

**Health literacy among Pacific mothers in New Zealand: Exploring the associations of demographic and behavioural factors with health literacy of Pacific mothers in the context of Pacific health and Well-being.**

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**Health literacy among Pacific mothers in New Zealand:**

**Exploring the associations of demographic and behavioural factors with health literacy of Pacific mothers in the context of Pacific health and Well-being.**

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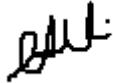
## List of Abbreviations

ALL	Adult Literacy and Life Skills
AUT	Auckland University of Technology
AUTEC	Auckland University of Technology Ethics Committee
BMI	Body Mass Index
CVD	Cardiovascular Disease
GHQ	General Health Questionnaire
MET	Metabolic equivalent
NCD	Non communicable disease
NZ	New Zealand
PA	Physical Activity
PIF	Pacific Islands Families Study
PI	Pacific Islander(s)
SILS	Single item literacy screener
WHO	World Health Organisation



**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.



Signed by: .....

## **List of Presentations from this Thesis**

43rd Annual Conference of the Oceania Comparative and International Education Society (OCIES), Vanuatu, 2015. *Health literacy among Pacific mothers in New Zealand: Exploring the associations of demographic and behavioural factors with health literacy of Pacific mothers in the context of Pacific health and Well-being.*

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### **Ethics Approval**

Ethical approval for the wider PIF study used for the quantitative aspect of this thesis was approved by the Central Health and Disability Ethics Committee on 28<sup>th</sup> July 2014 (14/108). The Auckland University of Technology Ethics Committee granted ethical approval for the qualitative aspect of this research on 14<sup>th</sup> October 2014 (12/291).

## **Abstract**

The physical and social factors related to non-communicable diseases (NCDs), including obesity, noninsulin-dependent diabetes mellitus or type 2 diabetes, ischemic heart disease, stroke, metabolic syndrome and some cancers, are multifaceted and complex (Ministry of Health [MoH], 2012a, 2012b, 2012c). One factor that may contribute to the inequitable burden of NCDs in Pacific people is health literacy; almost 90% of Pacific males and females aged 15 years and over have low health literacy (MoH, 2012c; University of Otago, & Ministry of Health, 2011). Health literacy is the ability to access, read, understand and interpret basic health related information to make informed health decisions to improve health outcomes (Kickbusch, Maag & Saan, 2005). Individuals with low health literacy are less likely to manage ill health including type 2 diabetes (Harris, 2000; Kim, Love, Quistberg & Shea, 2004), seek professional medical assistance (World Health Organisation [WHO], 2013), or interpret nutrition related information (U.S. Department of Health and Human Services, 2005). To date, there is no evidence to show that health literacy is related to NCDs among Pacific people in New Zealand. Further, no studies showing any associations between health literacy and health outcomes with Pacific mothers in New Zealand have been published.

Using both qualitative and quantitative research methodology, this research examined the extent to which health literacy and health outcomes are related in Pacific mothers in New Zealand. In doing so, this research comprised two studies: firstly a quantitative study to determine the association(s) between the single item literacy screener and weight status in Pacific mothers; and secondly a qualitative study using focus groups with Pacific mothers and semi structured interviews with health professionals in New Zealand to: 1) determine whether public health information is being appropriately interpreted by Pacific mothers and 2a) explore and discuss the experiences of health professionals with Pacific mothers and their health issues and 2b) examine best practice for these health professionals in addressing potential health literacy issues for Pacific mothers in New Zealand.

## Chapter 1: Introduction

Since the early 1960s the evolution of modern technology and fast and convenient foods (predominantly containing high sources of saturated fat, sugar and salt) has had a significant impact on the prevalence of non-communicable disease (NCD) in developed nations. NCDs include obesity, diabetes, cardiovascular diseases, some cancers (such as colon cancer), and chronic respiratory disease. These diseases are accountable for 80% of all deaths worldwide (WHO, 2011); equating to approximately 36 million deaths per year (WHO, 2013). NCDs are the world's leading cause of preventable death and are considered the worst public health problem for the 21st century (WHO, 2013). Of particular concern are trends and patterns of NCDs among Pacific people, with high rates among Pacific people in countries such as the Pacific Islands including Tonga, Western and American Samoa (the third most obese country in the world), the Cook Islands, Australia and the United States of America (Panapasa et al., 2012; WHO, 2011).

Prevalence of these chronic conditions in New Zealand is no different, and represents a significant problem among Pacific communities in New Zealand. For example, an estimated 1.1 million adults, equating to 31% of the total New Zealand population, are obese (MoH, 2015a). Obesity, a medical condition as a result of excess body fat accumulated over time, may result in adverse effects on health, reduced life expectancy and/or increased health problems (Wardlaw & Smith, 2013). An estimated 66% of Pacific Island (PI) adults are obese (MoH, 2015a) and an estimated 90% of Pacific people aged 15 years and over are obese or overweight (MoH, 2012c). Furthermore, obesity rates are extremely high among Pacific adults aged 15 to 64 years residing in Auckland (the largest, most populous urban area in New Zealand which has the largest Polynesian population of any city in the world) (Statistics New Zealand, 2015) where 18% are morbidly obese and over 40% are obese (Health Partners Consulting Group, 2012). Moreover, obesity is prevalent among Pacific children, with 30% of Pacific children aged two to 14 years of age being obese (MoH, 2012b) compared to 31% of the total New Zealand population (MoH, 2015a). This is of serious concern as children who are obese are more likely to develop mental and physical health problems (Wardlaw & Smith, 2013), and are more likely to become obese adults making them susceptible to developing diseases such as type 2 diabetes and respiratory problems later in life (MoH, 2015a; Wardlaw & Smith, 2013; WHO, 2013). Findings from the Annual Update of Key Results 2014/15: New Zealand Health Survey showed Pacific people

consume foods high in saturated fat, sugar, salt and drink more sugar-sweetened beverages compared to the total New Zealand population (MoH, 2015a). Pacific children were less likely to eat breakfast at home each day than non-Pacific children. With reference to PA, Pacific adults are 30% more likely than non-Pacific adults to be physically inactive to gain any health benefits and 31% of children aged 2 to 17 years are classified as being inactive (MoH, 2015a). The leading associated risk factors for ill health of Pacific people are smoking, inadequate nutrition and lack of physical activity (MoH, 2015a). Health inequalities for these risk factors among Pacific people, can be partially attributed to social and physical factors such as poverty, culture, religion, the built environment, globalisation, politics, gender inequalities, socioeconomic status, migration, human rights, education and health literacy (Braveman, Egerter, & Williams, 2011; Wagstaff & Claeson, 2004; Woodward & Kawachi, 2000; WHO, 2009, 2013b; WHO, 2008a). Such factors are important to comprehend because of their relationship with NCDs such as type 2 diabetes and cardiovascular diseases (CVD) (WHO, 2009; 2013a, 2013c; WHO, 2008a).

Literacy is the ability to read and write; critical skills needed to carry out day to day routinely activities (Berkman, Davis & McCormack, 2010). Similarly, health literacy is the ability to read, interpret, and understand health related information and translate this knowledge to make well-informed decisions for better health outcomes (WHO, 2013). Ensuring adequate health literacy is suggested as one of the best ways to reach a complete state of health and wellbeing (WHO, 2013a). Individuals with good health literacy are more likely to achieve a complete state of health of well-being by planning and achieving the lifestyle adjustments required for improving health, share health-promoting activities with others, and address health issues within their social settings (WHO, 2013a). As a result, these individuals create healthy social environments which is associated with improved social and mental health status (Hesketh, Waters, Green, Salmon, & Williams, 2005; WHO, 2013a). Because they are better informed and can manage their health, individuals with higher health literacy are less likely to be admitted to hospital, which reduces the financial burden from health care costs (WHO, 2013a). Further, individuals with good health literacy are generally healthier than their counterparts because they have a greater understanding of factors that contribute to living healthily (WHO, 2013a). They are more likely to live longer happier and healthier lives (Panapasa et al, 2012; WHO, 2013a) and it is for these reasons that health literacy has become a new global agenda for health (WHO, 2013a) and health

promotion (Minister of Health and Minister of Pacific Island Affairs, 2010; Ministry of Health Samoa, 2008; Ministry of Health Samoa, 2012; Nutbeam, 2000; Nutbeam, 2008; WHO, 2013c). However, low health literacy is common among Pacific people worldwide in countries including the Pacific Islands (Ministry of Health Samoa, 2008), Australia, the United States of America (Panapasa et al., 2012) and New Zealand (MoH, 2015a).

In New Zealand, low health literacy is a problem particularly among Pacific people, with some studies reporting an estimated 90% of Pacific adults with low health literacy (University of Otago, & Ministry of Health, 2011). Individuals with inadequate health literacy are less likely to have hospital admissions, more likely to have sound knowledge of how to prevent ill health, are more likely to seek medical assistance and consult with a health professional to manage ill health (WHO, 2013a). Low health literacy is common among older women, those of low socio-economic status (Kim et al., 2001), those who speak English as their second or third language, (Nguyen, & Bowman, 2007), low education attainment, and those with ill health outcomes such as poor management of type 2 diabetes (Kim, Love, Quistberg & Shea, 2004; Schillinger et al., 2002) or mental health (Jorm, 2000). It is assumed that individuals with low literacy levels are more susceptible to developing NCDs and are less likely to manage ill health because of their lack of knowledge of the disease (Hesketh, Waters, Green, Salmon, & Williams, 2005; Kōrero Mārama, 2010; Schillinger et al., 2002; Williams, Baker, Parker, & Nurss, 1998). However, this assumption requires more sufficient statistical evidence because identifying health literacy as a direct cause of good health outcomes remains unclear (Schillinger et al., 2002) and the methods utilised to measure health literacy are inconsistent (Paasche-Orlow, Schillinger, Greene, & Wagner, 2006). To date, no studies have been published to determine whether health literacy is a causative factor of NCDs among Pacific people in New Zealand.

The purpose of this research is to explore and investigate health literacy as a possible underlying factor to explain the severity and prevalence of disease of Pacific people in New Zealand with particular focus on Pacific mothers. The aims of this thesis are to: (1) describe the context of NCD prevalence and associations between health literacy and health, internationally, and with a focus on Pacific people living in New Zealand, (2) measure the relationships for health literacy with socio-demographic, NCD risk factors, and body size in a large sample of Pacific mothers living in New Zealand, and (3) gain an in-depth understanding of social and cultural factors contributing to these



relationships through qualitative methods. An outline of the thesis structure is further explained below.

## **1.2 Statement of the Problem**

Pacific people have some of the worst health outcomes and social indicators compared to all other ethnic groups in New Zealand. The social and cultural determinants of health need to be addressed in order to understand the underlying factors related to poor health status and outcomes among Pacific people. These may include culture, religion, education, socioeconomic status (Braveman et al., 2011; MoH, 2012c) and health literacy (Kickbusch, 2001; Kutner, Greenberg, Jin, & Paulsen, 2006; Schillinger et al., 2002). An estimated 90% of Pacific people aged 15 years and over have low health literacy but to date, health literacy has not been studied in the context of health of Pacific people living in New Zealand. This is important as it is possible that the high rates of NCDs observed in the Pacific population are in some part associated with low levels of health literacy. The purpose of this research is to investigate and explore the behavioural and demographic factors related to health literacy and health outcomes among Pacific people with particular focus on Pacific mothers. This study intends to explore the perceptions of Pacific mothers in order to further understand the factors related to health literacy and potential reasons why and how factors related to health literacy among Pacific mothers in New Zealand in the context of Pacific health and well-being.

### **1.3 Significance of the Research**

This study will provide unique insights to health literacy in regards to Pacific health in New Zealand. The findings could provide potential solutions and suggestions for current public health policy and practice, and add to the body of knowledge around health literacy in the global context. The overarching aim and objectives of this research are as follows:

Aim of this research;

To explore the demographic and behavioural factors in relation to health literacy of Pacific mothers in the context of Pacific health and wellbeing in New Zealand.

Objectives of this research;

- 1) Describe the context of NCD prevalence and associations between health literacy and health, internationally, and with a focus on Pacific people living in New Zealand
- 2) Measure the relationships between health literacy and socio-demographic factors, NCD risk factors, and body size in a large sample of Pacific mothers living in New Zealand
- 3) Gain an in-depth understanding of social and cultural factors contributing to these relationships through qualitative methods

### **1.4 Thesis Structure**

The structure of this thesis comprises six chapters (Figure 1). Chapter 1 comprises an introductory summary with the use of a statement of the problem, and significance of the research (above). Literature review findings are then presented in Chapter 2. The methods for the quantitative and qualitative research are described in Chapter 3.

Thereafter, findings from the quantitative and qualitative studies are provided in Chapter 4. Chapter 5 comprises a discussion of the findings from this study and places the research findings in the context of national and international research. The thesis conclusion considers the strengths and limitations of the research and key implications (Chapter 6). Appendices include important documentation required for the fundamental purposes of this research including information sheets, consent forms and ethical approval.

**Figure 1 - The Research Process**

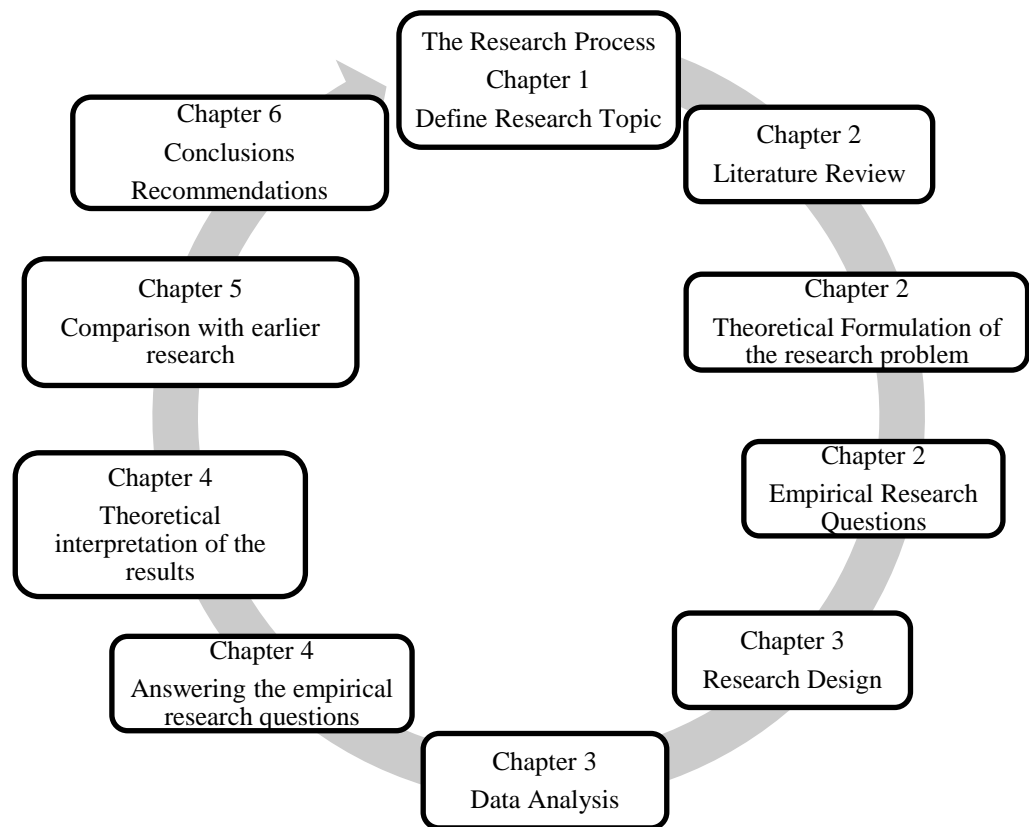


Figure 1. Tyzzer, R. N. (2012). The research process. Retrieved from [http://www.unice.fr/crookall-cours/research/research\\_cycle.htm](http://www.unice.fr/crookall-cours/research/research_cycle.htm)

## Chapter 2: Review of the Literature

### 2.1 Introduction

Since the early 1950s due largely to work related migration (Health Partners Consulting Group, 2012) and a high birth rate, the Pacific population in New Zealand has been one of the fastest growing populations (Tukuitonga, 2013b). The number of people identifying as Pacific in New Zealand is estimated to increase from 300,000 in 2006 to 480,000 by 2026 or approximately 10 percent of the New Zealand population by 2026 (Tukuitonga, 2013). The Pacific population consists of numerous Pacific ethnicities including Samoan (1/2 total Pacific population), Cook Island Māori (1/4), Tongan (1/5<sup>th</sup>), Niuean (1/10<sup>th</sup>) and other smaller numbers from other Pacific ethnic groups. Currently, 75% of the total New Zealand Pacific population reside in Auckland. Samoans comprise the largest Pacific group living in Auckland, followed by Tongans, Cook Island Māori, and Niueans (Tukuitonga, 2013). Pacific communities bring youth and vigour into an ageing New Zealand population. The contributions that Pacific peoples make to New Zealand's society, economy and identity will form an increasingly important part of the future New Zealand (MoH, 2015c). However, poor health outcomes among Pacific populations in New Zealand are in need of significant improvement (MoH, 2015a; 2016b).

Pacific adults in New Zealand have the highest prevalence of NCD compared with their non-Pacific counterparts (MoH, 2015b). An estimated 66% of Pacific adults are obese compared to 31% of the total New Zealand population (MoH, 2015b). NCDs are classed as medical conditions or diseases which are non-infectious, non-transmissible, and in many cases are preventable (MoH, 2012a; 2012c). Major NCDs comprise obesity, cardiovascular disease (CVD), heart disease, stroke, high blood pressure and some cancers (MoH, 2012a). In New Zealand the leading cause of mortality is CVD followed by diabetes and thirdly stroke (MoH, 2012a). New Zealand mortality rates continue to increase due to diabetes, cancer, and respiratory conditions (Health Partners Consulting Group, 2012) with Pacific adults and children having the highest rates of obesity.

NCDs are not only prevalent amongst Pacific adults but also Pacific children. An estimated 30% of Pacific children aged 2 – 14 years are obese compared with 11% of the total New Zealand population (MoH, 2015a). This is of grave concern as children who are overweight or obese early in life are more likely to be obese adults (MoH,

2012b). Children who are obese are more likely to develop social and psychological problems including low self-esteem (MoH, 2012b).

Evidence shows behavioural factors such as physical inactivity, poor diet and smoking are associated with poor health among Pacific adults (MoH, 2012a; Statistics New Zealand, 2013b). Identifying the most common underlying causal factors for detrimental health is important as this could aid in identifying more effective health interventions or preventable measures for ill health (Kickbusch, 2001). Social and cultural determinants of health need to be addressed in order to understand the underlying factors related to poor health status. Such factors may include (but are not be limited to) culture, religion, education, socioeconomic status (Braveman et al., 2011; MoH, 2012c) and health literacy (Kickbusch, 2001; Kutner et al., 2006; Schillinger et al., 2002).

The latter factor is of particular interest, as it has not yet been studied in the context of health of Pacific people living in New Zealand. It is possible that the high rates of NCDs observed in the Pacific population are in some part associated with low levels of health literacy. In New Zealand an estimated half of the total population are described as having inadequate health literacy which can be associated with ill health whereas marginal to adequate health literacy has been associated with good health outcomes (Kickbusch, 2001; Kutner et al., 2006; Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, 2005; Schillinger et al., 2002; U.S. Department of Health and Human Services, 2005; Williams, Baker, Parker, & Nurss, 1998). Alternately, individuals with good health literacy are less likely to have hospital admissions, more likely to have sound knowledge of how to prevent ill health, are more likely to seek medical assistance and are more likely to consult with a health professional to manage ill health (MoH, 2010; Williams et al., 1998).

If interventions could successfully improve health literacy, this may reduce the extent of NCD prevalence and need for NCD management among Pacific people in New Zealand. To date, no research has investigated whether health literacy is a causative factor in the development of NCDs. This literature review will identify relationships between health literacy and health outcomes with particular focus on primary underlying social factors faced by Pacific people (such as culture, religiosity, and socioeconomic status). In doing so, this review will examine the public health problem of NCD prevalence among the Pacific population in New Zealand, investigate the broader social determinants of health, and investigate health literacy as a potential

means of managing and preventing NCD for good health outcomes of the Pacific adult population.

## **2.2 Methods**

Literature was identified from the following databases: PubMed, Google scholar and EBSCOhost as well as government agency websites including the Ministry of Health New Zealand, Ministry of Education New Zealand and the World Health Organisation. The search was conducted between March 2013 and June 2013, further updated from Jan 2016 to July 2016 and included articles published from 1998 to 2016. The following search terms were used: nutrition, health literacy, socioeconomic status, health outcomes, adults, research, culture, diabetes, and obesity. Peer reviewed scholarly journal articles and key reports relating to NCDs among Pacific peoples within New Zealand, and international countries were included. In the first instance, an overview of behavioural factors related to health is provided. Thereafter information on key NCDs is provided, with a focus on health outcomes for Pacific people living in New Zealand. Socio-ecological frameworks are then considered, including the introduction of a Pacific-specific model of health. Using this model, key factors related to health in Pacific peoples are then discussed. Finally, the review considers the role of health literacy in health, including measurement approaches, and associations between health literacy and health outcomes and socio-demographic factors.

## **2.3 Health and Wellbeing**

### **2.3.1 The Benefits of a Healthy Lifestyle**

Leading a healthy lifestyle entails activities that contribute to achieving a state of complete physical, spiritual, emotional, mental and social well-being. Chronic disease and ill health negatively impact on the quality of life (MoH, 2012a). According to the Ministry of Health (2012a), 89% of the total adult New Zealand population is healthy and the remainder are affected by or have a disease. Poor health is associated with increased morbidity and mortality (MoH, 2012a). Social and built environment factors also indirectly influence chronic disease risk, including modern lifestyles (e.g., increased car use, television watching, consumption of processed foods containing high amounts of salt, fat and sugar), and socioeconomic status (MoH, 2012a).

Despite the presence of environments that encourage physical inactivity and unhealthy eating practices, adopting and managing a healthy lifestyle is achievable (Wardlaw &

Smith, 2013). In addition, evidence from behavioural interventions conducted with Pacific people in New Zealand shows the potential for improving health outcomes and reducing the severity of existing NCDs (MoH, 2012c; 2016a; New Zealand Heart Foundation, 2013; Waitemata District Health Board, 2010).

### **2.3.2 Behavioural factors related to poor health outcomes**

It is widely acknowledged and understood that regular physical activity, consuming a well-balanced nutritious diet, and smoking cessation are three lifestyle factors associated with good health outcomes (MoH, 2012a; Wardlaw & Smith, 2013; WHO, 2008b). Even with 89% of the population deemed as healthy, the physical and behavioural factors including physical inactivity, poor dietary choices and smoking rates are relatively high among New Zealanders, particularly Pacific people. These lifestyle behaviours are directly related to poor health outcomes including, obesity, cancer, CVDs, type 2 diabetes, and respiratory diseases, which ultimately reduces quality of life. These three factors are discussed in more detail below with particular focus on Pacific people.

#### **Physical activity in relation to Pacific health status**

Physical activity (PA) has extensive health related benefits. PA is defined as any bodily movement produced by skeletal muscles that requires energy expenditure (WHO, 2016). Epidemiological research shows the benefits of regular PA such as walking, cycling, or participating in sports and/or recreational activity in the management and development of communicable diseases such as colon cancers (MoH, 2016). This form of exercise has the ability to control body weight thereby reducing the risk of developing NCDs including obesity, type 2 diabetes, CVD, metabolic syndrome, and cerebrovascular disease. Furthermore, PA has been shown to strengthen bones and muscles, and improve mobility (particularly for older adults aged over the age of 65) (MoH, 2016). PA can help improve posture, balance, and sleep, and improve mental health including depression, improved self-esteem, mood, and stress (MoH, 2012a; 2013b; WHO, 2008), as well as increasing the chance of living longer (US Department of Health and Human Services, 2014). Even light physical activities (e.g., walking, gentle housework), if sustained frequently, contribute to improved health outcomes (MoH, 2012a, 2012b, 2013a).

Currently, the New Zealand physical activity guidelines recommend young children under the age of five should engage in any type of PA per day. The recommendation for

children between five to 14 years of age is to engage in at least 60 minutes of moderate to vigorous activities per day, while adults aged 19 years and older should engage in PA for 30 minutes at a moderate to vigorous intensity, at least three to five days per week. Older adults over 65 years of age should aim for at least 30 minutes of aerobic PA on five days per week in order to achieve optimal health (MoH, 2012a; 2013a). However, Pacific people across all age groups in New Zealand are falling short in achieving these required recommendations for PA. Forty-six percent of Pacific adults are deemed to be insufficiently active (i.e. little or no PA, or less than 30 minutes of PA per week) to gain any health benefits. Pacific women are less likely than Pacific males to meet the recommendations for PA (40% compared with 55% respectively) (MoH, 2014b). Results from Annual Update of Key Results 2014/15: New Zealand Health Survey (2015a) show that 9% of Pacific children aged two to five are sedentary (i.e., sitting or engaging in activities < 1.5 MET) and 22% aged 11 to 17 years are physically inactive (i.e., sitting down watching television). Pacific children are more likely to walk or bike to school but are less likely to participate in organised recreation or sport than their non-Pacific counterparts (Sport New Zealand, 2012; Statistics New Zealand, 2013b). Furthermore, physical inactivity increases as Pacific children age from young adolescents to young adults (MoH, 2008b; 2008d). Pacific adults aged between 15-64 years are 30% more likely to be physically inactive than non-Pacific adults (MoH, 2015a). Physical inactivity is classified as engaging in activities that use very little or no energy (e.g. sitting down, lying down, watching television or sitting down using a computer) which are strongly associated with poor health outcomes including obesity, type 2 diabetes and CVD. It is imperative to improve physical activity patterns across all Pacific populations, and age groups to improve health outcomes.

### **Nutrition in relation to Pacific health status**

Consuming nutritious meals throughout the day is a means of preventing and managing lifestyle diseases (MoH, 2003; Wardlaw & Smith, 2013). For optimal health, the New Zealand food and nutrition guidelines for adults aged 19 to 65 years recommend consuming nutrient dense foods aligned with the four food groups which include; (1) Breads and Cereals: at least six servings of breads and cereals per day preferably wholegrain or sources high in fibre, (2) Fruits and Vegetables: Eat at least five servings per day (at least 3 servings of vegetables and at least 2 servings of fruit) (3) Milk and Milk products: consume at least two to three servings of milk and milk products preferably reduced fat per day and (4) Meats and Alternatives: consume at least one to



two servings of meat such as lean meat, legumes, nuts and seeds, also eggs. It must be noted that there are different serving suggestions for young children from ages zero to two years, three to five years, five to 13 years, 13 to 18 years and older adults aged 65 years and over. Pregnant women are encouraged to also make careful food choices for optimal health (MoH, 2006). By consuming a variety of these foods each day, individuals are more likely to receive the essential nutrients they require to remain healthy and lower the risk of the development of NCDs including obesity, type 2 diabetes and CVDs (MoH, 2003). However, of concern are the patterns and trend of unhealthy eating behaviours among Pacific adults and children in New Zealand. Pacific people consume more sugar-sweetened beverages and fast foods high in saturated fat and salt compared to the total New Zealand population (University of Otago & Ministry of Health, 2011). Across all age groups Pacific people manage to consume the recommended two fruits at least twice a week, but vegetable intake is low with 46% of Pacific adults compared to 65% of the total New Zealand population consuming the recommended daily intake (MoH, 2015a).

A healthy eating regime, which includes consuming breakfast on a daily basis, is regarded as a key determinant of good health outcomes and particularly important for the growth and development of children and young people. In total however, 83% of Pacific children aged 2 – 14 years of age ate breakfast at home every day compared to 91% of their non-Pacific counterparts (MoH, 2015a). Pacific people having high levels of food insecurity, with an estimated 50% of Pacific people not eating properly owing to low level income, has led to inadequate nutrition (Rush, 2009; Statistics New Zealand, 2013b). Evidently the need to improve nutrition behaviours is required to improve health outcomes.

### **Smoking in relation to Pacific health outcomes**

In New Zealand, cigarette smoking is the leading cause of avoidable morbidity and mortality (MoH, 2014b). Smoking is the main cause of lung cancer and chronic obstructive pulmonary disease (COPD), and is a primary risk factor for cardiovascular disease, cancer and chronic diseases (US Department of Health and Human Services 2004). This is due to the toxic chemicals and other harmful products contained in manufactured cigarettes (MoH, 2012a). Cigarette smoking refers to the active smoking of one or more manufactured or hand-rolled tobacco cigarettes. The term ‘smoking’ refers to active smoking behaviour, that is, the intentional inhalation of tobacco smoke but does not refer to or include passive smoking (the unintentional inhalation of tobacco

smoke). Cigarette smoking does not include: the smoking of tobacco in cigars, pipes and cigarillos, the smoking of any other substances, herbal cigarettes or marijuana, for example, or the consumption of tobacco products by other means, such as chewing (MoH, 2012). Every cigarette inhaled is harming nearly every organ and system in the human body. A single cigarette contains more than 4600 harmful chemicals, 60 of which can cause lung cancer. Smoking can damage the skin and can cause gum disease, oral cancer, and mouth sores. Smoking and second-hand smoking also affects children aged 15 years or younger whereby smoking around children increases their risk of coughs, colds and serious infections that affect their breathing, such as, croup, bronchitis and pneumonia (MoH, 2016b).

Pacific people have the highest prevalence rates of smoking in New Zealand compared to their non-Pacific counterparts with an estimated one in four Pacific adults stating they currently smoke. Currently, 29% of Pacific women smoke and Pacific males aged 25 years and over have the highest smoking rates compared to the total population in New Zealand with 32% of Pacific males who smoke (MoH, 2014b). This is concerning as children who have a parent who smoke are seven times more likely to become smokers (MoH, 2014b).

To reduce the prevalence of smoking behaviour of the New Zealand population, political changes have been implemented to ensure New Zealand is a smoke-free country by the year 2025 (Blewden, 2006; New Zealand Parliament, 2010). These policies include, changing the pictures on cigarette packaging to showing the consequences on the body from smoking such as rotting lungs from the tar contained in cigarettes, removing all cigarette packages out of sight where cigarettes can be sold and also creating restricted smoking areas in public places including work places, schools, bars and restaurants. In line with these policies, community health services including 'Pacific quit' (Auckland Regional Public Health Service, 2011) and 'Pacific heart beat' (Heart Foundation New Zealand, 2013) are readily available services for all New Zealanders particularly Pacific peoples, to reduce the heavy burden of smoking prevalence. In addition, as of 2012 community health initiatives within Auckland have incorporated smoking cessation as a primary health goal simultaneously with their current goals to improve physical activity and nutrition (Auckland District Health Board, 2013; Counties Manukau District Health Board, 2013; Pasifika Integrated Health Care Ltd, 2013). Conveniently such services are based within Auckland, the home to an estimated 89% of the Pacific population in New Zealand (Health Partners Consulting Group, 2012).

### 2.3.3 Chronic diseases prevalent among Pacific people

#### A Global Pandemic

NCDs are the world's biggest global killers (WHO, 2011). In total, 36 million deaths in the world were are thought to be related to NCDs including CVD, diabetes, cancer and chronic respiratory disease (WHO, 2011). These chronic diseases are most prevalent among populations residing in most deprived areas in both developing as well as developed countries (Hodge et al., 1994; Hughes & Lawrence, 2005; Wild, Roglic, Green, Sicree, & King, 2004; WHO, 2013c).

CVD is the number one cause of death in the world responsible for approximately 23% of all deaths in developed countries, including New Zealand (WHO, 2011). Diabetes is ranked ninth in the world, accountable for almost 2% of all deaths (Beaglehole et al., 2011). If such trends continue it is projected an additional 15% of all deaths are estimated to increase between 2010 and 2020 due to NCDs (WHO, 2011).

Acknowledging this, the World Health Organisation have developed the Millennium Development Goals (WHO, 2013b) for both developing and developed countries to manage this pandemic (WHO, 2013b). In 2008, more than half a billion adults world-wide were classified as obese (WHO, 2011). In New Zealand, almost 65% of the total population aged 15 years and over were categorised as overweight or obese; the third-highest obesity rate in the Organisation for Economic Co-operation and Development (OCED) in 2009 (OCED, 2013).

Obesity is a complex condition with serious social and psychological dimensions (MoH, 2012a; Popkin & Doak, 1998) which affects virtually all age and socioeconomic groups (MoH, 2009). It is the onset of most NCDs including CVD, type 2 diabetes, high blood pressure, heart disease, and some cancers (e.g. kidney and uterus), osteoarthritis, gout, sleep apnoea, some reproductive disorders and gallstones (MoH, 2008d; 2012a).

Obesity is measured using a body mass index (BMI) scale ( $\text{weight (kg)/height(m)}^2$ ) as follows: overweight, 26 – 30  $\text{kg/m}^2$ ; obese, 30 – 40  $\text{kg/m}^2$ ; and morbidly obese 40+  $\text{kg/m}^2$  (MoH, 2013a).

#### Stroke

Cerebrovascular disease also known as 'stroke' is prevalent amongst the adult population of New Zealand (MoH, 2012a). Those at highest risk are Pacific adult males aged over 65 years with an estimated 12% risk of experiencing a stroke (Health Partners Consulting Group, 2012). A stroke is caused by a blood clot or a rupture in a blood vessel in the brain which supplies and circulates oxygen and nutrients around the body (American Heart Association, 2013). A blockage or rupture can lead to long term

disability or death (WHO, 2011). A stroke is also more likely to occur if an individual is overweight or obese (WHO, 2013c). The amount of fat accumulated in the blood caused by consuming foods high in saturated fat, sugar and salt increases the risk of blood clotting. Also, the harsh chemicals in manufactured cigarettes is detrimental to vascular health (WHO, 2008b).

## **Diabetes**

Diabetes is a disease where the body is unable to metabolically produce insulin to maintain adequate blood sugar levels (Diabetes New Zealand, 2008). Type I diabetes occurs where the body produces very little levels of insulin or in some cases no insulin; while type 2 diabetes is where the body produces insulin at a slow rate but the body becomes resistant to insulin (Diabetes New Zealand, 2008). The risk of type 2 diabetes is increased when an individual is overweight or obese (MoH, 2012a) which can lead to a range of health conditions including heart disease, stroke, blindness, kidney disease, nerve damage and/or amputation of a foot or lower leg, and death (Diabetes New Zealand, 2008). According to the New Zealand Ministry of Health (2012a), diabetes is one of three leading causes of death amongst Pacific people. Type 2 diabetes is a NCD which affects all ages and ethnic groups with an estimated 200,000 individuals diagnosed in New Zealand (MoH, 2012a). One out of 10 Pacific people aged 15 years and over is diagnosed with type 2 diabetes (MoH, 2012a). Since 2008, the prevalence rate of diagnosed diabetes has slowly but steadily increased over time, mostly in women, from around 4% in 2007 to 6% in 2012 (MoH, 2012a).

The onset of type 2 diabetes can occur during childhood among children as young as 2 years of age (MoH, 2012b). Children with diabetes are more likely to have serious health problems such as heart problems as their internal organs have not yet developed to their full potential (MoH, 2012b). Type 2 diabetes can go undetected because of the less obvious symptoms in children. As such it is possible that higher rates of undiagnosed diabetes exist for children than for adults (MoH, 2012a, 2012b). This is concerning because the associated risks amongst adults are just as likely to occur amongst children if left untreated (MoH, 2012b).

**Cardiovascular Disease (CVD)**

CVD is the leading cause of mortality in New Zealand responsible for 40% of deaths of the total population (MoH, 2015a). An estimated 25% of the Pacific population suffer from CVD, in part, as a result of poor dietary behaviours, sedentary lifestyle behaviours, and smoking (MoH, 2015a). Ischemic heart disease (IHD), peripheral vascular disease and congestive heart failure are all subsets of CVD, which are serious health conditions highly prevalent amongst the Pacific population (MoH, 2012c). The financial cost to treat CVD is exceptionally high for Pacific adults with at least \$35 million spent on treatment (MoH, 2012c). CVD-related expenditure contributes to 46% of all Pacific inpatient costs and 65% of all Pacific outpatient, emergency department and domiciliary visit costs (MoH, 2012c).

## 2.4 Social determinants of health associated with Pacific people

The factors that significantly affect and are associated with health outcomes of Pacific people are diverse and complex. Such factors include social deprivation, socioeconomic status, culture, religiosity, education and health literacy. This section will refer to two different frameworks to help explain the complexity of how these factors influence health outcomes among Pacific people: a modern global health framework (Figure 2) (Dahlgren and Whitehead, 1991) and a Pacific health framework; Fonofale Framework, as shown in Figure 3 (Pulotu-Endemann, 2001). These factors are discussed in more detail below.

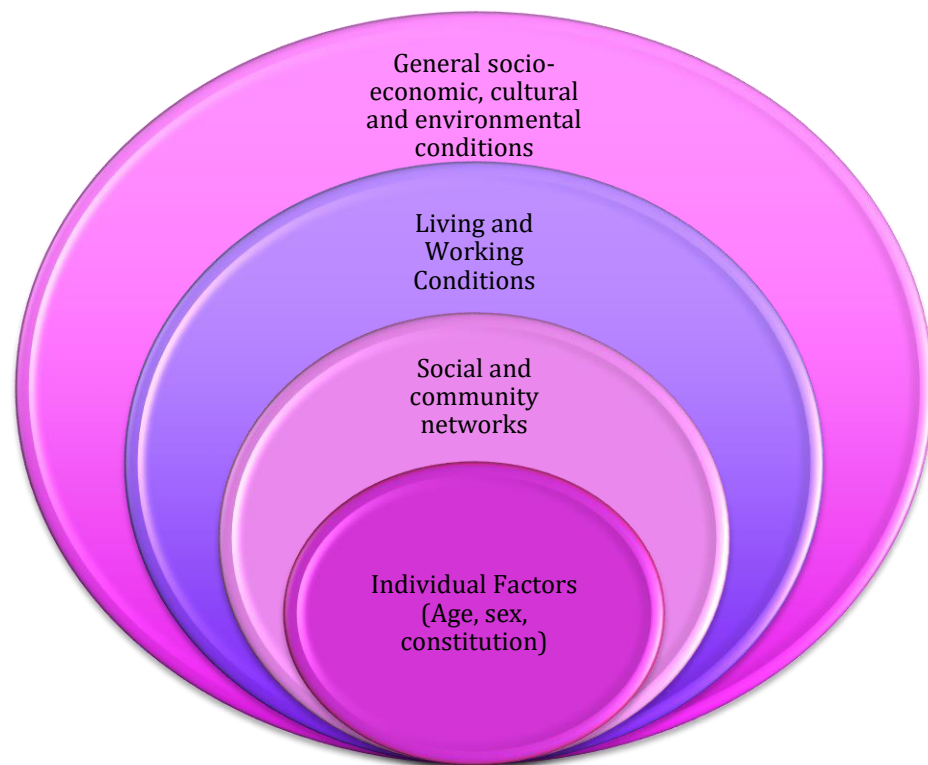


Figure 2. Dahlgren, G., & Whitehead, M. (1991). Socio-ecological Model. Retrieved from [http://www.nwci.ie/download/pdf/determinants\\_health\\_diagram.pdf](http://www.nwci.ie/download/pdf/determinants_health_diagram.pdf)

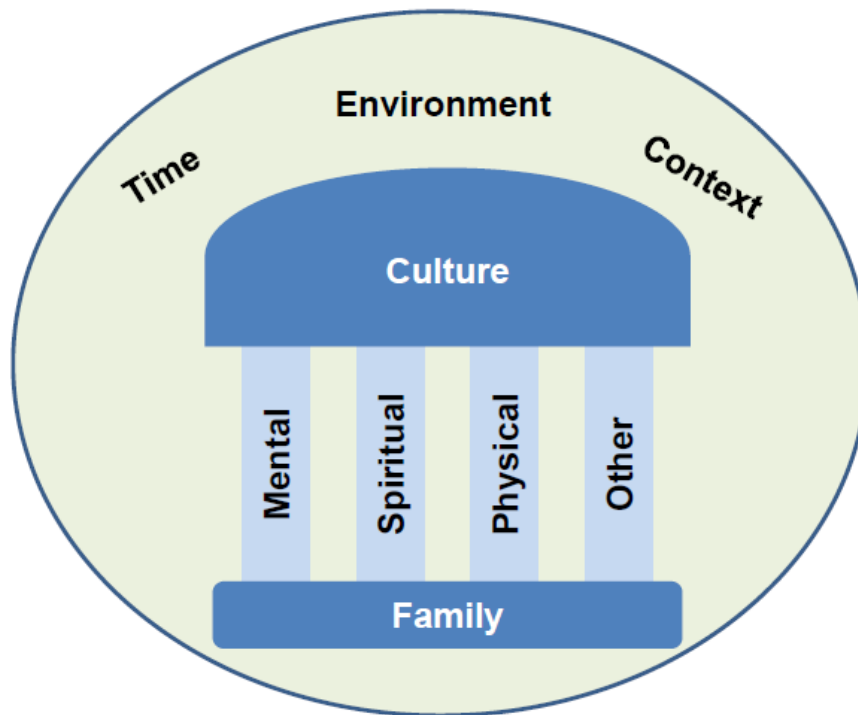


Figure 3. Pulotu-Endemann, F. K. (2001). Fonofale Model of Health. Retrieved from <http://www.hauora.co.nz/resources/FonofalemodelExplanation.pdf>

Indigenous research methodologies including Kaupapa Māori and Pacific methods have been developed to more appropriately investigate and understand health through an ethnic-specific lens (Amituanai-Toloa, 2009; Smith, 1999). Such research methods provide a foundation which aid in stabilising the planning, implementation and evaluation phases of research (Smith, 1999). Pacific people emanate from a variety of Pacific nations including Samoa, Tonga, the Cook Islands, Tokelau, Niue, Fiji and Tuvalu. Traditional core values, culture and religiosity are characteristics that define indigenous populations that differentiate Pacific from non-Pacific ethnicities (Smith, 1999). Accordingly, Pacific-specific research methodologies were generated in the early 1980s (Pulotu-Endemann, 2001). This approach uses the Fonofale model (see Fig. 3), a dynamic model in that all the aspects depicted in the model have an interactive relationship with each other, comprising key concepts that make up the fale (house). These are as follows:

**Culture:** The roof represents cultural values and beliefs that comprise a form of shelter and protection of the family. Culture is dynamic and therefore constantly evolving and adapting. In New Zealand, culture includes the culture of New Zealand reared Pacific people as well as those Pacific people born and reared in their island homes. In some

Pacific families, the culture of that family may comprise a traditional Pacific island cultural orientation where its members live and practice the Pacific island cultural identity of that group. Some families may lean towards a Palagi (European) orientation where those family members practice the Palagi values and beliefs. Other families may live their lives in a continuum that stretches from a traditional Pacific cultural orientation to a Palagi cultural orientation. These can include beliefs in traditional methods of healing as well as western methods.

**Family:** The foundation of the Fonofale represents the family, which is the foundation for all PI cultures. The family can be a nuclear family as well as an extended family or constituted family. Between the roof and the foundation are the four *pou* or posts. These *pou* not only connect the culture and the family but are also continuous and interactive with each other. The pou are:

***Spiritual*** - this dimension relates to the sense of well-being which stems from a belief system that includes either Christian or traditional spirituality relating to nature, spirits, language, beliefs, ancestors and history, or a combination of both.

***Physical*** - this dimension relates to biological or physical wellbeing. It is the relationship of the body (which comprises anatomy and physiology) with physical or organic and inorganic substances such as food, water, air and medications that can have either positive or negative impacts on the physical wellbeing.

***Mental*** - this dimension relates to the wellbeing or the health of the mind which involves thinking and emotions as well as the behaviours expressed.

***Other*** - this dimension relates to various variables that can directly or indirectly affect health such as, but not limited to, gender, sexuality/sexual orientation, age, and socio-economic status (Pulotu-Endemann, 2009).

#### **2.4.1 Socioeconomic status in relation to health of Pacific people**

Pacific individuals, families and communities are more likely to have poorer health status compared to other ethnic groups in New Zealand (MoH, 2008d; 2012a) due to poor income revenue and difficulty accessing health services (Statistics New Zealand, 2013). In addition, they are most likely to have the highest levels of living in most deprived neighbourhoods compared to other ethnic groups (Morrison & Nissen, 2010). Children living in low-income families are also at greater risk of having negative health outcomes later in life, which affects their chances of achieving a good standard of living as adults (Statistics New Zealand, 2013). In Auckland an estimated 60% of Pacific communities live in the most deprived areas (Health Partners Consulting Group, 2012)



where ill health conditions are more likely to occur. Diabetes, arthritis, chronic pain, cardiovascular disease, some cancers, obesity, high cholesterol, and high blood pressure are amongst the most prevalent conditions found to affect those living in most deprived areas (Health Partners Consulting Group, 2012; MoH, 2008d).

Health conditions have also been found to be more common among children living in most deprived areas compared to those living in the least deprived areas (MoH, 2008a, 2008b). For example, an estimated 19% of Pacific children were obese in most deprived areas compared to 3% in least deprived areas (MoH, 2008b). Fifteen percent of Pacific children had asthma in most deprived areas compared to 10% living in least deprived areas (MoH, 2008a, 2008b). Inadequate medical treatment of such conditions is also more likely to occur in families with lower socioeconomic status due to the expense of medical treatment and lack of transportation (two most commonly found barriers to seeking professional medical assistance for diseases among Pacific people) (MoH, 2008a, 2008b).

Household deprivation is also associated with negative health outcomes for children (Statistics New Zealand, 2013b). Children who live in most deprived areas are at risk of poor health as the increase in rates of hospital admissions for respiratory and infectious diseases is associated with poor quality, cold and damp housing (Statistics New Zealand, 2013b). Children are less likely to attend school in colder conditions due to the lack of warm clothing which is concerning especially in winter seasons because children are then more susceptible to chronic physical health conditions (Statistics New Zealand, 2013b).

Good nutritional eating behaviours correlates well with good health status (Wardlaw & Smith, 2013) but unfortunately this reality proves challenging for both Pacific adults and children (MoH, 2015a). Approximately 59% of Pacific people living in most deprived areas are less likely to consume less than three or more servings of vegetables per day compared to 73% living in least deprived areas (MoH, 2015a). Children living in the most deprived areas were less likely to have breakfast in the morning, at home on a daily basis (MoH, 2008a, 2008b). In addition, Pacific children were more likely to purchase foods high in saturated fat, sugar and salt at least two times per week than non-Pacific children (MoH, 2008a, 2008b).

### **2.4.2 Culture and health status of Pacific people**

Culture has been described as a defining feature or characteristic of Pacific people (Lui, 2003). According to Pulotu Endemann (2011) cultural values and beliefs are the shelter for life. For Pacific people residing in Pacific nations including Western Samoa, Tonga, Fiji, and Niue, an illness is believed to be caused by ghosts or ‘aitu’ (Hunkin, 2009) of ancestors and the only form of treatment for ill health being is a traditional healer or ‘fofo’ (MoH, 2008e). Pacific people have continued this form of treatment not only in the Pacific (MoH, 2008e) but also in New Zealand (2008eMoH, 2008e). Traditional treatments are predominantly used by PI adults especially among older adults who were born in the Pacific ( MoH, 2008e). Accordingly, the health of their New Zealand born children is at risk because of the different health beliefs embedded among Pacific Island-born parents or grandparents (Rush, 2009).

It is most likely such beliefs influence Pacific adult choices to utilise traditional healing methods. Therefore, there is a potential risk of serious health conditions being misdiagnosed, and the inability to receive adequate medical care (MoH, 2008d). In New Zealand, culturally sensitive Pacific health programmes exist including private Pacific health care services (Pasifika Integrated Health Care Ltd, 2013) to support those who use traditional ways of healing (Health Partners Consulting Group, 2012).

### **2.4.3 Gifting and health status of Pacific people**

Traditional Pacific culture involves gifting, typically for weddings and funerals (Health Partners Consulting Group, 2012; Lui, 2003; Rush, 2009). Gifting is an ancestral Pacific Island tradition (MoH, 2008e) inclusive of but not limited to traditional foods such as boxes of canned corned beef or wild boar, money, and also traditional fine mats. Pacific families are likely to spend 5-13% of their income on traditional gifting which then has a direct impact on the ability to invest in home ownership and individual savings (Statistics, New Zealand, 2013). It is estimated that three-quarters of Pacific peoples living in New Zealand send money back to family members living in the Pacific region (Health Partners Consulting Group 2012) and an estimated 85% of Pacific families send remittances overseas several times a year (Families Commission, 2012) and health is therefore at risk because of the psychological strain and stress on families to financially support family affairs.

#### **2.4.4 Religion in relation to health status of Pacific people**

Among the Pacific population believing in and putting all faith in God is the epitome of living a fulfilling and healthy spiritual life (Counties Manukau District Health Board, 2013). In New Zealand, 83% of the Pacific population affiliate themselves with a religious belief (Statistics New Zealand, 2013). People of Samoan and Tongan descent have the highest rate of religious beliefs at 86% followed by Cook Island Māori and Niuean's at 70% (Statistics New Zealand, 2013). Traditional gifting is a cultural value which is a unique factor among Pacific people where gifting not only occurs in traditional festivities but also for their respective churches they are affiliated (Statistics New Zealand, 2013).

Two-thirds of the total New Zealand Pacific population donate money to church gatherings, church events and to their respective Pastor or Reverend (Statistics New Zealand, 2013). Furthermore, an estimated 10% of their total income is gifted (Statistics New Zealand, 2013) which is believed to be because of the considerable number of blessings individuals or families will receive if they donate (Lui, 2003).

#### **2.4.5 Education in relation to health status of Pacific people**

It is well documented that individuals with higher education attainment are more likely to have better health outcomes because they are more likely to self-manage their health, seek professional health care treatment, and are more likely to understand and interpret health messages compared to those who are less educated (Gottfredson & Deary, 2004; MoH, 2008d; U.S. Department of Health and Human Services, 2005). Further, successfully completing a tertiary education qualification early in adult life provides better employment opportunities and income, which in turn improves quality of life whereby degree-level, masters or doctoral qualifications provide the greatest benefits (Statistics New Zealand, 2016).

In New Zealand, the education sector has seen considerable improvement in children's attendance rates and enrolment in school (Statistics New Zealand, 2013a). An 11% increase in the number of attendance rates has occurred for Pacific children enrolled in early childhood centres between the years 2000 to 2006 (Statistics New Zealand, 2013a). Furthermore, the National Certificate of Educational Achievement results for Pacific youth have improved with just over 53% of Pacific year 11 students who met the requirements for numeracy and literacy (Statistics New Zealand, 2013a). With reference to Pacific people, the number of young Pacific adults attending tertiary education has also increased from 2002 to 2008 to 11% (Health Partners Consulting Group, 2012). In

April 2009, both domestic and international Pacific students' participation in tertiary education increased more than any other ethnic group from the previous year. Between 2002 and 2008, the number of under-25-year-old Pacific students studying at diploma level or above increased by 11 percent. This is important as higher education is closely linked to income and general well-being, labour productivity (Callister & Didham, 2008; Earle, 2009) and adequate health literacy (Kickbusch, 2001; Kutner et al., 2006; Lawes, 2009). Pacific people are about half as likely as the total population to achieve a level four qualification (i.e., certificate or a diploma) or above by the age of 25 (Statistics New Zealand, 2016).

What remains concerning however is the low prevalence rates of participation and completion rates once enrolled in education across all age groups (MoH, 2008c). Pacific populations have the highest proportion of individuals who are less likely to attend school and are more likely to underachieve at both secondary and tertiary level or have no qualifications (Statistics New Zealand, 2013a). Further, the 2006 ALLS study showed that the overall literacy and numeracy of the adult Pacific population was lower than that of other ethnic groups. At both diploma and degree-level, 18–19-year-old Pacific students are less likely to complete a qualification than students from other ethnic groups. In addition, at masters' level, the number of Pacific students increased by 4.0 percent between 2006 and 2007, and again by 4 percent to 2008 (Statistics New Zealand, 2013a). Evidently it is crucial to ensure Pacific people remain enrolled in education from young adolescence to tertiary education to achieve adequate education standards and possibly better literacy outcomes.

#### **2.4.6 Housing in relation to health status of Pacific people**

Warm household living conditions have been associated with improved well-being, fewer asthma symptoms and less time off school due to illness (Howden-Chapman et al., 2007; Howden-Chapman et al., 2008). In New Zealand, Pacific people are more likely to live in overcrowded households that are associated with high prevalence rates of infectious disease and psychological distress (Statistics New Zealand, 2013b).

Further, PI families have the highest rate of overcrowding compared to all other ethnic groups in New Zealand (MoH, 2008d). In 2006, an estimated 43% of Pacific people lived in households in need of extra bedrooms due to overcrowding, a trend which has remained consistent since 1988 (Statistics New Zealand, 2013b). In a sense, living in overcrowded houses is considered normal to Pacific people because of the traditional customs of living situations in their Pacific nations. This could help explain why some Pacific people live in overcrowded houses. Despite the cultural norms, living in an

overcrowded house is a health risk for all individuals. Effective means to assist Pacific people in managing overcrowding should be considered by health policy makers, health professionals, and Pacific community leaders.

#### **2.4.7 Health Literacy as a potential factor associated with Pacific health status**

##### **Definitions of Health Literacy**

No agreed-upon definition of health literacy exists (Kickbusch, 2001). Health literacy has been defined as the ability to read, understand and interpret health information to better enhance individual health status (Berkman, Davis, & McCormack, 2010). In a similar vein, Ministry of Health (2010) and Kickbush (2001) defined health literacy as ‘the degree to which individuals have the capacity to obtain, process and understand basic health information and services in order to make informed and appropriate health decisions’. The New Zealand Ministry of Health defined health literacy as the capacity to find, interpret and use information and health services to make effective decisions for health and wellbeing (MoH, 2015).

The World Health Organisation definition goes on to say: Health literacy implies the achievement of a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions (as cited in Kickbusch, 2001). Thus, health literacy means more than being able to read pamphlets and make appointments (Kickbusch, 2001). Furthermore, by improving society’s access to health information, and their capacity to use it effectively, health literacy is critical to empowerment (Kickbusch, 2001; Nutbeam, 2008).

##### **Measures of Health Literacy**

The diversity of definitions identified is just as complex as the measures of health literacy (Nutbeam, 2000). The following are the main health literacy measures utilised in research: the rapid estimate of adult literacy in medicine (REALM), test of functional health literacy in adults (TOFHLA), short test of functional health literacy in adults (s-TOFHLA) (Baker, Williams, Parker, Gazmararian, & Nurss, 1999b), and the single item literacy screener (SILS) (Morris, MacLean, Chew, & Littenberg, 2006). The REALM test measures only the ability to pronounce words in isolation and little is known about the relationship of the REALM to patients self-management skills, health and use of health care services (Baker et al., 1999b). In addition, REALM appears to have both overestimated and underestimated patients' reading ability when compared to the S-TOFHLA (Baker, Williams, Parker, Gazmararian, & Nurss, 1999a).

The TOFHLA was considered the best form of measuring health literacy since the early 1990s but in 1998 the s-TOFHLA was introduced as a more reliable and valid instrument (Baker et al., 1999a). The s-TOFHLA is used to assess a patient's health literacy level based on reading comprehension and numeracy skills (Baker et al., 1999b). When created, the number of questions was reduced for the s-TOFHLA but included similar health related questions as the TOFHLA. The intention was to reduce the time frame to complete questions so that the same results could be produced (Baker et al., 1999b). Validity and reliability was measured using the Cronbach's alpha; a common form of reliability testing in statistics to determine insignificant or significant internal consistency between two measures (Bland & Altman, 1997). Good internal consistency is classified as  $r > 0.80$  and  $r < 0.70$  indicates questionable-to-insignificant correlations (Bland & Altman, 1997).

In a study comparing s-TOFHLA scores with REALM and TOFHLA, excellent reliability and validity was found (Baker et al., 1999b). When compared to the REALM the internal consistency resulted in 0.80 (Baker et al., 1999). Further, based on the reading passages the internal consistency measured 0.97 between the REALM and s-TOFHLA and 0.68 for numeracy skills (Baker et al., 1999b).

The questionnaire includes four numeracy items with a seven point score per question answered correctly and the reading comprehension passages cover 36 questions with a two point score per question (Baker et al., 1999b). Reading comprehension questions cover health related sentences such as: "The x-ray will take from 1 to 3 hours to do". The fifth or ninth word in each sentence is then deleted and the best suited word must be inserted. A list of words is available for selection of the appropriate word to insert. Numeracy questions include passages such as; "If your blood sugar score is 160, would your blood sugar be normal?". Scores from 0 to 53 indicates inadequate or low health literacy; a score from 54 to 66 indicates marginal health literacy and a score of 67 to 100 shows adequate or good health literacy (Baker et al., 1999b).

The s-TOFHLA has the ability to identify an individual's inadequate functional health literacy within a 10 to 12 minute time frame compared to TOFHLA which requires a 22 minute completion period (Baker et al., 1999b). In addition, it is easier to administer than the full battery, and scoring is less subjective (Baker et al., 1998). Testing of the s-TOFHLA suggests this is a reliable and valid measure of health literacy, while also being the shorter to complete than the TOFHLA and REALM (Baker et al., 1999b). Reliability testing of this measure has been conducted with small homogenous

populations; testing in a larger, more diverse population is needed to confirm reliability (Baker et al., 1998).

SILS is a simple instrument designed to identify patients with limited reading ability that need help reading health-related materials despite language barriers, education attainment and acculturation (Morris et al., 2006). The SILS is used to assess a patient's health literacy level based on reading comprehension and numeracy skills (Morris et al., 2006). The SILS question asks: "How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?" Participants can select from the following scale in response to this question including: 1-Never, 2-Rarely, 3-Sometimes, 4-Often, and 5-Always. Scores from responses 1 and 2 were classified as 0 (No) and scores greater than 2 (3 to 5) classified as 1 (Yes). The value 0 indicated 'good' or no difficulty with reading and interpreting health related information and responses for the value 1 indicated 'poor' or some difficulty with reading printed health related material (Morris et al, 2006).

### **Health literacy from a Pacific health perspective**

#### *Health literacy and Pacific culture*

Sharing of food is a fundamental cultural value in Pacific communities encompassing traditional Sunday church gatherings as well as traditional celebrations such as weddings and funerals (Lui, 2003). Food plays a significant role in social and cultural Pacific settings over and above biological needs for nourishment and survival (Rush, 2009). In New Zealand culture, family and personal attitudes influence the food choices of Pacific people (Statistic New Zealand, 2013). Foods of lesser nutritional value containing higher salt, sugar and saturated fat contents are often purchased as the convenience of such foods influences the opportunity to purchase foods with limited nutrition (Health Partners Consulting Group, 2012). Such foods are then served and consumed at traditional cultural gatherings (Rush, 2009).

This situation is indicative of two possible scenarios related to health literacy and health behaviours. Firstly, Pacific communities could be well educated in health knowledge to be able to identify the differences between healthy and unhealthy foods, yet consume unhealthy foods due to cultural practices. For example, despite the need for individual health attainment, it is culturally valued at cultural settings that the sharing and consuming of such foods occurs to show respect and common courtesy (Lui, 2003). The risks to health are significant as social gatherings occur frequently and foods are available in large amounts (Lui, 2003; Rush, 2009). Secondly, consuming such foods as

part of cultural practices could indicate low health literacy in this population. Pacific people could be unaware of what foods are healthy or unhealthy, low health literacy could be causing such unhealthy behaviours to continue.

PI families play a cultural role in providing for their respective families in New Zealand as well as their immediate or extended families living in the PI they originated from (Rush, 2009). Supporting their families in their country of birth financially is not only a cultural custom of Pacific populations but is the most common form of support which causes family members to seek financial assistance (Rush, 2009). This then suggests that Pacific people in New Zealand are at a higher risk of low health literacy because of the influences of cultural values of non-native ethnic groups and low income status which potentially eventuate in ill health outcomes. The impact of socioeconomic status is further explained later in this review.

### **Health Literacy and language attainment**

Research conducted in the United States and Japan has shown strong correlations between inadequate health literacy and groups for whom English was their second language such as African American (Gary, McGuire, McCauley, Brancat, 2004; McCleary-Jones, 2011), Asian (Ishikawa et al., 2008; Kim et al., 2001; Sarkar et al., 2002), and Spanish adults (Schillinger, 2002).

It is possible that translating each questionnaire to suit the language (or language attainment) of the individual could improve health literacy scores. Even so, when functional health literacy tests have been verbally translated, adults (older adults in particular) found it difficult to answer health related questions adequately which resulted in an overall rating of inadequate health literacy (Schillinger, 2002).

### **Health Literacy and Socioeconomic status**

Low health literacy levels have also been associated with low socioeconomic status (Ishikawa & Yano, 2008; Kim et al., 2001; Marks, Schectman, Groninger, & Plews-Ogan, 2010; McCleary-Jones, 2011; Sarkar, Liu, Moffet, & Schillinger, 2010; Schillinger et al., 2002). Four studies (Kim et al., 2001; Marks et al., 2010; McCleary-Jones, 2011; Sarkar et al., 2010; Schillinger et al., 2002) found that low health literacy was common among women with NCDs aged 55 to 90 years of low socioeconomic status (annual income less than USD\$20,000); findings which were consistent across differing health problems (e.g., type 2 diabetes, cancer). Few studies have shown associations between socioeconomic status and health literacy in males (Kim et al.,



2001; Marks et al., 2010; McCleary-Jones, 2011; Sarkar et al., 2010; Schillinger et al., 2002). These may be a consequence of higher reported socioeconomic status, wider age ranges and smaller sample sizes for males than females in these studies. Most of the studies included males aged from 30 to 90 years and samples were smaller (i.e., a maximum of 20 males compared to 45 females) (Kim et al., 2001; McCleary-Jones, 2011; Sarkar et al., 2002).

Larger study samples including men are needed to include a wide range of individuals to account for differences by socio-demographic factors such as sex, age, socioeconomic status, and education attainment. Using this approach could possibly show relatively similar results of health literacy across all age groups rather than older adults only (McCleary-Jones, 2011; Sarkar et al., 2002; Schillinger, 2002). This is important because younger age groups and males could be overestimated as having adequate health literacy but if included in future research could show they are just as at higher risk as older adults and females. Such evidence could enhance current health literacy initiatives to focus on this population group.

Low health literacy has also been associated with those of middle to high socioeconomic status (Hesketh et al., 2005). An investigation of mothers and their child's perceptions of nutrition, physical activity, and obesity took place in an urban Australia (Hesketh et al., 2005). Mothers of middle to high income believed their children understood which foods were healthy and the mothers could not completely comprehend the consequences of unhealthy eating. This was reflected in the perceptions of their children whereby most children identified some unhealthy foods as healthy foods or were confused with which types of foods to consume for healthy lifestyle and appropriate portion sizes. Leading a healthy lifestyle through healthy eating behaviours and being physically active were important factors perceived and well understood by all mothers but comprehending the consequences of such factors were not taken into serious consideration. Moreover, mothers understood what foods were healthy but their eating behaviours contradicted this and were inconsistent. Nevertheless, the majority of mothers understood that healthy eating behaviours for a child begin at infant age and in the home. Although based on their confused perceptions the ability to adopt a healthy lifestyle for themselves and their children would be challenging. This then reinforces the importance of focusing on improving health literacy for mothers because their perceptions of health can influence and reflect the health behaviours to their offspring. It remains clear that across all socioeconomic levels, inadequate health literacy is associated with inadequate management of ill health (Kim et al., 2001; Marks,

Schectman, Groninger & Plews-Ogan, 2009; McCleary-Jones, 2011; Sarkar et al., 2002; Schillinger, 2002) as well as perceived mixed messages around healthy lifestyles (Hesketh et al., 2005). Based on these studies, focusing on reducing socioeconomic inequalities and improving health literacy for all should remain a focal point of public and private health practice.

### **Health Literacy and Health Outcomes; Type 2 diabetes, Asthma, Mental health, Retinopathy, Prostate cancer and Obesity**

A substantial amount of scientific research shows health literacy is associated with the effective management of NCDs including type 2 diabetes (Harris, 2000; Kim, Love, Quistberg, & Shea, 2004; Sarkar et al., 2010; Schillinger et al., 2002; Williams, 1998), asthma (Mancuso & Rincon, 2006; Williams et al., 1998), mental health (Jorm, 2000), prostate cancer (Kim et al., 2001), and obesity (Carmona, 2005). Three research studies showed associations between adults with inadequate health literacy and type 2 diabetes (Kim et al., 2001; Schillinger et al., 2002; Williams et al., 1998). Findings from these studies showed inadequate health literacy was common in adults aged 45 years and older. Further, adults were less likely to self-manage their diabetes resulting in poor glycaemic control, having higher prevalence of retinopathy (damage to the retina caused by type 2 diabetes) and increased likelihood of reporting complications of diabetes (Schillinger, 2002) compared to patients with marginal or adequate health literacy. Significant associations have also been found between inadequate health literacy and sub-optimal asthma control (Mancuso & Rincon, 2006; Williams et al., 1998), prostate cancer (Kim et al., 2001), and mental health (Jorm, 2000). The following common characteristics were associated with inadequate health literacy; patients were predominantly older females, spoke English as a second language, and had a level of education from high school or lower (Jorm, 2000; Kim et al., 2001; Mancuso & Rincon., 2006; Williams et al., 1998).

Carmona (2005) suggested individuals require further education to improve health literacy to avoid obesity based on traditional family customs of consuming foods high in saturated fats, salt and sugar (Carmona, 2005). American children as well as adults continue to engage in such lifestyles which inhibit the ability to reduce obesity rates (Carmona, 2005). The same existing trends could possibly exist amongst Pacific populations where there is a need to tailor communication to suit Pacific traditional ways of lifestyle to reduce morbidity and mortality (Health Partners Consulting Group, 2012).

## 2.5 Conclusion

As previously discussed throughout this review, Pacific people living in New Zealand are more likely to have NCDs including type 2 diabetes, CVD, and obesity compared to all other ethnic groups in New Zealand (Health Partners Consulting Group, 2012; Ministry of Health, 2012a, 2012b). The most common influential risk factors for these diseases are unhealthy eating, physical inactivity, and smoking, which may be influenced by culture, religion, low socioeconomic status, education, and low health literacy. The review findings highlight the potential to reduce the prevalence of ill health and improve physical and mental health status through improved health literacy (Wolf, Gazmararian, & Baker, 2005). Low health literacy could possibly explain NCD prevalence among Pacific peoples in New Zealand, however, to date, no research to investigate the status of health literacy in Pacific populations in New Zealand has been published. Further, no evidence to show the impact of maternal health literacy on the health of their offspring exists for Pacific mothers in New Zealand. This is important as the influences of a mother's health behaviours and attitudes impacts on their child's health and lifestyle behaviours from infancy, throughout their childhood and into adulthood (Oliver, Schluter, Paterson, Kolt, & Schofield, 2009). Mothers with inadequate health literacy therefore could be influencing their children of unhealthy behaviours which could contribute to the high prevalence of NCDs among Pacific children in New Zealand.

Findings from this literature review show that inadequate health literacy was consistent among adult females, particularly older adults of low socioeconomic status (Kim et al, 2001; Marks et al., 2010; McCleary-Jones, 2011; Schillinger et al, 2002), lower level of education (McCleary-Jones, 2011; Schillinger et al, 2002), non-native speakers of English (Kim et al, 2001; Sarkar et al, 2010) and adults with compromised health status (Harris, 2000; Kim et al, 2004; Sarkar et al, 2012; Schillinger et al, 2002; William et al, 1998). Further, culture may play a role in attainment of adequate health literacy (Shaw, Huebner, Armin, Orzech, & Vivian, 2009). These individuals were more likely to report worse chronic physical conditions including lack of knowledge of their condition such as the inability to identify normal blood sugar levels, the range of a normal blood pressure or how to self-manage hypoglycaemia.

Social and cultural determinants of health are potential threats to ill health especially for those with inadequate health literacy. The challenging role for public health

practitioners is the ability to apply cultural and age appropriate strategies as an effective means to improve inadequate health literacy. Effective communication using a culturally and individually tailored approach that can help individuals to understand health messages and improve health behaviours, ultimately reducing morbidity and mortality, and improving their health and well-being (Carmona, 2005).

The following suggestions could advocate as potential strategies to improve health literacy: implementing nutrition based messages in school curriculum, advocating health messages through social media and lastly improving health prevention initiatives in Pacific communities especially most deprived areas with health literacy as the point of focus. Ideally, long term, such practical suggestions could improve health literacy and decline the prevalence of disease and the rate at which it is occurring among Pacific people in New Zealand.

## **Chapter 3: Methods**

### **3.1 Introduction**

Two approaches to understanding factors related to health literacy in Pacific mothers were employed in this research. Firstly, a quantitative examination of factors related to health literacy in Pacific mothers participating in the Pacific Islands Families (PIF) study was undertaken (Study 1). Pacific mothers were identified as a group of particular interest in the preceding literature review. Therefore, Study 1 focused specifically on this population group. Secondly, focus groups and thematic analysis were employed to gather a more in depth understanding about factors related to health literacy in Pacific people (Study 2). Findings from Study 1 aligned with the Fonofale Framework were used to develop an interview framework. This was used for focus groups with PIF study mothers and semi-structured interviews with Pacific health providers, using the Pacific ‘talanoa’ method of gaining and sharing information. Both studies drew from the longitudinal PIF study, briefly outlined below.

### **3.2 Pacific Islands Families (PIF) study**

The PIF study is a large, scientifically and culturally robust longitudinal birth cohort study of 1398 infants born at Middlemore hospital in Auckland, New Zealand, commencing in the year 2000 (Paterson et al., 2008). Data on social and physical health outcomes have been collected (2000-2014) when the children were 6 weeks, and 1, 2, 4, 6, 9, 11, and 14 years of age. As well, information has been gathered from participants’ family members including their mothers, fathers, other children, and teachers (Paterson et al., 2008). The objectives of the PIF study are: (1) to provide information on Pacific peoples’ health, and the cultural, economic, environmental and psychosocial factors that are associated with child health and development outcomes and family functioning; (2) to determine how such factors individually and interactively influence positive and negative child, parent and family outcomes over time; and (3) to provide information that will help set quantifiable targets for Pacific peoples’ health (Paterson et al., 2008). Ultimately, the research aims to inform policy development and programme implementation for a variety of end-users working towards maximising the health potential of Pacific families and communities within New Zealand society (Paterson et al., 2008).

### **3.2.1 PIF study inclusion/exclusion criteria**

#### ***Participants***

At the inception of the PIF study, infants were deemed eligible if at least one of their parents identified as being of Pacific ethnicity and was a permanent resident of New Zealand (Paterson et al., 2006). Thereafter, all participants remain eligible, irrespective of whether they participated in all waves of data collection.

### **3.2.2 PIF study protocol**

At the 14-year phase (relevant to the current study), mothers of PIF study participants were visited at their home by a trained researcher at which time study information was provided and informed consent gained. Thereafter, the interview was administered in person, using the PIF study maternal questionnaire and physical assessments were made (height, weight). On completion, participants were gifted a voucher to acknowledge their contribution to the study.

### **3.2.3 PIF study maternal questionnaire**

Study materials were developed based on previous research and with consultation with the wider community. Prior to implementation, surveys were piloted and researcher training conducted. The PIF study 14-year maternal questionnaire was administered in person and written in English. Questionnaires were also available in Samoan, Tongan, and Cook Island/Māori. The questionnaire comprised 150 questions that covered factors such as health, and the cultural, economic, environmental and psychosocial factors that are associated with child health and development outcomes and family functioning (Paterson et al., 2008). [Available upon request]. Ethical approval to conduct the 14-year phase of the PIF study was provided by the Central Health and Disability Ethics Committee on 28<sup>th</sup> July 2014 (14/108).

Factors related to the current investigation are detailed below. Ethical approval to conduct the current research was sought through and approved by the Auckland University of Technology Ethics Committee on the 14<sup>th</sup> of October 2014 (amendment to AUTEK reference 12/291; Appendix A).

## **3.3 Study 1: Quantitative study**

### **3.3.1 Participants**

The current study utilises aggregated demographic and health data from the maternal interviews of the 14-year phase of the PIF study that were completed between 01 April

2014 and 10 August in 2014, inclusive. Although data collection for the PIF study was still underway at the close off date for inclusion, this date was chosen to allow a sufficient amount of time to review the data and begin quantitative and qualitative study processes for this thesis. For the purpose of this study, the PIF study cohort eligible for recruitment included mothers of Pacific Island descent or Pacific mothers who affiliated themselves with Pacific Island heritage. This included Pacific ethnicities such as Samoan, Tongan, Cook Island/Māori, and Niuean. PIF study mothers of non-Pacific ethnicity and male participants were excluded.

### **3.3.2 Measures**

#### **Survey variables**

##### **Socio-demographic information**

Within the PIF study maternal survey participants completed self-reported sections that included demographic questions to identify sex, age, ethnicity, employment status and qualification level. PIF study questionnaire is available upon request for demographic items and all other items used for this study.

##### **Health Literacy**

The SILS measure was created as a short version of the 32-item S-TOFHLA health literacy measure, which was designed to measure reading ability (Baker, Williams, Parker, Gazmararian, & Nurss, 1999). The SILS measure is a single item intended to identify adults in need of help with understanding printed health material; an indicator of limited reading ability to identify those who need help with reading or understanding printed health related information (Morris et al., 2006). This study used the SILS single item, which asks, “How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?” (Morris et al., 2006). PIF study participants were asked to rate their perceptions using a scale from never to always; 1 = never, 2 = rarely, 3 = sometimes, 4 = often or 5 = always (see Appendix 8). Participants scores from one to two were considered as having high health literacy. Participants’ scores which ranged from three to five were categorised as having low health literacy.

##### **Acculturation**

First developed by Tsai and co-authors (2003), the general ethnicity questionnaire (GEQ) is an efficient and reliable tool that can be used with individuals of different

cultural backgrounds, simply by changing the reference culture (Tsai et al., 2003). The GEQ comprises 38 items that includes topics relating to the specific cultural dimensions of language, social affiliation, activities, exposure in daily living, and food (Tsai et al., 2003). For the purpose of the PIF study, the acculturation measure used was shortened and modified from 38 items to 11 items. The intention was to help explain two areas of interest intended to protect the essence of cultural significance; the ability to maintain one's heritage, culture and identity and the wider population as a whole (Berry, 2010). This also reduced participant burden without compromising the ability to collect information relevant to the acculturation process and the inter-relationship with the other variables of interest (Borrows, 2010). From this, two different versions of the acculturation measure to suit the PIF study population, namely the Pacific Island acculturation measure (PIACCULT) and the New Zealand acculturation measure (NZACCULT) were established (Burrows et al., 2011).

The PIACCULT measure includes 11 single items that ask questions around cultural importance of the individual (i.e., I am familiar with Pasifika practices and customs, I was brought up the Pasifika way, I am familiar with Pasifika practices and customs, I can understand a Pasifika language well, I have several Pasifika friends, Most of my friends speak a Pasifika language, I participate in Pasifika sports and recreation, I speak a Pasifika language, I have contact with Pasifika families and relatives, I eat Pasifika food, I visit a traditional Pasifika healer when I have an illness, I go to a church that is mostly attended by Pasifika people). For each statement, the participant is asked to state how much they agree or disagree with each statement. Scores are then coded on a scale of 1 to 5 as follows: 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, and 5 = strongly agree.

The NZACCULT measure includes 11 single items (i.e., I was brought up the New Zealand way, I am familiar with New Zealand practices and customs, I can understand English well, I have several non-Pasifika friends, Most of my friends speak English, I participate in New Zealand sports and recreation, I speak English, I have contact with non-Pasifika families and relatives, I eat non-Pasifika food, I visit Western-trained doctors when I have an illness, and I go to a church that is mostly attended by non-Pasifika people). Participants are asked to state their level of agreement as for the PIACCULT items. Scores from both acculturation measures are then used to generate four acculturation categories; 1) assimilation (i.e. the process whereby a person or a group's language and/or culture resembles those of another group; replacing Pacific with



New Zealand culture), 2) separation (i.e. affiliated only with their Pacific culture), 3) integration (i.e. identification with both New Zealand and their Pacific culture), and 4) marginalisation (i.e. withdrawal from both cultures) (Paterson et al, 2012).

### **Socioeconomic deprivation**

The New Zealand Index of Deprivation for individuals' tool (New ZealandiDep2013) is a valid and reliable measure of socioeconomic status (Salmond et al., 2005). The tool comprises eight items that provide an indication of socio-economic deprivation which include; 1 = In the last 12 months have you personally been forced to buy cheaper food so that you could pay for other things you needed?; 2 = In the last 12 months, have you been out of paid work at any time for more than one month?; 3 = In the 12 months ending today did you yourself receive payments from any of these three benefits: Jobseeker Support, Sole Parent Support or Supported Living Payment?; 4 = In the last 12 months have you personally put up with feeling cold to save heating costs?; 5 = In the last 12 months have you personally made use of special food grants or food banks because you did not have enough money for food?; 6 = In the last 12 months have you personally continued wearing shoes with holes because you could not afford replacement?; 7 = In the last 12 months have you personally gone without fresh fruit and vegetables, often, so that you could pay for other things you needed?; 8 = In the last 12 months have you personally received help in the form of clothes or money from a community organisation (like the Salvation Army? Respondents were asked to reply yes or no to each of these items. Refer to Appendix 8. Data were aggregated into five categories representing a higher (i.e. no deprivation characteristics) or lower (i.e., five or more deprivation characteristics) socioeconomic status (Salmond et al., 2005).

### **Physical Activity**

For this study, PA was measured using the New Zealand Physical Activity Short Form (NZPAQ-SF) (Boon, Hamlin, Steel, & Ross, 2008). The NZPAQ-SF is a valid and reliable surveillance tool that assesses three dimensions of physical activity: frequency, duration, and intensity over eight items (Boon et al., 2008) adapted from the International Physical Activity Questionnaire (McLean & Tobias, 2004). For this study respondents were asked "Thinking about all your activities over the last seven days (including brisk walking), how many days in the previous week did you engage in physical activity; at least 30 minutes of moderate activity (including brisk walking) that made you breathe a little harder than normal, or at least 15 minutes of vigorous activity that made you breathe a lot harder than normal (i.e. huff or puff state)?" These included

activities which were work or home related (i.e. housework and gardening); travelling to and from places; and any activities they did for exercise, sport, recreation or leisure. Participants were able to select from 0–7 days for each activity dimension. These responses were then aggregated to an average of 0 – 2 days per week (low active), 3–5 days per week, and 6 – 7 days per week (high active). The New Zealand physical activity guidelines stipulate that adults should engage in moderate to vigorous activity at least three to five times per week to gain health benefits and reduce the risk of non-communicable diseases (MoH, 2013a).

### **Health status**

The general health questionnaire (GHQ) is a self-administered 60-item screening questionnaire developed by Goldberg in the 1970s (Goldberg & Hillier, 1979). This tool is designed to detect those likely to have or be at risk of developing psychiatric disorders and measures mental health problems such as depression, anxiety, somatic symptoms and social withdrawal (Goldberg & Hillier, 1979). Since its development, four shortened versions of the questionnaire have been designed to reduce participant burden including the GHQ-30, the GHQ-28, the GHQ-20, and the GHQ-12 (Politi, Piccinelli, & Wilkinson, 1994). The single item used for this study was derived from the GHQ-12 which is a screening tool used to assess a person's overall psychological well-being and to detect non-psychotic psychiatric problems which requires an average of three minutes for administration (Zulkefly & Baharudin, 2010). For the purposes of this study, the single item 'Would you say your health is...?' was examined to measure health status. Responses were coded into two different response categories; 1 = good, 0 = fair or poor.

### **Smoking Status**

The term 'smoking' refers to active smoking behaviour, that is, the intentional inhalation of tobacco smoke (WHO, 2012). Cigarette smoking refers to the active smoking of one or more manufactured or hand-rolled tobacco cigarettes, from purchased or home-grown tobacco, per day, by people aged 15 years and over. Smoking does not refer to or include passive smoking (the unintentional inhalation of tobacco smoke). Cigarette smoking excludes smoking of tobacco in cigars, pipes and cigarillos, smoking of any other substances, herbal cigarettes or marijuana consumption such as chewing. The Ministry of Health (2008a) defines smoking status by using three categories: current smoker, ex-smoker and never smoker. The way smoking status is defined determines the final prevalence figure and in part, the comparability of the final

figure with other surveys (MoH, 2008). For this study smoking status was measured using the single item: ‘Over the past week, how many cigarettes on average did you smoke a day?’ Scores were then coded two different response categories; 0 = No (non-smoker) or 1 or more = Yes (current smoker).

### **Alcohol consumption**

The alcohol use disorders identification test (AUDIT) is a 10-item screening measure that assesses alcohol use during the previous 12 months. Such questions assess drinking behaviour that address harmful use (guilt, unconsciousness, injury), hazardous alcohol use (frequency, quantity, heavy drinking), and dependence indications (reduced control, conspicuousness, morning consumption) (Seth et al, 2015). Health care providers often do not screen for alcohol-related issues, and time constraints may be a contributing factor. Therefore, two abbreviated screening tools have been developed and validated in North America and Europe; AUDIT-C and the AUDIT-3, both of which are valid and reliable screening tools utilised in public health settings (Barry, Chaney, Stellefson, & Dodd, 2015). The AUDIT-Consumption (AUDIT-C) consists of the first 3 questions of the full 10-item AUDIT and is a very brief, effective alcohol screening tool to identify an individual’s need to further evaluation and intervention (Seth et al, 2015). For this study, the single item from AUDIT- C was used to assess alcohol status; how often did you have a drink containing alcohol in the past 12 months? A “drink” is classified as a can or bottle of beer, a glass of wine, a wine cooler, or one cocktail or a shot of hard liquor (like scotch, gin, or vodka). Possible responses given included: 0 = never, 1 = monthly or less, 2 = two to four times a month, 3 = two to three times a week, 4 = four or five times a week, 5 = six or more times a week. Responses were coded using 2 different categories: 0 = No drinks in last 12 months and 1 - 5 = Yes (had alcoholic drink(s) in the last 12 months).

### **Physical measures**

#### ***Body Mass Index***

Height was measured to the nearest 0.1 cm using a stadiometer and weight was measured to the nearest 0.1 kg using digital scales. BMI was then calculated as weight in kilograms divided by height in meters squared ( $\text{kg}/\text{height in m}^2$ ). Ethnic-specific thresholds were applied to classify participants in the following categories; underweight ( $<18.5 \text{ kg}/\text{m}^2$ ), normal weight ( $18.9\text{-}24.99 \text{ kg}/\text{m}^2$ ), overweight ( $25\text{-}29 \text{ kg}/\text{m}^2$ ), obese ( $30\text{-}34.99 \text{ kg}/\text{m}^2$ ), obese I ( $35\text{-}39.99 \text{ kg}/\text{m}^2$ ), obese 2 ( $40\text{-}45.99 \text{ kg}/\text{m}^2$ ), and obese 2I ( $50\text{-}90$

kg/m<sup>2</sup>) (Rush, Freitas, & Plank, 2009). These cut off points were designed to include Pacific ethnic body compositions by Rush et al. (2009) derived from the globally world renowned cut off points by the World Health Organisation (World Health Organisation, 2009).

### **3.3.3 Statistical Analysis**

Descriptive statistics were calculated to determine the mean and standard deviations of the demographic variables of the participants (Table 1). Bi-variable logistic regression was used to investigate the relationship between health literacy (low or high) and the following factors: acculturation, socioeconomic status, physical activity, education, smoking status, health status, and alcohol consumption. Data were entered, cleaned, and analysed using SPSS Statistics 22.0 and confidence intervals were set at 95%.

## **3.4 Study 2: Qualitative study**

The qualitative phase of this thesis was undertaken using small focus group meetings and individual interviews. Pacific health professionals were asked open ended questions based on the findings from the quantitative stage of this investigation of this study, and findings from the literature review (Chapter 2). Focus group participants were also asked open ended questions based on the findings drawn from the quantitative stage of this study, the literature review, and the individual interviews with the Pacific health professionals. Details of this study are further explained below.

### **3.4.1 Participants**

This qualitative study comprised two different types of participants interviewed in different settings; two focus groups with Pacific mothers from the PIF study and two semi-structured interviews with two health professionals. Both focus groups involved interviewing Pacific PIF study mothers at a location in close proximity of where the PIF mothers reside (South Auckland, New Zealand). Both in-depth interviews involved discussions with health professionals; a Pacific health advisor from the Ministry of Health based in Wellington and a Pacific primary health care nurse based at a primary health care organisation in Auckland (PIHC). Health professionals who had any direct contact with the Pacific PIF study participants were ineligible because of the potential bias in decisions and answers made during the interviews, which could affect the credibility of the results. Participants took part based on their willingness and

availability. Interviews and focus groups were conducted in December 2014. See appendix D, E, F and G for full information sheets and consent forms.

### **Pacific PIF study mothers**

PIF mothers of Pacific Island descent that completed the PIF study 14-year maternal survey were invited to be a part of the qualitative study. PIF mothers were randomly selected from two different health literacy categories; those with low health literacy (SILS score of 0 - 2) or high health literacy (SILS score of 3 - 5). For a Pacific PIF mother to be eligible, participants were required to have completed the PIF study maternal survey questionnaire, answered the health literacy item and were of Pacific ethnicity. In total, 40 Pacific PIF mothers were randomly selected by a PIF study researcher; 20 participants who reported low health literacy and 20 participants who reported high health literacy. Information sheets and consent forms were mailed to the physical home address of each potential participant to advise them of the study. No PIF study mothers responded so the researcher called each PIF mothers mobile or home phone to follow up. From this, 28 PIF mothers were either not interested in taking part, were busy with family and work or were unable to travel to the anticipated focus group venue. Four PIF mothers agreed to take part but declined because they were required to attend work on the day of the focus group. A total of four PIF mothers of low health literacy and four PIF mothers with high health literacy were recruited and agreed to take part. The researcher sent a reminder via text and email about the study the day before the focus group occurred to each PIF mother. On the day of the focus group two PIF mothers sent their apologies, as they could not attend, leaving a final sample of three PIF study mothers who scored low health literacy and three PIF mothers of high health literacy. An appropriate sample size for qualitative study is one that adequately answers the research question (Marshall, 1996). A small size is preferable in a project involving qualitative descriptive research (Lewis, Kellett, Robinson, Fraser, & Ding, 2003). The information from these participants in focus group settings will be utilised for the data analysis of this thesis, further explained in the results chapter (see Chapter 4).

## **Health Professionals**

Pacific health professionals who had work experience with Pacific people in a professional setting for at least five years were invited to take part in this study. Each health professional was invited to take part by either meeting with the health professional in person, via an email or telephone communications. Health professionals were given an information sheet and consent form to complete at least two weeks prior to the intended date of being interviewed. This allows the participants an efficient amount of time to decide if they are willing to partake in the study as well as the researcher to determine if further recruitment is required.

### **3.4.2 Setting**

Both focus groups took place on separate days in a conference room based at the Auckland University of Technology South Campus in Manukau, South Auckland. Pacific PIF mothers were provided free VIP parking to the venue and were offered refreshments throughout the duration of the focus group. Interviews with each health professional took place at a convenient and comfortable setting of their choosing. Selecting a place which was informal, relatively quiet and easily accessible for the participants allows them to talk confidently (Krueger & Casey, 2014).

### **3.4.3 Procedure**

Qualitative research aims to gather an in-depth understanding of human behaviour and the reasons that govern such behaviour (Johnson, & Onwuegbuzie, 2004). These behaviours may be influenced by culture and religiosity that defines an individual. The qualitative methods used in this research were focus groups and interviews where questions were open ended so participants could share their experiences and ideas when answering questions (Johnson & Onwuegbuzie, 2004). These research methods are designed to investigate perspectives based on how and why decisions and ideas are what they are rather than only investigating what where and when (Johnson & Onwuegbuzie, 2004). This project adopted the qualitative Pacific research approach; talanoa, kakala, using semi-structured approaches to information sharing. Semi structured interviewing is a qualitative method that involves asking open ended questions which allows new ideas to arise as a result of the questions being asked (Trumbull, 2000). The Pacific research method 'talanoa' is an effective Pacific research method for deriving honest and reliable information from Pacific people (Vaiioleti, 2006). It uses conversation or talanoa as a way to create a healthy environment for both the researcher and the participant (Vaiioleti, 2006) however these conversations must align with the Pacific

epistemological views best described as the fonofale framework (Nonu-Reid, Lui, Erik, Puloto-Endemann, & Bridgman, 2000). The researcher conducted all focus groups and interviews, and recorded them using an audiotape recorder. A focus group or interview conducted less than thirty minutes and longer than 60 minutes (Morgan, 1996).

Focus groups and interviews took between 30-60 minutes and each PIF study mother received a \$30 Westfield (shopping centre) voucher in appreciation of their time and contribution to take part in the study. In addition, out of respect for the participants a letter was mailed to each PIF mother's physical home address and emailed to each health professional that included contact details of the researcher, expressing gratitude for their time and contribution to the study, and details about health counselling and well-being services available at AUT. For the purpose of confidentiality and anonymity (Longhurst, 2003) numbers have been used to identify the participants rather their names throughout this research.

#### **3.4.4 Interview guide**

A semi-structured interview guide containing a list of key points of enquiry was generated, drawing from the findings from Study 1. This allowed some form of flexibility for participants to discuss self-identified issues which may have influenced their experiences (Grant & Giddings, 2002). Developed by Karl Pulotu-Endemann in the 1980s, the fonofale framework was designed as general model of health to be used in the New Zealand context among Pacific Island populations, to provide an understanding around the appropriate outcomes for Pacific health mental health services (Nonu-Reid et al., 2000). The concept encompasses the components of a traditional Pacific way of living which comprises culture, family, religion, time, the environment and context. Refer to fig. 3 in the literature review in chapter 2 of this thesis. For this research, the fonofale framework was also used to identify specific topics that directly or indirectly influenced an individual's health literacy status. These included lifestyle behaviours, nutrition and physical activity related behaviours, Pacific-specific ethnic culture, religiosity, public health information, the built environment and social influences. Accordingly, focus group and interview questions comprised six to ten questions in search of the following themes; barriers and benefits of reading and interpreting health related information, recommendations to improve interpretations and understandings, and general thoughts and feelings towards public health information (see Appendix B for focus group questions and Appendix C for interview questions).

### **3.4.5 Qualitative Analyses**

The data obtained from the interviews and focus groups were transcribed verbatim, and imported into NVivo 11 (QSR International, Burlington, MA) for thematic analysis. Thematic content analysis was used to pinpoint and examine common themes within the data (Braun & Clarke, 2006). This process involved deriving themes and identifying key patterns and trends from these themes. The commonalities found from these themes will be used for designing and reporting purposes of the thesis.



## **Chapter 4: Results**

Results from Studies 1 and 2 are presented separately in this Chapter. For Study 1, sample characteristics of the participants (in this case Pacific PIF study mothers) are presented and results of bi-variable analyses are then addressed. Results for Study 2 comprise qualitative findings from two semi-structured focus groups with Pacific PIF study mothers and semi structured interviews with two health professionals in New Zealand.

### **4.1 Study 1: Epidemiological investigation of Pacific PIF study mothers**

#### **4.1.1 Sample characteristics**

Of the 549 maternal participants who took part in the PIF study maternal survey sample, 11 participants were male and 35 participants were of non-Pacific ethnicity. Following their exclusion this left a final sample of 503 PIF study Pacific Island mothers. Of these just over 50% were of Samoan descent, 45% were between the ages of 40 - 49 years with a mean age of 42 years ( $SD = 6.7$ ). Just over 29% were classified as obese I and 25% were classified as obese II with an average BMI mean of 37 ( $SD = 7.45$ ). Full demographic information for participants included in analyses is provided in Table 4.1.

More than half of the PIF mothers (65.1%) reported having high health literacy and 61.3% reported they had good health status. Of the study sample, 36.5% affiliated themselves with the assimilation acculturation style. Over half of the participants (53.4%) reported they were employed (part time or full time), 24.6% reported an annual household income between NZ\$40,001 - NZ\$80,000 although 32.3% reported having a relatively low deprivation characteristic (3 to 4). Pacific PIF mothers had relatively high education levels with 47.4% reporting some form of secondary education and 32.7% reported some form of tertiary education. Health behaviour patterns were relatively good where 70.4 reported they did not have a cigarette in the past 7 days, 60.7% did not consume alcohol in the past 12 months however 47.6% had met the PA recommendations either 2 days or less (See Table 4.1).

**Table 4.1. Descriptive information of demographic variables (n = 503)**

<b>Variable</b>	<b>Total</b>	<b>n or (mean)</b>	<b>% or (SD)</b>
<b>Age</b>	503	(42.64)	(6.77)
< 39		194	38.5
40 –49		228	45.2
> 50		81	16.1
<b>Ethnicity</b>	503		
Samoan		254	50.4
Tongan		127	25.2
Cook Island		91	18.1
Other Pacific		31	6.2
<b>BMI status</b>	410	(37.10)	(7.45)
Normal		15	3.0
Overweight		46	9.1
Obese I		146	29.0
Obese II		77	15.3
Obese II		126	25.0
<b>Health literacy (frequency with which support is needed to read health literature)</b>	497		
Never (high health literacy)		328	65.1
Rarely		74	14.7
Sometimes		80	15.9
Often		6	1.2
Always (low health literacy)		9	1.8
<b>Health Status</b>	497		
Good		309	61.3
Fair		170	33.7
Poor		18	3.6
<b>Acculturation</b>	494		
Assimilationist		184	36.5
Separationalist		170	33.7
Integrator		58	11.5
Marginal		82	16.3
<b>Income (\$NZ)</b>	330		
Up to NZ \$40,000		121	24.0
NZ \$40,001 to \$80,000		124	24.6
NZ \$80,001 to \$100,001		85	16.9
<b>Employment</b>	499		
Employed		269	53.4
Unemployed		27	5.4
Other		203	40.3
<b>Education</b>	494		
Secondary		239	47.4
Tertiary		165	32.7
No qualifications		90	17.9
<b>Smoking status (previous 7 days)</b>	497		
No		355	70.4
Yes		142	28.2
<b>Alcohol (any) in the last 12 months</b>	497		
No		306	60.7
Yes		191	37.9
<b>Physical Activity</b>	495		
Less than 2 days		240	47.6
3 to 5 days		195	38.7
6 to 7 days		60	11.9
<b>Socioeconomic Status</b>	498		
High (No Deprivation Characteristics)		57	11.3
One		74	14.7
Two		103	20.4
Three or Four;		163	32.3
Low (Five to Eight Deprivation Characteristics)		101	20.0

Key: n = number; SD = Standard Deviation

#### 4.1.2 Demographic and behavioural factors among Pacific PIF study mothers

Table 4.2. represents the results of bi-variable analysis for associations between health literacy (low or high) and health and demographic variables in Pacific PIF study mothers. Statistically significant relationships were found between health literacy and age ( $p = 0.001$ ), ethnicity ( $p = 0.001$ ), acculturation ( $p = 0.001$ ), employment ( $p = 0.002$ ), education ( $p = 0.001$ ), smoking status ( $p = 0.001$ ), and alcohol status ( $p = 0.001$ ). As indicated in Table 4.2, the bi-variable associations between overall BMI ( $p > 0.456$ ), income ( $p > 0.095$ ), self-reported health status ( $p > 0.789$ ), physical activity ( $p > 0.209$ ) or socioeconomic status ( $p > 0.085$ ) and health literacy showed no statistical significance.

Pacific PIF mothers aged 40-49 years, and over 50 years were significantly less likely to have high health literacy in comparison with younger Pacific PIF mothers (OR 0.41, 95% CI 0.19, 0.59,  $p < 0.001$ ). Compared with Pacific PIF mothers identifying as being of Samoan ethnicity, mothers of Tongan ethnicity were 60% less likely to have high health literacy (OR 0.41, 95% CI 0.25, 0.67,  $p < 0.001$ ) but no significant differences were found between the reference group and participants who were of other Pacific ethnic groups.

Compared with Pacific PIF mothers classified as having an assimilationist acculturation style, those with a separatist or marginal style were significantly less likely to have high health literacy (OR 0.16, 95% CI 0.09, 0.32,  $p < 0.001$  and OR 0.20, 95% CI 0.09, 0.42,  $p < 0.001$ , respectively). Pacific PIF mothers who were classified in the 'other' employment status category were significantly less likely to have high health literacy, compared with those who reported being employed (OR 0.46, 95% CI 0.29, 0.73,  $p < 0.001$ ). Findings for education status showed significant associations where those whose highest qualification was achieved at secondary school compared to those who reported completing a tertiary level qualification, were more than nine times as likely to have high health literacy (OR 9.19, 95% CI 3.86, 21.83,  $p < 0.001$ ). Smokers were four times more likely to have high health literacy compared with non-smokers (OR 4.60, 95% CI 2.52, 8.37,  $p < 0.001$ ). Similarly, this trend was observed for those who did not consume alcohol in the previous twelve months versus those who did.

**Table 4.2. Odds ratios of having high (versus low) health literacy by demographic and health variables**

<b>Variable</b>	<b>Total n</b>	<b>n</b>	<b>OR</b>	<b>(95% CI)</b>	<b>P-value</b>
<b>Age (years)</b>	496				0.001
≤ 39		193	Reference		
40 – 49		225	0.33	(0.19, 0.59)	0.001
≥ 50		78	0.23	(0.12, 0.46)	0.001
<b>BMI</b>	408				0.456
Normal		15	Reference		
Overweight		46	1.26	(0.22, 7.29)	0.795
Obese I		146	0.59	(0.13, 2.78)	0.509
Obese 2		75	0.49	(0.10, 2.36)	0.372
Obese 2I		126	0.69	(0.14, 3.26)	0.639
<b>Ethnicity</b>	496				0.001
Samoan		250	Reference		
Tongan		126	0.41	(0.25, 0.67)	0.001
Cook Island		89	1.26	(0.63, 2.52)	0.516
Other Pacific		31	5.88	(0.78, 44.38)	0.086
<b>Health Status</b>	495				0.789
Good		308	Reference		
Fair		169	1.17	(0.72, 1.90)	0.529
Poor		18	1.26	(0.35, 4.49)	0.721
<b>Acculturation</b>	487				0.001
Assimilationist		181	Reference		
Separationalist		166	0.16	(0.09, 0.32)	0.001
Integrator		58	0.82	(0.28, 2.41)	0.718
Marginal		82	0.20	(0.09, 0.42)	0.001
<b>Income</b>	329				0.095
Up to NZ\$40,000		120	Reference		
NZ\$40,001 to \$80,000		124	0.82	(0.38, 1.79)	0.618
NZ\$80,001 or more		85	3.32	(0.92, 12.04)	0.068
<b>Employment</b>	497				0.002
Employed		267	Reference		
Unemployed/seeking work		27	1.33	(0.381, 4.63)	0.656
Other		203	0.46	(0.29, 0.73)	0.001
<b>Education</b>	429				0.001
Secondary		237	Reference		
Tertiary		165	9.19	(3.86, 21.83)	0.001
No formal qualifications		90	0.77	(0.450, 1.308)	0.330
<b>Smoked cigarette(s) in previous week</b>	495				0.001
No		353	Reference		
Yes		142	4.19	(2.10, 8.33)	0.001
<b>Alcohol (any) in the last 12 months</b>	495				0.001
No		304	Reference		
Yes		191	4.60	(2.52, 8.37)	0.001
<b>Physical activity*</b>	494				0.209
Less than 2 days		240	Reference		
3 to 5 days		195	1.26	(0.78, 2.04)	0.336
6 to 7 days		59	2.05	(0.88, 4.79)	0.096
<b>Socioeconomic status**</b>	496				0.085
High (No deprivation characteristics)		57	Reference		
One		74	1.56	(0.53, 4.60)	0.42
Two		102	0.71	(0.29, 1.75)	0.46
Three to Four		163	0.58	(0.25, 1.33)	0.19
Low (Five to Eight deprivation characteristics)		100	0.49	(0.20, 1.17)	0.11

Key: n = number; OR = Odds Ratio; BMI = Body Mass Index

\*Number of days in the previous week that the individual reported meeting physical activity recommendations (at least 30 minutes of moderate activity or at least 15 minutes of vigorous activity per day)

\*\*Classified using the NZiDep, calculated as the sum of positive responses to eight items used to assess socioeconomic deprivation.

## 4.2 Study 2: Perspectives of Pacific PIF study mothers and Health Professionals

### 4.2.1 Introduction

The purpose of this study was to explore the beliefs and perceptions of the Pacific PIF mothers regarding health literacy and public health related information. Participant perceptions and insights were collected in order to add depth and meaning to the quantitative research findings, and to identify key participant-derived themes on health literacy. During the qualitative discussions, literacy of public health related information referred to pamphlets and brochures which participants might see when visiting their doctor or nurse. Two approaches were used to collect information, firstly, allowing Pacific PIF study mothers the opportunity to discuss their opinions around public health related information in a focus group setting and secondly, discussing the experiences of health professionals while working with Pacific peoples (especially Pacific mothers) during their professional careers. In total, six Pacific mothers from the PIF study participated in two focus groups, and two health professionals participated in individual interviews. Table 4.3 shows the demographic characteristics of focus group participants. The health professionals interviewed were females of Pacific ethnicities who had at least five years' experience working with Pacific peoples (including Pacific mothers) in health professional settings.

**Table 4.3. Demographic characteristics of focus group characteristics**

Focus group participants	Age	Ethnicity	Health literacy level	Acculturation
P1	59	Samoan	Low	Marginal (Low NZ score, low Pacific score)
P2	43	Cook Island	Low	Assimilationist (High NZ score, low Pacific score)
P3	36	Cook Island	Low	Assimilationist (High NZ score, low Pacific score)
P4	38	Samoan	High	Marginal (Low NZ score, low Pacific score)
P5	37	Samoan	High	Assimilationist (High NZ score, low Pacific score)
P6	42	Tongan	High	Assimilationist (High NZ score, low Pacific score)

**Table 4.4. Characteristics of Health Professionals**

<b>Health Professional</b>	<b>Gender</b>	<b>Work Place</b>
HP1	Female	Pasifika Integrated Health Care Ltd
HP2	Female	Ministry of Health New Zealand

From the transcriptions of each of the focus groups and interview data, four key themes were identified, namely; empowerment, behaviours, policy change; and relationships, as outlined in Table 4.5.

**Table 4.5. Key themes arising from thematic content analysis of focus group and interview data**

<i>Main themes</i>	<i>Sub-Themes</i> <i>Focus groups</i>	<i>Sub-Themes</i> <i>Interviews</i>
1. Behaviours	<ul style="list-style-type: none"> <li>▪ Reading and using pamphlets or brochures from the doctors</li> <li>▪ Nutrition and physical activity</li> <li>▪ Smoking and alcohol related behaviours</li> <li>▪ Culture/ethnicity and religion</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reading and using pamphlets or brochures from the doctors</li> <li>▪ Nutrition and physical activity</li> <li>▪ Smoking and alcohol related behaviours</li> <li>▪ Culture/ethnicity and religion</li> </ul>
2. Relationships	<ul style="list-style-type: none"> <li>▪ Seeking support from family for health-related purposes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Establishing strong relationships with the community</li> </ul>
3. Empowerment	<ul style="list-style-type: none"> <li>▪ Mother's influence upon her respective family members</li> <li>▪ Empowering their children to make good lifestyle choices for improved health status</li> </ul>	<ul style="list-style-type: none"> <li>▪ Encouraging community to lead healthy lifestyles</li> <li>▪ Sense of Pacific mothers as the leading role model for their families</li> </ul>
4. Policy Change	<ul style="list-style-type: none"> <li>▪ Recommendations for health policy to implement practical strategies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Recommendations for health policy to implement practical strategies</li> </ul>

Contributing to these themes, topics around using health information (including pamphlets and posters from the doctors), nutrition and PA, smoking and alcohol related behaviours, culture, ethnicity, religion, developing strong relations with family and the community, sense of empowerment and practical health related strategies to improve public health policy arose from the focus group and interview data. The information revealed many different strengths, challenges and issues around interpreting, understanding and the use of public health related information and health related reasons in general (as outlined in table 4.5.). It must be noted however, more themes

could have been selected and were worthy of being discussed but were not discussed as often or had enough depth to consider these as strong dominant sub-themes. The key findings and commonalities found within the key themes will be identified and explained in detail below.

### **4.3 Theme 1: Behaviours**

The dominant theme that arose from the focus groups and interviews was behaviours. According to Minton and Khale (2014) a behaviour is defined as the range of actions and mannerisms made by individuals, (organisms, systems, or artificial entities) in conjunction with themselves or their environment, which includes the other systems or organisms around as well as the (inanimate) physical environment. It is the response of the system or organism to various stimuli or inputs, whether internal or external, conscious or subconscious, overt or covert, and voluntary or involuntary. In this context, behaviours were either related directly or indirectly to the perspectives of the participants in the study.

#### **4.3.1. Reading and using pamphlets or brochures from the doctors**

When asked the question “Do you currently use public health related information such as brochures or pamphlets?”, the initial response from each participant mother was no. One reason for this was because the information relayed was either too brief or did not encourage them to read information fully. Many participants reported an existing understanding of their (or their child’s) condition and no need for further information: *“I don’t need those pamphlets because I already know what my symptoms are” (P6)*. Some reported experiences of long term conditions and ongoing exposure to the health systems in relation to existing knowledge: *“No...because they’ve had it since they were babies and we’ll end up in hospital so you get educated more and more and then it just becomes a lifestyle habit of getting into and then having to have their inhalers on them” (P6)*. Most of the PIF mothers agreed that they would be more inclined to using public health information only if the information in the pamphlets or brochures was relevant or important to them and their families: *“If I see it on the wall now I don’t have to look at it. My kids don’t go through rheumatic fever they don’t go through those other diseases or sicknesses so I won’t use it....I’ve got no interest in it” (P4)*.

When discussing previous use of public health information, most PIF study mothers agreed the information helped them better understand the illness they needed support for. In terms of current information sourcing, alternative sources to pamphlets and

posters were sought by participants. For example, if they had little knowledge or understanding of their own, their child or partners condition, they would source further details of this condition such as the internet: *“Nowadays it’s on the internet... I’d rather look through that, but then if that doesn’t help me I’ll look for another way of looking for other remedies but pamphlets for me I can just skim through it. Some of the facts I already know through past experience and then I’ll probably just throw the pamphlet back out or put it back to where I got it from”* (P5). Almost all PIF mothers supported the notion that the internet is fast, convenient and a readily available source of information whether they sourced this information on their phone or at home.

Similar behaviours were reported by the health professionals working with Pacific peoples as primary health care nurses. HP1 stated when she visited community group sessions, Pacific mothers (especially the younger mothers) would take the pamphlets with them, and understood the information well. However, once they took the pamphlets home, she was unsure whether her clients were using this information or not: *“They [the young and older mothers] do take the information but when they go home we don’t know what is happening”* (HP1).

### **Use of Pacific language and images**

Both health professionals felt resources needed to suit the language attainment of Pacific peoples with the use of Pacific written language or pictures, so that Pacific people could better understand the information. This could increase the number of Pacific people using the information, since the availability of this information using only a European context was cited as a main reason Pacific mothers did not use the information more often. This reflected the behaviours of P1 as she required her children to translate the information in Samoan because she could not speak or read English fluently. When reading through the pamphlets or brochures with the Pacific people, HP2 would empathise with their situation despite their Pacific ethnic background: *“I just had to go through it and say look this is what it says but this is what it could be like more so for you as a Samoan as a Niuean as a Cook Islander and I think people appreciate that you’ve taken the time to consider that they’re not mainstream that they’re not like every other mother but you’ve considered the fact that they are Pasefika that they have a different sort of lifestyle and so you’ve adapted the messages for them.....and sometimes the wording in a lot of those resources the messaging is not appropriate so you’ve got to break it down into everyday language for our mothers*



*too*". More details around empowering Pacific people under theme 3 empowerment further below.

Furthermore, because there are so many other options for retrieving health related information such as the internet, the utility of pamphlets or brochures was becoming less popular when seeking advice on current health related issues: *"Back in the day much of the resources that were being developed weren't developed with a Pacific person in mind .....so either I had to tailor it to the audience that I was giving it to....or I just had to go through it and say look this is what it says but this is what it could be like... more so for you as a Samoan as a Niuean as a Cook Islander"* (HP2). Moreover, she felt that the best way to engage with Pacific people is through talanoa to create trusting relationships and alleviate the pressures of understanding the information. Her preference was to ask them in person to determine if they were ok. Hearing them say thank you for your help and for your services would suffice as a way to know if the information being explained was effectively working.

### **Influence of technology for health-related purposes**

Technology was an important theme that arose with the health professionals. In this sense, the health professionals noticed Pacific people were becoming more inclined to using technology such as mobile phones, to access the internet as a credible source of health-related information. Health professionals wanted to understand how to tailor information about health related issues in a format that is easily accessible and easy to use internet sites for Pacific peoples in particular Pacific mothers to use because of the increasing demand: *"Young mothers....The way in which they understand information better may well be through IT systems....social media all those types of approaches so I think what we need to understand is that we don't have one blanket one size fits all but that we look at different approaches so that it's catering for a whole range of generations as well as catering for learning styles that we've had amongst our Pasefika woman"* (HP2).

### 4.3.2. Nutrition and physical activity

#### Selecting healthy versus unhealthy food items

Selecting food items for their respective homes whilst shopping was based on perceived food palatability, food expiry date, or whether foods were inexpensive (regardless of their nutritional value) among all PIF study mothers. Issues around reading and understanding food labels are specifically discussed under the topic ‘Reading Nutrition Information Panels’ below. Participants’ reported knowing which food items were healthy and agreed they wanted to want to lead a healthy lifestyle for themselves and their respective families. Despite this, almost all participant mothers agreed that their financial circumstances and their palatability would determine the types of foods they would purchase: *“We want to make sure our children are eating the right foods...but it’s whatever we can afford”* (P4). Participants’ current situation (i.e. financial situation) determined the type of food items purchased in the home: *“At the moment that’s what I’m doing ...I’m not going by what’s healthy what we should be eating... we’re tight....so we just make week to week with what we can... so I don’t go by what’s recommended or what they say”* (P2).

#### Home-made meals vs take away meals

Historically, consuming meals outside of the home (i.e., ‘fast foods’, foods from takeaway stores) was reported as a luxury for some participants in their childhoods: *“If I ever saw something like pizza hut or kfc that was like a luxury to me”* (P3). Nowadays, purchasing meals from take away stores was common but in conjunction with home cooked meals: *“I kind of do half and half like I’ll say, ‘oh we’ll cook the chicken at home’ and then we can get some chips to eat”* (P3). Moreover, participant mothers also wanted to cook home-cooked meals but reported being either too busy or too tired from having worked long hours or looking after their children: *“I work night shifts so I usually sleep during the day.....and when the kids come back from school I have no time to cook a proper meal for them”* (P6).

With reference to the health professionals, these participants sensed that Pacific people were shy to talk about their current food environment situation. Health professionals reported wanting to share with Pacific people that it was acceptable to maintain values and behaviours learnt within the home (e.g., cultural values and teachings): *“We have heard about obesity and Pacific and so it’s almost like there is a real strong judgement on Pasifika parents for the way in which they feed their children so many times many of*

*our Pasifika mums do not want to talk about that because they think they feel as though people will judge them on giving their kids the wrong foods” (HP2).* This assumption proved somewhat true during the focus group discussions, as there was reluctance from the PIF study mothers to talk about the types of food choices they were making in the home. Conversely, these participants were confident when justifying why these foods were considered the only option they could choose.

HP1 noted seeing posters for the ‘5+’ media campaign (to promote eating 5 or more serves of fruit or vegetables per day) in the homes of some Pacific families she visited. This reassured her that in fact Pacific peoples were using the information they had been given. HP2 found that working with Pacific peoples, especially Pacific mothers, that it was crucial to be compassionate towards the situation of these mothers prior to providing health related information to infer behaviour change: *“Rather than just launching straight into information about nutrition. I think that’s really rude for health professionals to go in and immediately start saying you need to do this this this and this...this is all the research says and this is what this says and this is what the heart foundation says and you have no idea about where that family has been through or where that family is at so if you go into a home and you see anything around this that suggests that they’ve got the money to buy fruit galore then you have to work with where that family is at and help them to understand what they need to do in order to provide the best that they can”.*

### **Reading nutrition information labels**

When asked about whether PIF study mothers used nutrition information labels or the ingredients list when purchasing preferred food items, they said they did not look at the panels or the details within these panels. Fat, salt and sugar were identified as three main micronutrients to be aware of for health concerns but overall participants did not understand what the numbers meant within these labels. Thus, participants felt more inclined to prioritise purchasing food items based on palatability and cost (as discussed earlier): *“I look at price... I don’t even bother with it [the nutrition information label] .... whatever tastes good.... whatever’s cheaper.... just skim right through it [the label]” (P4).*

### 4.3.3 Physical Activity

When asked: “what does it mean for you to be healthy?” all PIF study mothers agreed physical activity was a component of being healthy. Playing sports and recreational activities were the two most common types of physical activity mentioned by the PIF study mothers. Participants’ children from ages 13 to 18 years were currently registered in one or more school sports teams such as touch or touch rugby: *“We are always rushing to all these sports events.... I think sports are really high [children are highly active] in our household too so I think yeah they’re healthy” (P4)*. Regarding recreational activities, one of the PIF mothers would go for a walk with her husband at their local park for the purpose of being ‘healthy’. HP1 experienced similar behaviours when she attended community exercise sessions. Many of the Pacific community would engage in the exercise sessions which included Zumba but did mention that some younger Pacific mothers would either not attend because of having worked all day or those mothers who would attend, would not participate and would say they were either too busy or too exhausted from having worked long hours that day.

### 4.3.4 Smoking and alcohol related behaviours

Smoking cigarettes and drinking alcohol were reported by all PIF mothers as behaviours to be avoided in order to be healthy. PIF study mothers understood they either had to stop or reduce the number of cigarettes they were inhaling and/or the amount of alcohol being consumed. Conversations focused on the importance of improving their behaviours for their children’s well-being. Participants reported being told by their children to try and stop smoking or drinking, and suggested this was due to children’s health education classes at school. These participants shared their aspirations for their children’s health behaviours that sometimes conflicted with their own health behaviours: *“when they grow up they’re not going to touch a cigarette, they are not going to drink they are going to live the good life which is good and I am pushing them to that state” (P1)*.

### 4.3.5 Culture, ethnicity and religion

Culture, ethnicity, and religion were factors influencing the thoughts of PIF study mothers in the context of healing from illnesses. For example, one PIF study mother advised her younger son to use warm milk to help reduce the pain and redness of his eye. Further, using traditional herbal green tea leaves was mentioned as a way to soothe aches and pains. These remedies were drawn from participants’ Pacific upbringing and

the normal accepted way to cure such conditions. Participants reported their children were reluctant to use these traditional remedies and instead preferred Western prescription medication.

Another strategy for healing was religion, having faith in the Lord or a religious belief was seen as an effective means to deal with health-related illnesses especially for older PIF mothers. The health professionals recognised that these factors were common when working with Pacific people: *“We as Pacific people all come from different ethnic groups so we all have different techniques”* (HP2). She went on to say: *“often many of us who are Pasifika or even Samoan, our faith is what helps us to keep going even when it’s difficult”*. In the context of Pacific people, the term difficult meant times of struggle in relation to their holistic way of life.

Regardless of these techniques health professionals reported reassuring their Pacific communities and families that it was alright to rely on the remedies they have been advised to use by close family members: *“she accepted where I was at but was willing to ask the right questions to get the right response out of me and I think that is more important the ability to listen to people, ask the right questions and then not to judge people but just to say you know what, that’s ok”* (HP2). HP2 felt that there was disconnect with Pacific people who were born in New Zealand from their ethnic background and their philosophical characteristics. Therefore she would explain to those Pacific mothers who were born in New Zealand, unaware of their heritage (generally the younger mothers) to encourage them to learn more about the fact that there is a Pacific way of doing things: *“many of them come with a mixed bag of heritage so some of them perhaps they’re not so aware of their own culture but they know they are Pacific and so they are really proud of being Pacific but they don’t know what it is that I can then pass onto my kids or what sort of Pacific tools do I have of my own bag of who I am as a Pasifika person that I can pull out and say you know what these things are really important I want to teach you how to make that”* (HP2).

## 4.4 Theme 2: Relationships

### 4.4.1 Seeking support from family for health-related purposes

Seeking help from family members was commonly cited as a method of gathering support with health issues. These included, help to read or interpret pamphlets or brochures written in English, or advice on traditional remedies. P1's second language was English therefore she required assistance with reading and understanding health related information: *"We use my son or my daughter to read the information to us either in English or Samoan"*. Half of the participants stated they would either ask someone they knew within their family to help treat low-grade conditions such as cuts, grazes or eye infections, but not others, such as asthma. One mother reported feeling the need to seek advice from a spiritual healer because her son was "acting rather strange". After trying to take him to the doctors and using prescribed medication, his condition was worsening. She reported that her son's behaviour returned to normal and he was feeling more like himself once he had been seen by the spiritual healer.

The health professionals also recognised the main support system for Pacific people were their families. When working with Pacific mothers, the health professionals understood at the end of the day, despite their relationship and the advice given as a health care practitioner, the parents of the Pacific mothers would be their closest support system as this was the Pacific way of living: *"Whether we like it or not, parents have a huge influence on what we do...seeking advice from those who brought us into this world is common and a way of doing things the 'right' way...culturally"* (HP2). Particularly for younger Pacific mothers aged between 25 to 35 years of age, she explained that health practitioners needed to empathise with their current situations whilst trying to provide information that is of valuable use to their health: *"People tend to think no let's get young Pacific young people together and just talk to them but it doesn't work that way so those are the sort of things that I then say, at which part of that conversation with young people do you consider the voice of parents in that because that's really critical"*. She went onto say that not only are their parents influential people in their lives but also their grandparents and their closest friends: *"Parents... young people as much as they want to be independent they're the way in which they parent the way in which they develop as they look after their children is very much determined by what their parents say to them what they're grandmother says to them so we always need to keep that in the back of our mind around I'm always conscious when I used to go into homes who was living with that mother or who was*

*greatly influencing the way she did what she did because I knew that her breast feeding whatever view she had on breast feeding came from someone else”.*

#### **4.4.2. Establishing strong relationships with the community**

Working with Pacific people required a specific way of engagement to develop relationships when trying to support their situations in health-related settings. For HP2, being patient *“I might show it to them but then I’ll say this is what this means, talk it through and then wait for them what do you think then maybe wait for a response and then carry on so it is about having a conversation”*, compassionate, empathetic and being able to relate towards their situation was a means to allow an authentic relationship to occur. Talking with them and seeing them in person was an effective way to gain this sense of trust and sense of security for both the individual and herself. She explains: *“The talanoa is about the back and forth...them saying what they think, asking and feeling they can trust you to ask the dumb questions and I think that’s really where it comes to is about a trusting relationship that you can say something and they can say something back and you feel as though your being open with them or they being open with you but that comes about not through necessarily the talanoa but everything you’ve done leading up to that”*.

She further explains that the first initial stage of introducing yourself is vital for establishing strong relationships with the community: *“because I think people talk about talanoa but they don’t realise and maybe I’ve got it wrong but what they don’t realise is that everything has to develop from the point of even establishing that relationship where they make that first phone call..... they might not see you and I think the thing for me is because I don’t often sound like a Samoan on the phone”*. Followed by an initial formal introduction of being of Pacific ethnicity to establish a sense of trust: *“I have to find ways to say ‘look my name is so and so’ and I’m Samoan’ sometimes you just say you’re Pasefika and you also get past that initial hesitation because they think oh she’s a palagi what does she know about me so I sort of draw that into the conversation so I think the talanoa is based on the relationship building that you’ve had even before you’ve done the face to face (interaction)”*.

## **4.5 Theme 3: Empowerment**

### **4.5.1. Mother's influence upon her respective family members**

Almost all PIF study mothers reported their health, their child's health, and their families' health was a priority. As mothers, they would implement their role by encouraging their children to make healthier choices to lead healthier lifestyles: *"As well as their lunches, we take our children to the doctors and we help them with their homework a lot of the time"* (P3). Even though the term empowerment was not mentioned, the theme arose from the influential nature of their roles when discussing their experiences with health-related ideas. Empowerment is the capacity of individuals, groups, and/or communities to take control of their circumstances, exercise power and achieve their own goals, and the process by which, individually and collectively, they are able to help themselves and others to maximise the quality of their lives (Adams, 2008). Participants would encourage their children to listen to health education advice being taught within their schools, or by making healthier food choices such as disguising vegetables at dinner or selecting fast foods with vegetables. However, essentially, they wanted to make sure their children were well fed and safe. HP2 supported this statement and stated that no parent intends to feed their children food items that lead to unhealthy lifestyle diseases that ultimately want their children to be happy and well fed: *"I think you have to understand too that at the end of the day what I've realised that in all of my line of work is that no parent ever sets out to make their children fat. No parent sets out to give their children the worst type of food either so in our heart of hearts as a parent you just want the best for your children you want to provide the best food possible"*.

### **4.5.2. Empowering the community to lead healthy lifestyles**

During the interviews with each health professional, the notion of empowering Pacific peoples was at the forefront of the ideas proposed in relation to health-related information. In this context, both interviewees acknowledged the significance of empowering Pacific people for improving their health behaviours. Two main reasons were proposed for this: 1) Numerous Pacific-specific barriers to optimal health were experienced by Pacific people (e.g., spiritual healers), and 2) Negative statistics on Pacific health and well-being (e.g., around diabetes and obesity prevalence).

Further, HP2 emphasised the importance of the concept of access to health-related information and solutions for improved health outcomes. Not only was the notion of



empowerment at the community level of importance but also at the professional level. This was a significant component to empowering Pacific people as these relationships would create an environment that would allow for better informed policies or decisions (further explained in theme 4). Essentially, they considered their role as health professionals as being able to understand how to work best as individuals within their own right to deliver services that best served Pacific people. Thus, whether directly (i.e., delivering health services) or indirectly (i.e., influencing fair policy changes for Pacific peoples), they felt empowered to support others to lead lifestyles that promoted better quality of life. For both health professionals establishing that first initial trusting relationship was vital followed by conversations that allowed the individual to discuss their health-related circumstances. For HP2 she found that as a health professional you must empathise with the members of the community they are working with to develop a sense of trust through talanoa (as mentioned in theme 2 – relationships) followed by further discussing their understanding of nutrition related knowledge and behaviours: *“so sometimes it’s come out of a lack of awareness and so you need to understand what is their base knowledge around food and what’s important for their children and then once you’ve established that once you’ve established the relationship first then you have permission to then go into the next questioning which is around trying to understand what their level of knowledge is and then understanding what’s in their hand that they’ve got that they can bring”*.

She further empathised and elaborated on the fact that health professionals must take into consideration their surroundings and their current financial or living situation before any new knowledge around nutrition related information should be mentioned: *“because at the end of the day you can say well you need to do this this this and it’s about identifying new you know you talk about the risk factors and the protector factors and whilst there are many people who immediately go to the risk factors that say they don’t have this they don’t have this they don’t have this we can say what are they protectors family factors for that family; they have grandparents who are living with them, they have other family members that can support them so you begin to understand what are the protector families the fact that everyone in that family speaks Samoan so whilst it’s not linked to nutrition it’s absolutely linked to the wellbeing of that family and that’s more important than blasting them about nutrition and I think that’s what we forget too as health professionals”*. As nutrition is only one component of their health and well-being: *“We solely focus on the one key thing but don’t look at housing we*

*don't look at the family dynamics and I think that that's probably more important and you don't understand that or you don't know that until you've had the conversations the talanoa to understand those things first that doesn't necessarily mean that you have to take a whole 2 hours to do that you can do that very simply if you develop the skills to just have those conversations ask the right questions and ask them in the way that's going not going to get their backs up but that's going to help them understand that what you're trying to do is give them the best information possible and it's for free”.*

#### **4.5.3. Cultural identity as a form of empowerment**

Both health professionals acknowledged and understood that being a Pacific person as a health professional was an asset to helping Pacific people with their health-related purposes. As a qualified health professional, HP2 felt as though being of Pacific ethnicity and grasping the value of her heritage as a Pasifika person was an essential component to being a valuable asset with supporting Pasifika peoples: *“Because I think what you bring with you and what I've brought with me to who I am as a nurse really helps other people... ..I think a lot of that [mentoring] starts with how we work with them to say it's ok to do.... to use your intuition, to use the skills that you've developed as you were growing up and to understand that that's ok, that you don't have to take on other types of cultural practices to be a better person or a better mum, that there are a lot of things within our own ways of growing up as a Samoan woman (Pasefika for that matter) where you can pull out some of those things how we would work alongside our mothers how we would work alongside our families that we intrinsically use in our own parenting”.* She viewed her experiences as a Pacific mother an essential and crucial component to benefit the health and well-being of her clientele of Pacific ethnicity: *“See the thing is what we tend to think is that parenting is different for other cultures too but I think for woman intrinsically what they want to be told is ‘hey you're doing a great job’ or they want someone to validate what they did know like the way they are raising their children is ok that they're doing a great job and so I think that runs into how we parent as a Pacific person or how we parent as a Samoan person”.* Her cultural values included being raised to have a religious faith, respecting and valuing your family especially the elders by serving them: *“So who I am as a Samoan woman and how I was raised then translates into how I then become a Samoan mum before I am a Pacific mum because everything that I grew up with learning about the Pasefika or Samoan values about what it is to go to church to go to Sunday school, how we do things, how we serve people when they come to the door all of those things then*

*translate to how we then pass on those things to our own children and what's important to us because ultimately what's important to us meaning those values that we were raised with how we treat people with respect how we speak to people even how we serve when you have other people coming to the door a cup of tea how you work in a relationship with your husband those are the things that you've observed from your own parents or from your family members and so then you sort of translate that into your own parenting when you have children".*

She also found it important to have an identity as a person of specific Pacific ethnicity rather generalising as a Pasifika person: *"I think I'm Samoan first before I'm Pasefika".* The generalisation proposes the notion that we all fit into one specific sphere where in actuality, each Pacific ethnic group has their own set of values, beliefs and cultural values: *"Pasefika's a term that we've placed upon ourselves because people know Pasefika sometimes the Samoan, Tongan, Niuean has something that's foreign to people and they tend to understand Pacific but they don't necessarily understand the difference between a Samoan mum and a Niuean mum and I think there are some differences but ultimately what describes us as Pasefika is that we have a way of doing things that's maybe slightly different from mainstream mothers"* (HP2).

### **Language attainment and empowerment**

HP2 felt that speaking her native language as a way for Pacific people in support of their health and well-being was important for empowerment: *"I see language as critical.... I've learnt Samoan as I was growing up and I've seen the value of it to my own growth is really important. I know the value of having a first language especially when you look you're not palagi...you look Samoan or you look Pasefika and so it's important that those sort of things are, when you talk to woman who are Samoan or Pasefika, you say to them, speak to your children in their first language. Help them to understand even if you don't understand (if you're not totally fluent in your language) get other people alongside them so they can learn or even for yourself because that's really important for their well-being"* (HP2). As well as her Samoan values including her faith in God: *"So you take what you know to be normal growth and development and you incorporate elements of Pacificness and if it is about going to church (which is not so much about religiosity) but having a faith base to your family life and being a parent then that's really about having something that you can use to cement your family too".* She empathised that their culture and upbringing is ok to be embraced and understood that during tough times relying on your religious faith is ok: *"Because often*

*many of us who are Pasefika or even Samoan, our faith is what helps us to keep going even when it's difficult and I think too I understand what it's like to not have a great deal of money".*

### **Health literacy and health status**

When asked if health literacy is the way forward for helping Pacific peoples' health outcomes, HP2 agreed that yes, it is important: *"I have to say yes because I mean the true sense of health literacy is really about breaking down the information so then you can make an informed decision"*. She understood that health literacy was an important aspect for Pacific peoples' lives in order to improve their health related outcomes in particular conditions such as rheumatic fever: *"I think what's important is to have the right people who can break down that information so that it's presented in a way that helps me to make the choices that I need to make because that's what health literacy is about.....about being able to take information, filter it, consider it and then make my decisions based on that information that I have got"*.

She went on to say that health literacy is a component of work that is a health policy priority at the moment because of the low health literacy statistics in relation to Pacific people: *"I can honestly say that we are really pushing the health literacy component in almost every part of the work that we do even to maternity services around child health services, so tamariki ora the child health checks trying to understand how do we break the information down before school checks is another one so all of that is now sort of like a campaign helping what before school checks means to the well-being of children and how we as parents can make decisions around getting those checks done"*.

HP2 further explained the process behind the role of the Ministry of Health in terms of creating policies being implemented by community advisors to the general public including the Pacific population: *"there is a lot of work that's happening within the Ministry of Health that helps us to consider 'so what are the health literacy levels for the groups that we are going into now consider?'. So if you think about the fact that there's a lot of work that's been done if you think of the rheumatic fever just as an example we knew that we took that into account that Pacific people had low health literacy so what we did was we made sure that part of the funding that went into this we knew that many of our Pacific children were affected by rheumatic fever"*.

The process also included liaising with each Ministry of Health branch to gather credible resources to help support each community by raising awareness around health

literacy: *“so what we did was we put aside funding that we contracted providers in the Auckland area and the Wellington area that they could go specifically to our Pacific communities to help them to grow the awareness around it. So, what they’ve been doing is going out to communities, breaking down the information, teaching them because we know that if it starts with a sore throat then who is it that’s supposed to make the decisions around taking them to the doctor or not? It’s our families, it’s our parents so a lot of the work that we are currently doing has to take that into account”*.

#### **4.6 Theme 4: Policy Change**

##### **4.6.1. Recommendations for health policy to implement practical strategies**

###### **Recommendations for health and nutrition related information**

Overall, most participant mothers wanted to make recommendations to the Ministry of Health regarding health related information. Suggestions included creating clinics within small community groups to better understand health related issues as well as nutrition related information. In agreement of this statement, P3 and P4 added, using a coding system with the use of colours or a traffic light system could help people understand which food items to select: *“Yes...there needs to be other ways to help our people practically rather these pamphlets and things because I never use them”*. With regards to using pamphlets and brochures, when the researcher probed whether the language should be translated into their native language, they agreed this would be helpful, although there was more emphasis on suggesting practical changes such as a community clinic.

Based on HP2’s experience, it was identified that significant practical changes were required to help support Pacific people’s health. She understood that at the policy level her role was to help her fellow employees to understand there are other sources of information to support Pacific peoples particularly with their health: *“For me then .... the strategy is how do I then support them to identify key people ...how do I make it work so that they can come and talk to the right people”* (HP2). Based on HP1’s experiences she suggested creating health care clinics that catered to traditional Pacific related illnesses that provided Pacific herbal remedies, Pacific masseurs, or spiritual healers. Especially because of her personal experiences in relation to spiritual healers and the fact that they have worked for her and her family.

HP2 understood that there were serious changes that needed to be made at the health professional and health policy levels but acknowledged that these changes would pose

challenges for health professionals and policy makers to undertake: *“Well I think the challenge for us who are working at any sort of level like whether it’s DHB or whether it’s the Ministry of Health is that you have to take care of the whole population but are we doing the best possible probably, could we be doing more I think there’s things that are in place to support better health for Pacific but do we need to do more? I think we do and I think the challenge is really about people understanding that there are some groups who have really poor health outcomes”*. She went on to identify many challenges that arise for health professionals when delivering services for Pacific people: *“Much of that isn’t just about changing the health system, it’s about how do we interact with the education system, how do we interact so that there’s better housing for people, how do we interact so that there’s better support for young mothers so that they can stay at home and look after their children for whatever length of time, that they’re meant to that that’s the best possible start to the lives of their children so we could be doing more”* (HP2).

In support of these challenges, she emphasised the significance of having professionals of Pacific ethnicity to be at the health delivery and policy level to be a voice for Pacific people in support of finding solutions to Pacific health problems or issues: *“This is where it is really important to have people like myself and other people who have knowledge in positions of influence to be able to be in that space where they have the conversations to say what about Pacific people, here are some options on how we can do it better and here is the information like the research.... this piece of work that you’re doing. So that’s part of what I do even now is that I have input into a lot of the resources that are now being developed. When I was new when I was a nurse or a registered nurse or a Plunket nurse back in the day much of the resources that were being developed weren’t developed with a Pacific person in mind. They were developed with a mind that these were going out to mainstream so either I had to tailor it to what the audience that I was giving it to”* (HP2).

## Chapter 5: Discussion

### 5.1 Introduction and summary of key findings

The extremely high prevalence of NCDs such as obesity, type 2 diabetes, CVD, and some cancers has been declared the worst public health epidemic of the 21<sup>st</sup> Century (WHO, 2013c). NCDs are the leading cause of death globally, responsible for approximately 38 million deaths per year (WHO, 2014). In New Zealand, Pacific people fare worse in terms of these NCDs compared to all other ethnic groups (MoH, 2015a). Fifteen percent of Pacific adults have one or more NCDs compared to 25% of the total New Zealand population. An estimated 89% of Pacific people aged 15 years and over are classified as obese or overweight, 65% of Pacific adults are obese and 55% of Pacific children (including those as young as two years of age) are obese (MoH, 2015a). While the socioecological model (see Fig. 3) aids as a guide to understand factors related to NCD risk in individuals, a deeper understanding may be gained by application of population-specific models of health. For Pacific people, the fonofale framework (see Fig. 4) is helpful particularly because the framework includes aspects including religiosity and culture specific to Pacific epistemology (Tukuitonga, 2013a). One area that is not well understood across these two health models is that of health literacy in relation to NCD risk factors and outcomes. The factors associated with these ill health outcomes particularly for Pacific people are numerous and complex and include social deprivation, socioeconomic status, culture, religiosity, and education (MoH, 2015a). Social and cultural determinants of health need to be addressed to understand the underlying factors related to poor health status. Such factors may include (but are not be limited to) culture, religion, education, socioeconomic status (Braveman et al., 2011; MoH, 2012c) and health literacy (Kickbusch, 2001; Kutner et al., 2006; Schillinger et al., 2002). Health literacy is of particular interest as this factor has not been studied to date in the context of health of Pacific people living in New Zealand. It is possible that the high rates of NCDs observed in the Pacific population are in some part associated with low levels of health literacy.

International evidence has shown that the prevalence of inadequate or low health literacy was higher in females, older females, and adults aged 50 years and over (Gary, McGuire, McCauley, & Brancati, 2004). Asian (Ishikawa & Yano, 2008; Kim et al., 2004; Sarkar et al., 2010), African American and Hispanic ethnic groups, those with low language attainment (Kim et al., 2001; Schillinger et al., 2002) and those with lower socioeconomic status (Marks et al., 2010; McCleary-Jones, 2011) were also more

likely to have low health literacy compared with their counterparts. Health literacy has also been associated with culture, religiosity and health outcomes (Harris, 2000; Kim et al., 2001; Schillinger, 2010; Williams et al., 1998a) including asthma and type 2 diabetes. It is possible that lower health literacy may relate to risk factors for NCD and NCD prevalence, through a reduced understanding of the impact of behaviours on the health of an individual or their family members. Parental health literacy may be of particular relevance, both for the health of the individual, for the health of their family members and through their role as parents/caregivers.

At the inception of this study, no research on health literacy and health outcomes or risk factors in Pacific parents in New Zealand had been published. Even though modern lifestyles dictate the need for two working parents in the home and providing for their children and their respective families (Biernat & Wortman, 1991), in Pacific culture, Pacific mothers within their respective families traditionally retain primary caregiver roles, such as purchasing and preparing food (Ministry of Social Development, 2004). The fact that they are leading role models within the home could translate among their offspring therefore Pacific mothers were selected as a group of particular field of interest. The aims of this thesis were to: (1) describe the context of NCD prevalence and associations between health literacy and health, internationally, and with a focus on Pacific people living in New Zealand, (2) measure the relationships for health literacy with socio-demographic, NCD risk factors, and body size in a large sample of Pacific mothers living in New Zealand, and (3) gain an in-depth understanding of social and cultural factors contributing to these relationships through qualitative methods. The socio-ecological model (Figure 2) and the fonofale framework (Figure 3) were used to help explain how these factors are associated with health outcomes among Pacific people in the context of health and well-being. Relationships were found between health literacy and social and cultural factors, and between low health literacy and poor health outcomes across a range of population groups as noted above. However, information on health literacy and health outcomes among Pacific people in New Zealand was non-existent.

Research gaps identified from the literature review (Chapter 2) informed the methods and processes for the current study, as outlined in Chapter 3. The empirical research involved: (1) quantitative examinations of relationships between health literacy in six Pacific mothers and key socio-demographic and health factors identified from the literature review, (2) face-to-face interviews with health professionals working with Pacific people, and (3) focus groups with Pacific mothers to elucidate quantitative



research findings and generate new insights. Quantitative research findings revealed associations between low health literacy and age, ethnicity, acculturation, employment, education, smoking status, and alcohol status. Health outcomes such as BMI, and factors including income, self-reported health status, PA or socioeconomic status, and health literacy showed no statistical significance. The qualitative discussions revealed different philosophical views, strengths, weaknesses, attitudes and behaviours towards health-related situations, summarised within four key themes: behaviours, relationships, empowerment, and policy change as described in detail in Chapter 4. These themes helped explain the reasons as to how and why Pacific people and in particular Pacific mothers were using health information (or not). Of these themes, the notion around behaviours dominated each of the other themes and tended to overlap and intertwine; where one issue related to and often caused another. Most were expressed and explained in the context of Pacific health and wellbeing, aligning with the fonofale framework. Several novel findings emerged, related to use of health information, comprehension of information, preferred information and health service delivery modes. Issues around conflicting messages and priorities were observed, for example where traditional health practice did not align with information being provided through public health services. These issues and key findings are explored in more detail below.

## **5.2 Contextualising research findings: Health literacy versus use of health information**

Findings from the quantitative and qualitative studies showed a mismatch between health literacy and use of health information. Counterintuitively, positive relationships were found between health literacy and smoking status and alcohol consumption in the quantitative analyses. Smokers were four times more likely to have high health literacy compared to non-smokers and those who consumed an alcoholic beverage in the past 12 months were four times more likely to have high health literacy.

These findings align with those of Arnold et al. (2001) who investigated the health risk behaviours among low-income pregnant woman and found older females with adequate health literacy were more likely to have higher rates of smoking compared to those of low health literacy. Interestingly, those of European ethnicity were more likely to smoke in comparison to African Americans (34% and 8% respectively). Those who had low health literacy were more likely to report never having smoked. These observations are similar to a study conducted with Australian mothers, whereby despite having

adequate health literacy and a good understanding about healthy nutrition behaviours, these mothers continued to consume unhealthy processed foods (Hesketh et al., 2005). Of note, these unhealthy nutrition behaviours were reflected in their children.

With reference to this study, regardless of their level of health literacy, participants reported they wanted their children to avoid these behaviours in order to be healthy. The participants understood that they needed to reduce the number of cigarettes and alcohol being consumed to be healthy, more importantly to ensure their children would not experience these unhealthy behaviours later in life: *“when they grow up they are not going to touch a cigarette, they’re not going to drink [alcoholic beverages], they are going to live the good life which is good and I am pushing them to that state” (P1)*. Similarly, conflicting patterns emerged for age, which was positively associated with health literacy, yet participants who were older in age (> 50 years) cited language barriers in terms of interpreting health information.

These findings suggest that health literacy may not play a significant role in health behaviours, and that other factors may be more important to target for improving health. For example, several studies show cigarette smoking and consuming alcoholic beverages are associated with living in most deprived areas, unemployment, and lower education levels (MoH, 2012). Wolf et al (2007) found that it is unlikely that inadequate health literacy affects health outcomes via health behaviours including smoking and alcohol consumption, rather more plausible pathways that have a more direct effect on health status such as chronic disease knowledge, self-management skills, and the culturally appropriate and timely skills of preventative services. To some extent, it is also possible that the measure of health literacy was inadequate in accurately representing health literacy in its traditional sense, that is, being able to read and interpret health information accurately. Culturally-tailored questionnaires or measures are sometimes important because they can include appropriate language and terminology, as well as culturally-relevant examples of activities that are familiar to the target audience. This helps because the intent of each question may be more clearly conveyed, which supports respondents comprehension, and potentially increases accuracy (Moy, Sallis, & Tanjasiri, 2010). In the context of the current study findings, it is possible that the concept of ‘health literacy’ needs to be reframed. It appeared that participants were generally capable of reading and interpreting health information, however the information being delivered (and the method of delivery) was not seen as appropriate or relevant, and did not acknowledge the significant cultural aspects of health for this group. Discussions with participants revealed little-to-no use of health information, which suggests that although health

literacy may be adequate, health and nutrition related messages are not being well received. In particular, Pacific PIF mothers cited low use/need of health information because they ‘already knew it’, it was ‘not relevant’ and was ‘non-Pacific specific with the use of pictures and diagrams’. As well, the format of delivery was not always relevant or adequate, in some instances information was considered ‘too brief’, ‘repetitive’, or ‘non-Pacific specific’. For example, text was written in English rather than their native language hence they required assistance with interpreting written information.

### **5.3 Improving delivery and uptake of health information**

#### **5.3.1 Talanoa**

In-depth interviews with health professionals revealed a need to prioritise face-to-face meaningful talanoa for provision of health information with Pacific people, particularly older Pacific mothers. Several studies exploring the attitudes and behaviours of Pacific people have found that when working with Pacific people, the best way to change behaviours is through face to face interaction or talanoa (Vaiioleti, 2006). Meaningful talanoa must be expressed in a way that incorporates the values and belief of the individual to develop a sense of trust. This then allows the individual to have the confidence to express their opinions confidently through deep and meaningful talanoa (Suaalii-Sauni et al., 2009).

Health professionals observed greater impact on delivery when they utilised talanoa, encompassing individual and family values and simultaneously linking this with public health messages. A high level of trust was crucial to effectively engage with and motivate their Pacific community to share the essence of their personal life stories and home/family life. This was deemed essential, to enable health professionals to effectively share and translate health information. In part, this trust came from working with a Pacific person, ideally an individual of the same Pacific ethnicity and gender. Although, because participants primarily involved were female, using females as evidence to support this notion is required particularly in health-related settings. Talanoa was mentioned as an important strategy to use in two different settings: 1) to establish meaningful relationships, and 2) when dealing with Pacific people. As one of the health professionals advised, she loved working with Pacific people and understood the importance and value of respect as a means to establishing great relationships. She felt that establishing a positive relationship with clientele of Pacific ethnicity is best when trying to guide them through the process of reading pamphlets, or trying to

understand health related concerns. Even the PIF mothers preferred to talk about their issues with closest family members and discussed their health issues with their closest friends. Vaioleti (2006) explains establishing relationships with talanoa must integrate aspects of the Kakala such as the beliefs and cultural values with quality conversations with Pacific people. This then reinforces the fact that in order for Pacific people to respond to be receptive to these health messages and be aware of their health-related situations, establishing vital relationships is essential: *“Whether we like it or not, parents have a huge influence on what we do.....seeking advice from those who brought us into this world is common and a way of doing things the ‘right’ way...culturally” (HP2)*. This indicates a need for increased Pacific capacity in the workforce such as Pacific health advisors, Pacific doctors and nurses, and appropriate time allocation for adequate talanoa.

### **5.3.2 Internet access and technology**

A number of opportunities were identified to contribute to greater use and relevance of health information. Sources of information varied from paper-based such as posters to internet delivery. Studies have shown internet use for health-related reasons are generally associated with youth, being female, and higher education status (Hanauer, et al., 2004; Kamalu, 2012; Scheppers et al. 2007). Often there is an assumption that access to the internet and use of technology to access the internet is low among communities of lower socioeconomic status and ethnic minority groups (Kamalu, 2012). This theory was not reflected in the discussions with the participants of this study. Participants insisted on using their mobile device to access the internet because of its convenience and availability of easy to use websites (e.g., ‘google’) to access health information. The health professionals understood this behaviour was becoming increasingly popular among their Pacific clientele in particular young Pacific mothers so they encouraged this behaviour. Simultaneously all participants identified a need to create and design health based websites that incorporate Pacific specific information to cater to all Pacific groups: *“What we need to understand is that we don’t have one blanket one size fits all but that we look at different approaches so that it’s catering for a whole range of generations (HP2)”*. Overall, there was a preference from participants in search of and receiving information by using mobile devices to access the internet.

### **5.3.3 Embedding health information within individual cultural contexts**

Unique findings from the discussions with the participants were that elder family members were key sources of health information, and that this information often conflicted with current public health messages. Using organic medicinal remedies such as green tea leaves and coconut oil for body aches and pains, using warm milk to soothe a sore eye or seeking help from a Pacific spiritual healer were provided as examples. These behaviours conflict with general health practice whilst trying to deliver health information including nutrition messages (Medical Health Research Council, 2010). As Basset-Clarke et al, (2012) found, older Pacific people have views and belief around medications which can differ from New Zealand European people.

Understanding, acknowledging, and respecting an individual's values when sharing health information consistently arose as a key priority. Quantitative findings from Study 1 (see Chapter 4) showed ethnicity and acculturation were associated with health literacy. PIF mothers who affiliated with the separation or marginal acculturation style were significantly less likely to have high health literacy compared to those of assimilation acculturation style and Tongans were 60% less likely to have high health literacy compared to Samoans. However, no significant differences were found for other ethnic groups. Similar findings were found in the ALL Survey where adults of Tongan descent were less likely to have high health literacy in comparison to those of other Pacific specific ethnicities (Lawes, 2009). Based on the learning developed from the current research, two reasons for these findings are proposed: (1) the low number of qualified Tongan health professionals assisting with Tongan ethnic specific population groups, and/or (2) a lack of Tongan specific frameworks incorporated in the delivery of health-related information with community health practitioners and policy makers (Suaalii-Sauni et al., 2009).

Even though the health professionals felt the need to empower Pacific people by encouraging their Pacific specific traditional way of healing, retaining a sense of cultural identity in relation to health is challenging and will become increasingly relevant for New Zealand born Pacific youth. There are often numerous differences between New Zealand-born and migrant Pacific peoples. Aside from the PIF study, there is a paucity of research available to help explain the lifestyle behaviours of young Pacific people born in New Zealand (Suaalii-Sauni et al, 2009). Currently, Pacific New Zealand born youth are born with the knowledge and values of their culture while simultaneously living in the European culture. Anae (2001) explains his experience as

such: “I am a Samoan – but not a Samoan. To my aiga in Samoa, I am a palagi [foreigner] I am a New Zealander – but not a New Zealander. To New Zealanders, I am a bloody coconut, at worst, A Pacific Islander, at best, To my Samoan parents, I am their child” (as cited in Medical Council of New Zealand, 2010). While this verse relates to a Samoan experience, it encapsulates the paradox of identity for many New Zealand-born Pacific peoples.

In such instances, there is potential for youth to become confused and adamant towards identifying with a particular culture which affects their ability to have a sense of belonging and their values which affects health, wellbeing and quality of life (Tukuitonga, 2014) (Tukuitonga, 2013b). The lack of cultural identity interferes with their health-related concerns as they would be conflicted whether to use Pacific specific health remedies or seek medical attention from non-ethnic specific doctors. In essence, culturally competent approaches should recognise that addressing inequalities in health means addressing barriers between different communities across all Pacific specific ethnic groups, age groups and health-care systems (Medical Health Research Council, 2010). A need for qualitative research particularly with Pacific youth to understand these disparities and to bridge these gaps is warranted.

Delivery of health information in a range of Pacific languages and through interpretation by family members were noted by some participants. The importance of speaking and protecting native languages within the family unit aligns with the culture component of the fonofale framework. As described by Pulotu-Endemann (2001) culture represents the roof of the fonofale which indicates cultural values and beliefs that is the shelter for life. The culture of that particular family may comprise a traditional Pacific Island cultural orientation where its members live and practice the particular Pacific island cultural identity of that family. The foundation of the fonofale represents ‘aiga’ or family which is the foundation for all Pacific Island cultures (Pulotu-Endemann, 2001). Family not only includes the immediate members of a family but extended or constituted family through kinship (i.e. marriage). The high value of family clearly reflects the reasons why participants seek assistance with health-related information from their respective family members. These findings highlight the importance of the fonofale model in understanding Pacific health issues. It is worth highlighting that Western health models such as the socio-ecological model could be improved by integrating more holistic and population-specific factors across the

individual, family, and community levels to help understand health issues and solutions for Pacific people.

#### **5.4 Health literacy, socio-economic factors, and food purchasing behaviours**

In line with findings from the literature review (Chapter 2), for participants in the current study, employment status and education were positively associated with health literacy. PIF mothers in the other employment category were significantly less likely to have high health literacy compared to those who reported being employed. Participants whose highest qualification was achieved at tertiary level qualification compared to those who reported completing secondary school, were more than nine times as likely to have high health literacy. Research has shown those who are employed and have higher education attainment are more likely to have better health outcomes because they are more likely to seek professional health care treatment and self-manage their health (Baker, Parker, Williams, & Clark, 1998; Baker, Parker, Williams, Clark, & Nurss, 1997; Gottfredson & Deary, 2004; Schillinger et al., 2002). Although previous research has shown a negative association between annual income and health literacy (Kalichman, Ramachandran, & Catz, 1999; Sudore et al., 2006; Wolf, Gazmararian, & Baker, 2007) no associations were found between socio-economic status or income with health literacy in the current study.

Findings from the qualitative component of this research again suggest that health literacy (with the exception of nutrition labelling) may not be a key driver of health behaviours and outcomes in this population, and that other factors play a greater role in these relationships. Socio-economic factors arose in the qualitative discussions when talking about nutrition. In spite of their health literacy levels, purchasing food items for their respective homes was based on perceived food palatability, food expiry date, or whether foods were inexpensive. Participants explained that they understood which food items were healthy (e.g. fresh fruit and vegetables) and unhealthy (e.g. packaged chips, biscuits, and sugar-sweetened beverages), but purchasing food items was determined by affordability and palatability. Nutrition labelling was problematic however, with participants stating they did not understand what the numbers on nutrition information panels meant, that they recognised micronutrients including fat, sugar and salt but had little knowledge about determining the correct amount to align with current New Zealand nutrition recommendation standards for good health outcomes. Even so, socio-economic drivers were still the prevailing driver for food

purchasing behaviours: *“I look at price... I don’t even bother with it [the nutrition information label] .... whatever tastes good .... whatever’s cheaper.... just skim right through it [the label]” (P4).*

Further, studies have shown that Pacific people are more likely to consume diets high in fats, sugar and salt, more likely to have takeaway meals and less likely to cook at home (MoH, 2012a; 2015b; University of Otago & Ministry of Health, 2011). These findings reflected the behaviours of the participants from the qualitative study. For example, when purchasing food items outside of the home participants stated that they wanted to make home cooked meals but were either too tired from working long hours: *“I work night shifts so I usually sleep during the day...and when the kids come back from school I have no time to cook a proper meal for them” (P6).* This is concerning as processed foods that are high in salt, fat and sugar directly related to NCDs are inexpensive and convenient and these foods are easily accessible (MoH, 2015a). These findings suggest that environmental interventions to improve availability and accessibility of healthy foods may be a worthwhile strategy to improve quality of nutritional intake for Pacific people. Examples include policies that restrict the number of fast food outlets available in most deprived areas, and tax incentives that reduce the cost of healthy foods.

## **5.5 Health literacy and NCD risk factors**

No significant relationships were found between health literacy and BMI, self-reported health status, or physical activity. These findings are similar to those of Wolf et al. (2007) who also found no associations with BMI, physical activity, self-reported health status and health literacy in older adults. They found that instead, earlier life factors such as psychosocial circumstances (i.e., parental and peer influences and social support) may be more predictive of these health risk behaviours. Sentell et al. (2011) found no associations with BMI and low health literacy (maybe because of inaccuracies in self-reported weight and height), which were used to determine BMI (McAdams, Dam, & Hu, 2007) and lower health literacy and did not predict poor self-reported health for Native Hawaiians, diabetes for Filipinos, or depression among Japanese or Filipinos. Thus, the relevance of low health literacy may vary across distinct groups and health outcomes. This has implications for the effectiveness and meaningfulness of health literacy interventions in these particular groups, and these ethnic and cultural differences may be an important area to consider in comparisons of the effectiveness of



health literacy intervention on health outcomes (Berkman, Sheridan, Donahue, Halpern, & Crotty, 2011).

## **5.6 The importance of emotional states of health and well-being**

The emotional state of health and well-being was an important component that arose during the discussion with the participants. Some of the participants thought that as long as she and her family were happy they were deemed healthy: *“being happy; family support around you all the time...to lean on as a friend...to cry onto your mother ...your kids to share love with... always laughing”* (P6). This emotional attachment remained present when wanting to feed their families even if they had a chronic illness such as type 2 diabetes. They agreed that if someone is hungry they should eat rather than “starve” themselves in spite of the doctor’s recommendations because they felt sorry for them: *“I feel sorry for them so I just feed them. I think if you’re hungry then you should eat”* (P4). As explained by Pulotu-Endemann (2001) family is the foundation of Pacific culture where having respect your elders (Tukuitonga, 2014) and the sharing of food are fundamental cultural values (Lui, 2003), therefore this then suggests that these behaviours or mentality could subconsciously be driven by their culture which conflicts with public health messages. Thus, even though these participants are aware of the benefits of consuming healthy foods (as mentioned earlier), the motives to feed their family members unhealthy foods outweighs the intention of providing them healthy foods.

## **5.7. Strategies to improve uptake of health information**

### **5.7.1 Community clinics to assist with understanding health related information**

Participants identified a need for local, community based health providers to assist with understanding health information. Fortunately, this finding aligns with the current New Zealand Health Strategy theme, ‘closer to home’ (MoH, 2016c). The New Zealand Health Strategy focuses on the prevention and wellbeing, early intervention, and rehabilitation for long-term conditions, through evidence-based initiatives aimed broadly at all New Zealanders as well as those designed for people at higher risk (e.g., those who are overweight, obese, or living in socially deprived areas). In five years’ time, one of the five intended objectives of this strand is to ensure New Zealanders have access to services, information and support as close as possible to home.

### 5.7.2 Pacific-specific services and capacity development

Participants also highlighted a need for Pacific-specific services and information delivery in three ways: (1) clinics that incorporated spiritual healers or supplied traditional Pacific spiritual healing remedies, (2) strengthening and empowering the Pacific workforce, and (3) providing evidence-based information using language and images that were relevant to them.

The Ala Mou'i: Pathways to Pacific Health and Well-being 2014 - 2018 strategy aims to address the health needs of Pacific peoples and facilitate the delivery of high-quality and targeted health services (MoH, 2014a). This document proposes a promising avenue to improve Pacific health status in New Zealand and aligns with the New Zealand government goal of all New Zealanders to lead longer and healthier more independent lives (MoH, 2007). Strategically, the policy aims to change the behaviours of Pacific to prevent and reduce diseases including obesity and heart disease as well as the behavioural risk factors affecting health such as physical inactivity, poor nutrition, smoking, and alcoholism (MoH, 2014a). The key aspects of focus are to up-skill health care practitioners to provide quality health care, monitor the effectiveness of current health programmes, and to educate Pacific through quality and culturally appropriate health information (MoH, 2014a). The current study findings suggest that these factors are desirable and necessary for engaging with Pacific people for improved health outcomes.

Currently, there is a range of community initiatives across the health sector which contribute to improving health outcomes for Pacific people (MoH, 2016). These programmes include Enea Ola, Healthy Village Active Zones and Lotu Moui which are funded by district health boards and are based in Auckland, New Zealand. The aim of these initiatives are to assist help empower Pacific peoples through PA, nutrition and smoking cessation. These initiatives have shown to make effective lifestyle changes but only in the short-term health outcomes. In terms of interventions for health literacy, Taggart et al. (2012) investigated the associations between health behaviours and health literacy and findings showed health initiatives in primary care settings improved health literacy among their participants and improved health status. Interventions in New Zealand also have shown to incorporate the component of health literacy in current health policy (Schillinger, Barton, Karter, Wang, & Adler, 2006) but health literacy is a relatively new concept in New Zealand and at present there is little published data on effective interventions for improving health literacy levels in New Zealand (New

Zealand Guidelines Group, 2011). Thus, the need to design community health initiatives which incorporate health literacy for Pacific populations is urgently required.

### **5.7.3 Improve nutrition labelling**

Participants reported challenges in understanding nutrition claims and nutrition information panels on food items. Nutrition claims exist to provide individuals with a health and safety approved guide to support the decision to select nutrition rich food items. In New Zealand, the Heart Foundation ‘pick the tick’ is the longest standing and most recognised voluntary front of pack food labelling programme and has been in place since 1996 (Heart Foundation, 2016). It is an approved programme to improve the nutritional profile of New Zealand’s food supply by using a nutrient criterion measure used on 1000 food products in 60 food categories (Heart Foundation, 2016). The programme aims to provide a framework for cooperation with the food industry to improve nutrition labelling and to develop a healthy food supply but some food items do not align with the current New Zealand food and nutrition guidelines recommendations such as condensed milk or flavoured porridge (generally high in salt and sugar).

In the United Kingdom, the traffic light nutrition labelling system provides independent dietary advice that helps individuals make healthier choices quickly and easily. The colour red indicates high which means the food is high in fat, sugar or salt, orange indicates that the food item is ‘ok’ and the colour green means the food item is ‘low’ in unhealthy components. Food items can also be compared to one another making the process of deciding whether a food item should or not be bought based on their nutritional value (Food Standards Agency, 2007). The health star rating food labelling system uses a scale of ½ to five stars able to be used on all packaged food products for retail sale. Foods with more stars reflect better nutritional value and the number of stars is determined by an algorithm that considers the overall nutritional value of the food. The system has many benefits such as having nutritional information on the front of the pack which will make it easier for busy shoppers to make a healthier choice. The overall nutritional rating will also enable shoppers to compare and choose healthier products from within a range (Ministry for Primary Industries, 2013). Findings suggest that an easier-to-understand nutrition labelling system could be helpful, although it is worth recalling that for this group the primary drivers of food purchasing behaviours were palatability, cost, and time. As such strategies to improve the wider determinants of health may be more effective, as discussed below.

#### 5.7.4 Political context

In 1984, New Zealand steered away from capitalism and the National New Zealand government adopted neoliberalism; an agenda where government take full control over the economy with the notion to gain profits from investing in the wealthy and to distribute investment profits across middle and low income classes. The neoliberal economic agendas including privatisation, deregulation, and the trickle-down effect have meant that executive power is at the forefront of policy-making whereby New Zealand citizens have limited say in decision-making, including those made to reductions on welfare, restrictions on eligibility for welfare, and strict policies of welfare benefits (introduced to reduce benefit fraud).

In 2004, financial minister Bill English addressed the issue that the first and most obvious challenge New Zealand faces is the economic and fiscal environment and the legacy of the global recession because of the increase in financial debt. According to Bryce (2013) the gap between the rich and the poor is one the fastest growing than most other developed countries in the world including the United States and Germany. However, the New Zealand government continues to adopt the neoliberal agendas that are increasing inequalities including health inequalities especially among the middle and low income classes.

The neoliberal goal to free New Zealanders from being dependant on welfare to reduce debt in New Zealand has influenced changes in today's society. These changes include increased progressive tax rates; a \$13.50 minimum wage rate; an increase in housing costs, limited employment opportunities, increased food costs and a rise in petrol costs. As a result, the 'individualistic approach' of neoliberals has failed the unemployed poor and working poor. Urgent economic changes such as a 1% increase in income tax with additional revenue targeted at schools serving Pacific populations, family welfare grants, or employment opportunities for Pacific peoples would make a significant and positive impact on health and wellbeing outcomes for this population.

The new public health approach states that adopting comprehensive approaches to health development is the most effective approach for health promotion (Nestle & Jacobson, 2000; Satcher & Higginbotham, 2008). In order to achieve long term health benefits for Pacific people living in New Zealand and internationally, health policies should incorporate strategies that align with the Millenium Development Goals (Travis et al., 2004) such as: to eradicate poverty by collaborating with existing housing and welfare organisations, to enable home ownership by promoting cost effective housing

opportunities, and promote more employment opportunities. This requires the collaborative and coordinated efforts of local and regional businesses, health and non-health organisations, national and international agencies, social media, and government agencies. These changes at this level could alleviate the pressures of access to health care, and in turn would allow Pacific people at risk of ill health to improve their health status to sustain good health long term.

NCDs are the current and future leading causes of global ill health. Unhealthy commodities, their producers, and the markets that power them, are their leading risk factors. Until health practitioners, researchers, and politicians are able to understand and identify feasible ways to address the social, economic, and political conditions that lead to the spread of unhealthy food, beverage, and tobacco commodities, progress in areas of prevention and control of NCDs will remain elusive (Stuckler, McKee, Ebrahim, & Basu, 2012).

## **Chapter 6: Conclusion**

This body of research provides the first exploratory phase to understanding the factors related to health literacy in Pacific mothers in New Zealand. Based on the findings from this study, current health related information is not being used to its fullest extent by Pacific mothers due in part of their underlying cultural and religious beliefs. Solutions identified from this research included designing community health initiatives within close proximity of where Pacific mothers reside, providing Pacific-specific services whereby the use of mobile and internet technologies is recommended for information sharing, and sensitively managing conflicting messages from traditional and Western health practice. Moreover, clear and accurate food labelling, and reducing the cost of healthy foods may also improve health outcomes for this population. For the most part, these practical strategies align with current health policy strategies for reducing the public health problem of NCDs among Pacific people in New Zealand and could improve health literacy. However, even though these practical suggestions can support current health policy to improve Pacific health, the challenge lies with policy makers, in terms of impacting the wider determinants of health (particularly the economic environment) that have a direct impact on health behaviours which lead to poor health outcomes.

### **6.1 Strengths and limitations of the research**

#### **6.1.1 Strengths**

Participants and researchers involved in this study provided a credible source of evidence to support current evidence based literature. The participants involved in this research were Pacific mothers of different ethnic groups from the PIF study. The Pacific health professionals involved had over 15 years of experience working with Pacific people across all age groups from infants to older adults. The researcher is of Pacific Island descent and has over five years of work experience with Pacific people within the public health sector in New Zealand and was supported by a team of researchers with over 15 years of experience working with Pacific people living in New Zealand.

This research provides new information and unique insights from a Pacific perspective that contribute to the international research body. These included the use of focus groups and interviews which enabled the generation of new insights beyond the quantitative research findings, and helped to contextualise and understand the quantitative results. Established and validated measures and protocols are employed in

the full PIF study, using current best practice. It is acknowledged that some measures could be improved by testing and validating for a Pacific population, where this has not already occurred. In addition, the PIF study survey is a credible survey that has been implemented by highly trained researchers therefore sourcing information from this database is appropriate for comparative purposes in future research investigating Pacific mothers in New Zealand.

### **6.1.2 Limitations and delimitations**

This study involved Pacific peoples within New Zealand and therefore direct comparisons from the findings found throughout this document are not generalizable to their non-Pacific counterparts. The approach taken to measuring health literacy may have influenced research findings. Differing concepts of health literacy and measures of health literacy exist, and it is possible that the tool utilised did not adequately capture health literacy. A tool specific for Pacific people may be necessary to appropriately define and measure health literacy in this population. For the qualitative component of this research, sample sizes were small, therefore extrapolating these findings to larger Pacific population groups and ethnic specific groups is not recommended. Participants were either busy with work and/or family orientated requirements (e.g. funeral) during the day which meant most participants recruited could not take part in the study leaving a relatively small sample. Recommendations for improving engagement with research such as this included meeting with the participants in person rather contacting them via telephone communications. The opportunity to converse in person could have allowed the researcher time to explain the criteria of the research project and an opportunity for the participants to ask questions in a comfortable environment. Even so, the findings from the small sample used can provide a general consensus for health practitioners to further establish practical solutions to improve health literacy for Pacific mothers in New Zealand. Finally, as the interviewing researcher was a young female, participants' desirability to openly express their ideas and concerns seemed limited at times. Having an older and more experienced researcher preferably of Pacific Island descent might have avoided discomfort from answering questions confidently.

## **6.2 Future Research**

Researchers investigating the correlations between health literacy in Pacific people could investigate health outcomes such as type 2 diabetes and other lifestyle diseases as envisaged by this study when first commenced. Due to the limited time constraints to conduct this research a more robust study investigating health literacy and health outcomes could provide validity around direct links to health outcomes rather factors related to health outcomes. Also, it is well acknowledged that parents have a direct influence on their children's behaviours and therefore the partners of the PIF mothers involved in this study may have just as much influence or responsibility with the lifestyle choices made by their children and their families. Their perspectives could then be utilised to support current public policy such as creating community clinic designed to improve health literacy, which could ultimately improve health outcomes of their children or respective families. This also applies to the children as they too were not involved in this study but their perspectives could validate their parents' perspectives. Future researchers could investigate the impact of fathers in correlation with Pacific mothers and their children to understand the effect they have upon their children. Furthermore, using a larger sample for qualitative purposes with an equal distribution of Pacific mothers with low and high health literacy could provide more credible evidence to utilise for population based comparisons.



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## List of Appendices

### Appendix A: AUTECH Ethics approval form for focus groups and interviews



14 October 2014

El-Shadan Tautolo  
Faculty of Health and Environmental Sciences

Dear El-Shadan

Re Ethics Application: **14/291 Health literacy among Pacific mothers: Understanding the relationship between health literacy and weight status of Pacific mothers in New Zealand.**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTECH).

Your ethics application has been approved for three years until 13 October 2017.

As part of the ethics approval process, you are required to submit the following to AUTECH:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/researchethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 13 October 2017;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/researchethics>. This report is to be submitted either when the approval expires on 13 October 2017 or on completion of the project.

It is a condition of approval that AUTECH is notified of any adverse events or if the research does not commence. AUTECH approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

AUTECH grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to obtain this.

To enable us to provide you with efficient service, please use the application number and study title in all correspondence with us. If you have any enquiries about this application, or anything else, please do contact us at [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz).

All the very best with your research,



Kate O'Connor  
Executive Secretary  
**Auckland University of Technology Ethics Committee**

Cc: Losi Sa'uLilo [jsaulilo@aut.ac.nz](mailto:jsaulilo@aut.ac.nz)

A u c k l a n d   U n i v e r s i t y   o f   T e c h n o l o g y   E t h i c s   C o m m i t t e e

WA505F Level 5 WA Building City Campus

Private Bag 92006 Auckland 1142 Ph: +64-9-921-9999 ext 8316 email [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz)

**Appendix B: Focus Group Questions**

1. Do you use current public health information and how so?
2. Is the information easily accessible and easily interpreted?
3. How often do you use this public health information for medical health and nutrition related problems?
4. How effective is this information to help answer health related questions you may have?
5. Whether positive or negative how have health professionals helped you with your health concerns or enquiries
6. What are your ideas and thoughts about how you would better understand this information?
7. Are there other recommendations you would advise health professionals and health policy makers to support you to better understand health related information?

**Appendix C: Interview Questions**

1. As a health professional what have your experiences been working with Pacific Island mothers
2. Do you believe current public health information is being interpreted and well understood by Pacific mothers?
3. If so, how is this information improving health status and or health literacy
4. How is public health information having an impact upon Pacific health status
5. What are the current policies and regulations to help Pacific mothers understand health related information for improved health outcomes?
6. What are your recommendations to public health workers working with Pacific mothers to improve health literacy and their health outcomes?

## Appendix D: Consent Form for health professional



### Consent Form

*Project title:* Health literacy among Pacific mothers: Understanding the relationship between health literacy and weight status of Pacific mothers in New Zealand

*Project Supervisor:* Dr El-Shadan Tautolo and Dr Melody Oliver

*Researcher:* Losi Sa'uLilo

- I have read and understood the information provided about this research project in the Information Sheet dated 01 October 2014.
- I have had an opportunity to ask questions and to have them answered.
- I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- If I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.
- I agree to take part in this research.
- I wish to receive a copy of the report from the research (please tick one): Yes  No

Participant's signature: .....

Participant's name: .....

Participant's Contact Details (if appropriate):

.....

.....

Date:

**Approved by the Auckland University of Technology Ethics Committee on 14 October 2014  
AUTEK Reference number 12/291**

*Note: The Participant should retain a copy of this form.*

## Appendix E: Consent Form for focus group participant



### Consent Form

*Project title:* Health literacy among Pacific mothers: Understanding the relationship between health literacy and weight status of Pacific mothers in New Zealand

*Project Supervisor:* Dr El-Shadan Tautolo and Dr Melody Oliver

*Researcher:* Losi Sa'uLilo

- I have read and understood the information provided about this research project in the Information Sheet dated 01<sup>st</sup> October 2014.
- I have had an opportunity to ask questions and to have them answered.
- I understand that identity of my fellow participants and our discussions in the focus group is confidential to the group and I agree to keep this information confidential.
- I understand that notes will be taken during the focus group and that it will also be audio-taped and transcribed.
- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- If I withdraw, I understand that while it may not be possible to destroy all records of the focus group discussion of which I was part, the relevant information about myself including tapes and transcripts, or parts thereof, will not be used.
- I agree to take part in this research.
- I wish to receive a copy of the report from the research (please tick one): Yes  No

Participant's signature: .....

Participant's name: .....

Participant's Contact Details (if appropriate):

.....  
.....  
.....  
.....

Date:

***Approved by the Auckland University of Technology Ethics Committee on 14 October 2014  
AUTEK Reference number 12/291***

*Note: The Participant should retain a copy of this form.*

## Appendix F: Information Sheet for interview



### Participant Information Sheet

#### Date Information Sheet Produced:

01<sup>st</sup> October 2014

#### Project Title

Health literacy among Pacific mothers: Understanding the relationship between health literacy and weight status of Pacific mothers in New Zealand

#### An Invitation

My name is Losi Sa'uLilo. I am a postgraduate student at AUT University currently working alongside the Pacific Islands Families (PIF) Study research team in the process of completing a thesis which includes interviewing Pacific mothers from the PIF study. I am inviting you to participate in a research study which will involve being interviewed where you will be asked some questions about you, your experience and your knowledge working about nutrition and health related information. Your decision to participate in this study is voluntary so your decision will not in any way be discouraged if you disagree or agree to participate in this study. Further, you may withdraw yourself from this study prior to the completion of data collection.

#### What is the purpose of this research?

The purpose of this study is to investigate and explore health literacy and health outcomes in Pacific mothers involved in the PIF study. To date there is no evidence to show that non communicable diseases including obesity are linked to health literacy. Health literacy is the ability to access, read, understand and interpret basic health related information to make informed health decisions to improve health outcomes (Kicbusch et al., 2005). The results from this research may possibly be of great benefit to current public health advisors and organisations to determine whether current public health related information is accessible and well interpreted. With your help and support we may be able to improve current health information for Pacific people especially Pacific mothers within New Zealand to improve health outcomes by improving health literacy.



### **How was I identified and why am I being invited to participate in this research?**

You have been invited to participate through the researchers' networks. We are seeking predominantly health professionals who have previous work experience essentially with Pacific Island mothers residing in New Zealand.

### **How do I agree to participate in this research?**

To participate in the study, you will need to complete the enclosed consent form and return it to Losi Sa'uLilo in the envelope provided at least 2 weeks prior to your available interview date. Please note that your decision to participate in the research is voluntary and you may withdraw prior to the completion of data collection.

### **What will happen in this research?**

If you agree to take part in this study you will participate in an interview where you will be asked questions about you, current health related information and the effect public health information has upon the health status of Pacific mothers. The interview will take place at a location convenient to you with the intention to help you answer questions easily in a comfortable and relaxed environment. The interview will take up to 60 minutes in length and will be audio-taped and later transcribed for analysis.

### **What are the discomforts and risks?**

It is unlikely that you will experience any discomforts or risks as a result of this research

### **How will these discomforts and risks be alleviated?**

If at any time during this study you feel uncomfortable in answering or discussing any questions being asked of you, you will not need to answer them. You are free to withdraw from the study prior to the completion of data collection.

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>.

### **What are the benefits?**

Your contribution to this study may benefit the wider community to provide beneficial ways to improve health literacy among Pacific mothers and Pacific people potentially across all age groups and Pacific ethnicities.

**How will my privacy be protected?**

Your personal contact information and signatory agreements to participate in this study will be kept in a safe storage place and locked away at the PIF study office at the AUT South Campus. All information will be kept confidential where you will not be able to be identified on the findings although the researcher, the research managers and the data manager will have access to this information. We will use unique identifier codes to maintain confidentiality so you are unable to be identified. Data will be stored for six years and will be permanently destroyed after this period.

**What are the costs of participating in this research?**

If you decide to take part, you will be required to attend a 30 to 60-minute interview at a place that is convenient for you

**What opportunity do I have to consider this invitation?**

If you would like to participate in this study, please contact Losi Sa'uLilo 2 weeks prior to your available interview date to arrange a time that best suits you.

**Will I receive feedback on the results of this research?**

I will provide you with a summary of the findings from the results of this study.

**What do I do if I have concerns about this research?**

If you have any concerns regarding the nature of this project please contact the Project Supervisors; Dr El-Shadan Tautolo, [dtautolo@aut.ac.nz](mailto:dtautolo@aut.ac.nz), 9219999, ext 7527 and Dr Melody Oliver, [melody.oliver@aut.ac.nz](mailto:melody.oliver@aut.ac.nz), 9219999 ext 7078

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz), 921 9999 ext 6038.

**Whom do I contact for further information about this research?**

**Researcher Contact Details:**

Losi Sa'uLilo  
 Human Potential Centre  
 17 Antares Place, Mairangi Bay  
 AUT Millenium Campus  
 Email: [lsaulilo@aut.ac.nz](mailto:lsaulilo@aut.ac.nz)  
 Phone: 9219999, x7511

**Project Supervisor Contact Details:**

Name: Dr El-Shadan Tautolo  
 Associate Director

Pacific Islands Families (PIF) Study  
Auckland University of Technology (AUT)  
AUT South Campus, MB Building, 640 Great South Road, Auckland  
Email: [dtautolo@aut.ac.nz](mailto:dtautolo@aut.ac.nz)  
Phone: 9219999, x7527

Name: Dr Melody Oliver  
Human Potential Centre  
Private Bag 92006, Auckland 1142  
Ph: 921 9999 ext 7078  
E-mail: [melody.oliver@aut.ac.nz](mailto:melody.oliver@aut.ac.nz)

**Approved by the Auckland University of Technology Ethics Committee on 14 October 2014, AUTEK Reference number 12/291**

## Appendix G: Information Sheet for focus group participant



Participant Information Sheet

### **Date Information Sheet Produced:**

09 October 2014

### **Project Title**

Health literacy among Pacific mothers: Understanding the relationship between health literacy and weight status of Pacific mothers in New Zealand

### **An Invitation**

Malo E Lelei, Talofa Lava, Fakaalofa lahi atu, Bula Vinaka, Kia Orana and Warm Pacific Greetings. My name is Losi Sa'uLilo and of Samoan decent. I am a postgraduate student at AUT University currently working alongside the Pacific Islands Families (PIF) Study research team in the process of completing a thesis which includes interviewing Pacific mothers from the PIF study. I am inviting you to participate in a research study which will involve being interviewed in a focus group setting where you will be asked some questions about you, your experience and your knowledge working about nutrition and health related information. Your decision to participate in this study is voluntary so your decision will not in any way be discouraged if you disagree or agree to participate in this study. Further, you may withdraw yourself from this study at point in time.

### **What is the purpose of this research?**

The purpose of this study is to investigate and explore health literacy and health outcomes in Pacific mothers involved in the PIF study. To date there is no evidence to show that non communicable diseases including obesity are linked to health literacy. Health literacy is the ability to access, read, understand and interpret basic health related information to make informed health decisions to improve health outcomes (Kicbusch et al., 2005). The results from

this research may possibly be of great benefit to current public health advisors and organisations to determine whether current public health related information is accessible and well interpreted. With your help and support we may be able to improve current health information for Pacific people especially Pacific mothers within New Zealand to improve health outcomes by improving health literacy.

### **How was I identified and why am I being invited to participate in this research?**

You have been invited to participate in this study through the PIF study research team. Also, because you have completed the 14-year maternal survey you are eligible to take part in this study.

### **How do I agree to participate in this research?**

To participate in the study, you will need to complete the enclosed consent form and return it to Losi Sa'uLilo in the envelope provided at least 2 weeks prior to your available focus group date. Please note that your decision to participate in the research is voluntary and you may withdraw at any stage.

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.

### **What will happen in this research?**

If you agree to take part in this study you will be a part of a focus group interview where you will be asked questions about you, current health related information and how useful this information is to you and your families. This focus group will involve approximately five to a maximum of eight other Pacific mothers from the PIF study. The focus group setting is to help encourage discussions rather a one on one interview to help you answer questions easily in a comfortable and relaxed environment. To thank you for your time and effort refreshments will be provided on the day and a \$30.00 Westfield voucher will be given as a mea'alofa or token of appreciation at the end of the focus group. This focus group will be held at the AUT South Campus in Manukau at a convenient time to you and will take up to 60 minutes in length. The interview will be audio-taped and later transcribed for analysis. The interview will take place at a location convenient to you with the intention to help you answer questions easily in a

comfortable and relaxed environment. The interview will take up to 60 minutes in length and will be audio-taped and later transcribed for analysis.

**What are the discomforts and risks?**

It is unlikely that you will experience any discomforts or risks as a result of this research

**How will these discomforts and risks be alleviated?**

If at any time during this study you feel uncomfortable in answering or discussing any questions being asked of you, you will not need to answer them. You are entitled to withdraw from this study any time prior to the completion of data collection and will not in any way be discouraged based on your decision.

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>.

**What are the benefits?**

Your contribution to this study may benefit the wider community to provide beneficial ways to improve health literacy among Pacific mothers and Pacific people potentially across all age groups and Pacific ethnicities.

**How will my privacy be protected?**

Your personal contact information and signatory agreements to participate in this study will be kept in a safe storage place and locked away at the PIF study office at the AUT South Campus. All information will be kept confidential where you will not be able to be identified on the findings although the researcher, the research managers and the data manager will have access to this information. We will use unique identifier codes to maintain confidentiality so you are unable to be identified. Data will be stored for six years and will be permanently destroyed after this period.

**What are the costs of participating in this research?**

You will be required to attend a 40 to 60-minute focus group interview so to alleviate financial inconvenience, a \$30.00 voucher will be given to you at the end of the focus group and refreshments will be provided as a way to say thank you for your time and effort in taking part in this study.

**What opportunity do I have to consider this invitation?**

If you would like to participate in the study, please contact Losi Sa'uLilo at least 2 weeks before your available focus group date to arrange a time that best suits you.

**Will I receive feedback on the results of this research?**

Yes, you will receive a report summarising the results of the study.

**What do I do if I have concerns about this research?**

If you have any concerns regarding the nature of this project please contact the Project Supervisors; Dr El-Shadan Tautolo, [dtautolo@aut.ac.nz](mailto:dtautolo@aut.ac.nz), 9219999, ext. 7527 and Dr Melody Oliver, [melody.oliver@aut.ac.nz](mailto:melody.oliver@aut.ac.nz), 9219999 ext. 7078

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, [ethics@aut.ac.nz](mailto: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:**

Losi Sa'uLilo  
Human Potential Centre  
17 Antares Place, Mairangi Bay  
AUT Millenium Campus  
Email: [lsaulilo@aut.ac.nz](mailto:lsaulilo@aut.ac.nz)  
Phone: 9219999, x7511

**Project Supervisor Contact Details:**

Name: Dr El-Shadan Tautolo  
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Approved by the Auckland University of Technology Ethics Committee on 14 October 2014, AUTEK Reference number 12/291