the amount of food I eat is too much, and I would like to cut down	*Strongly Disagree*	3	10.7
	Disagree	1	3.6
	Not Certain	2	7.1
	Agree	14	50.0
	Strongly Agree	8	28.6
19. I feel my present weight is too high for my height or age	*Strongly Disagree*	3	10.7
	Disagree	7	25.0
	Not Certain	2	7.1
	Agree	9	32.1
	Strongly Agree	7	25.0
20. I don't think changing my behaviour will reduce my risk of developing heart disease	*Agree*	4	14.3
	Not Certain	1	3.6
	Disagree	15	53.6
	Strongly Disagree	7	25.0
21. I don't have time to take care of myself	*Strongly Agree*	1	3.6
	Agree	2	7.1
	Not Certain	1	3.6
	Disagree	17	60.7
	Strongly Disagree	7	25..0
22. God or a higher power ultimately determines my health	*Agree*	2	7.1
	Not Certain	4	14.3
	Disagree	12	42.9
	Strongly Disagree	10	35.7
23. I should be doing exercise to maintain a healthy lifestyle	*Strongly Disagree*	1	3.6
	Agree	7	25.0
	Strongly Agree	20	71.4
24. If I need to go to places somewhere nearby, I choose to walk rather than taking any form of transport	*Disagree*	7	25.0
	Not Certain	1	3.6
	Agree	12	42.9
	Strongly Agree	8	28.6
25. I know smoking is bad for my health	Agree	1	3.6
	Strongly Agree	27	96.4
26. I should ensure that my weight is appropriate for my height	*Strongly Disagree*	1	3.6+
	Not Certain	1	3.6
	Agree	12	42.9
	Strongly Agree	14	50.0
27. I should take less oily food for a healthy lifestyle	*Not Certain*	1	3.6
	Agree	11	39.3
	Strongly Agree	16	57.1

28. I prefer to spend more time on my electronic device(s) or watching TV rather than exercising	*Strongly Agree*	1	3.6
	Agree	6	21.4
	Not Certain	2	7.1

	Disagree	9	32.1
	Strongly Disagree	10	35.7
29. I choose to eat or buy fast food when going out with family or friends	*Strongly Agree*	1	3.6
	Agree	15	53.6
	Not Certain	1	3.6
	Disagree	5	17.9
	Strongly Disagree	6	21.4
30. I can manage my stress	*Disagree*	2	7.1
	Not Certain	6	21.4
	Agree	17	60.7
	Strongly Agree	3	10.7
31. I should avoid drinking carbonated drinks	*Not Certain*	2	7.1
	Agree	13	46.4
	Strongly Agree	13	46.4
32. I should include fruit or vegetables in my diet for maintaining my health	*Agree*	5	17.9
	Strongly Agree	23	82.1

Table 3

Practices towards CV Health (n=28)

		Frequency	Percent (%)
33. I exercise more than 20 minutes, 3 times a week	*Never*	1	3.6
	Rarely	4	14.3
	Sometimes	10	35.7
	Often	7	25.0
	Always	6	21.4
34. I use more than 3 teaspoons of salt per day	*Always*	3	10.7
	Often	5	17.9
	Sometimes	8	28.6
	Rarely	8	28.6
	Never	4	14.3
35. I consume fatty foods more than 3 times a week	*Always*	3	10.7
	Often	5	17.9
	Sometimes	7	25.0
	Rarely	12	42.9
	Never	1	3.6
36. My daily activity involves vigorous activity (e.g., heavy lifting, digging)	*Never*	2	7.1
	Rarely	14	50.0
	Sometimes	7	25.0
	Often	2	7.1
	Always	3	10.7
37. I walk for at least 10 minutes to get to and from places such as café, classes, mosque etc.	*Rarely*	4	143.
	Sometimes	5	17.9
	Often	14	50.0
	Always	5	17.9
38. During my spare time, I exercise for at least 20 minutes (per session)?	*Never*	3	10.7
	Rarely	7	25.0
	Sometimes	10	35.7
	Often	3	10.7
	Always	5	17.9
39. I often taky any health supplements or I am on a special diet (that is not recommended by a health professional)	*Always*	4	14.3
	Often	3	10.7
	Sometimes	5	17.9
	Rarely	6	21.4
	Never	10	35.7
40. I eat two fruit servings per day	*Never*	1	3.6
	Rarely	2	7.1
	Sometimes	11	39.3
	Often	9	32.1
	Always	5	17.9
41. I eat three vegetables servings per day	*Never*	1	3.6
	Rarely	3	10.7
	Sometimes	7	25.0
	Often	9	32.1
	Always	8	28.6
42. I eat dinner late at night before I sleep	Always	1	3.6
	Often	8	28.6
	Sometimes	13	46.4
	Rarely	3	10.7
	Never	3	10.7

43. I eat between main meals (e.g., snacking, eating biscuits, etc.)	*Always*	3	107
	Often	8	28.6
	Sometimes	10	35.7
	Rarely	6	21.4
	Never	1	3.6
44. I lead a stressful life	Always	2	7.1
	Often	6	21.4
	Sometimes	15	53.6
	Rarely	4	14.3
	Never	1	3.6
45. It is likely that I will suffer from a heart attack or stroke in the future	*Agree*	6	21.4
	Not Certain	13	46.4
	Disagree	8	28.6
	Strongly Disagree	1	3.6
46. I am concerned about the likelihood of having a heart attack/ stroke in the near future	Strongly Agree	2	7.1
	Agree	12	42.9
	Not Certain	8	28.6
	Disagree	6	21.4
47. Having a heart attack or stroke is always fatal	*Strongly Agree*	6	21.4
	Agree	10	35.7
	Not Certain	2	7.1
	Disagree	10	35.7
48. My whole life would change if I had a heart attack or stroke	*Strongly Agree*	16	57.1
	Agree	10	35.7
	Not Certain	2	7.1
49. I believe walking a lot can benefit my health	*Agree*	11	39.3
	Strongly Agree	17	60.7
50. Increasing my exercise will decrease my chances of having a heart attack or stroke	*Not Certain*	1	3.6
	Agree	7	25.0
	Strongly Agree	20	71.4
51. Eating a healthy diet will decrease my chance of having a heart attack or stroke	*Agree*	9	32.1
	Strongly Agree	19	67.9
52. I don't have time to exercise for 30 minutes a day most days of the week.	Agree	9	32.1
	Not Certain	2	7.1
	Disagree	12	42.9
	Strongly Disagree	5	17.9
53. I don't know about healthy diets the would prevent me from developing heart disease.	*Strongly Agree*	1	3.6
	Agree	5	17.9
	Not Certain	2	7.1
	Disagree	18	64.3
	Strongly Disagree	2	7.1
54. I have other problems more important than worrying about diet and exercise	Agree	2	7.1
	Not Certain	4	14.3
	Disagree	15	53.6
	Strongly Disagree	7	25.0

Table 4

The Total Knowledge, Attitude and Practice Scores at Timepoint 1.

	N	Minimum	Maximum	Mean	Std. Deviation
Total Knowledge Score (T1)	28	49	76	63.39	6.557
Total Attitude Score (T1)	28	60	78	67.86	4.912
Total Practice Score (T1)	28	58	89	73.18	7.898

Table 5

Knowledge versus Attitudes towards CV Health (n=28)

		Total Knowledge Score (T1)
Total Attitude Score (T1)	*Pearson Correlation*	-.011
	Sig. (2-tailed)	0.956
	N	28

Table 6

Knowledge versus Practices towards CV Health (n=28)

		Total Knowledge Score (T1)
Total Practice Score (T1)	*Pearson Correlation*	-.011
	Sig. (2-tailed)	.957
	N	28

Table 7

Attitudes versus Practices towards CV Health (n=28)

		Total Attitude Score (T1)
Total Practice Score (T1)	*Pearson Correlation*	.210
	Sig. (2-tailed)	.284
	N	28

Table 8

Gender versus Overall KAP Score at Timepoint 1 (n=28)

Which gender do you identify most with?	Mean	N	Std. Deviation
Male	205.71	14	12.505
Female	203.14	14	11.792
Total	204.43	28	11.998

Table 9

Gender versus Total Knowledge Score at Timepoint 1 (n=28)

Which gender do you identify most with?	Mean	N	Std. Deviation
Male	63.43	14	7.803
Female	63.36	14	5.329
Total	63.39	28	6.557

Table 10

Gender versus Total Attitude Score at Timepoint 1 (n=28)

Which gender do you identify most with?	Mean	N	Std. Deviation
Male	66.57	14	4.553
Female	69.14	14	5.082
Total	67.86	28	4.912

Table 11

Gender versus Total Practice Score at Timepoint 1 (n=28)

Which gender do you identify most with?	Mean	N	Std. Deviation
Male	75.71	14	7.539
Female	70.64	14	7.672
Total	73.18	28	7.898

Table 12

The Total Knowledge, Attitude and Practice Scores Including the Overall Score for Each Timepoint.

	N	Minimum	Maximum	Mean	Std. Deviation
Total Knowledge Score (T1)	28	49	76	63.39	6.557
Total Knowledge Score (T2)	28	54	77	65.39	5.567
Total Attitude Score (T1)	28	60	78	67.86	4.912
Total Attitude Score (T2)	28	55	79	67.46	5.066
Total Practice Score (T1)	28	58	89	73.18	7.898
Total Practice Score (T2)	28	59	88	73.50	8.145
Overall KAP Score (T1)	28	182	232	204.43	11.998
Overall KAP Score (T2)	28	183	227	206.36	10.975

Table 13

The frequency and percentage of sources used by the participants to find out more about CV health.

	Frequency	Percent
None	12	23.5%
Physician/Family Doctor/GP	12	23.5%
Radio/Television	2	3.9%
Family/Friends	5	9.8%
Nurse	4	7.8%
Internet	10	19.6%
Written Information (i.e., pamphlet, information booklet)	6	11.8%

Appendix 22: Phase Two Participant Review Form

Phase Two – Participant Review Form

Project title:	**Examining cardiovascular health knowledge, attitude and practises among the Fijian Indian community in New Zealand**
Project Supervisor:	**Dr Gael Mearns**
Researcher:	**Thrishila Parshu Ram**

Date: _____   Participant Number: _____

SECTION A: KNOWLEDGE OF CARDIOVASCULAR HEALTH	
1. *Were the questions in this section appropriate?*	*YES / NO*
If no, please explain:	
2. *Did you find any of these questions difficult to understand?*	*YES / NO*
If yes, please indicate which question and why:	
3. *Do you have any suggestions on how we could improve that question/s?*	

SECTION B: ATTITUDES TOWARDS CARDIOVASCULAR HEALTH	
4. *Were the questions in this section appropriate?*	*YES / NO*
If no, please explain:	
5. *Did you find any of these questions difficult to understand?*	*YES / NO*
If yes, please indicate which question and why:	
6. *Do you have any suggestions on how we could improve that question/s?*	

SECTION C: PRACTICES TOWARDS CARDIOVASCULAR HEALTH	
7. *Were the questions in this section appropriate?*	*YES / NO*
If no, please explain:	
8. *Did you find any of these questions difficult to understand?*	*YES / NO*
If yes, please indicate which question and why:	
9. *Do you have any suggestions on how we could improve that question/s?*	

Appendix 23: Phase Two–Review Form Raw Data

	KNOWLEDGE				
	1. Were the questions in this section appropriate?		**2. Did you find any of these questions difficult to understand?**		**3. Do you have any suggestions on how we could improve that question?**
	Yes / No	*If no, please explain*	**Yes / No**	*If yes, please indicate which question and why*	
Participant 1	Yes		No		N/A
Participant 2	Yes		No		No
Participant 3	Yes		Yes	N/A	N/A
Participant 4	Yes		No		N/A
Participant 5	Yes		No		N/A
Participant 6	Yes		No		N/A
Participant 7	Yes		No		N/A
Participant 8	Yes		No		N/A
Participant 9	Yes		No		N/A
Participant 10	Yes		No		*N/A questions are very straightforward*
Participant 11	Yes		No		No
Participant 12	Yes		No		No
Participant 13	Yes		No		*Maybe include some more medical jargon so people become aware of the wider possibilities of cause, but in saying that, I guess they were appropriate for people who just have basic/little knowledge of heart disease.*
Participant 14	Yes		No		N/A
Participant 15	Yes		No		No
Participant 16	Yes		No		N/A
Participant 17	Yes		No		N/A
Participant 18	Yes		No		N/A
Participant 19	Yes		No		No
Participant 20	Yes		No		No
Participant 21	Yes		No		N/A
Participant 22	Yes		No		N/A
Participant 23	Yes		No		N/A
Participant 24	Yes		No		N/A
Participant 25	Yes		No		N/A
Participant 26	Yes		No		N/A
Participant 27	Yes		No		*There were maybe one or two questions that that I couldn't answer with yes or no, for example, I think there was a question that asked if I needed to reduce meat or add more veges to my diet. I already don't eat meat and eat mostly veges. Hence it wasn't a yes no type question for me. But thats just specific to me.*
Participant 28	Yes		No		N/A
Participant 29	Yes		No		*I think they are very well sumnpd up*
Participant 30	Yes		No		N/A

	ATTITUDE				
	1. Were the questions in this section appropriate?		2. Did you find any of these questions difficult to understand?		3. Do you have any suggestions on how we could improve that question?
	Yes / No	If no, please explain	Yes / No	If yes, please indicate which question and why	
Participant 1	Yes		No		N/A
Participant 2	Yes		No		No
Participant 3			Yes	N/A	N/A
Participant 4	Yes		No		N/A
Participant 5	Yes		No		N/A
Participant 6	Yes		No		N/A
Participant 7	Yes		No		N/A
Participant 8	Yes		No		N/A
Participant 9	Yes		No		N/A
Participant 10	Yes		No		N/A
Participant 11	Yes		No		No
Participant 12	Yes		No		No
Participant 13	Yes		No		N/A
Participant 14	Yes		No		N/A
Participant 15	Yes		No		No
Participant 16	Yes		No		N/A
Participant 17	Yes		No		One of the questions was "Do you prefer to spend more time in front of TV... than exercising" which I found to be somewhat at ends, as yes, I don't like exercising and I would prefer to sit in front of the TV but I still exercise.
Participant 18	Yes		No		N/A
Participant 19	Yes		No		No
Participant 20	Yes		No		No
Participant 21	Yes		No		N/A
Participant 22	Yes		No		N/A
Participant 23	Yes		No		N/A
Participant 24	Yes		No		N/A
Participant 25	Yes		No		N/A
Participant 26	Yes		No		N/A
Participant 27	Yes		No		No. Actually the questions were very good and asked a variety of things that I would normally not think about but does exist.
Participant 28	Yes		No		N/A
Participant 29	Yes		No		No
Participant 30	Yes		No		N/A

	PRACTICE				
	1. Were the questions in this section appropriate?		2. Did you find any of these questions difficult to understand?		3. Do you have any suggestions on how we could improve that question?
	Yes / No	If no, please explain	Yes / No	If yes, please indicate which question and why	
Participant 1	No		No		N/A
Participant 2	Yes		No		N/A
Participant 3			Yes	N/A	N/A
Participant 4	Yes		No		N/A
Participant 5	Yes		No		N/A
Participant 6	Yes		No		N/A
Participant 7	Yes		No		N/A
Participant 8	Yes		No		N/A
Participant 9	Yes		No		N/A
Participant 10	Yes		Yes	I often take any health supplements or I am on a special diet. Special diet is to general	Perhaps listing examples of special diets after may help
Participant 11	Yes		No		No
Participant 12	Yes		No		No
Participant 13	Yes		No		N/A
Participant 14	Yes		No		N/A
Participant 15	Yes		No		N/A
Participant 16	Yes		No		N/A
Participant 17	Yes		No		N/A
Participant 18	Yes		No		N/A
Participant 19	Yes		No		No
Participant 20	Yes		No		No
Participant 21	Yes		No		N/A
Participant 22	Yes		No		N/A
Participant 23	Yes		No		N/A
Participant 24	Yes		No		N/A
Participant 25	Yes		No		N/A
Participant 26	Yes		No		N/A
Participant 27	Yes		No		N/A
Participant 28	Yes		No		N/A
Participant 29	Yes		No		No
Participant 30	Yes		No		N/A

	ADDITIONAL FEEDBACK
Participant 1	*N/A*
Participant 2	*N/A*
Participant 3	*N/A*
Participant 4	*N/A*
Participant 5	*N/A*
Participant 6	*N/A*
Participant 7	*"Good questionnaire/review.. makes us reflect on what we do"*
Participant 8	*N/A*
Participant 9	*N/A*
Participant 10	*Doing the questionnaire twice (after 2 weeks) was really helpful as the first around you got a glimpse of what is going to be asked of you, so naturally you want to improve. eg The question how often you exercise, first time around was 1-2 times a week but knowing I was going to be asked it again I made a point to exercise more often.* **the open ended questions forced me to go and research in my own time before doing the questionnaire again so I had a better idea of what was being asked of me.*
Participant 11	*N/A*
Participant 12	*N/A*
Participant 13	*N/A*
Participant 14	*N/A*
Participant 15	*N/A*
Participant 16	*N/A*
Participant 17	*N/A*
Participant 18	N/A
Participant 19	*"I feel the questions were appropriate and applicable for the survey. Thank you for including me in your research."*
Participant 20	*"Everything was easy to follow and questions were all appropriate and understandable"*
Participant 21	*N/A*
Participant 22	*"Fijian indians are so bad at knowing all this info so its great that you guys are doing these studies."*
Participant 23	*N/A*
Participant 24	*N/A*
Participant 25	*N/A*
Participant 26	*N/A*
Participant 27	*"..Pretty good questions. I love that question about health being in God's hands! Lol made me laugh both times... but is so true too..!"*
Participant 28	*N/A*
Participant 29	*N/A*
Participant 30	*N/A*

Appendix 24: Thematic Analysis

	Participant	Participant Feedback	Phase 1 - Familiarising yourself with the dataset	Phase 2 Coding	Phase 2 Coding	Phase 3 - Generating initial themes	Phase 4 - Developing and reviewing themes	Phase 5 - Refining, defining and naming the themes
Question 55: How could local health professionals support you	1	Make it more streamline to understand most information out there is too complex for someone without a medical background or someone who is less literate to understand information is more targeted at an older audience , more information regarding youth / young adults would be	Information is too complex for people without a medical background or less literate to understand.

Is it true that the information is more targeted at the older audience?

I agree, focusing information on risk reduction in youth/young adults would be helpful to create lifestyle changes. Better health in the future. | Complex information hinders understanding

Simplify information to improve understanding

Tailor information/promotion for specific age groups | Complex information hinders understanding Simplify information to improve understanding Simple but informative signs are needed

Tailor information/promotion for specific age groups Tailor information/promotion for specific age groups

Tailored information for the community Tailor information for the community Tailored information for the community

More education is needed | 1. Simplify information about CV health to improve understanding

2. Tailor information for specific age groups

3. Tailor information for the community

4. More education is needed

5. Ways to | 1. People in the community know what they need to do to look after their own health, they just need more support. *Codes related to this theme: aware of what they need to do, need support/advice on diet and exercise, and need regular check ups and advice* | 1. Managing Health Together This theme is about how the data shows that the community are aware of what they can do to look after their heart health but also do need ongoing advice, guidance and support from health professionals. For people at |

		helpful to reduce risks or help make lifestyle changes going forward.			More education is needed Information about the consequences of an unhealthy lifestyle Increase awareness Lack of knowledge about healthy living Be aware of common causes of heart diseases Ways to prevent heart disease Information on healthy living More promotion needed Need to increase awareness Include real/personal experiences to help people understand CVD and	promote CV health

6. Need support/advice on diet and exercise

7. Aware of what they need to do

8. Need Regular check ups and advice

9. Addressing misbeliefs | 2. Simplify and tailor information about CV health to improve understanding. *Codes related to this theme: simplify information about CV health to improve understanding, tailor information for specific age groups,* | risk of CVD, it is a journey in which they will need regular health checks in order to manage their health better and prevent the development of CVD.

2. Targetted CV Health Promotion This theme describes the |
| | 2 | By advicing us more on our diet plans Exercising daily | They know that exercising daily supports heart health but need more advice on diet | Advice on diet plans

Exercise is important | | | | |

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	3	Regular checkup and advice with a follow up.	I think this statement shows that they understand that looking after heart health is long term. It will require commitment from their health proffessionals in the form of regular checkups and advice with a followup. Does this not happen already? Do we not have these systems in place for people who are at high risk of CVD?	Regular check ups and advice needed	encourage change More local advertising needed Workshops - source of information Flyers - source of information Workshops - source of information Radio - source of information Talks - source of information Tv programmes - source of information	10. Improving current practice 11. Increase presence in the community 12. Barriers to KAP towards CV Health 13. Health not a priority	*tailor information for the community, more education is needed and ways to promote CV health.* 3. Bringing the health force to the people. *Code related to this theme: increase presence in the community*	suggestions made in the data to promote and enhance the communities understanding of CV health and disease. Data suggests focusing in areas that are highly accessed by the community, building a relationship with community leaders, religous figures and increasing the presence of
	4	Giving advise on keeping ourselves healthy by eating healthy and maintaining our diet	Shows they understand they need to eat healthy foods and maintain their diets, but how?	Need advice on health Eating healthy food is important Maintaining diet is important	Workshops - source of information Brochure - source of information Health advertisements - source of information Education in schools - source of information	14. Build relationship with community leaders and religious figures	4. Building relationships with community	
	5	N/A	N/A	N/A	School, GPs and other			

	#							
	6	Visiting local doctors and discussing our health and getting check ups regularly.	Do people not get time to discuss their health? What are the barriers to this? Similar to the statement above about regular check ups, what systems do we have place for people at risk of CVD?	Making time to discuss health with Dr Regular check ups	health departments - source of information Community leaders - a source of information Seminars - source of information Workshop - a source of information Lectures by health professionals - a source of information Website - source of information Health workshops - source of information Community health clinics - source of information Website - a source of information App - a source of information Flyers in the mail - source		and religious leaders to promote CV health. *Code related to this theme: Build relationship with community leaders and religious figures* 5. Addressing misbeliefs and barriers to KAP towards CV health *Codes related to this theme: Addressing*	the health force within the community. 3. Recognising barriers to CV Health This theme acknowledges the different challenges that have been described in the data towards the KAP of CV health within the community.
	7	N/A	N/A	N/A				
	8	N/A	N/A	N/A				
	9	Educate.	It would have been good to probe this answer further to understand what they mean by this. Educate via what means? One-on-one coaching or community education sessions? Focus on every aspect of heart health or specific areas?	More education is needed				

	10	With regular check ups to prevent it from happening in the first place and educating paitent that certain symptoms of left prolonged can increase chances of health disease	Second suggestion for regular checks-up with theirhealth proffessional "prevent it from happening in the first place and educating paitent that certain symptoms of left prolonged can increases chances of health disease" shows their level of understanding of CVD but also highlights that they would like more people need to be aware of this.	Encourage regular check ups Early prevention is important	of information Monthly newsletters - a source of information Hold talks/workshops Health column in local indian newspaper - source of information Local hindi radio and TV station - a source of information Social media - source of information Local hindi radio and newspaper - source of information Pamphlets - source of information		*misbeliefs. improving current practice, barrier to KAP towards CV health and health not a priority*	
	11	N/A	N/A	N/A	Advice on diet plans Need advice on health Personal/Additional Support needed Advice on a healthy diet Constant support is needed Advice on diet recipes and exercises Need access to additional support			
	12	N/A	N/A	N/A				
	13	Coaching people in healthy diet	Coaches - this suggestion is also in line with the national roll out of role of Health Coaches in Primary Care. A new public health initiative under the Te Tumu Waiora programme which could be easily accessed by patients at	Personal/Additional Support needed Advice on a healthy diet				

			risk of different health conditions.	Exercise is important Eating healthy food is important Maintaining diet is important Early prevention is important Encourage blood tests Exercise is important Eating healthy is important Drinking water is important Exercise is important	
	14	Educating and addressing misbeliefs in the community about health	It would have been interesting to know what misbeliefs there are within the community that could be addressed.	Addressing misbeliefs	
	15	N/A	N/A	N/A	

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| | | 16 | I'm not sure, I think they've done a great job so far, through health classes in schools. Perhaps the encouragement of blood tests for 'at risk' patients, or a more in-depth description of the negative impacts of an 'unhealthy' lifestyle. | I like how they have acknowledged the education/awareness of heart health in schools. It shows they are aware of the information being provided.

Encouragement of blood tests - interesting suggestion, that shows they understand the importance of blood tests and the value they may have in guiding a persons health/healthcare.

In-depth description instead of a less complex one? Opposite to the first participant. There obviously needs to be a balance between clear and informative information about heart health.

Also suggested, negative impacts? Scare tactic? | Encourage blood tests

Information about the consequences of an unhealthy lifestyle | Changing eating habits is important
Exercise is important
Healthy food options are important
Eating healthy food is important
Cooking with less oil is important
Understand the importance of health
Monitoring health/lifestyle is important
Controlling eating habits is important
Knowing individual health risks is important
Controlling eating habits is important
Regular exercise is important
Being stress free is important
Exercise is important
Aware of history of CVD in community
Want to have better understanding of own health
Care about their health | | | |
|---|---|---|---|---|---|---|---|---|

			Would the community respond/react more to information that highlights the harsh realities of CVD?		Encourage regular check ups Encourage regular check ups Encourage regular check ups Encourage regular check-ups and advice Regular check-ups and advice needed Regular check ups Addressing misbeliefs Addressing misbeliefs Addressing misbeliefs Improve current practice Doctors actively asking and checking understanding Presence in the community Presence in community Presence in community Presence in community Promoting at community gatherings Increase presence in the			

	17	Provide flyers on heart health	More promotional material	Flyers - source of information	community Promoting at temples and Indian supermarkets			
	18	Regular scheduled check ups	"scheduled" suggests commitment	Encourage regular check ups Possible lack of commitment ('scheduled')	Check-up fees a barrier Check-up fees a barrier Don't have time a barrier			
	19	More awareness would be great	More awareness in what way? Through education sessions? Adverstisements? Flyers?	Increase awareness	Schools should not support unhealthy options Long work hours a barrier Tiredness a barrier Complacency a barrier			
	20	N/A	N/A	N/A				
	21	N/A	N/A	N/A	Health not a priority			
	22	Regular Check ups	Third suggestion for regular checks-up with theirhealth proffesional	Encourage regular check ups	Health not a priority CVD not taken seriously Lack of commitment/accountability towards health			
	23	To give a description as to what are the common causes that lead to heart diseases and what can be done to reduce the chances	They would like more information on common causes and advice on what they could do prevent CVD	Be aware of common causes of heart diseases Ways to prevent heart disease	Work outweighs wellbeing Exercise not a priority in the community Making time to discuss health with Dr Possible lack of commitment ('scheduled')			

24	Giving me a better picture of my health issues.	"better picture of my health issues" - this is a interesting suggestion because it shows the participant cares about their health. Goes back to my thought that maybe people at risk don't get that opportunity to discuss their health in detail with health proffessionals. What are the barriers? time? lack of follow ups? language?	Want to have better understanding of own health Care about their health	Reminders to look after health Self-motivation/effort key to healthier lifestyle Enough information available Build relationships between medical health professionals and the religious community Community respect and trust for religious leaders Religious leaders could support community KAP of CV health				
25	I think there is enough information available to me to initiate a healthier lifestyle if and when I make the effort.	"If and when I make the effort" I think this statement possibly talks to "self-motivation". They acknowledge that enough information is available for them to live a healthier lifestyle but it depends on their effort. In this context, can we relate "effort" to attitude?	Enough information available Self-motivation/effort key to healthier lifestyle					

	26	Regular full check ups and advice - at the moment they only do blood tests	Fourth suggestion about regular check-ups and advice with their health proffessional. They know that current practice is to do blood tests but they need more than that to support their heart health.	Improve current practice Encourage regular checkups and advice				
	27	Have workshops to address the growing rate of heart disease in the Fijian community. They can address ways to achieve a healthier lifestyle, more programs on radio regarding the benefits of exercising, eating healthy and non smoking	As suggested, workshops could be an effective way to address ways to achieve healthier lifestyles. Past research has shown the benefits of health-related community programmes/workshops. This may work for the community too. More radio programs - increase awareness. There are a number of hindi radio stations in NZ.	Workshops - source of information Radio - source of information				
	28	N/A	N/A	N/A				

Question 56: What ideas or suggestions do you have for improving our	1	Having people go around to community based events to give talks	People? Who could this be? Who would the community like to hear from and see?	Presence in the community Talks - source of information				
	2	Regular exercise Eating healthy Drinking plenty if liquid (water)	Shows they understand they need to eat healthy, drink plenty of water and regular exercise.	Exercise is important Eating healthy is important Drinking water is important				
	3	Exercise and change in eating habit.	Shows they understand they need to exercise and change their eating habits.	Exercise is important Changing eating habits is important				
	4	Conducting TV programmes	Agree, to increase awareness.	Tv programmes - source of information				
	5	N/A	N/A	N/A				
	6	The should run workshops to teach people.	Second suggestion for workshops	Workshops - source of information				
	7	N/A	N/A	N/A				
	8	N/A	N/A	N/A				
	9	Educating about healthy living.	Agree, to increase awareness.	Information on healthy living				

10	- Giving brochure out for them to read. - instead of sales advertisement there should be health advertisements	Agree, to Increase awareness Replace sales advertisements with health advertisements - interesting suggestion! Could this be a potential health promotion strategy? On TV? The radio? The Newspaper?	Brochure - source of information Health advertisements - source of information				
11	N/A	N/A	N/A				
12	N/A	N/A	N/A				
13	People should at least exercise or walk for 30 min	Shows they understand they should exercise or walk for atleast 30 mins	Exercise is important				
14	Reducing the misbeliefs of what ideal health is. And that only medication will not cure all disease, but we have to make lifestyle changes.	Second suggestion from participants about addressing misbeliefs. Are there many? It could be worthwhile to know what they are so they can be addressed within the community. This participant suggests reducing the misbelief of what ideal health is and that only medication will help. They also show	Addressing misbeliefs				

			their own understanding around lifestyle changes.					
	15	N/A	N/A	N/A				
	16	The inclusion of genetics, making people more aware that even if they live a perfectly healthy lifestyle if you have a familial history of heart disease you are still at risk.	Highlights the importance of what information is promoted within the community. It needs to be relevant and factual so people at risk have a better understanding	Addressing misbeliefs				
	17	Building awareness in the community	Agree, to increase awareness.	Presence in community				

		by doing small campaigns etc					
	18	More awareness in community events e.g free health checkups/ take surveys and follow up	Agree, to increase awareness. Free health checkups - is this a barrier within the community? Could surveys like the one we have created encourage a conversation about a persons heart health? Could taking surveys and discussing the results of their survey allow follow ups to occur?	Presence in community Checkup fees a barrier			
	19	More education in schools around it	Agree, to increase awareness.	Education in schools - source of information			
	20	N/A	N/A	N/A			
	21	N/A	N/A	N/A			
	22	Education- through school and in community through GP's and other	Information needs to be provided not only through the doctors but schools and other community health providers	School, GPs and other health departments - source of information			

		Health Departments					
	23	Having doctors ask about heart related diseases after visits and just ensuring we are aware of what we can be doing to reduce the chances of developing such a disease	Relates to another participants suggestion of "coaching". Health coaching service would work wonderfully in this situation. Advice, follow-up and better understanding/awareness of their health	Doctors actively asking and checking understanding			
	24	Approach community leaders to make this as a compulsory to spend at least 10 min suggesting the health issues	The influence of community leaders within the community - a potential health promotion strategy	Community leaders - a source of information			

	25	More advertising of the necessity of good health. Schools not to participate in unhealthy options for fund raising e.g Chocolate bars.	Second suggestion about more health-focused advertising The suggestion about schools not participating in unhealthy options for fund-raising i.e. chocolate bars, is a good reflection on school processes/commitments that have been happening over the years. Could these processes be adapted so that they were in line with current health initiatives. Encouraging the younger generation to eat healthy etc	More promotion needed Schools should not support unhealthy options				
	26	Free checkups in communities seminars	Second suggestion of free checkups - this may be a way to engage the community - a potential health promotion strategy Like workshops, seminars could also be a good way	Presence in community Checkup fees a barrier Seminars - source of information				

			to educate people about CVD.					
	27	Target places where the community gathers like religious events. Start by introducing healthy food items in the menu. Have workshop, lectures by health professionals.	Agree, to increase awareness in the community Healthier food options at these events would be a good initiative. Second suggestion for workshops, I agree, a way to increase awareness Lectures by health proffesionals is also a good suggestion. Is this about trust? Or that this creates an opportunity to ask questions in a community environment with similar people?	Promoting at community gatherings Workshop - a source of information Healthy food options are important Lectures by health professionals - a source of information				
	28	N/A	N/A	N/A				

Question 57: What would be the most helpful health resource or service for our	1	Possibly a website targeted at Fijian Indians where there is specific information targeted to the risks of heart disease and preventive measures (or how to reduce risks) that are tailored to the community as opposed to generic information	Tailored information for the community via a website - a potential health promotion strategy	Tailored information for the community Website - source of information				
	2	Eat healthy food Less oil in cooking	Shows they understand they should eat healthy food and cook with less oil	Eating healthy food is important Cooking with less oil is important				
	3	Awareness programme	Agree, a way to increase awareness.	Need to increase awareness				
	4	N/A	N/A	N/A				
	5	N/A	N/A	N/A				

6	As mentioned above, needs to attend health workshops to gain knowledge of healthy living.	Third suggestion for workshops, I agree, a way to increase awareness	Health workshops - source of information Lack of knowledge about healthy living				
7	N/A	N/A	N/A				
8	N/A	N/A	N/A				
9	Exercise and less oily food.	Shows they understand they should exercise and have less oily food	Exercise is important Less oily food is important				
10	Well some indian dont take health seriously so its ideal to be accountable for them and there health. Constant phone calls, checks ups.	Assumption that some indian people "don't take health seriously" - Although this has not been confirmed in this study, it may influence the KAP of CV health within this community. Fifth suggestion about regular followups (phone calls) and check ups.	Health not a priority Lack of commitment/accountability towards health Constant support is needed				
11	N/A	N/A	N/A				
12	N/A	N/A	N/A				

	13	Be considered about yr health. People are usually so busy at work so they don't have time to do something for themselves.	Shows they understand the importance of their health. "busy at work so they don't have time to do something for themselves". Work and all its commitments a potential barrier to better KAP of CV health in this community?	Understand the importance of health Work outweighs wellbeing Don't have time a barrier			
	14	Community health clinics or contacts, website, maybe an app to track health/lifestyle	Agree, new ways to increase awareness. New suggesstion - app - the rapid growth of the internet/social media - promotional material that is compatible and in line with current trends would be worth looking into.	Community health clinics - source of information Website - a source of information App - a source of information Monitoring health/lifestlye is important			
	15	N/A	N/A	N/A			

		16	Something to look into could be the inclusion of medical health practitioners within the religious community. Many Fijian Indians, will often listen closer to the words of religious figures within the community, and often be more open in the discussion of issues. If the priests were more aware of symptoms perhaps they could direct their people to the appropriate medical services.	Collaboration and engagement with religious/community leaders as a way to create awareness/dialogue within the community - a potential health promotion strategy	Build relationships between medical health professionals and the religious community Community respect and trust for religious leaders Religious leaders could support community KAP of CV health				

		17	Flyers in the mailer or having small gathering in community halls for people to visit and learn more about heart related problems	Agree, to increase awareness in the community. Finding new ways of taking information to the community instead of them seeking it out? Is this a barrier too?	Flyers in the mail - source of information Increase presence in the community			

		18	Health professionals should create more awareness about the risks of heart disease. Maybe monthly newsletters to go around the community or hold talks/workshops to educate people. Health column in the local indian newspapers should feature about heart diseases and recommend diet recipes and exercises to control it better. Interview people who	Agree, to increase awareness within the community New suggestions were monthly newsletters and a health column in the local indian newspaper - provide informative information - a potential strategy Interesting suggesstion about interviewing people who have heart disease - " to create awareness about the daily problems associated with it - people feel more inclined to change if it is coming from someone in their own community." This has been done in the past, e.g. Heart Foundation and many others, present stories from people. Engages the audience, encourages relatability and increases	Monthly newsletters - a source of information Hold talks/workshops Health column in local indian newspaper - source of information Advice on diet recipes and exercises Include real/personal experiences to help people understand CVD and encourage change Local hindi radio and TV station - a source of information Tailor information for the community Tailor information/promotion for specific age groups				

| | | have heart diseases and create awareness about the daily problems associated with it - people feel more inclined to change if it is coming from someone in their own community. Local hindi radio stations do not have a health based programme where they discuss diseases that affect the indo-fijian community - easy to reach people through this especially the older generation as they are more | awareness.

Another suggestion of promoting health on hindi radio stations and tv station - easy to reach a large scale of people in the community. Spoken hindi an alternate way to disperse information? | | | | | |
|---|---|---|---|---|---|---|---|---|

		inclined to listening to the radio than reading the newspaper. Local Hindi TV station should have a similar programme.						

		Through Facebook, as most Fijian Indians are on there	Highlights the influence of social media. "Most Fijian Indians are on there" - increase awareness	Social media - source of information				
	19							
	20	N/A	N/A	N/A				
	21	N/A	N/A	N/A				
	22	as mentioned above	N/A	N/A				
	23	Maybe increasing the awareness at temples and Indian supermarkets with pamphlets or simple signs describing the common causes and potential options to reduce the likelihood of getting heart related diseases.	Agree, to increase awareness in the community. Simple signs - relates to an earlier comment about information being clear for people without a medical background or	Promoting at temples and indian supermarkets Simple but informative signs are needed				
	24	Eating habits ...Is late eating and too much	Shows their understanding of good eating habits	Controlling eating habits is important				

		carbohydrates related food						
	25	Local advertising via social media e.g radio, TV & newspapers, cultural events.	Agree, to increase awareness in the community.	More local advertising needed				
	26	more awareness on indian radio and newspaper	Agree, to increase awareness in the community.	Local hindi radio and newspaper - source of information				
	27	The rate and statistics of where we are placed currently in terms of heart disease. A pamphlet maybe outlining the seriousness of the issue backed with statistics and ways to avoid it	Agree, to increase awareness in the community.	Tailored information for the community CVD not taken seriously Pamphlets - source of information				
	28	N/A	N/A	N/A				

Question 58: Do you have any other comments?	1	Additional support that would helpful is access to a way to measure health risks for the individual e.g BMI calculator is very generic, doesn't take into consideration, age, ethnicity, sex etc....	Not sure what they mean by health risks here? CVD risk? If so, there is a tool available.. This could also be discussed with a doctor… are they afraid to ask? Do they prefer to do their own research first? Google?	Need access to additional support Knowing individual health risks is important				
	2	Control your your eating habbits Exercise regular Be stress free	Shows they understand they need to control their eating habits, exercise regularly and be stress free. First participant to mention the importance of "being stress free". Maybe not considered a priority?	Controlling eating habits is important Regular exercise is important Being stress free is important				
	3	No	N/A	N/A				
	4	N/A	N/A	N/A				
	5	N/A	N/A	N/A				

6	N/A	N/A	N/A				
7	N/A	N/A	N/A				
8	N/A	N/A	N/A				
9	No	N/A	N/A				
10	N/A	N/A	N/A				
11	N/A	N/A	N/A				
12	N/A	N/A	N/A				
13	It's was a awesome survey. It refreshed my mind too that how crucial it is to look after yr health. Normally, I work long hours and when I come home I am tired. Therefore, I don't to any thing for myself	"Normally, I work long hours and when I come home I am tired. Therefore, I don't to any thing for myself" - Barrier to improving KAP of CV Health. Positive - this survey helped them realise how important it is to look after themselves. Like above, could this survey be used as a conversation starter? A reminder? A way to follow up on their KAP towards CV health?	Reminders to look after health Long work hours a barrier Tiredness a barrier Health not a priority				
14	No	N/A	N/A				
15	N/A	N/A	N/A				

16	N/A	N/A	N/A
17	N/A	N/A	N/A
18	N/A	N/A	N/A
19	Fijian indians never exercise. Atleast 3 days a week for 20 minutes would really help our people. We need to get this information to them so they understand the importance of this	Assumption - the community "never exercises". Agreed, to increase awareness we need to provide relevant information to the community	Exercise not a priority in the community Exercise is important
20	N/A	N/A	N/A
21	N/A	N/A	N/A
22	All Good. Best wishes for this Research	N/A	N/A
23	N/A	N/A	N/A
24	No	N/A	N/A

	25	The history of our people should make us more conscious of our health risks but there are too many who are complacent; this includes me.	Assumption - that "too many who are complacent" despite the history of the people in this community. Why? Is it motivation? Is it attitude? Is it that they don't know how they could prevent CV?	Aware of history of CVD in community Complacency a barrier				
	26	N/A	N/A	N/A				
	27	No	N/A	N/A				
	28	N/A	N/A	N/A				

Appendix 25: Participant Demographics

Table 1

Baseline Characteristics of the participants (n=28)

VARIABLE		n	%
Gender	*Male*	14	50
	Female	14	50
Age	*18-24 years*	2	7.1
	25-39 years	11	39.3
	40-60 years	12	42.9
	60 + years	2	7.1
Country of Birth	*Fiji*	24	85.7
	New Zealand	2	7.1
Marital Status	*Single*	6	21.4
	Long term relationship/ partnership/ de facto	2	7.1
	Married	19	67.9
	Divorced	1	3.6
What is your present religion, if any?	*No religion*	1	3.6
	Christian	1	3.6
	Hindu	25	89.3
	Not listed	1	3.6
How many people, including you, are there in your family or household?	*3 people*	5	17.9
	4 people	9	32.1
	5 people	11	39.3
	6 or more people	3	10.7
Length of residency in New Zealand?	*1-3 years*	1	3.6
	3-5 years	1	3.6
	5-10 years	1	3.6
	10 years or more	25	89.3
What is your highest level of education attained?	*Secondary School Education*	5	17.9
	Tertiary Education	23	82.1
In what languages can you speak fluently?	*English*	26	37.1
	Fiji Hindi	22	31.4
	Hindi	22	31.4
What is your current employment status?	Unable to work	1	3.6
	Employed full time (40 or more hours per week)	18	64.3
	Employed part time (up to 39 hours per week)	2	7.1
	Self-employed	4	14.3
	Student	2	7.1
	Homemaker	1	3.6

Table 2

Baseline health-related characteristics of the participants (n=28)

VARIABLE		n	%
In general, how would you consider your health condition to be?	*Excellent*	4	14.3
	Very Good	9	32.1
	Good	11	39.3
	Fair	2	7.1
	Poor	1	3.6
Do you have a family doctor?	*Yes*	25	89.3
	No	2	7.1
When was your latest health check-up at your local health centre or family doctor's?	*Within the last 3 months*	11	39.3
	Within the last 6 months	8	28.6
	Within 1 year	4	14.3
	In the last 2 years and over	2	7.1
	Not sure	2	7.1
Are you a smoker?	*No*	28	100
How often do you drink alcohol?	*Never*	3	10.7
	Monthly or less	14	50
	2 to 4 times a month	5	17.9
	2-3 times a week	4	14.3
Do you drink Kava?	*Yes*	5	17.9
	No	23	82.1
Have you been diagnosed by a doctor or registered health professional as having high blood pressure?	*Yes*	4	14.3
	No	23	82.1
	Not sure	1	3.6
Have you had a fasting blood glucose test before?	*Yes*	12	42.9
	No	16	57.1
Have you been diagnosed by a doctor or registered health professional as being pre-diabetic?	*Yes*	5	17.9
	No	23	82.1
Have you been diagnosed by a doctor or registered health professional as having Type 1 or Type 2 Diabetes?	*Yes*	2	7.1
	No	26	92.9
Have you been diagnosed by a doctor or registered health professional as having high cholesterol?	*Yes*	4	14.3
	No	24	85.7
In a typical week, how many days do you do at least 30 minutes of exercise (such as walking, running, cycling, jogging)?	*0 days*	5	17.9
	1-2 days	12	42.9
	3-4 days	8	28.6
	5-6 days	2	7.1
In a typical week, how often do you eat fruits and vegetables?	*0 days*	1	3.6
	1-2 days	5	17.9
	3-4 days	4	14.3
	5-6 days	11	39.3
	7 days	6	21.4
In a typical week, how often do you eat food that are high in saturated fat e.g., dairy foods, meat etc?	*0 days*	1	3.6
	1-2 days	7	25
	3-4 days	9	32.1
	5-6 days	8	28.6
	7 days	2	7.1
In a typical week, how often do you eat food that are high in trans-fat e.g., baked goods, fried food, snacks, margarine etc?	*0 days*	2	7.1
	1-2 days	16	57.1
	3-4 days	7	25.0
	5-6 days	2	7.1
Is salt added in the cooking of food that you eat at home?	*Never*	1	3.6
	Sometimes	3	10.7
	Often	6	21.4
	Always	18	64.3
Do you add salt to your food at the table?	*Never*	18	64.3
	Rarely	5	17.9
	Sometimes	4	14.3

	Always	1	3.6
Do you know what your current Body Mass Index (BMI) is?	*Not sure*	18	64.3
	18.5 - 25	2	7.1
	25-30	6	21.4
	35-40	1	3.6
How would you describe your lifestyle?	*Very stressful*	1	3.6
	Stressful	4	14.3
	Relatively stressful	13	46.4
	Free from stress	10	35.7
Please indicate if any of the following medical conditions/procedures are known in your immediate family history (i.e., parents, grandparents, and siblings)	*Hypertension*	21	23.1
	Diabetes Mellitus	15	16.5
	Hypercholesterolemia	16	17.6
	Heart Disease	20	22.0
	Cardiovascular Surgery	8	8.8
	Atrial Fibrillation	3	3.3
	Stroke	7	7.7
	Not sure	1	1.1
Have you ever been hospitalised due to problems with your heart or blood pressure?	*No*	28	100
In the past, have you had a cardiovascular risk assessment done?	*No*	27	96.4
	Not sure	1	3.6
What do you think your level of risk is for cardiovascular disease?	*Not sure*	18	64.3
	< 3%	3	10.7
	3 - 9%	1	3.6
	10 - 14%	2	7.1
	15+ %	4	14.3
What sources have you used to find out more about cardiovascular health and disease?	*None*	12	23.5
	Physician/Family Doctor/GP	12	23.5
	Radio/Television	2	3.9
	Family/Friends	5	9.8
	Nurse	4	7.8
	Internet	10	19.6
	Written information (i.e., pamphlet, information booklet)	6	11.8