

Exploring the factors that may influence health and wellness behaviour in the Control Group of a trial to prevent stroke: thematic analysis of qualitative interviews of Control Group participants in the Health and Wellness Coaching study

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Abstract

Stroke is the second leading cause of death and disability in the world, and one of the most devastating chronic diseases. It is rapidly increasing on a global scale, particularly in the countries that have low-income levels although incidence rates have declined in high-income countries. The incidence of stroke is higher in men compared with women and impacts the individuals' life, families, society and employment and education opportunities. The physical, psychological and social consequences of stroke are very high in New Zealand especially among Māori and Pacific Islanders compared with European New Zealanders.

Stroke has modifiable risk factors including hypertension, diabetes, alcohol, smoking, and obesity which are preventable. There are also non-modifiable risk factors such as age, sex, and race. Stroke prevention can be achievable when individuals make positive changes in their health behaviours through the help of intervention health programmes or independently by adapting to a new lifestyle including healthy diet and being physically active.

People who participate in a health behaviour change intervention such as Health and Wellness Coaching (HWC) gain many benefits from positive coaching, through direct motivation and other elements that lead to health improvement. But this study aimed to explore the factors that may influence behaviour in the Control Group of a trial to prevent stroke. This was conducted using thematic analysis of qualitative interviews of Control Group participants in the Health and Wellness Coaching study.

The current study recruited participants (n=12) from the Control Group of participants in an existing randomised controlled trial (RCT) to test the effectiveness of HWC for prevention of stroke. A qualitative descriptive analysis approach was utilized. Thematic analysis was used to analyse the data and generate seven overarching themes arising from the study: 1) Internal positive factors impacting health behaviour; 2) External positive factors impacting health behaviour; 3) The direct impact of being in the study/study elements impacting health behaviour; 4) The impact of learning, knowledge and health information in changing health behaviour; 5) Making practical changes in lifestyle; 6) Personality readiness; and 7) Negative factors impacting health behaviour.

The findings suggest that there are some important factors that have direct and indirect impact on health and wellness behaviour in the Control group of a trial to prevent stroke. Most of the

factors were found to demonstrate positive impact in the health and wellness behaviour. Self-awareness and awareness of health were the empowering factors that influenced health behaviour changes that participants' experienced. Both internal (personal) factors and external factors had a strong role in impacting health behaviour. The findings suggest that most of the participants used similar strategies to prevent stroke such as changing diet and increasing physical activities.

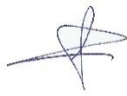
The findings acknowledge some barriers that affect health behaviour negatively but the study found that those barriers could be preventable, to some degree, so as not to become a threat to health in general and for stroke specifically.

The current study is unique in highlighting the factors in a control group in relation to health behaviour change that leads to stroke prevention. It also illustrates the importance of self-awareness, the awareness of health risks and consequences, being positive toward health and life in general including family and the importance of having a good quality of life.

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.

Signature:

A handwritten signature in blue ink, consisting of a stylized, cursive 'S' shape with a horizontal line extending to the right.

Date: 6 November 2019

Acknowledgments

I want give thanks to my lord Jesus Christ for being good to me all the time. He helped me and supported me to succeed in my work. I want give him all the glory now and forever.

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Ethics Approval

For this study, ethics approval was obtained from the Health and Disability Ethics Committee (HDEC); approval number 16/174 (Appendix A). Ethics approval was obtained from AUT University Ethics Committee (AUTEC); approval number 11/297 (Appendix B). HDEC approval was received on the 16th May 2016 and the AUTEC approval was received on the 10th May 2016.

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Chapter 1 Introduction

This chapter will provide an overview of stroke, including pathophysiology, epidemiology and definition of stroke, impact of stroke, modifiable and non-modifiable risk factors, Randomised Control Trials (RCT) and behavioural changes.

1.1 Overview of Stroke

People face and overcome challenges on a regular basis, but with chronic illness, there can be a level of helplessness in facing the consequences of an illness on a long-term basis. Stroke is one of the most devastating chronic diseases, and it is increasing rapidly on a global scale (Poston, 2018). It is important to acknowledge that stroke is the second leading cause of death and disability in the world. Over the past few decades the burden of stroke has crossed the borders between developed nations and developing ones with an estimated 75% of all stroke deaths and 81% of the total disability-adjusted life years lost due to stroke, occurring in developing nations (Kalkonde, Alladi, Kaul & Hachinski, 2018).

Annually more than 6 million people die globally because of cerebrovascular diseases (CVDs) which includes stroke victims, and more than 60 million are stroke survivors (Saha et al., 2018). Stroke is a very serious problem according to World Health Organization, in the last four decades the number of stroke incidences has increased by double in the countries that have low and middle-income levels. The positive news is that stroke incidents have declined by a third in high-income countries (Johnson, Onuma, Owolabi & Sachdev, 2016). The incidence of stroke between sexes also differs, with males having higher incidence of stroke at 372/100,000 per year compared with women having 340/100,000 per year (Keller, Munzel, Gyer & Ostad, 2018). Studies by Feigin, Norrving, & Mensah (2017) found similar results with a higher percentage of stroke in men than women. Although it seems that incidences of stroke are higher for men, these differences can be variable with increasing age (Poorthuis, Algra, Algra, Kappelle & Klijn, 2017).

Stroke can have major and multiple impacts in many areas of an individuals' life. It can affect the individual, the families and society, touching the victim's personal life, relationships, financial situation, employment opportunities, education, political life and human rights (Norris, Allotey & Barrett, 2012). The physical consequences may lead them to be more dependent on others, affecting them emotionally and financially because of the raised living

costs (Feigin et al., 2006; Mahon, 2018). It has many dimensions including financial, physical, psychological and social consequences, not only for the survivors but also for the partners and families (Schulz et al., 2017). All these changes can impact relationships, marriage and quality of life negatively (Anderson & Keating, 2018).

The heavy financial burden of stroke cannot be ignored. It is predicted that by 2020 the increase in expenditure will reach 6.2% of the overall cost of illness in industrialized countries (Kikuchi, Tanaka, Murai & Tancharoen, 2014). In New Zealand, stroke is also the second highest cause of death (Ministry of Health, 2017). These rates of stroke make New Zealand one of the highest statistically for developed countries (Feigin, Krishnamurthi, Barber & Arroll, 2014). Around 60,000 people are counted as stroke survivors and almost 25% of them are above the age of sixty-five. It seems that Māori and Pacific Islanders experience disabilities after stroke at a younger age, around 10 to 15 years younger compared with other New Zealanders (Feigin et al., 2015).

Half the people affected by stroke had to stay at home for six months after a stroke and reported struggles with mobility, recreational limitation and social isolation. This was often combined with depressive symptomatology, lack of self-worth, fatigue or cognitive impairment (Mayo et al., 2015). A major consequence of stroke is leaving people with permanent disabilities, adding complications to the person's life as they try to adjust to their new limitations. These complexities can be exacerbated by the patient's struggles with confidence, self-identity or depression and problems associated with the lack of family or social support (Ayerbe, Ayis, Crichton, Wolfe & Rudd, 2014).

Stroke has modifiable risk factors including heart disease, hypertension, diabetes mellitus, alcohol intake, smoking, obesity, and hyperlipidaemia most of which are preventable. There are also non-modifiable risk factors such as age, sex, and race (Govindarajan, Ravichandran, Sundarajan & Sreeja, 2018). Research by Feigin et al. (2016) pointed to the possibility that it is possible to achieve a high level of prevention for stroke because the modifiable risk factors are preventable.

1.2 Defining Stroke

The traditional definition of stroke as described by the World Health Organization (WHO) is “rapidly developing clinical signs of focal (or global) disturbance of cerebral function, lasting

more than 24 hours or leading to death, with no apparent cause other than that of vascular origin” (WHO, 1988; Aho et al., 1980, pp 114). This definition is still being widely used because it diagnoses stroke by depending on clinical symptoms. Modern specialized associations such as the American Association for Heart and Stroke are looking for a new definition of stroke that gives consideration to the timing, nature, and imaging of stroke. This new perspective will lead to an updated definition of stroke (Coupland, Thapar, Qureshi, Davies & Jenkins, 2017).

1.3 Epidemiology

Globally, stroke has weighty consequences that place it as the fourth cause for disability and the second leading cause for death (Kakkad & Rathod, 2018; Feigin et al., 2015). The fact is stroke has an immense effect, causing permanent disability or being the direct factor of death (Clare, 2017). The occurrence of stroke is rapidly increasing globally every year (Poston, 2018). In the last four decades stroke has doubled in number especially in the countries with lower incomes (Johnson, Onuma, Owolabi & Sachdev, 2016). Worldwide it is estimated that 6.2 million deaths annually are related to Cerebrovascular diseases (CVDs) including stroke and this number represents almost 11% of global deaths, and an estimated 62 million stroke survivors are present across the globe (Saha et al., 2018). In 2002 stroke ranked seventh among the major causes of disability adjusted life years (DALY) and it has become the second cause of death and one of the sixth causes of DALY loss globally (Saha et al., 2018).

The burden of stroke is not exclusive to males or females but effects both with a minor increase in males (Barker-Collo et al., 2015). The difference of stroke incidents between genders shows that males are 0.3% higher than females (Keller, Munzel Geyer & Ostad, 2018). Stroke has increased largely due to the ageing population (Mikkelsen et al., 2012), as elderly people, aged 80 years and older, are more likely to present with stroke (Navis, Garcis-Santibanez & Skliut, 2019).

New Zealand has a high rate of stroke, being the second cause of death nationally. Due to these high rates, New Zealand experiences one of the highest rates of strokes in developed nations (Feigin, Krishnamurthi, Barber & Arroll, 2014; Ministry of Health, 2017). Annually in New Zealand, almost 9000 people are impacted by stroke and around 60% of the survivors experience some kind of disability, for example, in 2015-2016 adults represented 1.5% of stroke patients (Ministry of Health, 2017).

1.4 Pathophysiology of Stroke

It is important to acknowledge that stroke is classified into three different types; the first type, ischemic stroke is caused by the blockage of blood to brain tissue (clots); the second type is a transient ischemic attack caused by temporary clots in the blood; and the third type is haemorrhagic stroke caused by bleeds (Govindarajan, Ravichandran, Sundararajan & Sreeja, 2017). Krishnamurthi et al. (2018) point to the fact that risk factors and the outcome of all pathological types of stroke, ischemic stroke (IS), primary intracerebral haemorrhage (ICH), and subarachnoid haemorrhage, are different. Ischemic stroke represents 87% of stroke incidents, while 10 to 15% are haemorrhagic strokes (Krishnamurthi et al., 2018; Govindarajan et al., 2018). Most strokes are cerebral ischaemic infarctions that occur as a result of cardiac or atherothrombosis embolisms that cause sudden cessation of cerebral blood flow and create a deprivation of glucose and oxygen. During this time, cells are vulnerable and may die within a few minutes of the ischaemic onset (Mitsios et al., 2006). Kim (2014) notes that other aetiological subtypes of stroke relate to small and large artery disease, large artery disease (LAD) and cardio embolic strokes.

Ischemic stroke occurs when a clot restricts blood flow in the vessel and limits or stops oxygen to the brain. When this event happens, the brain cannot function and the brain cells are damaged and cannot be replicated again (Galloway & Lakin, 2017). Stroke caused directly by blood-brain disruption with massive brain cell death can be the result of a major disturbance in the components of neurovascular unit that have been effected by the lysis of red blood cells releasing iron, haemoglobin that cause activation of the coagulation cascade, that leads to blockage and damage (Zhao, Chen & Feng, 2018).

The underlying cause of stroke in the presence of neural injury happens as a response of intricate pathophysiological disturbances caused by the lack of blood flow to the brain (George & Steinberg, 2015). Stroke pathophysiology is based on the reduction or lack of blood flow, which leads to neurons beginning to die from the unsuitable changes in the functional and biochemical system (Bandera et al., 2006). Pathologically stroke is considered as a heterogeneous disease that includes large or small artery disease and has several biological mechanisms (Kim, 2014). One of the common causes of ischemic stroke is intracranial atherosclerotic disease (ICAD) and ICAD may cause stroke in different ways such as artery-to-artery embolism, hemodynamic compromise, in situ thrombosis and perforating artery

occlusion or could be a mix of all these mechanisms (Dubow, Salamon, Greenberg & Patsalides, 2014).

1.5 The Impact of stroke

The impact of stroke marks all areas of an individual's life; it can cause physical disability and psychological problems, affect them and their families financially and add more stress on healthcare organisations and society in general (Krishnamurthi, et al., 2014). The negative impact of stroke can last for extended periods, even decades affecting quality of life. The occurrence in childhood and adolescence where physical impairments are present can stop involvement in sport activities and affect the ability of survivors of stroke to feed, clean and dress themselves (Gerzson, Ranzan, de Almeida & dos Santos Riesgo, 2018). Despite the high percentage of functional independency and active improvement among stroke survivors approximately half of the people who suffer from stroke cannot or do not return to work (Larsen et al., 2016).

The new conditions caused by stroke can also cause a limitation of activities for adults (Arwert, et al., 2018), including the loss of roles within the family. Both the patient and the partner, caregivers and family members will face new financial, social, physical and psychological burdens as they take on new challenges and responsibilities (Schulz et al., 2017). A couple's life is also affected when one of them experiences stroke that causes disability. The physical effects can lower their quality of life, cause incompatibilities and dissatisfaction and spoil the relationship (Anderson & Keating, 2018). Trygged, Hedlund and Kåreholt (2011) found that stroke in a marriage played a critical role in increasing separation and divorce.

Stroke can also cause psychological impairments including neurological deficits, and problems such as depression and cognitive damages (Barker-Collo et al., 2016). Acute stroke patients may suffer from excessive daytime sleepiness and sleep disturbances that are associated with other disorders and have a strong influence on quality of life (Moon, Yoon, Jeong & Cho, 2018). Fatigue is also a common and persistent outcome in stroke survivors, which can be a hidden factor in mobility deficits (Michael, Allen & Macko, 2006). Psychological impact is very common with approximately a third of stroke survivors being affected by depression up to 5 years after stroke and is associated with the severity of the physical disability (Arwert, et al., 2018). Brain damage associated with stroke can cause disruption to the neural circuits that are involved in mood regulation which leads to depression as a psychological reaction (Van

Mierlo, Van Heugten, Post, De Kort & Visser-Meily, 2015). Some stroke survivors complain of eating problems and a study by Chen et al. (2011) shows that 36.6% (of the sample) experienced insomnia.

Stroke has the ability to change life situations and life after stroke comes with many adjustments. This can cause worries and fears about the situation creating mood disorders and anxiety as a consequence of stroke (Kootker, et al., 2016). Survivors also feel despondency and worthlessness because of their disabilities, with low self-esteem being an outcome in the early stages of stroke (Vickery, Sepehri, Evans & Jabeen, 2009). Anger and aggressive behaviour is another behavioural manifestation that survivors of stroke experience (Toscano et al., 2014). A study aiming to explore mental health, psychological well-being, and psychosocial situations in stroke survivors after 2 to 5 years found that approximately 50% of the survivors had possible psychiatric morbidity and the same percentage had reported a low quality of life (Bergersen, Frøslie, Sunnerhagen & Schanke, 2010). It is very clear that stroke has a considerable influence on all aspects of the quality of life.

1.6 Modifiable Risk Factors

There are several risk factors that are associated with the increased likelihood of stroke. Modifiable risk factors can be divided into two groups; one related to medical conditions and another group related to behavioural risk factors (Boehme, Esenwa, & Elkind, 2017). Some of the modifiable risk factors that are preventable include the amount of alcohol intake, diabetes, obesity, smoking, coronary heart disease, cardiovascular diseases (CVD), high cholesterol, unhealthy diet, poor physical activity, hypertension, diabetes mellitus, hyperlipidaemia, polycythaemia and oral contraceptives (Strong, Mathers & Bonita, 2007; Govindarajan et al., 2018). There is a strong agreement in the findings of epidemiology studies such as Global Burden of Disease (GBD) and the INTERSTROKE case-control studies that show that 10 modifiable risk factors are closely associated with the incidence of stroke across most populations (Feigin et al., 2016; O'Donnell et al., 2016).

Blood pressure is also a major detrimental cause of both ischemic and haemorrhagic stroke. People that experience an increase in their blood pressure levels above 115/75 mm Hg and high blood pressure (BP) have a higher risk of stroke and these levels are seen in 54% of episodes of stroke worldwide (Gaciong, Siński & Lewandowski, 2013). People with type 2 diabetes with insulin resistance or insulin deficiency and people with type 1 diabetes are at

double the risk of having ischaemic stroke (Luitse, Biessels, Rutten & Kappelle, 2012). Unhealthy diets with high levels of sugar, trans fats, sodium and high total cholesterol with raised LDL cholesterol and low HDL cholesterol joined with high triglyceride level are also common stroke risk factors (Galloway & Lakin, 2017). Rantakomi et al. (2013) found that there is a significant increase of stroke risk among alcohol consumers because of the strong association between alcohol consumption, hypertension and obesity in men. Smoking remains one of the major risk factors for stroke and physical inactivity was associated with many poor health effects that play a big role in increasing the risk of stroke (Guo et al., 2018). The negative consequences due to lack of physical activity increase the risk of cardiovascular disease, depression, obesity and other chronic diseases (Warburton, Katzmarzyk, Rhodes & Shephard, 2007). It has also been found, that stroke is associated with other risk factors like anxiety, depression, social status, low income and social interaction (Jennum, Iversen, Kjellberg & Ibsen, 2015). The positive side is that 90% of the modifiable risk factors can be preventable (Boehme, Esenwa, & Elkind, 2017).

1.7 Non-Modifiable Risk Factors

There are several non-modifiable risk factors associated with the increased likelihood of stroke. These factors are irreversible and non-preventable and include factors such as gender, race-ethnicity, genetics and age (Govindarajan et al., 2018). These non-modifiable risk factors are sometimes known as risk markers (Boehme, Esenwa, & Elkind, 2017). Age is the most important non-modifiable risk factor as the risk of stroke increases by double after the age of 50 (Kelly-Hayes, 2010; Boehme, Esenwa, & Elkind, 2017). There is clearly an association between increase of the risk of stroke and elderly people 75 years and older (Mikkelsen, et al., 2012). A systematic review and meta-analysis looking for specific risk factors for stroke in men and women found that women with a history of spontaneous preterm delivery and stillbirth were at increased risk for all kinds of stroke (Poorthuis, et al., 2017). People with heart conditions such as Atrial Fibrillation (AF) are at higher risk because it increases the likelihood of clot formation, which is the main cause of stroke in older people (Galloway & Lakin, 2017).

Studies by Jerrad-Dunne, Cloud, Hassan and Markus (2003) investigated family history of stroke and found that genetics had a role in the risk factors of stroke and vascular disease. The effect of large or small cerebral vessel disease caused by atherosclerosis of cerebral arteries is also a genetic risk factor for stroke (Korchagin et al., 2017). There is an indication that the estrogen receptor (ESR1) gene affects men and women differently in relation to stroke risk, for

example estragon plays a protective role in women in the premenopausal stage making them less likely to be prone to stroke in comparison with postmenopausal women (Munshi et al., 2010).

The risks of stroke can be reduced (Feigin, Krishnamurthi, Barber & Arroll, 2014). Acknowledging the risks associated with stroke means people can succeed in reducing and preventing it (Hachinski, 2015). The straightforward strategy in most stroke cases is dealing with and managing all the risk factors so that the incidence of stroke can be reduced (Sakakibara et al., 2017).

1.8 Ethnic Disparities in Stroke Incidence

The fact that ethnic and racial disparities in health care exist raises growing concerns (Smedley, Stith & Nelson, 2003). Ethnic disparities are not limited to certain groups or regions but occur all around the world (Cruz-Flores et al., 2011). It seems that stroke contributes to the disparities along with life expectancy. This can be seen by statistics that show that stroke is higher among African American and Hispanics than white Americans (Lloyd-Jones et al., 2010). There is also a higher prevalence of risk factors for stroke and incidents of stroke among the American Indians and Alaskan native populations compared with white Americans (Schieb, Ayala, Valderrama & Veazie, 2014).

Similarities can also be seen in New Zealand where Māori and Pacific Islanders have stroke earlier in life in comparison with European New Zealanders (Feigin et al., 2015). These examples show that certain ethnicities or racial groups suffer from stroke more than others (Feigin et al., 2015). The ethnic differences in the incidence of stroke has found that Pacific Islanders and Māori had higher significant rates of all types of strokes compared with European New Zealanders (Krishnamurthi et al., 2018). Ethnic differences in stroke incidence within New Zealand have stayed almost the same between 2002 and 2011. It shows a clear gap of 10 to 15 years in the onset of stroke in Pacific Islanders and Māori before New Zealand Europeans (Feigin et al., 2015). In New Zealand there are significant increases in the age of stroke in overall, but stroke occurs in European New Zealanders around age 75 years, while in Māori and Pacific Islanders stroke occurs around 15 year earlier (Feigin et al., 2015). Māori and Pacific Islanders also experience much higher instances of risk in the modifiable risk factors than European New Zealanders (Krishnamurthi et al., 2018; Feigin et al., 2015). This leaves

no doubt of the existence of racial and ethnic disparities in stroke incidents with different people groups in the world.

1.9 Stroke Prevention

Prevention is not optional nowadays and there is great importance to address public health problems implementing intervention widely, as recognized by the World Health Organization (Ulijaszek, 2003; Waxman, 2004). There is a critical need to emphasise the importance of preventing stroke because the preventability of stroke and prevention is the most useful tool to reduce the burden it creates (Kalkonde, Alladi, Kaul & Hachinski, 2018). The straightforward strategy to prevent stroke is targeting the reduction of modifiable risk factors lowering the heavy burden of stroke (Goldstein et al., 2011).

Prevention plays a significant role in the occurrence of stroke. Within New Zealand stroke has decreased by 23% between 1981 and 2012, but the percentage among Māori and Pacific Islanders is still high (Casey, 2018; Feigin et al., 2015). There are several programmes, such as an online prevention programme for stroke survivors by Denham et al. (2018), aimed at reducing the chances of stroke. Participants have reported that engaging in health coaching programs that provide health information helped to prevent them from a second stroke. Studies showed that participating in a stroke prevention programme covering health behaviours, reducing risk factors and managing stroke, reduced the incidence of stroke (Jeon & Jeong, 2015). It is very important to address all of the modifiable risk factors in the prevention of stroke by focusing on making changes in health behaviour (Goldstein et al., 2011).

The first line of intervention for patients with type 2 diabetes and hypertension is diet and physical activity, which can play a role in managing the condition and intervene in cardiovascular risk profiles (Sigal, Kenny, Wasserman, Castaneda-Sceppa & White, 2006). The adaptation of the Bridges stroke self-management programme (Bridges SMP) is another example of a programme that has been used in New Zealand to help stroke survivors. It has many benefits for helping survivors to develop their skills in self-management (Hale et al., 2014). Prevention takes a series of strategies to help people at high risk and these take time, potentially five years for people with a high risk of cardiovascular disease (Feigin et al., 2016).

Changing an individual's lifestyle and behaviours through learning skills and motivation to achieve positive results impacts the intervention process and works on decreasing risk factors

associated with stroke (Larsson, Akesson, & Wolk, 2015). Historically, intervention focused on public health targeting stroke risk factors and had successful results. Today intervention should shift to include the risk in the future by advocating healthy life-style including eating, physical activity, no smoking and maintaining personal health (Claas & Arnett, 2016).

1.10 Randomised Control Trials and behavioural changes

Randomised Control Trials (RCTs) investigating health behaviour change employ a control group to compare the effect of the intervention, with a group not receiving the intervention. It has been observed that control group participants may engage in behaviour change as well (Becker, Roberts & Voelmeck, 2003). In the last few decades, there has been more attention around the impact in the control group especially when using new interventions (Aycock, Hayat, Helvig, Dunbar & Clark, 2018). It has been questioned whether the behaviour of participants in control groups are impacted by their awareness of being part of a study (Quirk et al., 2016). There was a noticeable improvement within participants of the control groups and this kind of improvement occurred because they realized that they were part of a research project (Waters, St George, Chey, & Bauman, 2012).

Researchers coined the term “Hawthorne effect” to refer to any positive influence towards behavioural changes in control group participants. This term became a replacement for the term “Placebo effect” (Wickstrom & Bendix, 2000). There needs to be more focus on studies that explore the Hawthorne effect in control groups (McCarney, et al., 2007). Qualitative research has discussed and described the Hawthorne effect as any positive changes in the behaviour or the outcome, as a result of being aware that participants are a part of a study or from awareness of being observed (Boet, Sharma, Goldman & Reeves, 2012). Empirical studies support the Hawthorne effect in situations where participants knew enough about the aim of the research, which lead them to make behavioural adaptations that would work toward meeting the observer’s expectations (Paradis & Sutkin, 2017).

Various studies have explored how randomized control groups perform and the level of behavioural change. They have described how RCT participants receiving good quality care showed medical and psychological improvements (Ayling, Brierley, Johnson, Heller & Eiser, 2015). Analysis from a 24-week RCT investigating differences and comparing between usual care and metabolic-based diet plans in obese adults showed there was no significant difference in weight loss between the control group and normal care group over time. Both groups

experienced a significant improvement in diet (McDoniel & Hammond, 2010). Qualitative studies worked to explore many hidden factors that impacted control group participants' health behaviour and this suggests that participating in a trial focused on health behaviour change may have led to increased self-awareness and self-care activities that worked towards disease prevention. Another potential benefit of participating in a control group is that it encourages the participants to be self-motivated and independent without professional monitoring (Bongartz, et al. 2017). The added awareness of being part of the control group also helps the process of self-reporting which can lead to an increase in healthy behaviour and have positive health benefits (John & Ziebland, 2004).

It is important to further study the results of control group participants because many participants have also experienced positive outcomes despite not participating in the intervention programmes (Skouteris, McCabe, Swinburn & Hill, 2010). Exploring the experiences of control group participants may be one way to determine ways to improve the design of future control group participants that are based on health behaviour interventions. For example, such studies may inform whether an attention control group is needed in the trial. Study design, however, cannot be the only way to measure the credibility of evidence in health interventions (Gardner, Wardle, Poston & Croker, 2011). There is merit in developing the quality of these studies to discover points of strength and positive impact. Research, especially in the field of prevention, needs more qualitative studies to explore the hidden factors that motivated control group participants' health behaviour.

By looking for the factors that influence control group participants' health behaviour, we get an opportunity to understand why people make change. Deci and Ryan (2000) explained the theory of self-determination (SDT), noting how people are focus on the process of behavioural self-regulation and specifically health behaviour. And It seems that when people have a clear and desired goal, they will persist in certain behaviours that they believe will lead them to achieve their goals (Deci & Ryan, 2000). There needs to be more clarification of why people behave differently or why they choose effective behaviours that help them to achieve the type of goals they desire (Elliot & Church, 1997). For example, a positive change such as increasing their physical activity through achievement goal theory demonstrates that when people realize their present behaviour is causing them problems they can assesses the advantages and disadvantages. This enables them to take positive actions like engaging in physical activity and

sustaining it for an extended time, leading to health benefits (Lochbaum, Podlog, Litchfield, Surles & Hilliard, 2013).

Another way of changing behaviour is looking at the discrepancy-reducing processes; people assess and work toward eliminating discrepancies between their current behaviours and the positive state they desire, then they will make an effort to achieve their goals (Chan & Cameron, 2012). There are two emerging approaches to preventative health behaviours, Rothman, Kelly, Hertel and Salvey (2003) suggest that the goal orientation approach is more effective than avoidance goal orientation. Other people prefer avoidance goal orientation in the behavioural change process and found it very beneficial in the process of quitting bad behaviours like smoking (Worth, Sullivan, Hertel, Jeffery, & Rothman, 2005). It seems that oriented goal setting is commonly used in behavioural prevention because it is more motivational and much easier to observe the improvements toward the desirable states such as lowering cardiovascular diseases risk (Rothman, Kelly, Hertel & Salvey, 2003).

1.11 Qualitative research

Qualitative methods have been used to study human phenomena and are considered as a methodological revolution because of what this method offers the research field. It has a more interpretative and descriptive approach to aspects of human life such as behaviour and relationships, areas that quantitative research methods cannot clearly described (Cypress, 2015). By its nature, qualitative research is an effective method to investigate personal experiences. It depends on data that has been extracted from responses collected from conducting interviews or good observation (Grove, 2019). It is clear that using qualitative research is an effective tool for researchers to describe people's perspectives in certain situations through analysing participants' words with a clear aim of grasping meaning from them (Creswell & Poth, 2018). The effectiveness of using qualitative research is characterized by the ability to understand human experiences and is a suitable method for researchers to explore and interpret the meaning in peoples' experiences (Scharalda & Leonard, 2010). The qualitative research approach can be used to explore, describe, understand and uncover the truth behind any phenomenon (Creswell, Hanson, Clark Plano & Morales, 2007). Qualitative research is distinguished from other types of research because it has a very unique and rich approach that focusses on making an in-depth evaluation of the data (Astroth & Chung, 2018).

1.12 Benefits of Positive Motivations and Health and Wellness Coaching.

Creating incentive to fight stroke can be developed by adapting positive thinking and motivation (Mattei, Mendez, Falcon & Tucker, 2016), that will make major behavioural changes and lead to positive activity that can prevent stroke. Health and Wellness Coaching (HWC) is a strategy that has been used successfully in reducing stroke because of the focus on changing behaviours (Mahon et al., 2017). Reaching for a higher quality of life and good health is an excellent aim for individuals and health-coaching programmes are an excellent tool to achieve desirable health outcomes by helping people to adopt new healthy behaviour as a life-style (Kivelä et al., 2014)

The key role in the HWC method is engaging and directing the clients toward intervention through encouraging them, with a focus on personal positive motivation and factors (Huffman, 2009). Studies show that positive messages motivate most people, especially adults, to participate in physical activities with the aim of intervention (Notthoff, Klomp, Doerwald & Scheibe, 2016). Engagement in HWC provides space for clients to express themselves freely sharing desires and values, which can be empowering in the change process (Huffman, 2009). Research shows that good results are achieved when participants in the HWC programme were coached to manage health risk factors and maintain improvement (Mettler et al., 2014). According to Kivelä et al (2014) there are multiple benefits from using HWC programmes in the treatment of chronic disease associated with social and psychological problems. The effect of HWC helps increase patient confidence, and an encouraging attitude, empathy, careful listening and a non-judgemental attitude from coaches has been effective in seeing successful results in combating type 2 diabetes (McGloin, Timmins, Coates, & Boore, 2015).

Patients with hypertension succeeded to learn and practice new skills that empowered them to self-manage hypertension when they participated in health coaching (Higgins & Scott, 2019). Health coaching has offered strong evidence that it is a promising approach to treat chronic diseases and lower CVD risk factors. It is also a good tool for reducing stress, helping to fight obesity, facilitate weight loss and empower people to establish a new life-style (Edman, Galantino, Hutchinson, & Greeson, 2019). Studies into the effect of healthy days after engagement in health coaching programmes found that there were significant reductions in the average total of unhealthy days (UHDs) which works towards people adopting healthy lifestyles (Cole et al., 2019). Supporting the client's process to achieve a strong and healthy

life is the core belief of the HWC programme. It includes several intervention elements including sessions over a 9 month period which focus on individual challenges, reviewing clients' goals, building strong bridges between coaches and clients, as well as working with client's families as an important part of the success in coaching process (Mahon et al., 2018).

Studies show an unanticipated improvement in intervention trials that targeted health behaviours. Control groups that received usual care lost 1 kg more than ones that received no intervention (Waters, St George, Chey & Bauman, 2012). The studies of different health trials explored the improvements in the behaviour of control group participants in intervention trials exploring an array of behaviours (Jenkins, McAlaney & McCambridge, 2009). In physical activity intervention trials, control group improvement was not uncommon. This may be associated with behavioural measurement and participant characteristics and such associations should be evaluated in future research (Waters, Reeves, Fjeldsoe, & Eakin, 2012). According to Becker, Roberts & Voelmeck (2003), there are some factors that can lead to changes in control groups such as testing effects, maturity of participants and history among other measurement effects. The occurrence of these phenomena, however, provides interesting information about factors affecting healthcare attitudes, knowledge and behaviour change.

This thesis will explore the factors that may influence health and wellness behaviour in the control group of a trial to test an intervention to prevent stroke. This will be done through thematic analysis of qualitative interviews of Control Group participants in the Health and Wellness Coaching study. It should be noted that these participants did not engage in the Health and Wellness Coaching at any time but were a part of the control group participants.

Chapter 2 Methodology

In this study Participants took part in semi-structured interviews, and were asked “What changes if any, have you made to reduce your risk of stroke/cardiovascular event during the course of this study?” such as adapting healthy diet and increase their physical activities and stopping smoking and drinking alcohol and other factors. Interview content will be examined for descriptions of lifestyle behaviour changes and the impact it had on the health and wellbeing of the participants. It will include exploring the changes in diet and physical activity. Results will be described in the qualitative analysis. In addition, some elements related to the method, such as participants’ ethical considerations and trustworthiness, will be addressed in this chapter.

Underpinning Philosophy

The study aims to explore the question: “what are the factors that may influence health and wellness behaviour of participants in the Control Group of a trial to prevent stroke?” The researcher found the most suitable way to understand participants’ experiences was through their words, without giving any interpretation to the meaning, but rather by describing what they said. Braun and Clarke (2006) described the “unidirectional” as the kind of relationship between the words (language) and the meaning of these words and the experience. This means participants’ words should reflect their experience in a straightforward way that allows the experience to be articulated clearly. Participants’ words are able to carry the description of the direct and indirect factors that impacted their health behaviours (Braun & Clarke, 2006).

2.1 Research Methodology: qualitative descriptive analysis

This thesis used a qualitative descriptive analysis approach. Qualitative researchers use descriptive analysis as an effective tool to present the information so as to clarify the meaning of the data. Exploratory-descriptive qualitative studies are designed by researchers to obtain information needed for development of interventions for certain groups of people (Gray, Grove, & Sutherland, 2017). In this method the effectiveness comes from a direct reading of the lines and not reading between the lines of going beyond them. In some cases qualitative description methodology is considered as the lowest category in the qualitative research methods because of the low level of inferences (Sandelowski, 2000). In fact, qualitative description is a valuable method in the qualitative field and there needs to be change in the

thinking about such descriptions, seeing it as a starting point and valuing the final product of the qualitative description itself (Seixas, Smith, & Mitton, 2018). The advantage of using exploratory-descriptive qualitative analysis is its flexibility and the ability to give a clear answer to the research questions when there is no pre-existing theoretical framework or use of any framework to lead the study (Gray, Grove & Sutherland, 2017). In descriptive qualitative analysis the researcher does not try to delve deeply into the data, but works directly with it to find comprehensive summaries of the experiences by using easy and familiar language (Polit & Beck, 2014). Qualitative descriptive research has important values starting with the knowledge that can be attained through this method (Sandelowski, 2010). It is also a good way to deal specifically and accurately with the research in a critical way. Further value of the descriptive approach include; giving respectful considerations for the research and resisting any attempt to simplify the research content, while working to reach strong and stable results (Sandelowski, 2010). The strength of descriptive qualitative studies is the ability to provide insight into problems while addressing those problems, especially if it requires appropriate understanding of the perspectives of individuals, family members or the surrounding community (Grove & Gray, 2019).

the thematic analysis approach in the nursing discipline have found the need to go more beyond the traditional methodologies such as grounded theory in the steps of investigating some specific issues (Thorne, 2016). Other qualitative methodologies may not necessarily work well with other health context and other qualitative methodology does not align with how subjective experiences are perceived from a clinical point of view, where client experiences are seen to be more general experience (Thorne, 2016).

2.2 Trustworthiness in Qualitative Research (the trustworthiness of the findings)

Trustworthiness or rigor of qualitative study simply refers to the degree or the level of confidence in interpretation of the data, making sure the methods used ensure the quality of the study (Connelly, 2016). Trustworthiness of qualitative research is very crucial to verifying that the findings of the studies are useful and refers to the integrity and transparency of those findings (Cope, 2014). Study trustworthiness can be evaluated by examining and addressing four main factors in the findings. These four factors include; transferability, credibility, confirmability and dependability (Thomas & Magilvy, 2011). Therefore, in this section of the current study the researcher will describe how trustworthiness was established through the data and the findings.

Credibility according to Polit and Beck (2014) is the most important criterion in the study and the findings. In fact, it refers to the level of confidence in the truth of the study and therefore the findings. Also credibility is the accurate interpretation, by the researcher, of the views of participants (Polit & Beck, 2014). The qualitative researcher can support his study credibility by engaging with the data through critical observation (Cope, 2014). Because credibility is important for the study, the researcher can use some strategies that are helpful for improving study credibility, such as persistent observation or using peer debriefing credibility. Another strategy is having a checking member. This is where the findings go through a review process and a check of one of the participants data in the study sample to make sure that the researcher interpreted his/her view accurately (Morse, 2015; Cope, 2014). The researcher's supervisor acted as a checking member in the research process.

Gathering different perspectives from participants gives not only completeness to the picture of the data, but also a real credibility to the study findings because the insight of participants' experiences is the primary source (Houghton, Casey, Shaw, & Murphy, 2013). During the coding of the data the researcher was conscious of presenting the truth from the participant experiences across the data. It enabled the researcher to work with a high degree of confidence in presenting the direct truth from data which offers more credibility to the current study.

Dependability is another aspect of the trustworthiness of qualitative studies. Dependability is very similar to reliability in quantitative research. It means stability over time where the participants' experiences are similar throughout various times and conditions in the study data (Polit & Beck, 2014). Basically, dependability is the ability to obtain similar results if the study was repeated after a period of time (Morse, 2015). Researchers can obtain dependability by being responsible in the presentation of the study data and findings. Presenting these in clear and logical ways enables the reader to track the research through clear documentation in the coding and highlighted themes index (Appendix C & D) (Tobin, & Begley, 2004). Throughout this study the researcher has made an effort to present the findings clearly, to ensure ease in tracking the participants' experiences.

Confirmability refers to the degree of consistency in the findings especially if the study is repeated (Polit & Beck, 2014). Confirmability can be demonstrated by the researchers' ability to describe the interpretations from the commencement until conclusion of the study (Cope, 2014). Confirmability in this study is provided by the use of quotes from the participant

experiences alongside the findings. Confirmability also refers to the researcher checking the objectivity of the findings. It can typically be managed by two or more people reviewing the data and coming to an agreement about their meaning (Beck, 2009). Additionally, confirmability can be obtained through use of triangulation, audit trails, and keeping a reflective journal. Reflective journaling is the process of keeping notes about the researchers' increasing self-awareness of the meaning of the phenomenon. Methodological decisions and engaging in reflexivity could also lead the researcher to identify his position of power in the research and how this position of power affects the participants (Kornbluh, 2015).

Transferability in this type of study refers to how the findings can be useful to other people in different settings and how they can be applicable to them in different events or experiences (Polit & Beck, 2014). Houghton, Casey, Shaw and Murphy (2013) explained transferability as the ability for the findings to be fit or applied to other groups in similar settings or conditions. Transferability can be called external validity or generalizability and comes as a result of in-depth description which is essential for a researcher who is interested in transferring the original study findings to other groups in different contexts (Morse, 2015).

Transferability in the qualitative study depends on the researcher giving rich descriptions of the context and providing extensive details of the people that he/she studied. There must also be a high level of transparency in the analysis that will help the reader to gain a realistic picture of the experience that can be used (Amankwaa, 2016). Transferability can be achieved when someone who has not been involved in the study comprehends the meaning for themselves and can make an association between their own individual experiences and the study findings (Cope, 2014). To fulfil the purpose of confirming the transferability in the study, the researcher must offer massive amounts of information that enables the individual reader to examine the study findings and discover if the findings fit with their own experiences (Cope, 2014). In this study there was sufficient information to form themes and sub-themes that portray the participants' experiences through suitable descriptions of the situation that can be applicable to others' experiences. In this current study the participants' demographic characteristics are described in Table 1. Significantly, the participant sample presents good ethnic diversity which can facilitate the transferability to diverse groups of people.

It is imperative when discussing the rigour and trustworthiness of qualitative research that there is adequate acknowledgment of the importance of reflexivity (Lambert, Jommen, &

McSherry, 2010). Reflexivity in qualitative research points to the awareness of the self-reflection or perception of the researcher which is processed continuously and impacts the research (Smith, 2006). Qualitative research allows reflexivity, which is essential in the audit trajectory, through a critical process of the research through internal and external dialogue from the researcher. It can be said that the process of reflectivity is one of the ways that can be used to validate or confirm the quality of research (Tobin, 2004).

Reflexivity can be understood as the influence of the researcher in the study and how the research itself impacts the researcher. Notably, reflexivity depends on the position of the researcher and how a researchers own experience will be reflected in the study (Merriam & Tisdell, 2016). The researcher will naturally impact the research by reflecting on personal thoughts and feelings from their personal experiences. This will have an impact in the process of the research, to some extent (Darawsheh, 2014).

A personal note for the researcher demonstrating how reflexivity was important in the current study.

“Realistically, in this current study, despite the realization of the importance of reflexivity on the qualitative research, there was no space for the effect of personal experience to impact the study in any way. My awareness of the importance of being objective in my presentation and not subjective in my research allowed this to happen. I found myself thinking deeply about the population I was working with and was concerned with determining the factors that impact their health behaviour so that it would match their perspective.

On the other hand, through the process of my research, with the subject of the study determining the factors influencing the health behaviour in the control group and the problem of stroke, I could not ignore my personal experience. One of my family members had a stroke that unfortunately led to severe damage and ended with his death. This brought to mind a lot of memories which also contained information that helped my thinking about the apparent and hidden factors in the process of influencing health behaviour.

This personal experience, I believe, did not lead me to enforce any pre-existing format into my research, but rather it has given me the opportunity to recall many aspects of my personal experience, which were quite similar to the experiences of the participants in the study. This, in fact, led to providing me greater clarification and affirmation that I was on the right track in the process of analysing the data and reaching clear results.”

2.3 The parent Study (PREVENTS) and the HWC Intervention

The parent PREVENTS study was designed to test the effectiveness of a HWC intervention for prevention of stroke and CVD risk in the community (Mahon, 2018). The study was a parallel perspective, randomized, open-treatment, single-blinded end-point trial that included 320 participants with high risk of cardiovascular diseases over 5 years. Participants were divided into two groups; (1) the intervention group: a Health Wellness Coaching (HWC) Group (n=160) that received 15 sessions in the HWC programme over nine months. (2) The control group: Usual care group (n=160) that had assessments every 3 months over a year, covering physical and mental well-being and were not involved in the HWC intervention (Mahon et al., 2018). A number of scales were used to assess health behaviour and health outcomes, such as lifestyle related questions on diet and physical activity, satisfaction of life, health-related quality of life and the questionnaires European Quality of Life-5 Dimensions EQ-5D and PHQ-9 patient health questionnaire. Ethnic diversity was an important consideration in the parent study (**PREVENTS**). There was also an equal presentation of New Zealand ethnic groups, such as NZ European, Māori, Pacific Islander and Asians. There was balanced consideration given to the two groups in the main factors of age, gender and the risk of cardiovascular disease (Mahon et al., 2018). The PREVENTS study included several coaching sessions over a 9 month period which focussed on individual challenges, reviewing clients' goals, building strong bridges between coaches and clients, as well as working with clients' families as an important part of the success in the coaching process (Mahon et al. 2018).

2.4 Participants

Original interviews and data: Qualitative interviews were conducted with a sub-sample of the RCT. Interviews were conducted by a researcher as part of the main study. Potential participants were those who had recently completed the PREVENTS trial. Participants were invited to participate in interviews and those that were willing were individually interviewed, by phone. Participants in the control group were sampled to allow a range of age, gender and ethnic group representation (Table 1). A total of 12 interviews were conducted. There were nine males and three females with an age range of 50 to 70 years (Table 2). Participants differed in terms of their ethnic background. They included; four Asians, two NZ Europeans, three Pasifika and three Māori. The interviews took an average of 30 minutes to complete. The data was audio-recorded and transcribed.

2.5 Procedure

Control Group participants were contacted by the researcher via telephone and/or email to invite them to take part in the study. Participants who gave verbal consent were asked to read the participant information sheet and the consent form. Following this a time was arranged for the participant to sign a copy of the consent form. All consent forms were uploaded into the database and paper forms kept in a secure filing cabinet, located at the offices of the National Institute for Stroke and Applied Neurosciences (NISAN), AUT University, North Campus, Auckland. At the completion of the interview a \$20 food/petrol voucher was given to each participant who had taken part in the study to show appreciation for the time they had given.

Interviews were conducted by a researcher in an initial phone call. These involved the researcher briefly explaining what the study was about before asking questions about their experiences and changes as an outcome of participating in the study control group.

2.6 Data Collection

This data had been collected by researchers in the parent study (PREVENTS) through semi-structured interviews conducted with sub-set participants who agreed to participate in the study. The aim of data collection was exploration of the factors and different levels of improvement and changes in health relevant behaviours such as improvement of self-awareness, self-care, diet and exercises and changes in the participants' health behaviours. This would allow further exploration of the behaviour of participants in an RCT. The findings of this study may help inform the findings of the main trial as well as inform better design of future studies of a similar nature.

In recent decades qualitative researchers have employed many tools to collect data; for example, questionnaires and surveys through mediums such as the internet and phone interviews (Fielding, Lee & Blank, 2017). Qualitative studies use interviews as a tool to collect data and qualitative studies require the researcher to develop an objective relationship with participants so as to present the facts through listening, describing and interpreting the data (Grant & Giddings, 2002).

In this study participants signed a consent form at the beginning of their participation in the study. The interviews were audio-recorded and transcribed. The participants were asked the

following questions regarding their experience of being a part of the study as control group participants.

Semi-structured interview questions with RCT participants.

1. What initially interested you about the study? [text]
 - a. How did you decide whether to take part or not? [text]
 - b. Before this study, were you aware of your risk of stroke? If no, has this changed? How?
 - c. Is reducing your stroke/cardiovascular event risk important to you?
2. How did you find taking part in the study? [text]
 - a. Was there any aspect of the study that you particularly liked or found beneficial? [text]
 - b. Was there anything about the study that you found difficult or frustrating?
3. Are there any particular aspects you particularly liked, and/or feel could have been better? (e.g. the health information booklet given at the beginning, - was it useful?
4. How did you find the frequency of contact by the research team?
 - Just right
 - Too frequent/ often (*Explain... text*)
 - Not often enough (*Explain... text*)
5. How did you find the questionnaires that you completed as part of the study?
 - Easy to understand and answer
 - Some questions were difficult to understand or answer (*Explain... text*)
 - Most of the questions were difficult to understand/answer (*Explain... text*)
6. a) What changes if any, have you made to reduce your risk of stroke / cardiovascular event during the course of this study?
 - b) To what extent did taking part in the study help you to make these changes?
 - c) How did participating in this study contribute to any behaviour changes you may have made?
7. Is there anything else you would like to add? [text]

Data Extraction

Data was obtained by a researcher in the PREVENTS study. The transcripts from the 12 interviews were used for data extraction for this thesis. This involved extracting information from the interview transcripts relating to health behaviour changes undertaken as a participant in the study and the factors that influenced these changes in the Control Group only.

2.7 Ethical considerations

Ethical approval was obtained prior to the current study from the Health and Disability Ethics Committee HDEC (approval: 16/174; Appendix A) and Auckland University of Technology Ethics Committee AUTECH (approval: 11/297; Appendix B). Participants for the current study were participants in the PREVENTS HWC control group who agreed they could be contacted for the research. Participants were informed about the study through an information sheet which included clear details of the study and their choice of participating in the study's control group. Their agreement has been documented with signed consent for collecting their data. The set of data used in the current study was collected by other researchers and has been stored with consent forms and data and given to the PREVENTS study manager. Recorded data and transcripts have been secured at AUT.

In this thesis the researcher has taken practical steps to ensure privacy, confidentiality and respect for both the reader and the participant. Participants' names were therefore not used (Oye, Sorensen, & Glasdam, 2016). Participant's names have been replaced with a numerical value and there is no indication of participants' identification so as to maintain their privacy. Furthermore while analysing participant's data and writing the results the researcher did not hold or express any negative attitudes toward the participants' experiences through words or expression (Robling, et al., 2004).

2.8 Data Analysis: Thematic Analysis

The thematic analysis approach was used in this thesis. Howitt (2016) refers to how thematic analysis has been widely used in reports and how users of thematic analysis give more attention to the details of the process in order to confirm the findings accurately. Thematic analysis can be a method which allows researchers to use qualitative analysis, even though they lack extensive experience in qualitative research theories and structured foundations, as compared to other techniques in qualitative research. Thematic analysis enables identification of the

patterns or similarities in the data and leads the discovery process in reaching the main themes (Braun & Clarke, 2006).

The data from the 12 participants was coded (Appendix C) then, after intensive reading and rereading of the data, the main themes aspects of the data were highlighted. Braun and Clarke (2006) noted that finding themes comes from familiarity with the data and this is a result of deep reading and observation. The analysis of the data needed flexibility and time to read and process the data so as to grasp the intended meaning (Grove, & Gray, 2019). The similarities or patterns were found and highlighted codes clustered together to indicate clear themes. These have been given titles and sub-themes analysed by using a data illustrative approach (Braun & Clarke, 2013). In the final report the researcher produced the findings in a storyline that described the participants' experiences (Vaismordi, Turunen, & Bondas, 2013).

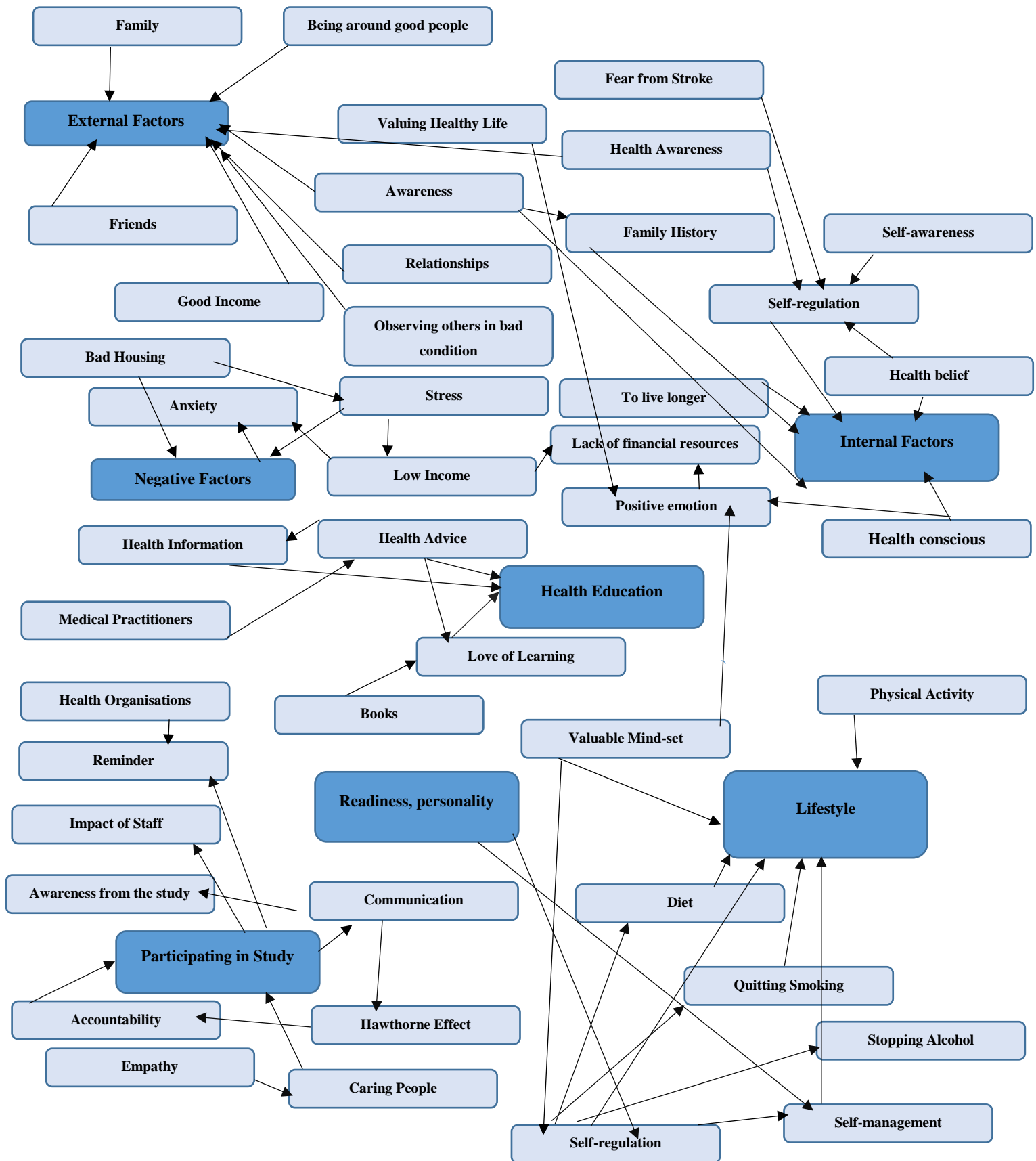
Thematic analysis is highly flexible and can be used with several theoretical frameworks. This thematic analysis used an inductive approach that was data driven. The researcher did not try to fit it into any kind of pre-existing framework (Braun & Clarke, 2006). It has been found that in some cases researchers may look for themes to suit their theory or to match with assumptions or scientific hypotheses. In those cases there is a pre-existing framework and there is need for confirmation from the data (Braun & Clarke, 2006). However, the inductive approach was used to explore the factors that impacted participants' health behaviour through their experiences of being participants in the study control group. There was no existing set of assumptions or aim to prove the feasibility of a theory.

2.9 Practical steps in making the final report.

The researcher obtained the Ethical approval prior to the current study from the Health and Disability Ethics Committee HDEC (approval: 16/174; Appendix A) and Auckland University of Technology Ethics Committee AUTECH (approval: 11/297; Appendix B). The researcher has replaced participant information and identified them by using numbers from 1 to 12. Participants' demographics were demonstrated in table 1 in chapter 3. The coding was done using Microsoft Word documents to code each interview separately (Appendix C). Comments have been added to each line to indicate important information the researcher wished to focus on. Following that, different colours were used to highlight similarities (Appendix D). Once each interview was coded and highlights done, the researcher collated all quotes and comments in a separate document. These were reorganized to present a clear

picture of the findings. After this the researcher identified 7 themes, each theme with a number of sub-themes, and this step was finished with an initial thematic map (Figure 1). The researcher then undertook analysis of the themes and started writing a draft report. Throughout the analysis process the researcher found some similarities in the sub-themes. A rereading of the data resulted in a rearranging of some of the points to write the report. After further reading and writing the draft report it enabled the researcher to make further changes found in the final thematic map (Figure 2).

Figure 1. Initial Thematic Map



Chapter 3. Results

This chapter describes the results of the qualitative study and presents the themes and sub-themes that were derived by the thematic analysis method. Demographic characteristics of the sample are presented in (Table 1).

Table 1. Demographic characteristics of the participants in the control group (n=12)

Characteristic		n
Age	50-54	1
	55- 59	2
	60-64	3
	65-69	4
	70-72	2
Gender	Male	9
	Female	3
Stratified Ethnic Group	Asian	4
	NZ European	2
	Pasifika	3
	Māori	3
Self-identified Ethnicity	Indian	4
	Māori	3
	NZ European	2
	Cook Islander	2
	Samoan	1

3.1 Demographic Features of Control Group Participants

The qualitative interviews were conducted with a sub-sample of the control group Participants. A total of 12 participants from the control arm of the PREVENTs trial took part in the qualitative interviews. Potential participants were invited to participate in interviews and those that were willing were individually interviewed, on the phone. Participants were sampled to allow for a range of age, gender and ethnic group representation. The control group participants were comprised of nine males and three females with an age range of 50 to 72 years. Participants differed in ethnic background, including; four Asians, two NZ European, three Pasifika and three Māori. Interviews were conducted by a researcher as part of the PREVENTs study.

3.2 Themes and Sub-themes

The use of thematic analysis of the interviews was a suitable method which generated seven overarching themes from the data. The findings highlighted the factors that may influence health and wellness behaviour in the Control group of a trial to prevent stroke. This was done through thematic analysis of qualitative interviews of Control Group participants in the Health and Wellness Coaching study. The factors were found to demonstrate positive direct and indirect impact in health and wellness behaviour. They acknowledge some barriers that affect health behaviour negatively. The seven themes that emerged from the data (Figure 2) are as follows:

Theme 1: Internal factors impacting health behaviour.

Theme 2: External factors impacting health behaviour.

Theme 3: The impact of learning and health information in changing health behaviour.

Theme 4: Making practical changes in lifestyle.

Theme 5: The direct impact of being in the study/study elements impacting health behaviour.

Theme 6: The role of readiness and positive emotions on behaviour

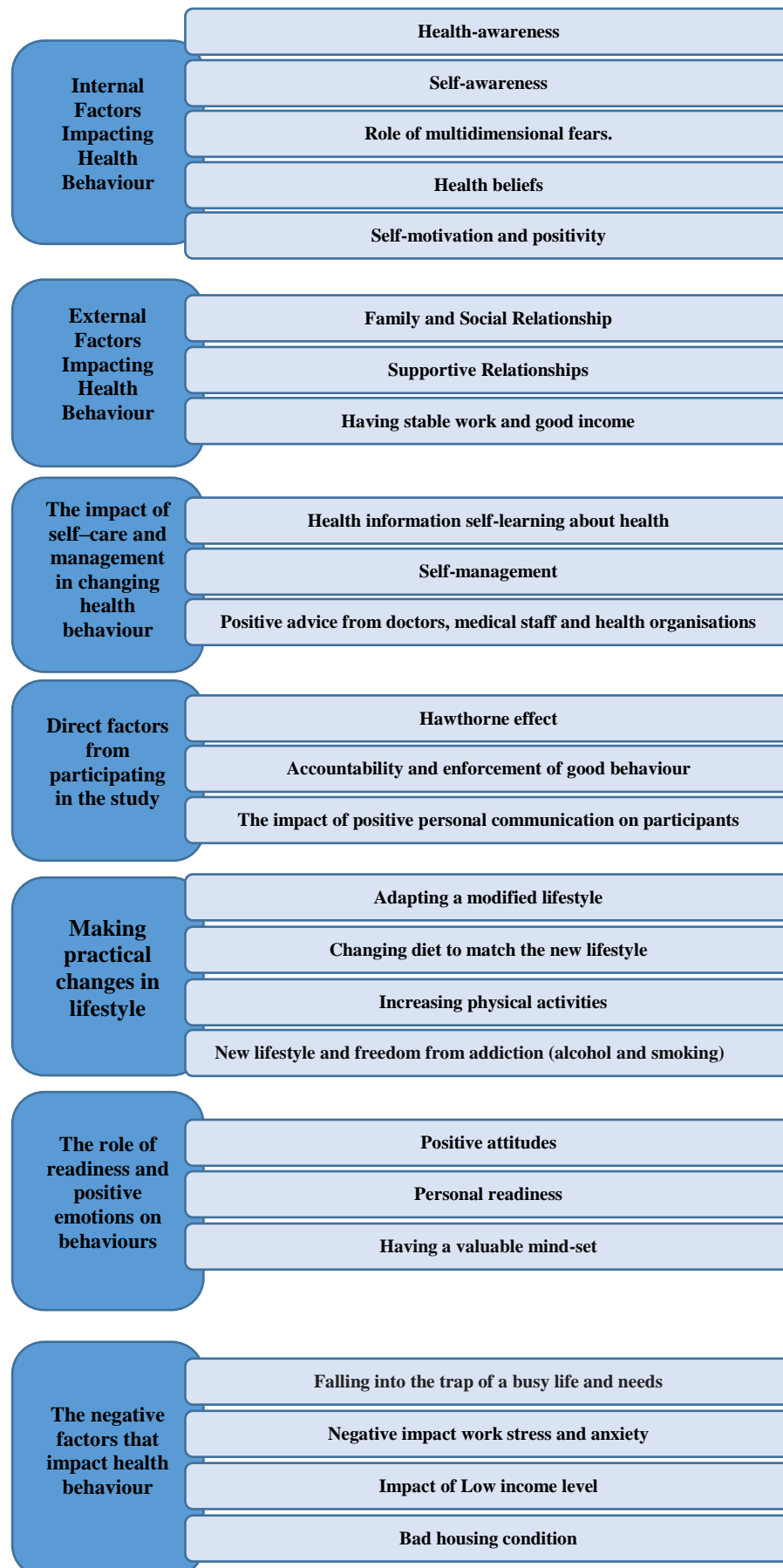
Theme 7: Negative factors impacting health behaviour.

This chapter will use quotes from the participants to describe their experience. The researcher used a number to refer to the participants as outlined in Table 2, in keeping with the confidentiality of the participants.

Table 2: Characteristics of the Participants

Participant number	Ethnicity	Age	Gender
1	Cook Island	55	Female
2	NZ European	66	Female
3	NZ European	62	Female
4	Samoan	67	Male
5	Indian	69	Male
6	Cook Island	70	Male
7	Māori	67	Male
8	Indian	51	Male
9	Māori	60	Male
10	Māori	63	Male
11	Indian	58	Male
12	Indian	72	Male

Themes, and sub-themes (Figure 2).



3.2.1 Theme one: Internal Factors Impacting Health Behaviour.

Self-awareness

There were a number of personal experiences and elements that motivated participants to make changes towards healthy behaviour. The changes were identified as important and necessary, but not easy. In general people experience changes in their lives from external influences, but it also comes from internal factors such as triggers that lead to internal change. Each action must have a starting point or a match to ignite it and here the starting point in the process was self-awareness of fitness levels and bad health.

"I've been more aware of, more conscious of I guess..." (Participant 1).

"I'm, I'm always er, you know, aware of my health" (Participant 4).

"Oh, in many ways, it, it made me more aware of what it's all about. And then, because I've been around doctors and I'm in hospital now, I get quite a few people to talk to" (Participant 5).

"Yes I was aware of my CVD risk because of my diabetes and blood pressure, and that's why I took the participate, participate in the study" (Participant 12).

Participants' awareness helped them to be mindful of the way they were thinking about their health.

"A bit more focus in terms of being mindful of what you put into your body..." (Participant 2).

"To be honest, I don't volunteer for anything, but er I knew it would be a good thing for health, I'd rather you know, get into it, what can I lose?" (Participant 4).

It seems that participants were highly interested in the effort they were making toward positive change and consciously started self-monitoring and evaluating themselves.

“I just kept an eye on my, erm, well my, what I ate as well, and erm how I behaved towards things” (Participant 1).

“Whatever you do you’ve got to be honest about it because otherwise it’s just a waste of time” (Participant 9).

Participants were positively impacted from monitoring themselves. This showed a readiness to be self-accountable and helped them to maintain their changes, as expressed by a man in his sixties:

“Oh, well it was helpful in me actually opening my eyes and saying to myself, you know if you’re gonna do it, get yourself in front otherwise don’t bother- Yeah, yeah, it sounds like, you know, being held accountable, by being honest, holding that mirror up” (Participant 9).

Another level of accountability that affected participants’ health behaviour was when some of them recognized their feelings of being accountable to someone else or being observed by someone like study staff. This gave them a positive push and encouraged them to make more effort to change. That was clear with participant number 3 and 8.

“Oh because [inaudible] it’s just like oh you’re asking me, I mean when you ask questions; are you feeling...what did you mean about reducing er your diabetes...or reducing your blood pressure and all that, so that making me more concerned and more cautious” (Participant 3).

“Just from the very start...I watched it because I knew the next three months were coming up for another interview, so I just yeah, they prompt effort” (Participant 8).

Self-motivation and positive thinking.

Participants in the control groups were not contacted by the HWC programme. They did, however, find ways to make positive changes in their lives and changes in their health behaviour. These changes were achieved through the impact of self-motivation. Without motivation it is hard to make changes or achieve results. Many participants of different cultural backgrounds, such as New Zealand European Māori and Pasifika, had similarities in their motivations which helped them to make changes in their lifestyle.

“I thought I’d might you know, need to change [inaudible]” (Participant 4).

“So I on my part, I am doing it” (Participant 3).

“I do try” (Participant 8).

“I have that attitude to do something more” (Participant 9).

“Yeah independently, yeah, yeah” (Participant 11).

“Yeah, and I need to help myself too, I know what’s right, yeah... Yes, already quite motivated to make some changes, um.. I knew I had to make some changes in my life and this was a good start to do it ... Yeah, yeah, yeah, [inaudible] because I am a very positive person, I mean I like to be” (Participant 7).

Recognition of the danger of high risk factors.

Recognition played a critical role within participants’ health behavioural changes. They recognised different aspects in their life or noticed things around them that motivated them to work toward redirecting their behaviour. This was especially true when they had a clear recognition of the negative side of the issues surrounding stroke. Participants’ recognition of their high risk factors raised awareness of their need to take action towards positive health behaviours, for example the recognition of risk factors such as diabetes, CVD, blood pressure, smoking or being older.

“It made me a little bit more, what do you call, conscious and cautious and made me more aware because I was being told by the doctor, because of my, you know diabetes and other things, you know that it could be, you know, a problem. Ahh because er, I mean er, er medically...what the doctor is saying is not just that you have diabetes and it’s not controlled and you have blood pressure and all that, there are these risks right?” (Participant 3).

“But erm, I persevered in terms of continuing to look for other opportunities and erm after quite some considerable time as an older person” (Participant 2).

“Yes, and I smoke” (Participant 10).

A positive side of their recognition came from their observation and acknowledgement of the strong association between being healthy and having a good and long life. A male in his late sixties showed his positivity and hope to live longer like his parents.

“Our parents who are 81 and 82, so we’d like to be, you know, I mean they’ve been very healthy otherwise they wouldn’t still be here” (Participant 7).

One participant expressed his desire to be healthy in general recognising the necessity of being physically and mentally healthy. This point of view initiated his efforts make changes.

“Just thinking a bit more actively about doing things that impact on my state of mind and general health and or well-being” (Participant 2).

Role of multidimensional fears.

Normally fear is a negative experience for people, we have been taught nothing good comes out of fear, but participants experiencing fear found it played a positive role in their health behaviour. Participants’ fear came from:-

(a) Family history, as many diseases are genetic or lifestyle related and family members, especially children, can have the same problem. In this example one of the participants is fearful of the disease history in her family, as three generations struggle with diabetes.

“I knew that I had to er, watch my diet because my mother was a diabetic, but you know it was there but it wasn’t there. My son’s got, my son’s going through the same thing. He, he has lows as well and I said yeah, and it can quickly turn to high so...But he’s trying to watch it as well” (Participant 8).

(b) The health risk or threat of certain consequences like blindness, visiting the hospital and seeing sick people.

“Because, you know, I...I have this er [inaudible] issue and that prompted me to take some action, rather than losing the eyesight. That is the main reason why” (Participant 12).

“Because er, changes and er, whenever I go to the hospital and everything, you can see the people there, they make you changes, like some of my friends yeah... they are sick, then when you say anything they never listen hey” (Participant 11)

(c) The suffering associated with current health problems and the desire not to get worse.

“Yeah, I sure, I sure am. I’m more aware of what can and can’t happen.....So, for example.... Well... I’m in the hospital now” (Participant 5).

The right emotional state and mental stability for positive changes.

The impact of the feeling of gratitude, which stemmed from the help and care received by participants, was very clear. They felt the care and kindness on a personal level from some of the study staff and that facilitated a positive response in them and really touched them. A good example is one of the participants who was influenced by care and kindness, on a personal

level, when he experienced genuine sympathy from the study manager toward his poor life condition. This reflected on him positively as seen in his comment.

“I would’ve er, you know, thanked her personally because it’s been awhile, since last year ...well just er, just say she helped me getting into it.”...“I am grateful for that. ...the service, they look after you, good on you people, why not just join it and see what’s the outcome.....At least people are trying to help” (Participant 4).

Participants who had a readiness and stability of mind succeeded to put themselves in a better position to make positive changes in their life.

“Ahh, when I am er, doing something or the other, like physically, I am trying to reduce my weight but whether I am successful, it’s, it’s a slow process. At least mentally I am prepared” (Participant 6).

One participant seemed to be very positive about his journey of change because of the peace of mind that came after his re-settlement. The satisfaction toward the place he lived in really impacted his attitude and mind-set toward his health behaviour.

“You know, and then she had a talk, she seen where I live and all that, recommended this and that, and I end up in a nice unit here” (Participant 4).

Participants’ statements about changing their normal way of thinking showed this was a factor in making changes in their health behaviours. Some of them pointed to the internal changes in their thinking that helped them to make progress in their health. The positivity to take small steps towards change and stability in thinking about the health condition was one of the positive generators behind the positive behavioural change. One participant described this by saying:

“I think for me, even though it’s only a small piece it’s part of a bigger picture. So yeah, I did take things for it to make my mind change so I could move in a different direction” (Participant 9).

Other participants talked about the process of change and demonstrated the change in mentality in their comments.

“Um I knew I had to make some changes in my life and this was a good start to do it... ultimately my goal is to come off those ... so I’m still working towards that goal” (Participant 7).

“Well, instead of getting all upset and worrying about things, erm well I just sort of sit in there and think well if this can be happening, what’s going on, instead of getting all over-heater....It made me think about how to.” (Participant 1).

3.2.2 Theme Two: External positive factors impacting health behaviour.

This theme emerged from the knowledge of the external positive factors that had an effect on health behaviours. Some people were able to make changes by depending on their own decisions and strength, but there were some other factors which were also able to guide and drive behaviours. A person cannot separate themselves from these factors and they also play a strong role in the process of change. The following sub-themes were direct external factors that illustrate the energy behind the behavioural changes.

Family and Social Responsibility

The participant data described critical factors that had a powerful impact on them such as: family as the most valuable aspect in peoples life regardless of age or longevity; valuing being with family, especially children and grandchildren; wanting to be good role models for them and teaching them the value of a healthy lifestyle; caring for the family and looking after family had a significant positive impact for participants. Two participants had very similar family values such as close family relationship and family role models that were the empowering factor that pushed them to make changes in their health behaviours.

“I need to be around my grandchildren, I’d like to be, my family...yes actually our whole family are, We’re quite a close-knit family and Um, we’ve got a...you know it starts at home, so we like to start it, you know, do it with our family who we love most dearly...and what we do, it filters down to our

children, and my children are adult children with their children, we take advantage of it, we get together as a family, um.... I can now say I'm no longer a smoker. And um, my sister, although she's only recently given up smoking, that was from my encouragement to stop it." (Participant 7).

"Our grandkids come round and they run around the house..., I mean it's pointless me sitting in front of my grandchildren going "eat your vegetables" yeah? You have to set them an example, and that's what I...basically I was doing this for myself, but I found that if I did it, I felt more confident in telling them to eat their vegetables" (Participant 9).

Participants found a strong motivational factor was family and the joy and satisfaction of being around them. This helped them to take real action in their health behaviours. Participants were motivated not only by their love toward family but also by a strong feeling and consideration of the social responsibility toward their family and community. Not wanting to lose their family or their social life was one of the direct factors that had an impact on them.

"Because we have to look after ourselves right? And family, yeah." (Participant 11).

"And that is the only thing...and it's a social responsibility, I considered." (Participant 12).

"Then if you think about why I'm doing it, I just know that I, right okay I've got to go to work today, I've got to work really hard, to make the boss happy and everything else." (Participant 9).

Family and social responsibility was a strong and direct motivational factor for some of the participants. They wanted to be active and present for their families and take responsibility for the people they love. This motivated them to make positive changes in their life in recognition of their role in their family to help them remain strong and healthy.

Relationships and being among good friends

Relationships are a compelling part of life in general, and they are very important because people due to the impact on individuals. This study clearly shows that some participants' health behaviour underwent a reshaping stage due to being among good friends and people who have the same health values. This was particularly noted when they took regular challenges to improve their health.

“We have always had a reasonably healthy approach to the way we live. I mean so we don't consume lots of, heaps of junk food, we don't erm, ah, we're not couch potatoes, ah and generally speaking our friends have a similar sort of approach to their lives” (Participant 2).

“I can now say I'm no longer a smoker. And um, my sister, although she's only recently given up smoking” ...“We have monthly, oh sorry three monthly challenges going on. We've actually got a six week challenge going on, just amongst our family. We have I sessional trainer within that group. We have been doing this for a couple of years yes. Well actually 18 months, um, you know, we get together on a Sunday, we go do the Panmure Basin. We live out south so we do [inaudible] we have some lovely parks out there” (Participant 7).

Having stable work and good income

The desire for work was one of the factors that led participants to make changes in health behaviour. It was a very important value in their life that gave them peace of mind. Stable work and good income encouraged them to be positive and satisfied. The fear of losing their jobs also made them more alert to their health behaviour. Participants expressed the importance of work by stating that:

“I'm in employmentYeah, yeah, it was useful. I think um, I think it clarified. You know I wasn't working at that point, I think it really clarified for me the fact that um, anxiety and money and work and all those things, erm probably you know, er probably had an impact on my state of mind and

working and having an income is good for your health..... There's no question about that." (Participant 2).

3.2.3 Theme 3. The impact of self-learning, knowledge and health information in changing health behaviour

The third theme that developed was the impact of self-learning and the participants' familiarity with their problem. This learning and knowledge had a profound and positive impact on changing their health behaviour. Other factors that supported participants to make changes included information, advice and direct guidance.

Self-learning and the love of knowledge about health

It is noticeable here that the first stage of participants' awareness was in regards to the seriousness of their health problems and the high risk of stroke. The self-awareness stage developed through collecting knowledge and self-learning about their problem. This was done in order to reach a degree of understanding so as to aid them in the prevention process and to make a change towards healthy behaviour.

"Ahhh mainly to find out what stroke and heart conditions are all about, because I really didn't know anything about them, I learnt more about, I, I, I kind of researched more myself, like I said before I googled, and I go to the doctor's on a regular basis you know for my medication, and um, I would ask more questions..." (Participant 7).

"You know becoming, becoming more knowledgeable." (Participant 3).

The oldest participant, a 72 year old male became aware of how unhealthy his normal diet was through self-learning. He started to make better decisions about his eating by avoiding foods that would affect his health negatively.

"See I, I stopped erm taking meat products, I stopped taking er chapattis, eating chapattis, which are high glycaemic index and glycaemic load, and er

I'm mostly on now hi fibre content, and the combination of er [inaudible] and proteins.” (Participant 12).

Another participant was impacted in two ways. Firstly by educating himself and learning health information. Secondly, and more significantly, through learning by observation, after seeing sick friends and their health behaviours.

“It’s allowed me to take all the information and regardless of where it’s come from because I want to learn something about, what do you call that, when you do the interview, I can have some ideas about diabetes and all this stroke.” ... “Because er, changes and er, whenever I go to the hospital and everything you can see the people there, they make you changes, like some of my friends yeah...they are sick, then when you say anything they never listen hey... Yeah, that’s why, how I change it.” (Participant 11).

The role of health educational materials, books and guidance from health information

Although the participants in the control group did not receive any kind of training or assistance from HWC programme, they received a booklet containing valuable and useful information regarding the problem of stroke and its prevention. This educational material played a positive role in their awareness of their health.

Researcher: *“Okay, and er, do you remember receiving a health information book from us at the beginning, was it useful?”*

Participant 11: *“Yeah, yeah [inaudible] Yes it was useful, yeahbecause the information is there about the stroke and the diabetes.”*

“Oh yes. It’s good and it still sits on my bedside cabinet and I share it with my family. I gave it to them, I mean it’s very useful information, Yes and its good reading material. It is very good.” (Participant 7)

“But it was still an interesting thing to read and check up on.” (Participant 8)

The most powerful testimony that reading a book can make a significant change in someone's health is seen clearly from the oldest participant in the control group. He talked about a significant revelation from reading a book about diabetes which empowered him to work towards overcoming his biggest risk factor.

"Six months back I started this when I went to, when I went overseas and I read a book that diabetes can be reversed. Yeah." (Participant 12)

Interviewer: *"That's great so you've erm, read some stuff and it's motivated you to make some changes."*

"Yeah that's right" (Participant 12).

This participant demonstrates how new and accurate new health information can assist and support changes in health behaviour.

Positive advice from doctors, medical staff and health organisations

Undoubtedly doctors and health workers work towards helping those suffering from disease and provide the best treatment available for their patients especially those having high risks of fatal diseases such as stroke. The experience of some participants showed the immense impact of the medical professionals in the process of their health behaviour change. This was particularly notable when the impact was related to broader and greater factors than the provision of drugs. Participants explained how their doctors' advice was a starting point for engaging in the study which would help their health condition.

Researcher: *"So first of all, can you tell me what made you want to take part in the study?"*

"Oh, I'd been asked...I was told to just be aware of heart attack."
(Participant 4).

"Oh I think it came from the doctor & 3 because I was recommended by the doctor." (Participant 3).

“My doctor must’ve suggested it so I said to her and she said just “go for it” and I went “ah okay”. (Participant 8).

“I’ve been around doctors and I’m in hospital now, I get quite a few people to talk to, even one of the bosses here, he works with you guys” (Participant 5).

It seems that the positive impact from doctors, medical staff and hospitals was fundamental to supporting participants’ adoption of a new perspective to make changes in their health behaviours.

“The doctors are very good, for the health care system is also very good in New Zealand. I’m quite, very happy. And I can say New Zealand is the only country, I can tell you, I mean I have stayed many years in Nigeria and I have friends all over and when I discussed with them the healthcare and the respect for the seniors and elders given, is awesome.” (Participant 12).

In addition to all the positive points about healthcare, this participant found that the New Zealand healthcare system was a unique model for him especially in the care and respect given to the elderly. Participants’ experiences were not related to only the usual medical help, but the positive impact was also the result of an effective mix of support, advice, care, awareness and communication, leading most of them to start and maintain good health behaviour.

3.2.4 Theme 4: Direct factors from study participation

The fourth theme is the influence of participation in the study itself. For many participants, participation had a direct impact on changing their behaviour, qualitatively improving their health and facing the danger of stroke. The study had many elements that made a direct impact on participants and lead them to make positive changes in their health behaviours.

The effect of participating in the study was constructive and participants appeared to go through several stages of development due to the various elements contained in the study. This led to success and change in behaviour. This was apparent in the first stage; understanding of the

basics – an awareness of the problem and the importance of prevention. Notably, the study addressed the issue of some participants' lack of awareness.

Researcher: “so before this study, were you aware of your risk of having a stroke or heart attack, were you aware that there was some increased risk there?”

Participant 1: “No I wasn’t!”

Participant 8: “No”

Taking part in the study enabled participants to gain an awareness which influenced them from the beginning of the study by being in the control group. Although they did not receive any help from the HWC programme they gained some obvious benefits.

“That you were doing research about people suffering from high blood pressure and diabetes and all that...and then maybe you know that also it makes us aware of the problem that I’ve got.” .. “Yes, this study it made me a little bit more, what do you call, conscious and cautious and made me more aware”...” And your study also is making me aware of exercise, of food intake” (Participant 3).

“Yes I mean it’s definitely helped” (Participant 6).

“It’s made me aware so.” (Participant 8).

“So that’s what I mean, it helped me to look at it properly” (Participant 9).

“It definitely had a health benefit on myself, just a bit more information and awareness” (Participant 10).

“More aware” (Participant 11).

Impact of being alert and given reminders from the study

From the initial contact through to participating in the study, participants were reminded about how serious their problem was and that encouraged them to rethink their problem.

“I think it’s always beneficial to be reminded, yeah ... in a way that encourages you to reflect. So erm to that extent yes” (Participant 2).

“It was okay. I don’t have any complaints about um the regularity of when calls were made, I think it was okay. And being kept informed, you know they gave you reminders, I mean I kind of did need the reminders because I’m so busy” (Participant 7).

“Well, just, just the ringing up every three months and making you aware of...that you should be on, er, on a diet [laughs] Yeah, yeah.” (Participant 8).

Participants showed the benefits of phone calls during the study that asked about their health and what they had done for their problem.

Researcher: *“We would contact you every so often and ask you questions about your health and your lifestyle...do you feel like that had any positive impact on you at all?”*

“Yeah, sure. Yeah.” (Participant 5).

“They were good because they made me, erm, they sort of jolted again, to let me know what I was doing, if I was wrong, you know, and that... I found them very, they were good.” (Participant 1).

“Oh because [inaudible] it’s just like oh you’re asking me, I mean when you ask questions; are you feeling...what did you mean about reducing your diabetes...or reducing your blood pressure and all that, so that making me more concerned and more cautious” (Participant 3).

The study helped to reinforce healthier behaviour

The reinforcement in participant behaviour came through phone calls, questions or being asked in the conversation. All of these elements had a strong positive impact on them. This experience could be summarised by participants' statements saying:

"I mean, I, I don't know that if I wasn't on this study, whether I would've given up smoking..... this made me, this really did push me to stop Yeah, yeah, yeah, it did keep me on track and made me um, kind of gave me that motivation um, to work towards getting off the pills. That is one of my goals anyway" (Participant 7).

"Well the study certainly helped with reinforcing all this stuff" (Participant 10).

"Ahh, I've made changes alright" (Participant 5).

"Well I tried to yes, which from this study has helped me do that, yeah" (Participant 8).

"So that's what I mean, it helped me to look at it properly." (Participant 9).

"Yes it has made me more aware of the situation and er, responsible in my diet, in my medication and in my erm, and exercise,it is beneficial, it is not frustrating at all" (Participant 12).

"I'm just glad to be part of the study... Really grateful for the study" (Participant 4).

The impact of positive personal communication on participants

It is clear that the participants were noticeably affected by the quality of their communication with the research team. The care, cooperation and encouragement as well as valuable advice and information had a positive impact on the participants. In addition the contact of some of the team members with participants helped them to improve their quality of life.

“Er no, No I thought, I think your people were um, sufficiently er...they persevered” (Participant 2).

“When you rang I felt more confident in saying something” (Participant 9).

“I suppose the person who rang up and suggested this was quite um, was very compelling, so I agreed to it. ..._Um it was quite easy, the people who I talked to we’re pretty erm accommodating. We’d fix up a time and if it was not... [stops self], they were very punctual when they rang up, and on a couple of occasions, like us, like with you today, the timing didn’t work out, but you know there was no problem, they were happy to reschedule. ... , everyone I’ve talked to on the study was very accommodative, we’re happy to ring back later, and that is a very er [stops self], you get so many telemarketers ringing saying I want to know this now and they never ring back or whatever, but they were very accommodating, very professional” (Participant 10).

It was apparent, from the experiences of some participants, that communication on a human level, even though an academic study, had a vital effect on people. This is indeed the experience of some participants, who because of their appreciation of the researchers and their attempt to help them changed their behaviour positively.

“Oh well I liked the, er, there was a lady (the study boss) that did help me you know. A whole lot, according to my status, where I was living and all that, and really I am grateful for that. ... I would’ve you know, thanked her personally because ... she helped me Getting into it ... she does, you know

interview me, and she mails news and all that,. That quite helped me ...”
(Participant 4).

“They were very courteous and nice” (Participant 8).

“It was good, good to talk to them... they were very helpful... but it’s always so nice to see someone on the other end being understanding about it... Thanks appreciate it and thanks for taking time so late in the evening to do this” (Participant 10).

“Ah, because the day, the first time when you came home and you, remember, you told me plenty things, so I have stopped all this, smoking and everything” ...” Oh er everything is alright, er the best is that I get, I get some advice from you” (Participant 11).

“The lady that was taking the interview... she was very courteous and very cooperative... Whatever you have done is much satisfaction of myself and I mean, for all the people, it is perfectly well thought of strategy and well thought of planning which was done” (Participant 12).

There is no doubt that the human element in the study, whether through direct personal contact from people from the study or through communication in different ways, had an impact on the participants. Clearly, this element has a way of influencing people and their way of thinking and created positive reactions in their health behaviour.

3.2.5 Theme 5: Making real changes in their lifestyle.

There were significant developments in the awareness of the presence of high risk factors for stroke. The participants gained a heightened awareness of the problem which was very beneficial, as seen in the previous themes. In this theme cognitive knowledge lead to practical changes where participants transformed their lifestyle in order to face their problem. This theme can be considered as a positive model and a recipe for self-protection due to the reduction of stroke risk from the high to lower levels. Analysis of participants’ experiences enabled identification of several factors that led to making the changes in health behaviour.

A new mind-set behind the new lifestyle

Behavioural change is not something that happens in a short time and is then quickly undone. Change is more than that, it becomes a lifestyle. Adapting to a new mind-set toward good health and avoidance of stroke can bring a change in perception. The new mind-set helped the participants to shift their unhealthy behaviours to a new perception, which in turn transformed their lifestyle in such a way as to help intervention in stroke.

One participant summarised the main core of the change by making this statement:

“If I put them all together, then, then what I’m doing now is actually part of that who mind-set, culture change... yeah, honestly? It’s sort of like become part of what I do now, ... Yeah, yeah, yeah I’ve made a whole lot of changes. I used to enjoy takeaways, you know fish and chips, pizzas, all the rubbish you can get. Now I cook my own” (Participant 9).

The participant here reaches a point where the changes became holistic, as changing his perspective about food brought practical transformation in relation to his new understanding of what is good or bad for his health condition. The value of the new mind-set was demonstrated clearly when the participant described his previous diet as rubbish, not because of the change of food but the change of mind-set with regards to healthy food.

Changing diet to match the new lifestyle

It is known that many of the stroke risk factors occur because of an unhealthy diet which leads to diabetes, high cholesterol, or obesity. Therefore participants needed to begin to address and confront the modifiable risk factors, such as food. They needed to adapt to the principal of having a new healthy diet as a major part of their new lifestyle. Participants described the features of their changes in diet, specifically the introduction of healthy foods, like vegetables, into their diet.

“See I, I stopped taking meat products, I stopped taking chapattis, eating chapattis, which are high glycaemic index and glycaemic load, and I’m mostly on now hi fibre content, and the combination of er [inaudible] and

proteins. And I try to restrict myself to only to two intakes in a day ... And erm major change is milk and milk products is totally avoided now, I'm not drinking any tea, no other milk, nothing" (Participant 12).

"You know, I got into a lot of onions [laughs], er all this other stuff for high blood pressure, cholesterol, er hopefully it will reduce, garlic, turmeric [inaudible]" (Participant 4).

One participant showed how he saw food differently after having a change in his perception in regards to food. The change in perspective caused him to relabel the food he used to enjoy as rubbish.

"Yeah, yeah, yeah I've made a whole lot of changes. I used to enjoy takeaways, you know fish and chips, pizzas, all the rubbish you can get. Now I cook my own....I also, I wasn't a very good vegetable eater, but um, I started eating more leafy vegetables. Bok choy is one of my favourites at the moment. And I eat all of that, I make it into a stew, I make a stew-up".
(Participant 9).

It seems that conscience played a strong role in creating the new diet and led some participants to use an avoidance strategy to stop the consumption of harmful foods like sugar and salt that are associated with risk factors.

"Start of being conscious of what I was doing the first one was salt, you know do you use salt on your food after it's cooked, and I don't," (Participant 8).

"More particular in the taking of food. Not doing anything that could, could aggravate my health problems" (Participant 3).

"I don't take sugar, yeah, mmm" (Participant 11).

On participant noted how changing diet was not about eating or consuming certain types of food but about the concept of having healthy food wherever they are.

“Go to whoever’s place and have breakfast, a nice healthy breakfast”
(Participant 7).

A great effort was made by participants in the area of food and good thinking in regards to a new lifestyle. However, another critical area that some of the participants had great success in was the necessity to fight the addictions that impacted their health negatively.

New lifestyle and freedom from addiction (alcohol and smoking)

A positive development in participants’ health behaviour was the taking of serious steps towards stroke self-intervention. Some of the participants had addictive behaviour problems with some of the stroke high risk factors, such as alcohol and smoking. The qualitative data shows that some of them turned away from their addictions with positive results. Participant five and participant eleven made positive changes by no longer drinking alcohol.

“Oh well I cut out the boozing” (Participant 5).

“Yeah, yeah, and plus I am, I am...I finished drinking [inaudible] the alcohol....I am not taking it any more” (Participant 11).

Another participant made very important changes by quitting smoking.

“Well I kind of cut down smoking and then I eventually gave it up, gave up smoking ...Oh gosh, I stopped smoking; that was a major change.”
(Participant 7).

This kind of change informs us that for some participants quitting smoking and drinking alcohol was an important factor in the changes toward health behaviours.

One participant discovered she had an addiction to sugar and she made the decision, according to the new lifestyle, to avoid sweets because they harmed her health.

“I’m a lolly, I’m a sweet-aholic, and I like eating lollies, and it doesn’t worry me [laughs]. But I try and stay off them. I try my hardest, yeah, and that’s another thing too, that helps against stroke” (Participant 1).

Increasing physical activity

One of the risk factors of stroke is a lack of physical activity. The increase in physical activity was a fundamental factor in making a change in health behaviour. Participants acknowledged this and they adopted new ways of becoming more active and participating in a variety of exercise or sporting activities that could impact their health positively and thus reduce their risk of stroke. In fact, all the ethnic groups represented in the control group agreed that increasing physical activity was one of the major changes they had made.

“Yes it did, of course yeah more exercise, I tried to be more, what do you call, physical, doing exercise and all that” (Participant 3).

“Yeah, more active I suppose. That would help a little bit I think ... My bike, I had a physical run on my, my pushbike.... Just steady, swimming, my bike rides” (Participant 4).

“I am exercising more. I became very active. I was doing Zumba on a regular basis, I was talking about what changes I’ve made, exercising was very important so I became more active” (Participant 7).

“Yes and also I am fairly regular at the gym, I’m going for walks” (Participant 10).

“I will like walk every morning and afternoon” (Participant 11).

“So I try to do some yoga in the house and...but that is not a regular feature, er but I try, try to walk at least er 40, 40 minutes a day” (Participant 12).

Participants found ways of being physically active which helped their health condition and became part of their daily behaviours. Every one of them became more active in a manner

suitable to their lifestyle. They took up activities such as walking, bike riding, swimming, yoga, dancing, Zumba or going to the gym. In the end they succeeded in becoming more active and this had a positive outcome on their health. Four participants were encouraged from the outcome of being active when they noticed their weight reduction.

“Ahh, when I am, doing something or the other, like physically, I am trying to reduce my weight” (Participant 6).

“I noticed my weight’s come down a bit as well, so.” (Participant 9).

“Oh I’ve reduced my weight” (Participant 10).

“And also I have reduced weight also now” (Participant 12).

Losing weight because of being more active was a good indication for a positive changes in health behaviour and added positivity to their efforts to change their health condition. Losing weight also made people more satisfied with themselves and this had a positive impact.

Finally, there were factors that impacted the health negatively as well. One participant was aware that stress was a dangerous factor and realised the need to manage stress, so she started to learn some skills to help her to release stress.

“I’m learning how to calm down” (Participant 1).

Participants were successful in creating a new lifestyle that included several factors enabling them to make changes in their health behaviour. This impacted their health condition positively, leading toward health behaviour change.

3.2.6 Theme 6: The role of readiness and positive emotions in changing behaviours.

There were various factors that influenced the participants in the Control Group and prompted positive changes in their health. These influences on behaviour change were significant despite them not being in the HWC programme. These changes were real and aimed to reduce the risk

of stroke. Reviewing their own experiences, the participants were able to describe and explain the pillars and components of change that were an important dimension in the process of change.

Being positive, happy, available, appreciative and practical

Positive personality traits appeared in many members and, although the study was looking at a serious subject such as stroke and the participants are struggling with the high risk factors of stroke, many of them were positive towards the work of change. They did not show signs of frustration but engaged with the problem on a personal level to change their health status for the better.

Yeah, yeah, yeah, [inaudible] because I am a very positive person, I mean I like to be happy, I choose to be happy each day I wake up, it doesn't matter, every day is a good day, rain or shine" ... [Laughs] Oh okay “

Researcher: *We need people like you!* [Laughs] ...Participant: *[laughs] ...*”
(Participant 7).

“There is a lot of other changes I'd like to make....”

Researcher: *“So you're quite open-minded and your attitude is quite positive towards health”*

Participant: *“Unless I'm dying [laughs]. Really there's nothing there to complain about.... And er you know I'm er, I'm a [inaudible] they call a maniac, you know fitness [laughs]”* (Participant 4).

It seems that when participants made themselves available mentally and physically to do something good for their health there was a positive impact on their health behaviour.

“If you can, if any time you want to call to me, I can take the interview no problem” (Participant 11).

“I always kept in touch with the person by text to ensure that I was available for the calls, Like with you, I always, you know...I, I manage staff so I’m very, I feel, well I know I’m very reliable, a reliable person Very! Very reliable, yes, and I like working with people like that.” (Participant 7).

Participants who have succeeded in their efforts, commitment and practical thinking had some positive changes in health behaviour. . Some participants had an appreciative attitude toward those who offered their time and help. Especially as this was given without personal gain or benefit. The participants enjoyed being a part of the study which encouraged them to be active in the process.

“And don’t forget I’m, I’m a sales manager so you know I hate people to waste my time, and I feel a bit bad when I need to change the time, but it’s always so nice to see someone on the other end being understanding about it.” (Participant 10).

Researcher: *“Okay, that’s great. Because you value it yourself, you appreciate it in another’s aye ...”*

“Yeah definitely... I’m Very! Very reliable person, yes, and I like working with people like that.” (Participant 7).

“I join whatever is out there, is free, the service, they look after you, good on you people... At least people are trying to help” (Participant 4).

“It was very pleasant and I enjoyed taking part in it. It was good” (Participant 8).

Being self-controlled and committed

The participants made many changes in their behaviour, and this was a direct result of a clear commitment. One of the participants described the commitment required to do something you do not like as difficult, but necessary. It seems this need for positive change supported the commitment to the process.

“Not that I am happy to do that, but it’s a necessity ...so I try to do some yoga in the house and...but that is not a regular feature, er but I try, try to walk at least er 40, 40 minutes a day.... If I can reduce it that is better.... Of going onto this, this particular Er diet” (Participant 12).

“Yes and also I am fairly regular at the gym, I’m going for walks, which is a challenge for me because any physical work I hate.” (Participant 10).

Here their degree of commitment is apparent, even though for them physical activity was not pleasant. They, in fact, expressed their dislike for physical activity, but the positive commitment towards change motivated them to work towards healthy behaviours and to follow through on their commitment.

It was also clear that self-control enabled commitment to be fulfilled. Commitment is abstract, but recognized and becomes a reality by way of self-control. This was evident with two participants’ experiences, as explained.

“..., I try to restrict myself to only to two intakes in a day and that is at 12 o’clock and 8 o’clock in the night..... I have to maintain the status quo whatever it is” (Participant 12).

“Well I made the change....so I’m moving forward.... Yeah, that’s the part, that’s the bit you need to move forward, being confident” (Participant 9).

Through the process of describing the experiences of the participants and focusing on how to make changes in behaviour we saw that the change came through a way of thinking and consciously seeking better health. They did this by prioritizing and making serious attempts to change their health behaviour, with perseverance and diligence. In addition to that, their immediate awareness made it clear that change came from their personal beliefs and that the continuation of change was due to the stability of positive thinking.

Researcher: *“It sounds like health is really on the agenda for your whole family” ...*

Participant: *Very, very important yes. I think it's always, sorry not always, but it's also an individual's mind-set if my mind-set was all 'who cares', well then I'd probably not care. But my mind-set is 'I care', so I do get to be healthy and know what, what the risks are I do take that on board, very seriously health wise.... Our mind-set has a lot to do with everything doesn't it, you know our whole health"* (Participant 7).

"I'm always endeavouring to do better" (Participant 2).

"I have to do, then it has to be a priority." (Participant 4).

"If I put them all together, then, then what I'm doing now is actually part of that who mind-set, culture change" (Participant 9).

"The thing is with a stroke it's very debilitating and the quality of life is very bad" (Participant 10).

The review of the participants' experiences showed that the result of conscious mental work and ideas can have implications. The mind-set, whether hidden or visible brought changes in health behaviour.

3.2.7 Theme 7: The negative factors that impact health behaviour

Life is impacted by many things especially obstacles and difficulties, therefore it was necessary to investigate the negative factors that impacted the participants such as stress or poor living conditions. Some of these elements can have a negative impact on the participants' health behaviour. The data revealed some challenges and obstacles that varied in degrees of difficulty and impacted the control group participant's health behaviour.

Anxiety and work stress.

Often, people fall into the trap of life and the requirements of living in a fast-paced world. This may be due to the presence of psychological pressure resulting from inadequate income, the

lack of good employment opportunities or work stress. The constant anxiety around all of these things can negatively affect the mental and physical health of individuals

"Yeah, yeah, it was useful. I think um, I think it clarified. You know I wasn't working at that point, I think it really clarified for me the fact that um, anxiety and money and work and all those things, erm probably you know, er probably had an impact on my state of mind" (Participant 2).

Neglecting self-care, especially in the area of health, is commonly a result of stress, anxiety, conflict within the necessities of life, commitments and social responsibilities. This can lead to more problems that may develop into serious pathogens such as stroke. Insufficient time to care for oneself was an element that negatively affected the life and health of some participants.

Impact of low income level and bad housing condition

Poor housing conditions and low income level may have a negative effect on the health behaviour of people. One participant was impacted negatively, physically and psychologically, due to his housing situation. Another one found that financial limitations impacted his state of mind and that reflected in his health behaviour. It was clear that some of the participants' income levels had an impact on their health and that having poor living conditions had a direct impact on them, due to low-income and the lack of resources.

"So, so I don't have any, quite as much exercise as I used to. I used to jump on my bike and I'm off. But now I have shifted to a new place, it's been stolen ... according to my status, where I was living and all that, and really I You know, and then she had a talk, she seen where I live and all that, recommended this and that, and I end up in a nice unit here" (Participant 4).

I wasn't working at that point, I think it really... money and work and all those things, probably you know, er probably had an impact on my state of mind and working and having an income is good for your health" (Participant 2).

Exploring the experiences of the participants and the various factors that affected their behaviour revealed that the positive factors were far greater than the negative ones. the interviews participants data were only asked to talk about the positive changes they had made in relation to their health to reduce the risk of stroke / cardiovascular event and this considered as a weak point lead to lacking of understanding what the negative factors that impacted their health behaviours

Some participants in the control group made their decisions to change their behaviour and experienced changes that improved their health behaviour to reduce their risk of stroke. Noticeably, despite some participants having negative factors in their journey, the final outcome indicates that the control group participants experienced numerous positive factors that lead to changes in their health behaviour.

Chapter 4 Discussion

The primary aim of this study was to explore the factors that influenced health and wellness behaviour in the Control Group of a trial to prevent stroke. Thematic analysis identified seven themes including: 1) internal factors impacting health behaviour; 2) external factors impacting health behaviour; 3) the impact of learning, knowledge and health information in changing health behaviour; 4) making practical changes in lifestyle; 5) personality readiness; 6) the direct impact of being in the study/study elements impacting health behaviour; and 7) negative factors impacting health behaviour. In this chapter the findings of the current study were examined for the differences and similarities in existing literature. It discusses strengths and limitations; some implications of the findings and future suggestion are also explored.

4.1 Internal factors impacting health behaviour

The first theme highlighted that participants' awareness of stroke risk factors had a direct influence on health behaviour. Awareness of stroke and acknowledging the main risk factors and warning signs of stroke has been found to be very poor in the general population with a very low level among the groups that have the highest rate of stroke risk factors (Reeves, Rafferty, Aranha, & Theisen, 2002). Lack of knowledge about stroke and poor awareness, particularly of stroke risk factors, could provide clear explanation of how populations at high

risk continue their unhealthy lifestyle with very poor management of the risk factors (Ellis, Barley & Grubaugh, 2013).

It seems that participant's access to medical services increased their level of understanding about stroke and warned them of predicted signs and stroke risk factors as well as giving them a picture of the outcome of stroke (Carroll, Hobart, Fox, Teare & Gibson, 2004). Participants' awareness led them to be mindful of the way they were thinking about their health and became a starting point for most of the participants to do something about their health behaviours.

The studies found that the limitation of knowledge about stroke caused much of the population not to have any engagement in preventative behaviours to reduce their current stroke risk factors (Ellis, Barley & Grubaugh, 2013). The lack of awareness and poor recognition of stroke risk factors and symptoms has been attributed to significant delays in intervention for people with a high risk of stroke. On the other hand, the patients with a higher level of awareness of stroke warning signs or risk factors were more likely to reduce their chance of stroke incidence (Lacy, Suh, Bueno, & Kostis, 2001). Awareness of stroke and good information about stroke prevention can play a critical role in reducing the effect of stroke (Feigin et al., 2014).

The role of awareness in changing health behaviour is not enough to fight stroke. Transformation needs motivation and positive thinking about living a healthy lifestyle (Mattei, Mendez, Falcon & Tucker, 2016). In literature the transition from awareness as the first step to take action has been explained and is known as the Information–Motivation–Behavioural (IMB) model (Fisher & Fisher, 1992). This model depends on self-care behaviours including physical exercise and diet and has showed success in promoting health behaviours with diverse populations (Amico, Toro-Alfonso, & Fisher, 2005). It seems that most of the participants applied the core of the IMB model unintentionally as they gained information and awareness that motivated them to be transformed and effectively implement it into health behaviours (Misovich, Martinez, Fisher, Bryan, & Catapano, 2003). Participants' health awareness combined with motivation had a direct impact on health behaviour especially when their level of performance did not require any special exercises or complex physical activities (Osborn, Amico, Fisher, Egede & Fisher, 2010).

This study explored how the participants' concerns about their current health condition and family history of diseases prompted them to take action toward intervention and changing

health behaviours. The role of family history in the development of certain diseases such as type 2 diabetes, obesity and insulin resistance has been examined in previous research (Baptiste-Roberts et al., 2007). Some studies were interested in whether a family history of diabetes impacted people to take protective health behaviours (Pierce, Harding, Ridout, Keen & Bradley, 2001). Some participants recognised these factors and their fear for loved ones was a hidden factor in making changes in health behaviour. The self-awareness of their health conditions led them to be more active in prevention (Bongartz, et al., 2017).

The findings of this study identified a relationship of fear and worry from the high risk of stroke. Some participants used the negative emotions as a motivating factor that enabled them to take positive action toward their health. The negative impact of fear and worry from strokes high risk factors can also become one of motivating factors that enables people to take positive action regarding their health. This can be explained through the health belief model, which explains how an individual will take steps toward changing their behaviours if they perceive a personal life threat like diseases (Rosenstock, Strecher & Becker, 1988). For example, if an individual experiencing hyperglycaemia stopped exercising and eating more unhealthy food but has a negative family history with uncontrolled diabetes and chronic diseases, there is high chance that they will be motivated to restart a physical exercise routine (White, Lenz & Smith, 2013). The existence of health threat beliefs and the knowledge of the impact of it on a personal level through family history can increase the motivation of participants' to make behavioural changes to avoid or lower the threat, to the benefit of their health (White, Lenz & Smith, 2013).

The perceived risk of some of the participants and their belief that they were vulnerable to some of the diseases, could be a strong predictor to starting self-protective behaviour in their health behaviour (Rimal, & Real, 2003). It seems that the changes in health behaviour with some of the participants was a reaction to their health belief model (Janz & Becker, 1984), which describes the combination of fear, worry and perceived susceptibility. This played a significant role in predicting the participants' likelihood of making behavioural changes and taking preventative action (Rimal, & Real, 2003). The impact of fear could be equal to hope in relation to the impact of an individuals' action and performance in their health status. Fear has the potential to motivate positive health behaviour (McGinty, Dark-Freudeman & West, 2013).

This current study revealed that some of participants' risk perceptions (beliefs about potential harm) had a direct influence on their health behaviours. Their belief about their family history

and their health risks influenced their attitudinal and self-efficacy beliefs (de Vries, van Osch, Eijmael, Smerecnik & Candel, 2012). It also found that risk perception and health background were important factors to initiate behaviours that would reduce health threats. This risk perception was helpful in guiding participants' choices toward healthy diet and exercise and warning them about unhealthy consequences (Brewer et al., 2007).

Another factor that impacted some participants in the control group was the participants' ability to be self-motivated and independent without professional monitoring (Bongartz, et al., 2017). The added awareness of being part of the control group helped the process of self-reporting which can lead to an increase in healthy behaviour and have positive health benefits (John & Ziebland, 2004). Simply put, participants' awareness of stroke, their high risk, their perception and being self-motivated was like an internal generator or the empowering factor, positively impacting participants' health behaviours.

4.2 External factors impacting health behaviour (relationships and employment)

The current study found that some external factors had an effect on health behaviours. There was a positive impact on participants' health behaviour due to their relationships with family and friends. Previous studies have found that strong, close relationships are very important for physical health in general (Uchino, Smith, & Berg, 2014). Individuals that have healthy and supportive relationships and do not separate themselves from others seem to have better health in comparison with people in unsupportive relationships who experience higher rates of morbidity and mortality (Brummett et al., 2001). The recognition of the importance of relationship for health is now widespread. There is extensive empirical evidence showing the positive effect of warm, close relationships on health and supportive relationships having positive psychological influence linked to longer life (Gable, Reis, Impett, & Asher, 2004). It is very important to recognise that people that lack social support are more likely to have an increase of health problems (Reblin & Uchino, 2008).

The findings suggest that some participants' social context played an important role in supporting the process of their behavioural change. One of the participants pointed out that friendship motivated and supported him to keep the healthy behavioural changes going. According to the self-determination theory the situation or social context are needed to motivate behavioural change (Deci & Ryan, 2000). Another participant linked his motivation

for eating healthy food to the encouragement of being with family members, and the positive impact from family supported the participant's self-regulation and motivated healthy behaviours (Patrick, Williams, 2012). This critical association for some of participants can be seen in the light of the attachment theory that is able to provide a useful and helpful framework for explaining the associations between the impact of close relationships and health outcomes (Maunder & Hunter, 2008; Pietromonaco, Uchino, & Dunkel Schetter, 2013). Evidence suggests that positive and supportive messages from others motivates people of different ages. This study shows that positive messages encouraged participants to be active and participate in changing health behaviours such as physical activities with the aim of intervention (Notthoff, Klomp, Doerwald & Scheibe, 2016).

People experience better health not only through social support mechanisms, but also in healthy relationships people can sometimes intentionally impact and change others behaviours (Craddock, van Dellen, Novak & Ranby, 2015). In this current study one of the participants confirmed that his positive health behaviour changes were empowered continually from having ongoing challenges and goals with friends. Studies suggest that people in most social relationships influence each other consciously and unconsciously and then start to pursue goals with each other (Fitzsimons & Finkel, 2010). In this current study the factor of close relationships with family and friends had an impact and was able to shape participant health behaviour.

One participant in this study started to make changes in his health behaviour because of his strong desire to be around to play with his grandchildren and to be a healthy role model for them. It has been found that these kind of high-quality relationships become a motivator for making changes in health behaviour, eating healthy food and becoming more physically active. It also encourages people to refrain from unhealthy behaviours such as smoking and drinking alcohol (Roberts, & Newman, 2013).

In this current study, another factor that had a positive impact on the participants' health behaviour was having a job and a good income. As most employment requires individuals to be active and have good health and an ability to engage with others socially, being in work offers many benefits, as well as giving meaning to life (Vance, Bail, Enah, Palmer & Hoenig, 2016). Not only that, the income from work helps with daily needs, and can bolster cognitive reserve in direct and indirect ways which can protect cognitive health as well as physical health (Vance et al., 2016). Employment requires social engagement and independence to finish tasks

and healthy social interaction with colleagues and co-workers that supplies an additional source of cognitive stimulation to keep people healthy (Vance et al., 2016). It has been found that the role of meaningful employment works toward assisting the development of mental constructs that have an ability to support people's resilience through hard times (Matuska, 2013).

Previous research has shown the benefits of having employment include life satisfaction, reducing stress and impacting peoples' wellbeing (Stevens-Ratchford, 2011). One of the participants in this study mentioned the changes he made in his health behaviour were linked to reduction in stress because he was now in work. In addition, it seems that the structured routine of employment may impact health behaviour. This can include set times for work, meals, taking medication or setting times for physical exercise before or after work, all of which can facilitate a healthy lifestyle (Vance et al., 2016). Some important behaviours can be established from being in employment like having a set schedule that requires people to avoid behaviours that impact their work negatively such as not having enough sleep. Adapting positive health behaviours that intrinsically regulate physiological functions and social life in order to remain employed improves cognition and physiological function (Vance et al., 2016). It is worthy to note that most of the participants in this current study were old enough to be retired and do not have to work but some of them still found work was beneficial for them and motivated them to make changes in their health behaviours.

4.3 The impact of health education, practitioners, self-care and management in changing health behaviour

Another theme identified in the current study was the impact of health through educational material such as books, pamphlets and medical practitioners (doctors and nurses) advice, with the aim of supporting change in health behaviours to reduce stroke risk factors. Participants found that this element played an important role in making a difference in their health behaviour. Studies very specifically described the poor level of information and lack of knowledge about stroke can be demonstrated through the survivors' inability to understand many of the common stroke risk factors or their inability to describe stroke symptoms (Ellis, Barley & Grubaugh, 2013).

Some participants found that understanding and managing their own health became very important and learning about health was considered a vital step towards enabling them to play an active role in managing their own health risks (Coster & Norman, 2009). Research has

confirmed that when people received sufficient health education, in a way that considered caring about health as a very important issue, it alerted peoples' perspective about their health. This knowledgeable perspective led to better action in managing their diseases (Liddy, Johnston, Irving, Nash, & Ward, 2015).

In this study some of the participants had improvement in their health behaviours related to self-management education, which has been defined as "the individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a long term disorder" (Coster & Norman, 2009). Self-education and self-management are able to engage the patient through disease-specific information to take appropriate actions to improve their health behaviour. Self-education could also be minimal interventions with the aim to raise the importance of involving patients in taking care of themselves and managing their condition (Coster & Norman, 2009).

Similar reactions were found with some participants in the current study. Health education materials helped them to learn about their risks and had a direct impact on them which helped them to become more conscious about their health (Artinian et al., 2010). The practicality of learning about the problem reflected positively by inspiring improvement in health behaviours. Studies that focussed on intervention generally reported that health education played a key role in the management of many of risk factors of health problems such as hypertensive patients (Lu et al., 2015). In this study health education was a useful tool that helped in the process of changing health behaviour. Some of the participants' learnt from the booklets, health information books, or checking the internet and most of them got the information from their health community centres through medical staff (Lu et al, 2015). The effect of health education improved patients' knowledge about the health risks of disease and helped them to learn better ways of dealing with the problem. This led to better treatment adherence and most participants took a positive role to manage and change their health behaviour (Hayward et al., 2017). It is worthy to mention that health education and self-learning proved successful in improving health behaviour within many of the health risk factors. But it has also been found that health education was not effective in reducing smoking and alcohol use because of the dependent and addictive behaviours (Lu et al, 2015).

The role of healthcare providers and medical practitioners (doctors and nurses) is also one of the most important elements of health promotion. They can play a significant role in peoples'

health through the considerable time they spend with people, taking care of them. The health education they offer to their patients supports change (Gruppen, Mangrulkar & Kolars, 2012). Nurses have an important part to play in creating conditions to support change. To fulfil this role, nurses need to be able to assess readiness for change and the factors that enable it and then to intervene in ways that facilitate their readiness to change (Gruppen, Mangrulkar & Kolars, 2012). Good quality evidence shows a high level of improvement in patients' outcomes due to the effort of health professionals teaching their patients and educating them about the self-management of their health conditions (Rochfort et al., 2018). Medical practitioners also have numerous opportunities through contact with their clients to educate them in direct and indirect ways about health risk, issues and treatment (Gruppen, Mangrulkar & Kolars, 2012).

4.4 The direct impact of being in the study/study elements impacting health behaviour

RCTs investigating health behaviour change employ a control group to compare the effect of the intervention, with a group not receiving the intervention. It has been observed that control group participants in RCTs engaged in behavioural changes as well as participants in the intervention group (Becker, Roberts & Voelmeck, 2003).

It seems that participants' health behaviours were impacted directly through their awareness of being participants in the intervention study despite being participants in the control group without gaining any coaching help or benefits (Quirk et al., 2016). Some of the participants recognized that there was an improvement in their health behaviour after participating in the control group. This supports previous findings which suggest the factor of awareness of taking part in a study as part of a control group can produce similar results to receiving intervention (Waters, St George, Chey, & Bauman, 2012).

The findings from this study confirm the "Hawthorne effect" which is the term coined to point to any positive influence in the RCT participants behavioural changes (Wickstrom & Bendix, 2000; Boet, Sharma, Goldman & Reeves, 2012). Participants' awareness of being observed from the study staff members had an impact on their efforts in changing their health behaviour (McCarney, et al., 2007). The impact on the control group participants' behavioural changes, because of being observed, has been well supported in previous studies and proven in empirical studies (McDoniel & Hammond, 2010). Participants may try to perform to meet the perceived expectations of the people observing them (Paradis & Sutkin, 2017). Performance of

participants due to the “Hawthorne effect” generally impacts them positively with more improvement in their physical health than under normal medical care (Ayling, Brierley, Johnson, Heller, & Eiser 2015). In this study many of the participants experienced real improvement in their health behaviours. One of them stopped smoking, another stopped drinking, while others changed their diet, all of which are related to health improvement (William et al., 2007). Previous studies that aimed to measure the differences in the health improvements in both usual care and control group participants found that both groups improved significantly (McDoniel & Hammond, 2010).

The findings refer to another factor that impacted participants, the level of accountability that affected their health behaviour when they recognized their feelings of accountability to someone or from being observed by someone like study staff (Boet, Sharma, Goldman & Reeves, 2012). The concept of accountability and the impact of being accountable energized them to do their best toward their health.

This current study found that participating in the PREVENTS study impacted participants through self-motivation and making changes in health behaviour. Some of them were motivated independently because of being in the study and this is consistent with Bongartz, et al. (2017) findings of the impact on control group participants being self-motivated without any support from professionals. Previous studies linked the impact of awareness of being in the control group and self-motivation. It aided the participants in self-reporting and resulted in increased self-care and positive health behaviour (John & Ziebland, 2004).

Although participants in this study were not involved in the HWC programme and there was no personal contact with the coaches or therapists, there was a positive impact on some of the participants. This was a result of empathetic communication and understanding of study staff while delivering the interviews or enquiring about their health behaviour. Miller and Rose (2009) explain how the positive impact of the theory of motivational interviewing and the effect of empathy and the therapists (researchers) style, had an impact on participants compared with other behavioural interventions. The impact of the relational component (“spirit” and empathy) from the study staff through an indirect motivational interview worked as a mediator for behavioural change (Miller & Rose, 2009). Participants’ were empowered positively from being in the study and from the empathy of staff members that listened carefully without judgemental attitudes. This kind of influence has proven successful in helping in combating type 2 diabetes, one of the stroke risk factors (McGloin, Timmins, Coates & Boore, 2015).

This study found that for some of the participants being part of the control group did impact and encourage them to be self-motivated and make changes to reduce stroke risk. Most of them become more independent in making positive behavioural changes without depending on professional monitoring. Some of the participants succeed to do self-reporting after their awareness increased because of being part of a control group, which lead them to increase the level of the healthy behaviour and gain positive health benefits. These findings are confirmed by the findings of John & Ziebland (2004) and Bongartz, et al. (2017).

4.5 Making practical changes in lifestyle

There is a well-established relationship between lifestyle and stroke risk factors such as physical inactivity, being overweight, alcohol consumption, smoking and unhealthy diet (Goldstein et al, 2011). All of the participants in this current study were at a high risk of stroke and their high risks were, in part, associated with their lifestyle, including food patterns. Studies have proven that unhealthy diets high in sugar and meat-based diets are associated with the increase of many of the stroke risk factors such as CVD, obesity and type 2 diabetes (Rees et al., 2013). In this current study unhealthy diet was a common pattern within participants' past lifestyles.

The good news is the effect of adopting a modified lifestyle is able to reduce stroke risk factors by up to 75 % (Eguchi et al., 2012). Many of the previous studies examined the significant impact of a healthy lifestyle and the findings confirm the strong association with substantially reduced stroke risks factors (Larsson, Akesson & Wolk, 2015). Extensive scientific evidence consistently showed that a healthy diet that is rich in vegetables, fruits and fish is the best method to work toward CVD intervention (Yokoyama et al., 2014; Zatonski, McMichael & Powles, 1998). Through this study the findings revealed that most of the participants adapted a new lifestyle with suitable consideration for healthy food patterns.

Clinical studies have proved that dietary changes and lifestyle alterations are able to lower the risk of many diseases and to intervene in the development of cardiovascular diseases. Real healthy changes in lifestyle had a significant delay in the progression of established disease in patients (Haskell et al., 2007).

Another important element of adopting a new life style is physical activity, which is any form of movement a person does by using skeletal muscles. Physical activity levels have declined with urbanization. Benefits of being physically active and exercise such as walking, running, cycling and swimming, cause a direct increase in oxygen intake, improving cardiovascular function (Haskell et al., 2007). Exercise maintains health and could be considered as a cornerstone for intervention in many health issues and is especially important in reducing the risk factors of chronic diseases and stroke (Naghii, Almadadib & Zarchi, 2011).

Individuals aiming to adopt new behavioural changes are in need of facilitating this with a new mind-set that sees physical activity as an important part of their lifestyle (Kahn et al., 2002). Physical activity is highly recommended by all healthcare professionals with clear advice given to patients, beyond the traditional medical prescriptions, encouraging them to participate in a physical activity that meets each person's needs, interests and time (Haskell et al, 2007). Most of the participants in this study realised the importance of physical activity and incorporated it into their lifestyle. There was a diversity of activities such as walking, biking, swimming or yoga classes. Figures from one study suggest there is a strong associations between not adopting a healthy lifestyle and not engaging in sufficient levels of activity to enhance health behaviours, and higher risk levels of chronic diseases (Lim et al., 2012).

The process of adapting to a new lifestyle requires changing health risk behaviours. Most of the participants in this current study altered their thinking through making and sustaining positive lifestyle health behaviour, which may be understood in the light of the trans-theoretical model of behaviour change (Procheska et al., 1994, Butler et al., 1999). This theoretical model focuses on making a transition to reduce health risk behaviours, for example some of the participants stopped smoking and another one stopped drinking alcohol (Dalton & Gottlieb, 2003). The positive transfer from unhealthy lifestyle to healthy lifestyle develops through the cognitive shifting and some participants succeeded in ending addictive behaviour that was not in line with their new lifestyle.

Some participants demonstrated changes that may be explained by the Self-Determination Theory (SDT) (Deci, & Ryan, 2000), a human motivation theory that focuses on the idea that any behaviour originates from self and can be controlled by interpersonal forces. This theory believes that to reach a particular goal the individual needs psychological energy that is known as motivation (Deci & Ryan, 2000). Participants in this study used their motivation and their

psychological energy to make an impact in their health behaviour. The impact of self-determination was the power behind the changing health behaviours. Therefore a participant may be motivated to stop smoking because of the guilt of wasting money and the stress on his family financially especially if he were to have a chronic illness for a long period time and may face early death (Patrick & Williams, 2012). Due to these kinds of scenarios participants took positive steps toward changes in important modifiable risk factors and adopted a healthy diet as a critical part of their new lifestyle.

However, adapting to a new lifestyle and behavioural changes is not easy. It can be a complicated process that includes frustrations and extensive effort. The foundations for making these kinds of fundamental changes can be facilitated through common theories such as, the health belief model and trans-theoretical model of behaviour change (White, Lenz & Smith, 2013). This current study strongly encourages the adaptation of a healthy lifestyle, because the positive outcome is considered as a primary intervention for many of the chronic diseases. The impact of health behaviour, lifestyle transformation can be a self-protection recipe for stroke risk factor intervention.

4.6 The role of readiness and positive emotions in changing behaviours.

Normally people are not primarily motivated by the hard challenges that focus on discrepancy reduction but by setting goals and challenges and taking proactive control of a situation. They can use their personal resources and rally their efforts to achieve their goals (Bandura & Locke 2003). We can observe how participants achieved alterations in their health behaviour after they were informed about stroke risks. Following that, changes were implemented and behaviours were adjusted through motivation (Osborn, Amico, Fisher, Egede & Fisher, 2010). Positive performance in health behaviour was associated with positive attitudes toward the changes and personal beliefs about the outcome of the changes, as well as the confidence in themselves and their ability to overcome their condition of health (Osborn, et al., 2010).

One of the key factors in the process of participants' behavioural changes was their readiness. Readiness can be explained as the participants' willingness and ability to act and perform self-care or to practically manage their behaviours with the aim of reducing their high-risk behaviour (Dalton & Gottlieb, 2003). The current study found that participants' readiness was demonstrated in both being ready to make a change and readiness to take practical actions

towards changing their health behaviours (Dalton & Gottlieb, 2003). Some of the participants developed commendable changes because of being ready to change.

The findings from this study revealed how the readiness of some participants' was triggered through personal factors such as being energetic and feeling relaxed, rather than stressed, so they could be willing and ready to undertake change (Dalton & Gottlieb, 2003). Some of the participants succeed, through self-management, to improve various aspects of their health behaviours. Through changes like eating healthy food or adding more physical exercise, they were able to make changes in their health. This is in line with Higgins and Scott's (2019) findings, that self-management and learning new skills helped patients to better control hypertension. Experiences from some of the participants' showed the impact of their self-regulation. The ability to take action in their daily behaviours was necessary to prevent them from the consequences of an unhealthy life. These changes were able to improve some of the damage which had occurred in their health (Purdie & McCrindle, 2002).

Furthermore, in this current study most of the participants reported that they accomplished change in their health behaviours. These changes in behaviour could be identified as the impact of emotions and interpersonal relationships (Badenoch & Cox, 2010). Some of the participants' behavioural changes could be aligned with social cognition models of health behaviour, as they were positive and had hope that they were in control of their health outcome, which worked positively to help them engage in healthy behaviours (Makarem, 2016). It has been documented that there are benefits of control perception that enables individuals to be more positive with adapting diseases outcomes and in their daily functioning (Tangsrud & Smith, 2000). This was demonstrated in the process of change in their health behaviours.

Additionally, in this current study, positive emotional factors empowered behavioural changes within some of the participants by giving them hope. Their hope to live longer and healthier lives like their parents or the hope to be healthy for their family played an important role in their decision to change and to continue their healthy behaviour (Platt, Green, Jayasinghe & Morrissey, 2014). The participants' hope and in specific their hope for having a good future and to be healthy worked actively as a positive motivator in their health behaviour changes (McGinty, Dark-Freudeman & West 2013).

Discoveries from this current study found that some of the participants enjoyed the outcome of the good behaviour that started to reduce their risk factors, such being active, regularly taking part in challenges and being able to play with their grandchildren. Generally speaking this kind of enjoyment has been associated with the positive thoughts that empowered them to engage in a health behaviour (Lawton, Conner, & McEachan, 2009; Kiviniemi & Duangdao, 2009). A range of changes in most of the participants' health behaviours, including physical activity and eating fruit and vegetables become enjoyable to them. A study by Lawton, Conner & McEachan (2009) found that the impact of positive, effective attitudes was more beneficial and stronger than the impact of positive cognitive attitudes in changing behaviour.

Reviewing some of the participants' experiences in this current study found that the result of behavioural changes occurred due to a new mind-set. The impact from the individual cognitive and behavioural process (mind-set), as described in the mind-set theory of Heckhausen & Gollwitzer, (1987), suggests that the participants' new mind-set, including visible and invisible health values, brought changes to their "health behaviour through a deliberative and implemental mind-set" (Gollwitzer, Heckhausen & Steller, 1990).

Finally, it may be possible to correlate the causal relationship to participants' behavioural changes. It seems that some of the participants made the behavioural changes according to a deliberate mind-set, weighing both the advantages and disadvantages of certain behaviours, then coming to a final decision by accepting and sustaining behaviours or rejecting them (Richert, Schüz & Schüz, 2013). This study assumed that the participants who referred to their behavioural changes as their mind-set were describing an implemental mind set and had a strong focus on transferring their decision to a form action or behaviour. This assumption has been found and examined previously in experimental studies by Fujita, Gollwitzer, & Oettingen, (2007).

4.7 Negative factors impacting health behaviour

The current study found there were also factors that impacted some of the participants negatively. Negative impacts on health behaviour were related to the common unhealthy behaviours, especially alcohol consumption, smoking, bad diet, busy lifestyles and stress from work, which are all linked to CVD (Payne, Jones & Harris, 2013). One participant noted that work, stress and social smoking affected his health behaviour. This supports previous findings

which proved the association between variables related to work and stress with the problem of smoking, drinking, and unhealthy eating (Kouvonen et al., 2005; Lallukka et al., 2004).

The exploration in the current study also found that one of participants found anxiety was a negative factor that impacted his health behaviour. There is preliminary evidence to explain how anxiety contributes to maladaptive eating, lack of physical activity or engaging with other unhealthy behaviours (Hearon, Mascoop, Otto & Quatromoni, 2014). Anxiety impacts the ability of individuals to tolerate distress and the cognitive process, and there is a link with health behaviours and chronic diseases (Leyro, Zvolensky & Bernstein, 2010). A few of the participants struggled with different forms of anxiety that affected their health. This has been found in previous studies that document the significant impact of anxiety among those that have poor engagement in health behaviours (Piper, Cook, Schlam, Jorenby & Baker, 2011).

For a few of the participants in this current study, the impact on their health behaviour was related to low income or poor living conditions. One study argued that when people experience financial strain or limitation in their financial resources they will not engage in health-conscious behaviours, such as healthy diet (Macy, Chassin & Presson, 2013). Moreover, the negative impact of decreased financial resources also causes stress which discourages any engagement in health behaviours (Macy, Chassin & Presson, 2013). The findings in this study identified bad living conditions as a negative factors that affected one of the participant's health condition and behaviour. The impact of one's housing environment has been acknowledged as one of settings that has a direct impact on human health (Jackson, 2003). The neighbourhood environment also has an immediate effect on health which can support or limit both the physical and mental well-being of the residents. The impact of the relationship between the health and well-being with the quality of environmental housing, is still not fully understood (Bonnefoy, 2007), but there are several studies in social and environmental psychology that have shown the causal and direct impact of the housing environment. They include the impact of factors such as indoor air quality, noise, crowding and mould growth on mental health and symptoms of depression and social well-being (Gomez-Jacinto & Hombrados-Mendieta, 2002; Leventhal & Brooks-Gunn, 2003). The health behaviour of one participant in this study changed positively when his housing situation improved. There is robust evidence of the positive impact on mental health as the outcome of improved housing conditions (Thomson, Thomas, Sellstrom & Petticrew, 2009). However, the mechanisms whereby such improvements create impact is

not clear and there is a need to understand how this can be used more effectively in intervention development (Acevedo-Garcia et al., 2004).

The negative impact on participants' health behaviour were associated with the low income level, financial limitations, poor housing condition and the negative physical and psychological outcomes that all limited their health behaviour. Considering these factors and finding strategies that can help in identifying these negative effects in health behaviour will lead to finding suitable solutions to improve health behaviours.

4.8 Limitations

There are several limitations in this study that need to be acknowledged. The first limitation is related to the main aim of the study; exploring the factors that may influence health and wellness behaviour in the Control Group of a trial to prevent stroke through using thematic analysis of qualitative interviews of participants in the Health and Wellness Coaching study. The exploration depended on the participants' personal experiences, sufficient data and adequate sample size for the purpose of the study (Vasileiou, Barnett, Thorpe & Young, 2018). The sample size is considered the least importance element in the thematic analysis in order to enable significant time on each transcript and identify the main ideas through high quality analysis (Braun & Clarke, 2006). However, in this study only 12 participants participated which can be a limitation as more participants could offer more usefulness to the study.

The method of collecting data in qualitative research often includes interviewing and observing participants while documenting observations clearly in the transcript with the need for the researcher to demonstrate in detail the processes used in collecting the data (Bloomfield, Harreveld, & Fisher, 2019). The researchers' role is to give a worthy description of the interviews especially the questions used to lead the dialogue in the interview and extract clear information from the data source (Bloomfield, Harreveld, & Fisher, 2019). Unfortunately, for this study, interviews were not performed by the researcher, but by a highly respected colleague. Due to the difference in focus of this study, than that of the interviewer, the researcher would conduct interviews differently to gain more information relevant to this particular study and offer more space for participants to express their experiences and gather more details. This created a limitation to discovering more factors that impacted the participants and greater time was spent to extract good themes from the participants' experiences. Due to the shortage of detail in the data the researcher had to use the same quotes

to describe different factors in the study. This overlap was due to few options in the data to provide more extensive descriptions. The use of secondary data in this thesis was a limitation, in that the information was not collected by me, but by another interviewer. It would have been helpful to have questions pertaining to how the participants felt about being in a control group, and whether they thought the contact was sufficient for change. In addition to that the researcher would have added some direct question regarding the positive or negative factors that impacted the control group participants in relation to the process of changing health behaviour. The interview participants were only asked to talk about the positive changes they had made in relation to their health to reduce the risk of stroke/cardiovascular event. This is a weak point that lead to a lack of understanding about the negative factors that impacted their health behaviours.

In addition to this, the content of the data was a major reason for the limitations of the study. The responses of the participants to the questions posed were very short and did not carry extensive information bearing indications of the elements and factors that led to changing their health behavior. It is also worth noting that the data contained a small sample and it would be better for the study to have some flexibility in gaining data from other participants whose experiences may not have carried any kind of change in health behavior. Thus there may be of greater benefit to know other factors that may have negatively affected the process of changing health behavior.

There was a great ethnic diversity in the participants but little information about the participants' backgrounds, such as cultural and community impact on health behaviour, personal skills and education level which could have an impact on them. Due to these limitations future studies should be aware of this and expand the diversity of the participants while acknowledging the importance of the impact of their personal backgrounds.

The data obtained did not include any description of the family and social life of participants, how much this affected the participants or what the direct and indirect impact was on the change of health behavior. Despite the lack of data available for this study, the researcher extracted points that relate to the role of family and friends without interpretation to show participant experiences.

4.9 Strengths

This current study had several strengths. The findings and features of the data presented in the study used the thematic analysis method which is considered as a foundational method in qualitative research (Braun & Clarke, 2006). The advantage of using thematic analysis is the ability to give attention to the data especially when looking for a report with more objective details about peoples experiences (Howitt & Cramer, 2008). Thematic analysis supported the study by helping find the real experiences of the participants' which adds credit to the study in terms of the research transparency (Braun & Clarke, 2006).

Another strength is the diverse ethnic representation of the participants that gives a richness to the data in the study. It also offers the advantage of transferability of data so that the research can to be used with similar groups of peoples.

The reflexivity in this study is another strength as there is no personal impact in the analysis or any attempt to manipulate the data to support any kind of theoretical framework. Reflexivity was maintained within the study through the internal dialogue and the reflection of the researcher which worked toward the credibility and transparency of the study (Thomas & Magilvy, 2011).

The researcher believes that "the trustworthiness of the current study has been demonstrated well and the study shows important elements such as the dependability, credibility and reliability to the extent that it raises the value of the research and this is the most important strength of the study". The strengths of the trustworthiness or rigor of this study simply refers to the quality of the study (Polit & Beck, 2014; Morse, 2015; Cope, 2014).

4.10 Implications of the study

The overarching implication of this study is that some participants engaged in health behaviour changes simply as a result of being a participant in a trial that was focussed on a health behaviour change intervention. Information about the study, regular contact with study researchers, and being assessed for health risk factors were apparent triggers which initiated health behavioural changes or at least increased the awareness and motivation to make improvements in health. This means that trial results may be impacted due to parallel, albeit

small changes in the control group as well as in the intervention group. Previous research reports the impact of the Hawthorne effect within control groups (McCarney, et al., 2007). There is a need for further studies to explore how the Hawthorne effect could be used in the intervention field. The evidence in this study supported evidence that participants' health behaviour was impacted positively from the Hawthorne effect, and that it may be beneficial to use this technique when studying and applying new interventions. The design of similar RCTs in the future should take this into account. This study, however, cannot say whether the effect of being in the study had an actual effect on behaviour change. This data will be discovered after conducting quantitative analyses of the full study data.

This current study aimed to explore the factors that had an impact on the health behaviours of the participants in the RCT. The findings from this study offer and contribute to existing literature that studied the effectiveness of utilizing health and wellness coaching programmes in stroke intervention (Mahon et al., 2018). This study can help in the evaluation of the impact of the HWC programme results on health behaviours in comparison with the similar factors that impact health behaviours in both the experimental and control group. This study included ethnically diverse participants adding to the existing study that investigated the benefits of the HWC among a multi-ethnic NZ population (Mahon et al., 2018). It may reveal new facts that are relevant to the findings from similar studies or give a new perspective to future implications of using interventions programmes in NZ and abroad.

The findings of the current study provide a better understanding of the set of factors that facilitated the positive changes in participants' health behaviours. The description analysis of these factors can add a deeper understanding of the importance of each of the factors on participants' health behaviours, such as how they became aware and educated about the risks, health behaviour intervention and the impact of readiness (Dalton & Gottlieb, 2003). This information can be considered in the development of stroke intervention programmes in the future. It also provides an understanding of the participants' perspective of the benefits of being in the control group through a qualitative study. Hence, the current study can potentially contribute to an area that is lacking in health behaviour changes in intervention programmes.

This current study illustrates the importance and effectiveness of health education on health behaviour and stroke intervention. It is recommended that stroke intervention programmes work towards health education design that helps people increase their knowledge of stroke and transforms that knowledge into actions that can decrease stroke risk factors (Ellis, Barley &

Grubaugh, 2013). Health promotion campaigns should focus on educating people about the benefits of healthy eating, as one of the health-enhancing aspects of health behaviours and prevention (Bodenheimer et al., 2002). In addition the health system and health organizations should reinforce and focus on self-care and self-education as a form of intervention to lower disease risk factors and as the centre of the agenda for patients' involvement (Coster & Norman, 2009).

Positive emotions were found as an empowering factor in changing health behaviour in this current study. These findings are an indication of the necessity to give more recognition to the role of positive emotions such as hope in stroke intervention (Platt, Green, Jayasinghe & Morrissey, 2014). The need for concentration on the reinforcement of the role of positive thoughts in intervention among people with high risk of stroke can be another empowering factor in the process of change in health behaviour (Lawton, Conner, & McEachan, 2009).

An important implication of this study is the practical reflection of the factors that impacted the participants, illustrated through the development of a new lifestyle. This current study can contribute to previous studies that investigate the effectiveness of the adaptation of lifestyles that can reduce stroke risk factors (Eguchi et al., 2012). This study is very supportive of the necessity to adapt to a healthy lifestyle and magnifies the outcome of healthy behaviour and highlights its rewarding benefits (Larsson, Akesson & Wolk, 2015). It also highlights the need for persuading populations with high risk of CVD and stroke to consider healthy lifestyle as an important step toward reducing stroke risks factors.

Additionally, medical care systems, health organizations, education systems and the media should help to encourage, teach and support the extensive evidence of healthy diet as the best method of the intervention (Yokoyama et al., 2014). This study showed the importance of physical activity and its effectiveness in reducing risk factors (Naghii, Almadadib & Zarchi, 2010). The main pillars that significantly impacted participants' health behaviours were healthy diet and physical activity. These aspects should be widely supported and applied to other populations as the safest, most accessible and manageable intervention options, as the individuals are the investor and the primary beneficiaries.

In terms of future research into control group impact on reducing stroke risk in NZ, the benefits of self-care and self-management in intervention could be explored (Coster & Norman, 2009).

There is a need to design programmes that can be accessible to people to enable them to reduce their risk of stroke by depending on their ability to manage their health conditions. Future research could investigate how to raise self-management from a minimal level in disease intervention to be in the front line for stroke intervention and cardiovascular disease (Coster & Norman, 2009). Further studies could also explore self-care and self-education impact on intervening risk factors in other populations.

4.11 Conclusion

The current study explored factors that influenced health and wellness behaviour in the Control Group of a trial to prevent stroke through using thematic analysis of qualitative interviews of Control Group participants in the Health and Wellness Coaching study. The study found that there are factors that have had a direct and indirect impact on changing the health and wellness behaviour of participants.

The main factor is based on the participants themselves and has been categorized as both internal and external factors. Most of these factors had a positive impact in their health behaviour, these included awareness of fitness levels and bad health and how awareness helped them to be mindful of their health. The participants were also positively impacted from self-monitoring and self-accountability and even more so from accountability to someone else like being observed by study staff (Hawthorne affect). This gave them a positive push and encouraged them to make more effort toward positive health behaviour. Self-motivation and positive thinking helped to achieve results and recognition of the danger of high risk factors and the association between being healthy and having a long life empowered them to take action.

The study found that multidimensional fears played a positive role in health behaviour. Participants fear from family history, health risks or threat of consequences and suffering from ill health was a critical factor in motivation. A mind-set with clear goals, self-regulation, determination to make health a priority and gratitude for the care and kindness of researchers and medical support also facilitated a positive response toward change.

External positive factors included family and social relationship, such as valuing being with family especially children and grandchildren, the desire to be role models in healthy lifestyles, and caring for family, had a significant positive impact on participants. This included the power

of friendship and participation in a community that shared health values. Another external factor was the desire for and ability to maintain stable work and a good income which motivated some participants to be more active in their health especially if they feared of losing their job.

Participants were impacted through self-learning, knowledge and health information which supported changes in health behaviour. The use of educational materials, books and guidance from health information allowed participants to develop insight and understanding to equip them for change. Positive advice from doctors, medical staff and health organisations was also a starting point for some participants to engage in the study and resulted in changes in their health and wellness behaviour.

The findings also explored the practical factors that impacted participants behaviours related to making significant transformations in lifestyle in order to face their problems. Developing a new mind-set and adapting health behaviours to avoid stroke through changing their perceptions was important. Lifestyle changes were also critical including changes in diet through introducing healthy foods like vegetables and freedom from addiction such as alcohol and smoking. The increase in physical activity was also a fundamental factor. Participating in various forms of exercise and sporting activities helped some to lose weight and make them more satisfied with themselves which had a positive impact.

The findings referred to the factor of personal emotions, character and individual readiness having a direct impact on changing health behaviour. Participants with positive, happy, appreciative, willing attitudes and practical thinking reached their goals and demonstrated self-control and commitment.

The final section of the findings explored the negative factors that impacted health behaviour. These kinds of obstacles varied in degrees of difficulty and included commonalities such as a busy life with psychological pressure, employment opportunities, work stress, anxiety, impact of low income level and bad housing condition. All of these things can negatively affect the mental and physical health of individuals. The accumulation of these problems can result in a lack of self-care, especially in the area of health which can develop into serious pathogens such as stroke. Insufficient time to care for oneself was an element that negatively affected some participants in their life in general and health in particular.

However, most of the factors that impacted health and wellness behaviours were positive and were the main element in changing health behaviour. Therefore, the current study provides a broad exploration of the factors that can positively reduce stroke and cardiovascular disease risks. The relationship between the participants' personality, lifestyle changes and being in the study seemed to be a very supportive, empowering environment for encouraging positive changes in their health behaviours.

Moreover, health behaviour models fitted well with the findings of this study. They showed that health behaviour models are a part of the positive role in changing health behaviour that leads to intervene in stroke. Adopting a new lifestyle with the clear goal of having a healthy life, with self-protection attitudes can be a critical defence for stroke intervention. The current study can be a helpful guide, due to the insight and understanding of dealing with risks of stroke. It contributes to a better understanding of self-intervention as a step to face stroke and can be an example of the process of health behaviour changes.

This study showed that the factors that impacted health behaviour did not have any kind of relationships to the diverse ethnicity of the participants, as most of them experienced very similar factors and responses. Furthermore, addressing these factors was essential, showing that positive changes can be accessible to improve health and to deal with stroke risk factors. In order to produce the final report, writing this thesis has made the researcher think in-depth about the roots and factors of stroke and reflect on what solutions might be found to make positive changes in health behaviour that can significantly reduce the risk factors of stroke.

The findings from this research may contribute to existing literature by illustrating the factors that impacted health behaviour in the control group and how participants used these factors to assist themselves in changing their health behaviour for the better.

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Appendices

Appendix A: Letters of Ethics Approval Health and Disability Ethics Committee (HDEC)



Health and Disability Ethics Committees
Ministry of Health
133 Molesworth Street
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04 816 3985
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19 December 2017

Prof Valery Feigin
AA254
90 Akoranaga Drive
Northcote
Auckland 0627

Dear Prof Feigin

Re:	Ethics ref:	16/NTA/36/AM02
	Study title:	Efficacy of a Health and Wellness Coaching program for the primary prevention of stroke and Cardiovascular disease in the community

I am pleased to advise that this amendment has been approved by the Northern A Health and Disability Ethics Committee. This decision was made through the HDEC Expedited Review pathway.

Please don't hesitate to contact the HDEC secretariat for further information. We wish you all the best for your study.

Yours sincerely,

Dr Brian Fergus
Chairperson
Northern A Health and Disability Ethics Committee

Encl: appendix A: documents submitted
appendix B: statement of compliance and list of members

Appendix A
Documents submitted and approved

Document	Version	Date
PIS/CF: Participant and Information Sheet for the Qualitative Study	1	27 November 2017
Post Approval Form	1	-
PIS/CF: This version has question 3 amended according to the recommendations given by the ethics committee.	2	15 December 2017
Response to Request for Further Information	1	-

Appendix B

Statement of compliance and list of members

Statement of compliance

The Northern A Health and Disability Ethics Committee:

- is constituted in accordance with its Terms of Reference
- operates in accordance with the *Standard Operating Procedures for Health and Disability Ethics Committees*, and with the principles of international good clinical practice (GCP)
- is approved by the Health Research Council of New Zealand's Ethics Committee for the purposes of section 25(1)(c) of the Health Research Council Act 1990
- is registered (number 00008714) with the US Department of Health and Human Services' Office for Human Research Protection (OHRP).

List of members

Name	Category	Appointed	Term Expires
Dr Brian Fergus	Lay (consumer/community perspectives)	11/11/2015	11/11/2018
Dr Karen Bartholomew	Non-lay (intervention studies)	13/05/2016	13/05/2019
Dr Christine Crooks	Non-lay (intervention studies)	11/11/2015	11/11/2018
Dr Catherine Jackson	Non-lay (health/disability service provision)	11/11/2016	11/11/2019
Ms Toni Millar	Lay (consumer/community perspectives)	11/11/2016	11/11/2019
Dr Kate Parker	Non-lay (observational studies)	11/11/2015	11/11/2018
Ms Rochelle Style	Lay (ethical/moral reasoning)	14/06/2017	14/06/2020

Unless members resign, vacate or are removed from their office, every member of HDEC shall continue in office until their successor comes into office (HDEC Terms of Reference)

<http://www.ethics.health.govt.nz>


Health and Disability Ethics Committees

Ministry of Health
Freyberg Building
20 Aitken Street
PO Box 5013
Wellington
6011

0800 4 ETHICS
hdec@moh.govt.nz

16 May 2016

Prof Valery Feigin
AA254
90 Akoranaga Drive
Northcote
Auckland 0627

Dear Professor Feigin

Re:	Ethics ref:	16/NTA/36
	Study title:	Efficacy of a Health and Wellness Coaching program for the primary prevention of stroke and Cardiovascular disease in the community

I am pleased to advise that this application has been approved by the Northern A Health and Disability Ethics Committee. This decision was made through the HDEC-Full Review pathway.

Conditions of HDEC approval

HDEC approval for this study is subject to the following conditions being met prior to the commencement of the study in New Zealand. It is your responsibility, and that of the study's sponsor, to ensure that these conditions are met. No further review by the Northern A Health and Disability Ethics Committee is required.

Standard conditions:

1. Before the study commences at *any* locality in New Zealand, all relevant regulatory approvals must be obtained.
2. Before the study commences at *any* locality in New Zealand, it must be registered in a clinical trials registry. This should be a WHO-approved (such as the Australia New Zealand Clinical Trials Registry, www.anzctr.org.au). However <https://clinicaltrials.gov/> is acceptable provided registration occurs prior to the study commencing at *any* locality in New Zealand.
3. Before the study commences at a *given* locality in New Zealand, it must be authorised by that locality in Online Forms. Locality authorisation confirms that the locality is suitable for the safe and effective conduct of the study, and that local research governance issues have been addressed.

Non-standard conditions:

- Please clarify further in the Participant Information Sheet that participants' medical information will be obtained from Nirvana with participant permission and the reasons why it is important for the study.
- The Consent form asks participants to give approval but no clarification of what or why in the Participant Information Sheet (or the telephone script). Please correct this.

Non-standard conditions must be completed before commencing your study. Non-standard conditions do not need to be submitted to or reviewed by HDEC before commencing your study.

If you would like an acknowledgement of completion of your non-standard conditions letter you may submit a post approval form amendment. Please clearly identify in the amendment that the changes relate to non-standard conditions and ensure that supporting documents (if requested) are tracked/highlighted with changes.

For information on non-standard conditions please see section 128 and 129 of the Standard Operating Procedures at <http://ethics.health.govt.nz/home>.

After HDEC review

Please refer to the *Standard Operating Procedures for Health and Disability Ethics Committees* (available on www.ethics.health.govt.nz) for HDEC requirements relating to amendments and other post-approval processes.

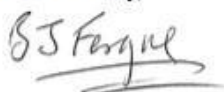
Your **next progress report** is due by **15 May 2017**.

Participant access to ACC

The Northern A Health and Disability Ethics Committee is satisfied that your study is not a clinical trial that is to be conducted principally for the benefit of the manufacturer or distributor of the medicine or item being trialled. Participants injured as a result of treatment received as part of your study may therefore be eligible for publicly-funded compensation through the Accident Compensation Corporation (ACC).

Please don't hesitate to contact the HDEC secretariat for further information. We wish you all the best for your study.

Yours sincerely,



Dr Brian Fergus
Chairperson
Northern A Health and Disability Ethics Committee

Encl: appendix A: documents submitted
appendix B: statement of compliance and list of members

Appendix A
Documents submitted

<i>Document</i>	<i>Version</i>	<i>Date</i>
Protocol: Study Protocol	2	16 March 2016
PIS/CF: Participant Information and Consent Form	1	16 March 2016
Survey/questionnaire: Main Questionnaire	3	16 March 2016
Survey/questionnaire: Screening Questionnaire	1	16 March 2016
Survey/questionnaire: Serious Adverse Events Questionnaire	1	16 March 2016
CV for CI: CV for Professor Valery Feigin	1	17 March 2016
Supporting Letter from Nirvana Health Group	1	29 February 2016
CVs for other Investigators: CV for Co-Investigator	1	18 March 2016
Evidence of scientific review	2	21 September 2015
Application		
Protocol: Revised Protocol as requested	2	03 May 2016
PIS/CF: revised information and consent form	2	03 May 2016
Phone Script for Non Eligible	2	03 May 2016
Revised phone script	First Contact (Screening)	03 May 2016
Revised recruitment flowchart	2	03 May 2016
I have added comments to the HDEC letter in order to document the changes have that been made requested by the committee.	1	03 May 2016

Appendix B

Statement of compliance and list of members

Statement of compliance

The Northern A Health and Disability Ethics Committee:

- is constituted in accordance with its Terms of Reference
- operates in accordance with the *Standard Operating Procedures for Health and Disability Ethics Committees*, and with the principles of international good clinical practice (GCP)
- is approved by the Health Research Council of New Zealand's Ethics Committee for the purposes of section 25(1)(c) of the Health Research Council Act 1990
- is registered (number 00008714) with the US Department of Health and Human Services' Office for Human Research Protection (OHRP).

List of members

Name	Category	Appointed	Term Expires
Dr Brian Fergus	Lay (consumer/community perspectives)	11/11/2015	11/11/2018
Ms Rosemary Abbott	Lay (the law)	15/03/2016	15/03/2019
Dr Karen Bartholomew	Non-lay (intervention studies)	13/05/2016	13/05/2019
Dr Charis Brown	Non-lay (intervention studies)	11/11/2015	11/11/2018
Ms Susan Buckland	Lay (consumer/community perspectives)	11/11/2015	11/11/2016
Ms Shamim Chagani	Non-lay (health/disability service provision)	11/11/2015	11/11/2016
Dr Christine Crooks	Non-lay (intervention studies)	11/11/2015	11/11/2018
Dr Kate Parker	Lay (consumer/community perspectives)	11/11/2015	11/11/2018

Unless members resign, vacate or are removed from their office, every member of HDEC shall continue in office until their successor comes into office (HDEC Terms of Reference)

<http://www.ethics.health.govt.nz>

Appendix B: Letter of Ethics Approval AUT University Ethics Committee (AUTEC)

Auckland University of Technology Ethics Committee (AUTEC)

EA2

Research Progress Report or Application for Amendment

Notes about Completion

- ❖ The AUTEC Secretariat and your AUTEC Faculty Representative are able to provide you with assistance and guidance with the completion of this report or application.
- ❖ The information provided in this Report will be used for the purposes of granting ethics approval. It may also be provided to the Graduate Research School, the Research and Innovation Office, or the University's insurers for purposes relating to AUT's interests.
- ❖ Please ensure that you are using the current version of this form before submitting your form.
- ❖ Please ensure that all questions on the form have been answered and that none have been deleted.
- ❖ Please deliver or post to the AUTEC Secretariat, room WU406, fourth floor, WU Building, City Campus or email to ethics@aut.ac.nz. The internal mail code is D-88. The courier address is 46 Wakefield Street, Auckland 1010.

For AUTEC Secretariat
Use only

To respond to a question, please place your cursor in the space following the question and its notes and begin typing.

Project Information

AUTEC Application Number and Project Title

16/174 Primary Prevention of Stroke and Cardiovascular Disease in the Community

Current Expiry date

8 June, 2109

Are you making an annual progress report?

☒ Yes ☒ No

If you have responded 'Yes' to this question, please complete part B of this form

Are you making an application for amendments?

☒ Yes ☐ No

If you have responded 'Yes' to this question, please complete part C of this form

Has the title altered since ethics approval was given?

☐ Yes ☒ No

If the answer is 'Yes', please answer the following question, otherwise please answer section A.5 and continue from there.

What is the proposed new title for the research?

Who is the applicant?

Rita Krishnamurthi

Has the applicant altered since ethics approval was given? ☐ Yes ☒ No

If the answer is 'Yes', please answer the following, otherwise please go to Part B and continue from there..

Who is the new applicant?

When the research is part of the requirements for a qualification at AUT, then the applicant is always the primary supervisor. Otherwise, the applicant is the researcher primarily responsible for the research, to whom all enquiries and correspondence relating to this application will be addressed.

In which faculty, directorate, or research centre is the applicant located?

National Institute for Stroke and Applied Neurosciences

What are the applicant's qualifications?

PhD

What is the applicant's email address?

An email address at which the applicant can be contacted is essential.

rkrishnamurthi@aut.ac.nz

At which telephone numbers can the applicant be contacted during the day?

9219999

Progress Report

Please complete this section if you answered 'Yes' to section A.2

Has the recruitment of participants commenced?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Has the recruitment of participants been completed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Has the collection of data commenced?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Has the collection of data been completed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Has data analysis commenced?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Has data analysis been completed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Has the writing up of the findings commenced?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Has the writing up of the findings been completed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Has any publication of findings occurred?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If the research is for a qualification, is it on schedule to finish before its expiry date?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

If the answer is 'No', please explain why and indicate when the research is likely to be completed. Otherwise, please answer section B.11 and continue from there.

Ethical issues that have arisen

Were there any previously unforeseen risks and if so, how have they been managed?

N/A

Were there any conflicts that may have arisen and if so, how have they been managed?

N/A

Were there any complaints and if so, how have they been managed?

N/A

Were there any adverse events and if so, how have they been managed?

N/A

Were there any problems with the approved research protocols and if so, how have they been managed?

N/A

Application for Amendments

Please complete this section if you answered 'Yes' to section A.3. Please ensure all applicable revised documentation such as Advertisement, Participant Information Sheets or Consent Forms are attached to this application.

What amendments to the recruitment protocols are needed?

We will be conducting qualitative interviews with both the coaches and participants to determine how they have found the coaching intervention. The qualitative component of the project was always part of the study, however not specifically not mentioned in the initial HDEC

and AUTECH application. We have already received HDEC approval for the amendment and qualitative study.

What amendments to the data collection protocols are needed?

As the interviews are being audio recorded for the participants, consideration of privacy and confidentiality and been described in the consent form and information sheet.

What amendments to the research aims are needed?

None

What amendments to the research methodology are needed?

None

What changes are there to the proposed research outputs?

N/A

What other amendments to the research are required?

None, we have already received approval from HDEC letter attached

References

Please include any references relating to your responses in this report or application in the standard format used in your discipline.

Checklist

Please ensure all applicable sections of this form have been completed and all appropriate documentation is attached as an incomplete form will not be considered by AUTECH.

Have you discussed this form with your AUTECH Faculty Representative, or a member of the AUTECH Secretariat?

☐ Yes ☒ No

Is this form related to another ethics application? If yes, please provide the application number of the other application.

☒ Yes ☐ No

Are you seeking ethics approval from another ethics committee for this research? If yes, please identify the other committee. HDEC approval number 16/NTA/36/AM02

☒ Yes ☐ No

Section A	Project information provided	<input checked="" type="checkbox"/>
Section B	Progress Report information provided	<input checked="" type="checkbox"/>
Section C	Amendment details provided	<input checked="" type="checkbox"/>
Section D	References provided	<input type="checkbox"/>
Section E	Checklist completed	<input checked="" type="checkbox"/>
Section F.1 and 2	Applicant and student declarations signed and dated	<input checked="" type="checkbox"/>
Section F.3	Authorising signature provided	<input checked="" type="checkbox"/>
Spelling and Grammar Check (please note that a high standard of spelling and grammar is required in documents that are issued with AUTECH approval)		
Attached Documents (where applicable)		
Participant Information Sheet(s)		<input checked="" type="checkbox"/>
Consent Form(s)		<input checked="" type="checkbox"/>
Questionnaire(s)		<input checked="" type="checkbox"/>
Indicative Questions for Interviews or Focus Groups		<input checked="" type="checkbox"/>
Observation Protocols		<input type="checkbox"/>
Recording Protocols for Tests		<input type="checkbox"/>
Advertisement(s)		<input type="checkbox"/>
Researcher Safety Protocol		<input type="checkbox"/>
Hazardous Substance Management Plan		<input type="checkbox"/>
Any Confidentiality Agreement(s)		<input type="checkbox"/>
Any translations that are needed		<input type="checkbox"/>
Other Documentation		<input type="checkbox"/>

Declarations

Declaration by Applicant

- ☐ The information in this report or application is complete and accurate to the best of my knowledge and belief. I take full responsibility for it.
- ☐ In conducting this study, I agree to abide by all applicable laws and regulations, and established ethical standards contained in AUTECH's Applying for Ethics Approval: Guidelines and Procedures and internationally recognised codes of ethics.
- ☐ I will continue to comply with AUTECH's Applying for Ethics Approval: Guidelines and Procedures, including its requirements for the submission of annual progress reports, amendments to the research protocols before they are used, and completion reports.
- ☐ I understand that brief details of this report may be made publicly available and may also be provided to the Graduate Research School, the Research and Innovation Office, or the University's insurers for purposes relating to AUT's interests.



5/2/2018

Signature

Date

Declaration by Student Researcher

Please tick the boxes below.

- ☐ The information in this report or application is complete and accurate to the best of my knowledge and belief.
- ☐ In conducting this study, I agree to abide by all applicable laws and regulations, and established ethical standards contained in AUTECH's Applying for Ethics Approval: Guidelines and Procedures and internationally recognised codes of ethics.
- ☐ I will continue to comply with AUTECH's Applying for Ethics Approval: Guidelines and Procedures, including its requirements for the submission of annual progress reports, amendments to the research protocols before they are used, and completion reports.
- ☐ I understand that brief details of this report may be made publicly available and may also be provided to the Graduate Research School, the Research and Innovation Office, or the University's insurers for purposes relating to AUT's interests.

Signature

Date

Authorisation by Head of Faculty/School/Programme/Centre

- ☒ The information in this report or application is complete and accurate to the best of my knowledge and belief.
- ☒ In authorising the continuation of this study, I declare that the applicant is adequately qualified to undertake or supervise this research and that to the best of my knowledge and belief adequate resources are available for this research and all appropriate local research governance issues have been addressed.
- ☒ I understand that brief details of this report may be made publicly available and may also be provided to the Graduate Research School, the Research and Innovation Office, or the University's insurers for purposes relating to AUT's interests.










5/2/2018

Signature

Date

Appendix C: Examples of Coding

47	Participant: Ahhh I I I mean this sounds erm a bit weird I suppose, but erm as a family we have always had a reasonably healthy approach to the way we live. I	 Farid a clear goal to have a healthy life
48	mean so we don't consume lots of, heaps of junk food, we don't erm, ah, we're not conch potatoes, ah and generally speaking our friends have a similar sort of	 Farid Healthy life style
49	approach to their lives. So I guess by comparison with possibly some of the other respondents, we come to it from a somewhat different perspective perhaps	 Farid Eating healthy food
50	than other people do, which is that we've always lead a reasonably healthy and engaged life.	 Farid Positive support from friendship to have healthy life and good impact
51	Interviewer: So you were already fairly healthy in terms of your lifestyle and the things that you have control of and it sounds like because of that you didn't feel	 Farid Having good and positive life prospective
52	the need to make any changes, is that kind of what you're saying or...	
53	Participant: I'm always endeavouring to do better	 Farid Good attitudes and readiness for better life
54	Interviewer: Okay	
55	Participant: In terms of things like diet and so forth, it's just who we are. Erm but I, I wouldn't describe myself as, as erm maniacally committed to erm... I'm more	
56	of a everything in moderation sort of person	 Farid Good life style and good and logical thinking
57	Interviewer: Right okay, so just to clarify, the answer to the question as to whether you made any specific changes during this study would probably be no, am I	

Appendix D: Example of Finding Themes

Awareness – in this data that included large amount of information about the role of awareness and through researching for themes discover there is many **aspects of awareness**. **Self – awareness** that **motivated participants** to make changes towards healthy behavior line 22- 24 ; 26- 30 **participant 1**. **becoming self-aware** with what is going on with their health plus the awareness of health risk becoming very important to guide participant to move toward health heavier line 800 **participant 4**. Awareness of health come through many resources that enabled the participants to act positively in changing their health behavior starting from **being educated about health** line 1101 – 1104 **participant 5**; line 3118 **participant 12**.

Awareness did played a strong role to help them to be mindful of the way they were thinking about their health. line 299- 304 ; 317- 324 **participant 2**. Participant reaction to act differently as resulting **of being mindful**. Self-awareness and health awareness made participants more interested in the behavioural changes and **consciously** started to **be self-monitoring** and evaluating themselves line 26-30 participant 1; line 2509- 25-10 **participant 9**. Awareness was important to make These changes achieved through the impact of **self-motivation line** 2435, 2464- 2467 **Participant 9**. In line 2919 seeing motivation **Participant 11**).

Awareness of risk factors and impact of this kind of risks and recognizing the link of **their age** too that was cognitive factor impacting health behaviour line 605- 609 participant 3; line 269- 270; 394- 395 participant 2; line 2672- 2664 **participant 10**. **Awareness of family history** and impact many diseases on individuals and **family members**, especially children that empowered the action toward health behaviours line 2195- 2196; 2291-2292; 2362; **participant 8**. This type of awareness made them to look after their health more. Awareness of health risk and threat of the consequences of high risk such blindness and the awareness becoming more serious to be a health behaviour changes line 3168- 3170 **participant 12**; line 2929 – 2931 **participant 11** . line 1044- 1048 participant 5. actually **awareness come also from the threat** and through comparing themselves with other people have very similar risks situation and they are in very bad health condition. **Participating in the study** raised the awareness of health risks and becoming more **conscious about health**. Study encouraged to change health behaviour that being related to the participating in the study. Taking part in the study enabled participants to gain an awareness which influenced the changing process 671 **participant 3**; 2282 **participant 8**; 2707 **participant 10**.