

**Self-management of Type 2 Diabetes among Mainland Chinese Immigrants
in Canada: A Qualitative Study**

By

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A Thesis

presented to

The University of Guelph

In partial fulfilment of requirements

For the degree of

Master of Science

In

Family Relations and Applied Nutrition

Guelph, Ontario, Canada

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ABSTRACT

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The current study used phenomenology to explore how Mainland Chinese immigrants with type 2 diabetes engage in the self-management of diabetes in Canada. A total of 18 participants were interviewed (8 were male and 10 were female). The average age of the participants was 50.7 years old. Overall, participants were highly motivated in their diabetes management. They were seeking information on how to manage their diabetes from both formal and informal channels. The majority of them didn't include traditional Chinese medication in their treatment due to the negative views they had towards it. They had a fear of western medication because of the possible side effects associated with it; however, many of them had to take medication when their condition was not managed with lifestyle intervention alone. Participants were in favour of lifestyle intervention, including diet management and physical activity. They changed from mindless eating to mindful eating, specifically, reducing their overall food intake with reduced carbohydrate, protein and increased vegetable intake. They acknowledged the importance of physical activity in diabetes management, but encountered more barriers in achieving the desired level of physical activity. Glucose level was used as a biofeedback to the changes they made in western medication, nutrition therapy, and physical activity. Balance and control were achieved as they have learned to manage their condition while living a "normal" life.

Acknowledgements

It is with pleasure that I thank those who made this thesis possible. First and foremost I would like to thank my advisor, Dr. Judy Sheeshka. Thank you for believing in me and taking me on as your graduate student in the first place. I would not have been where I am today without your encouragement and help. Also thank you for the bridal shower and baby shower you have hosted for me-I could not have wished for a more caring advisor.

My committee member, Dr. Paula Brauer, provided her expert guidance in numerous ways throughout the research process. I am very thankful for her feedback and advice.

I also wish to thank Melanie Simard for her help during the data coding process. Her hard work and dedication were most appreciated. Also, my experience would not have been the same without the support and encouragement of my friends, officemates and classmates.

Special thanks should be given to the people who participated in this study. I appreciate that they invited me into their lives to share their experience and this project would not be possible without them.

Finally, words alone cannot express the thanks I owe to my husband Roy. Thank you so much for always being there to encourage me and have faith in me. Your encouragement, support and love are the reasons why I have been able to successfully complete this chapter of my life, and I look forward to the new chapter of life of being parents.

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1.0 INTRODUCTION

Diabetes is a common and increasingly prevalent chronic illness around the world including Canada. The recently published *2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada* provides the basis for health education and disease management programs currently being offered to individuals with diabetes in Canada (CDA, 2008). Diabetes self-management is an essential component in managing diabetes. It includes self-monitoring of blood glucose, medication, nutrition/diet, physical activity and other lifestyle behaviours, and foot care (CDA, 2008). Unfortunately, people with diabetes face many obstacles when they engage in all self-management practices, particularly people who are in minority populations (Xu, Pan, & Liu, 2010). The minority population might encounter greater challenges in self-managing diabetes due to social obstacles, or language and cultural barriers (von Goeler et al., 2003; Hsu et al., 2006).

Canada is a multi-cultural country with immigrants coming from everywhere in the world and immigrants are at higher risk of developing diabetes than non-immigrants (Creatore et al., 2010). Among Canada's ethnic and cultural groups, Mainland Chinese immigrants merit special attention in diabetes management for several reasons. First, the rate of obesity and diabetes is growing in Mainland China and it is a main source of immigrants for the past 10 years in Canada. Second, research is limited in studying and understanding Mainland Chinese immigrants as they are a new emerging group of the population in Canada. Third, Mainland Chinese immigrants face language and cultural barriers in using the health care system in Canada. Research in understanding how Mainland Chinese immigrants manage their Type 2 diabetes mellitus (T2DM) is needed and identifying the factors that influence their disease management can lead to a better understanding of this population as they adapt and integrate into the Canadian society.

The methodology of this research uses thematic analysis to analyze in-depth interviews with Mainland Chinese immigrants with T2DM. Participants had to have been diagnosed with T2DM for a minimum of one year and without major complications. The main objective of this research is to explore how Mainland Chinese immigrants with T2DM are engaging in medication-taking, diet recommendations, physical activity, and self-monitoring of blood glucose, and the cultural factors that influence their care. Other questions this research seeks to answer include: where do mainland Chinese immigrants with type 2 diabetes acquire information in managing their condition? What are some barriers they encounter in achieving in optimal care? What is it like for Mainland Chinese immigrants in Canada to live with T2DM? The experience of living with T2DM includes how someone responds to the effects of the disease and adapts to and manages the disease. The results of this research will add to the literature with more understanding of this ethnic group in their T2DM management, thus helping health care providers to deliver more culturally appropriate and sensitive care.

2.0 LITERATURE REVIEW

2.1 Overview of Type 2 Diabetes

The term diabetes mellitus (DM) describes “a metabolic disorder of multiple aetiology characterized by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both” (WHO, 1999). T2DM is the most common form of diabetes and accounts for 90% of all cases of diabetes (Egede & Dagogo-Jack, 2005). Some of the common complications include blindness, heart disease, kidney problems, nerve damage, amputations and erectile dysfunction (CDA, 2008).

The number of people with diabetes has increased substantially during the past 20 years. The rapid increase in the prevalence of obesity is partially linked to the rising prevalence of T2DM worldwide (Li, et al., 2011). According to the latest available WHO report, the number of people worldwide with diabetes reached 346 million (WHO, 2011). Prevalence is generally higher in developed countries than in developing countries; however developing countries have seen the greatest increase as they continue to modernize (Shamseddeen et al., 2011). One classic example is China. As it moves towards becoming a more developed country, the proportion of children aged 7 to 18 years who were obese and overweight increased 28-fold between 1985 and 2000 (Yang et al., 2010). The age at which T2DM develops has also decreased and the prevalence of T2DM is also increasing. According to the latest study, China has overtaken India and has become the country with the largest number of persons with diabetes in the world (International Diabetes Federation, 2010; Yang et al., 2010).

In Canada, more than three million Canadians are living with diabetes and this number is projected to reach 3.7 million in 2020 (CDA, 2011). The number of people with T2DM is constantly increasing in Canada due to a number of factors, including the aging

population, rising obesity rate, and sedentary Canadian lifestyle (CDA, 2011). Another important factor is that almost 80% of new Canadians come from areas of the world that are at high risk for T2DM, such as Asia, South Asia, and Latin America (CDA, 2011). There is strong evidence that the rate of diabetes is higher in immigrant populations than non-immigrants; specifically, immigrant women are at higher risk (CDA, 2008). The difference in diabetes prevalence among certain ethnic groups and the general population has been well documented in the United States. The prevalence of T2DM is higher in African Americans, Asian Americans and Pacific Islanders, Hispanic Americans, and Native Americans compared with whites (Egede & Dagogo-Jack, 2005). A few studies also indicated that approximately 13-21% of Chinese Americans suffer from diabetes (Choi, 1990; Wang & Abbott, 1998). Research has shown a high prevalence of impaired glucose regulation in Chinese immigrants, even among individuals with normal BMI in New York (Rajpathak & Wylie-Roseet, 2011). In Canada, even though there is no specific data on the prevalence of T2DM in Chinese immigrants, the number is expected to be high. The Canadian Diabetes Association (CDA) has classified people of Asian descent to be members of a high-risk population and Mainland Chinese is one of the largest Asian groups in Canada (CDA, 2008).

2.2 Self-Management Components in Diabetes Management

The 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada is the basis for health education and disease management programs currently being offered to individuals with diabetes in Canada (Canadian Diabetes Association, 2008). Optimal diabetes care not only depends upon the daily commitment of the person with diabetes, but also self-management practices with the support of an integrated diabetes health care (DHC) team (Renders et al., 2001). The core DHC team includes the person with diabetes, his or her family, the family physician and / or diabetes specialist, and the diabetes educators including nurse and dietitians (Clement, 1995). Research has shown

that the comprehensive and shared care the DHC team provides can increase the commitment and participation of the person with diabetes (Griffin, 1998). The self-management education of diabetes is also a critical component in the disease management. It includes goal-setting, problem solving, skill training, and coping strategies. The skill training during self-management education focuses on the ability to make proper dietary choices, incorporate an exercise regimen, use medication as recommended and self-monitor blood glucose (CDA, 2008).

Nutrition therapy is an integral part of diabetes treatment and self-management. Research has shown that nutrition therapy can improve glycemic control by reducing glycated hemoglobin (A1C) by 1.0 to 2.0% (Pi-Sunyer et al., 1999). Some diet recommendations given by the CDA clinical guidelines include: maintain regularity in timing and spacing of meals, choose food sources of carbohydrate with a low glycemic index, and consume no more than 7% of total daily energy from saturated fats (CDA, 2008). The Canadian Diabetes Association has been spearheading several initiatives designed to improve diet counselling services and tools in the Canadian health system. Some of them include the “Just the Basics” and “Beyond the Basics”. The “Just the Basics” guide includes the plate model, which suggests having half of a dinner plate of vegetables (at least 2 kinds), a quarter plate of grains and starch, a quarter plate of meat and alternatives, and a glass of milk and a piece of fruit with the meal. It also includes a handy portion guide to help individuals with diabetes to estimate appropriate portions using their hands (CDA^a, 2012). The “Beyond the Basics (BT): Meal planning for Healthy Eating” also known as carbohydrate counting is a meal planner guide that is based on 15g of carbohydrate per serving in each of the carbohydrate-containing groups (Grains & Starches, Fruits, Milk & Alternatives, Other choices) (CDA^b, 2012). It is recommended that people with diabetes meet with their registered dietitian to discuss how to plan their meals based on the BTB guide.

Physical activity has a number of benefits for people with diabetes, such as increased cardiorespiratory fitness, increased vigour, improved glycemic control, decreased insulin resistance, improved lipid profile and maintenance of weight loss (Sigal et al., 2006). The CDA recommends that people with diabetes “accumulate a minimum of 150 minutes of moderate- to vigorous-intensity aerobic exercise each week, with no more than two consecutive days without exercise” (CDA, 2008). Resistance exercise three times per week is also encouraged for people with diabetes (CDA, 2008).

The initiation of pharmacotherapy depends on the A1C level. A1C is a measurement of average blood glucose control for the last 2-3 months and approximately 50% of the value comes from the last 30 days (CDA, 2008). When the A1C level is $< 9.0\%$, medication should be initiated if there is no effective result from lifestyle intervention, including nutrition therapy and physical activity. When the A1C is $\geq 9.0\%$, then pharmacotherapy should be initiated without waiting for effect from lifestyle intervention (CDA, 2008).

Results from self-monitoring of blood glucose (SMBG) and A1C provide the best information to evaluate glycemic control. The frequency of SMBG depends on many factors, such as treatment prescribed and the individual’s ability to use the information to make changes (CDA, 2008). In addition, pre- and postprandial measurements should be included in the SMBG (CDA, 2008). For most diabetes patients, A1C should be measured every three months to ensure glycemic levels are being controlled (CDA, 2008).

Overall, in order to achieve good glycemic control, people with diabetes should be trained in the self-management components of diabetes care including: nutrition therapy, physical activity, medication taking and self-monitoring of blood glucose.

2.3 History of Chinese Immigrants to Canada

Several waves of migration have brought people of Chinese descendent from different parts of the world to Canada in the past 150 years (Yue, 2005). Hong Kong,

Taiwan, and Mainland China are the main origins of Chinese immigrants. Like many other ethnic groups, people of Chinese descent immigrated to Canada hoping to improve their quality of life. They believed that Canada would offer better opportunities and living environments for themselves and their children. Some came to join their families that had already settled in Canada. Others came for political and religious freedom.

The first Chinese immigrant group came to Canada in 1858 (Yue, 2005). They were merchants and labourers who escaped famines and came to Canada to search for gold and fortune. Between 1881 and 1884, more than 15,000 men from China came to serve as construction workers on the Canadian Pacific Railway. The second wave started after the Second World War when Canada allowed close relatives of Chinese people to enter the country (Yue, 2005). The next wave started in 1962 and 1967 when Canada developed the “point system”. It was based on “economic factors” such as education, training, and job opportunities rather than origin of the immigrant. The applicant was required to obtain 50 out of a possible 100 assessment units in order to gain admission (Marr, 1975).

The new Immigration Act that came into effect in 1978 emphasized occupational experience and demand and generated the largest wave of Chinese immigrants (Yue, 2005). The government also introduced an “entrepreneur” category of immigration through the Business Immigration Program (Li & Lee, 2005). After the 1989 Tiananmen Square incident in China and China’s takeover of Hong Kong in 1997, many Hong Kong Chinese were seeking immigration to secure their future citizenship. The point system and Business Immigration Program allowed many wealthy and well educated Hong Kong and Taiwan Chinese people to immigrate to North America. However, the economic downturn that happened in the late 1990s resulted in decrease immigration from Hong Kong and Taiwan (Li & Lee, 2005).

In 1998 Mainland Chinese took over Hong Kong and became the major source of immigrants of Chinese background. China's rural poverty, overpopulation, political system, restrictive policies such as one child policy, and highly competitive environment due to a large population were the persistent motivations for people from Mainland China to migrate to Canada (Yue, 2005). Statistics show that in 2000 Mainland China sent more immigrants to Canada than did any other country - almost 20,000 (Yue, 2005). And the number doubled in 2001, accounting for 16% of all immigrants who came to Canada that year (Citizenship & Immigration Canada, 2010). Of these immigrants, almost one-third of them were skilled workers, making Mainland China the main country where skilled immigrants came from that year. From year 2001 to 2009, Mainland China was the largest source of permanent residents in Canada and third largest in 2010 (CIC, 2010).

2.4 Migration and Type 2 diabetes

The hypothesis called the "healthy immigrant effect" has been well documented in the literature. It means that the health status of immigrants is substantially better than native-born people, but over time, this health status advantage decreases (McDonald & Kennedy, 2004; Gee, Kobayashi, & Prus, 2004). It applies mainly to immigrants from developing countries who move to developed countries. Evidence of the healthy immigrant effect in Canada has been reported by Chen et al., (1996) who used the 1994-95 wave of the National Population Health Survey (NPHS); Newbold and Danforth (2003) who used the 1998-99 wave of the NPHS, Perez (2002); and Gee, Kobayashi, and Prus (2004) who used the Canadian Community Health Survey (CCHS) from 2000-01; McDonald and Kennedy (2004) who used the 1996 wave of NPHS and CCHS; and Newbold (2006) who used the longitudinal components of the 1994/95, 1996/97, 1998/99, and 2000/01 cycles of NPHS. The healthy immigrant effect has also been documented in other developed countries, such as the United States (Stephen et al., 1994), Australia (Biddle, Kennedy, & McDonald, 2007),

and Europe (Razam & Rohrmann 2001). The healthy immigrant effect is seen in research that uses the existence of diagnosed chronic health conditions as an indicator of health status. Unfortunately, the evidence of the healthy immigrant effect does not exist when using self-assessed health status (Newbold, 2006). One possible explanation could be that the perception of health changes when people immigrate. Immigrants are more likely to evaluate their health relative to peers within the host country rather than their country of origin (Newbold, 2006).

Research done by Statistics Canada using cross-sectional 2000/01 CCHS data found that the prevalence of general chronic conditions is significantly lower in immigrants than non-immigrants, implying immigrants are healthier overall than non-immigrants. However, after controlling for age, education, and income, those immigrants who have resided in Canada for 30 years or longer are not significantly different from their Canadian-born counterparts (Perez, 2002). When looking at specific health conditions, such as diabetes, immigrants who have been in Canada less than 10 years have significantly lower odds ratio of reporting diabetes than Canadian born adults. However, this significance is lost when immigrants reside for longer than 10 years (Perez, 2002).

In the literature, the healthy immigrant effect is believed to be strongest among new immigrants. Researchers have identified a number of reasons that might be attributed to this phenomenon. The first is immigrants' self-selection. It is commonly believed that healthier, younger, and better educated individuals are more likely to be physically and financially able to immigrate (McDonald & Kennedy, 2004). Moreover, the health screening in the Immigration Act for entrance into Canada tends to favor the relatively healthier immigrants and disqualify people with serious medical conditions (Oxman-Martinez, Abdool, &Loiselle-Leonard, 2000). Another possible reason is that the health conditions among the recent immigrants are under-reported (Newbold, 2006) or they under-utilize health services and the

existing medical conditions were undiagnosed at time of immigration (McDonald & Kennedy, 2004).

Researchers also explored the reasons for the diminishing of the healthy immigrant effect. One possible explanation is the process of acculturation. The term ‘acculturation’ means the process of adopting language, ethnic, culture, and lifestyle practices of the host country after migration (McDonald & Kennedy, 2004). Another explanation is barriers to using the health services because of language, culture difference, and lack of information and knowledge in the new health system. This has contributed to the worsening of health conditions when immigrants under-use preventative health screening and don’t receive diagnoses of disease (McDonald & Kennedy, 2004). On the other hand, the improved access to a health care system increases the recognition of otherwise existing, but undiagnosed conditions (McDonald & Kennedy, 2004).

The causes of T2DM are complex and multi-faceted. However, it is believed that a change of environment, such as migration, has an impact on the incidence and prevalence of T2DM because it is a predominantly environmentally-influenced disease (Misra & Ganda, 2007). Researchers Misra and Ganda (2007) did a review on the topic of migration and its impact on adiposity and T2DM. The classic example they found was South Asian migrants, who are predisposed to develop insulin resistance and T2DM. They had nearly four times the prevalence rates of T2DM compared to South Asian people living in their original country of residence. Similarly, Chinese immigrants to Mauritius were shown to have a higher age-standardized prevalence of impaired glucose tolerance and T2DM based on WHO criteria (Dowse et al., 1990). Nutritional transition was found to be one of the determinants of obesity and T2DM in migrant populations. The dietary patterns in developed countries usually include high calories, saturated fat, simple sugars, and low intake of dietary fibre, fruits and vegetables. In contrast, Chinese people living in China tend to consume more

carbohydrate but less fat, and are leaner than Chinese people who are settled in North America (Lee et al., 1994). Chinese immigrants in North America might have a higher chance of developing T2DM with changes in their diet. Additionally, physical activity levels were found to be reduced with Chinese immigrating to North America (Lee et al., 1994). There are also gene-environment interactions, the effect of stress, and ethnic susceptibility components in the development of T2DM (Misra & Ganda, 2007). Overall, evidence suggests that environmental factors play a critical role in conferring an increased risk of developing T2DM in immigrant population.

2.5 Chinese Religious and Philosophical Beliefs

There are a number of religions and philosophies that influence Chinese descendants. While most individuals do not strictly adhere to beliefs from one particular religion, ideas from these religions and philosophical beliefs have blended in people's lives over the centuries. Therefore, it is important to understand those main religious and philosophical beliefs and how they might influence Mainland Chinese immigrants in managing their T2DM.

Confucianism is the most influential philosophy in China and was the basis of education for over two thousand years (Yue, 2005). It strives to achieve harmony through observing the five basic relationships of society: ruler and ruled, father and son, husband and wife, older and younger brother, and between friends (Spector, 2009). There are codes of conduct for each of these five relationships. Confucianism stresses the importance of respecting authority and elders. There is a high regard for education and hard work with the belief that they are the main means of achieving a higher status in the society. Daoism is a Chinese philosophy that is second to Confucianism in popularity. It was originated by LaoTzu in the sixth century BC (Yue, 2005). The word 'dao' means way or path. It is believed to be the way of all nature, the primary law that governs all heavenly and earthly matters. To live according to the Dao, one must "empty him or herself of doctrines and

knowledge, act with simplicity and humility, and above all seek nature”. The fundamental belief in Daoism is that nature has its own laws and will take care of itself (Yue, 2005).

The yin-yang balance principle was originated in Daoism (Spector, 1985). It was believed that they are two diametrically opposed forces and it is the most fundamental aspect of Chinese culture and traditional Chinese medicine (TCM) (Spector, 1985). Yin represents negative energy, femaleness, coldness; in contrast yang represents positive energy, maleness, and warmth. The balance of these two forces results in harmony in body and good health and the disruption of this balance cause poor health and illness (Spector, 1985). In a similar way, *qi* is the vital energy that flows around the body to maintain good health. Illness and surgery drain the *qi*, while rest and some exercises restore it. The concept of yin-yang and *qi* are rooted in Chinese traditional medicine.

The philosophical beliefs in Chinese history have a profound influence on how one views oneself and also the experience of a health issues such as diabetes. Some researchers have identified two distinct views of self: interdependent and independent (Markus & Kitayama, 1991). Those who perceive themselves as being independent tend to express their psychological experience and behaviours based on their own thoughts and feelings with little reference to others in their social environment (Markus & Kitayama, 1991). In contrast, those who hold an interdependent view organize their psychological experience and behaviours according to the thoughts, wishes and goals of others (Markus & Kitayama, 1991). Many researchers have identified that Chinese culture primarily fosters an interdependent view of the self. Chinese social orientation is known as collectivism, where the well-being and functions of the group are valued above personal desires and goals to minimize any conflict and therefore promote group and social harmony (Triandis, 1989; Kagitcibasi, 1997).

2.6 Attitudes toward Chinese and Western Medicine

Traditional Chinese Medicine (TCM) is an ancient method of healing that combines the use of herbs, acupuncture, dietary therapy, massage, and therapeutic exercise (Zhang & Verhoef, 2002). In TCM, illness is seen as the imbalance of the yin-yang within the body or unobstructed flow of qi (Maciocia, 1989). Therefore, the treatment of illness focuses on the restoration of this yin-yang balance or qi by using ‘natural’ herbs, which are preferred over the artificial chemicals in Western medicine. The philosophy of TCM believes that every part of the body is integrated and connected into a whole unit. The mind and body are considered as one entity (Spector, 1985).

In contrast to TCM, Western medicine is usually based on the biomedical model which views disease as “the result of biochemical abnormality or the result of disease-causing organisms or substances” (Engel, 1977). The tendency of the biomedical model state that the mind and body are seen as separate entities (Lim & Bishop, 2000). Western medicine explains disease primarily in biochemical terms and focuses on subsystems such as the organs or cells (Lim & Bishop, 2000).

In general, TCM is usually seen as a holistic approach toward health and believes that good health is a state of spiritual and physical harmony with nature (Spector, 1996). It is believed to be more effective to treat chronic disease than acute disease. Blood tests, biopsies, and surgery are often seen as invasive in Chinese culture (Spector, 1996). However, many believe acute illnesses, particularly those needing surgery, are best treated by Western medicine (Spector, 1996). It is generally believed among Chinese that TCM treats the causes of the diseases that lead to permanent cure, whereas Western medicines act fast to ease the symptoms but may not cure the roots of the problem (Wanget al., 2008).

2.7 Traditional Chinese Medication in Diabetes Management

The disease of diabetes has been treated by the Chinese with herbs for at least 2000 years and was known as *xiaoke* (Li et al., 2004). It is postulated that *xiaoke* is primarily a deficiency of yin. Organ names in TCM do not correspond with their anatomic Western counterparts; instead they refer more to a system. For example, the kidney also includes the urinary system and adrenal gland, and the heart includes the brain as well (Cheng, 2000). Every part of the body is believed to be integrated by yin and yang forces or qi. *Xiao ke* is characterized by a yin deficiency of the kidney, the lungs, and excessive fire in the stomach (Li et al., 2004). As the disease progresses, there appears the co-existence of yin and yang deficiency, and yin deficiency predominates again at later disease stage (Li et al., 2004).

A systematic review on herbs and dietary supplements for glycemic control in diabetes examined combination formulas in TCM (Yehet al., 2003). There were only a few trials of TCM published in the English language; most have been published in Chinese. Within the limited number of controlled clinical trials, a multiple herb combination containing *Coptischinensis*, *Astragalusmembranaceus*, and *Lonicera japonica* was found to possibly decrease carbohydrate absorption, however, the mechanisms of action were not well reported (Yehet al., 2003). The available studies suggest some TCM might have beneficial effects. However, most studies were of small sample size and short duration. Additionally, it is particularly difficult to assess the effectiveness of TCM because prescriptions might change each time the patients visit (Wang & Wylie-Rosett, 2008). Herbs such as *Cinnamomum cassia* (Chinese cinnamon), *Momordicacharantia* (bitter melon), and *ginseng* are commonly used in treating diabetes. Canadian Diabetes Association clinical practice guidelines stated that there is conflicting evidence that those herbs assist with glycemic control in adults with T2DM (CDA, 2008). Furthermore, the use of bitter melon in children was associated with hypoglycemia (Krawinkel & Keding, 2006). Therefore, the Canadian

Diabetes Association Clinical Practice Guidelines Expert Committee does not recommend complementary and alternative medicine in the management of diabetes due to lack of sufficient evidence regarding safety and efficiency, and individuals with diabetes should be routinely asked if they are using any by their care providers (CDA, 2008).

2.8 Health Care Systems in Mainland China versus Canada

In Mainland China, every citizen has access to the medical system for a nominal fee. Medical insurance is offered to public servants; however, the majority of citizens have to pay all medical expenses on their own. Hospitals are the primary health care providers. Most people are often seen in local clinics but may also visit district hospitals, city hospitals, and then university--affiliated hospitals if more and better specialized treatment is needed. Each patient is accustomed to seeing many doctors and can seek a specialist without seeing the general practitioners first. An appointment to see a doctor is usually not required in Mainland China. Doctors in Mainland China who studied western medicine still have some training in Chinese medicine (Yue, 2005). In fact, both western and Chinese medicine coexist in the health care system competitively and collaboratively. Chinese citizens have the freedom to choose what kind of medical service they would like to use.

In contrast to the Chinese health care system, primary care is sought mainly from family physicians in Canada. Each resident is eligible to apply for a family doctor of his or her own. Family physicians act as 'gatekeepers' to specialists in Canada (Wang, Rosenberg, & Lo, 2008). Therefore, access to a specialist is not as easy and convenient as it would be in Mainland China. Appointments are usually needed before seeing a doctor unless it is an emergency in Canada. Mainland Chinese immigrants are not used to making an appointment to see a doctor and the long wait period is sometimes unbearable for them.

Despite the availability of a publicly funded, universal health care system in Canada, research has shown that immigrants still underutilize health services (Hyman, 2001, in Dyck,

2004). Immigrants face significant barriers to access health care when they can't speak or write in the official languages and are not familiar with the Canadian health care system (Leduce & Proulx, 2004). Like many other immigrant groups, Mainland Chinese immigrants are at a disadvantage in their encounters with health care providers, with their health beliefs and health practices being unknown or misunderstood (Wang, Rosenberg, & Lo 2008). However, meeting the health needs of immigrants is of critical importance to their adaptation and integration to the new society.

2.9 Dietary Habits of Chinese Immigrants

Food has a vital social meaning in Chinese culture. Feasts take place on special occasions, such as birth, birthday, holidays, and funerals. The yin-yang principle not only has an influence on Chinese people's health-seeking behaviours, but also their dietary habits (Yue, 2005). Foods are classified based on their yin-yang or hot-cold properties. Different foods are considered to have different degrees of coldness and hotness, and these are different from their actual temperature (Yue, 2005). Hot foods such as meats, spicy and fatty foods give strength but cause fever and related illness in excess amounts. In contrast, cold foods such as herbal teas, beer, and most fruits bring rest and relief but produce weakness and chills in excess amounts (Yue, 2005). The holistic view of the body and use of diet to promote health is well recognized among Chinese people and there is no clear-cut division between food and medicine.

The traditional Chinese diet is known to be well-balanced with high fibre and low saturated fats (Newman, 1985). Steamed rice is a major staple in the south of China, while wheat in the form of noodles and breads is more common in the North. Meat is eaten in small quantities, usually cut into bite-size pieces and stir-fried with vegetables to allow for less cooking time and to spread flavour to other ingredients. Hot tea, fresh fruit, and nuts, instead of sweets, are commonly served after the meal. Most Chinese dishes are

characterized by composite dishes of mixed food groups. Dishes are usually placed in the middle of the table and shared by everyone at meal times. The amount to eat is primarily based on one's hunger level and satiety. Moreover, it is rare to measure ingredients while cooking. Estimation is common and it comes with experience. Therefore, portion size is rather a new concept for Chinese people.

The term 'dietary acculturation' refers to the extent to which immigrants adopt the dietary practices of the host country. It is not a linear process where people move from one side of the continuum to the other; rather it is a multi-dimensional, dynamic, and complex process (Satia-About et al., 2002). Many factors, such as socioeconomic, demographic, and cultural factors have an influence on the dietary acculturation process. One example of dietary acculturation practices is to incorporate the foods available in the host country in preparing traditional meals (Yang & Fox, 1979). Some studies have shown that breakfast is the first meal to be 'westernized' and immigrants are more likely to consume a traditional Chinese dinner (Satia et al., 2000). Dietary acculturation can result in both healthful and unhealthful dietary changes. For example, a study on the dietary pattern change of 399 Chinese Americans reported that the consumption of grain products, dairy products, fruits and vegetables, meat and meat alternatives increased after immigration to the United States. However, at the same time, the amount of sweets increased as well (Lv & Cason, 2004).

A study that examined the dietary habits and health beliefs of 106 Chinese Canadians from Mainland China, Hong Kong, or Taiwan who reside in Toronto found similar dietary acculturation results (Kwok et al., 2009). Participants reported regular intakes of fruits and vegetables and fat-reducing behaviours. Practices based on traditional Chinese beliefs, such as balancing yin and yang foods to promote health were prevalent. This implies that health care practitioners need to understand and assess where the client is in the process of dietary acculturation when advising on the management of T2DM.

2.10 Understanding Mainland Chinese Immigrants

The distinct waves of immigration have brought different groups of Chinese immigrants to Canada. The term “Chinese immigrants” has been used loosely in the literature to combine immigrants from Mainland China, Hong Kong, and Taiwan. However, Chinese immigrants are no longer a homogenous group but vary in political, social, and economic backgrounds (Yue, 2005). Although they share some common beliefs, there are significant differences among Chinese immigrants. Mainland Chinese immigrants are a more recent group of immigrants and they are more likely to immigrate to Canada under the “skilled worker” category, which means they were highly educated and skilled in China. Another source of Mainland Chinese immigrants came to Canada under the category of “family reunion”. They came to Canada to join their children who are immigrants or citizens of Canada. The third common source of immigrants is under the “entrepreneurs” category where they came to invest and start businesses in Canada (CIC, 2011). In recent years, Citizenship and Immigration Canada initiated “Canadian Experience Class” and “Provincial nominees” to help foreign students who graduated in Canada to immigrate to Canada (CIC, 2011).

Mandarin is the official language in Mainland China and many dialects are spoken in some provinces. Some of the Chinese languages include Cantonese, Hakka, Taiwanese, Chaochow, Fukien and Shanghainese. According to the Canadian 2006 census, Chinese languages are the third largest mother tongue group after English and French, and 3% of the population reported a Chinese language as their mother tongue (Statistics Canada, 2006). Metropolitan Toronto, Vancouver, and Montreal continued to be the popular places for Mainland Chinese immigrants to settle. Many of those Mainland Chinese immigrants are first generation immigrants in Canada; therefore, they do not have the same social support networks compared to earlier Hong Kong and Taiwan immigrants, on arrival in Canada. It is

not uncommon for newer immigrants to live among their own social networks, maintain close connections with their places of origin, and travel back and forth often (Yue, 2005). Like many others, immigrants from Mainland China also vary in terms of their own education background, English proficiency, and degree of acculturation. Therefore, some Mainland Chinese immigrants have achieved great economic and political success; however, some experience much hardship in settling in Canada and are forced to take low-paying jobs.

Individual barriers and structural barriers are two major types of barriers that are faced by immigrants (Zong, 2004). Some examples of individual barriers include inadequate English and lack of Canadian experience. Structural barriers include unequal opportunity, devaluation of foreign credentials, and racism (Zong, 2004). Researchers have suggested that the individual barriers lessen the longer immigrants stay in Canada (Zong, 2004). However, structural barriers may not be easily resolved with the increasing length of stay. Some of the common barriers faced by Chinese immigrants include lack of English and Canadian experience, foreign credentials not being recognized, and different skill demands in Canada (Zong, 2004). As a result, some people choose to go back to school for further training. Others start new businesses in order to make a living in Canada. Some skilled immigrants even consider returning to their home country after immigrating to Canada. This new phenomenon, known as 'return migration' has been documented in a recent longitudinal study by the Canadian government (Aydemir & Robinson, 2006). It is clear that immigrants face many challenges in settling to a new country, and having to manage a chronic disease on top of the settlement process can add an extra burden.

To date, research into the lived experience of immigrating to Canada from mainland China is very limited. One study by Sakamoto, Ku, & Wei (2009) interviewed skilled immigrants from Mainland China who live in Toronto and have lived in Canada on average between four and ten years. The main theme of the settlement experience was described by

“*Luocha*” (deep plunge). It means a sense of failure and loss that results from challenges in multiple areas such as employment, family integration, mental health, and language barriers. Some of the coping strategies used by those participants included compromised expectations, re-evaluating life goals, and seeking help from family and friends in Canada. Underutilization of social services was also common among those participants. Services aimed at the general public, such as health care and child care were well received. However, they were hesitant to use mental health services, because of the stigma associated with it in Chinese cultures (Sakamoto et al., 2009). Due to the differences in welfare systems in China and Canada, Mainland Chinese immigrants have a different view of social services and see them as a crisis-based support system and believe they are burdens to the government (Sakamoto et al., 2009). Being self-sufficient was a common value among Mainland Chinese immigrants. The uniqueness of this subgroup of Chinese immigrant and their needs for settlement services that are specific to them have been recognized by the government. Therefore, in the summer of 2003, the Citizenship and Immigration Canada Region Settlement Directorate issued a request for proposals from academic researchers to evaluate the existing service-delivery models as to their relevance to the Mandarin-speaking newcomers from Mainland China, and to recommend policy adjustments and improvements (Wang & Lo, 2005).

2.11 Health Management Strategies among Chinese Immigrants

Approaches to obtaining health information can be broadly categorized as institutional or formal and non-institutional or informal (Ahmad et al., 2004). Institutional or formal initiatives include workshops, seminars, and counseling, while the non-institutional or informal strategies include mass media and social networks. Researchers who examined the sources of health information used by 22 Mainland Chinese immigrant women found the main sources of health information before immigration were informal strategies, including

doctors, written materials (health magazines, books and newspapers), public health workers, TV health programs, and elders (Ahmad et al., 2004). Doctors were the most trusted and used source of health information due to their credibility in China. However, doctors became less accessible after immigration due to language and other barriers. When examining the sources of nutrition information in the previously-mentioned study with 106 Chinese Canadians, 88% of the participants reported obtaining nutrition information through Chinese media, including television, radio, newspapers, and magazines (Kwok et al., 2009). Another major source of information was family and friends (68%). Very few participants had even sought nutrition and health advice from dietitians, and they were not very familiar with the roles dietitians play.

Evidence is strong that having culturally- and linguistic-matched physicians results in better care. Researchers Somnath and Shipman (2006) reviewed 55 studies and found that minority patients tend to receive better interpersonal care from physicians of their own cultural or linguistic background. Moreover, non-English speaking patients experience better inter-personal care, greater medical comprehension, and greater likelihood of keeping follow-up appointments when they see a language-matched physician. The majority of the Mainland Chinese immigrants also prefer to have a Mandarin-speaking physician (Wang, 2008); however, this expectation does not always get met in reality. Research done by Wang and colleagues (2008) in Toronto found that there exists a big difference between the percentage of participants who prefer Mandarin-speaking physicians (59%) and the actual percentage that had Mandarin-speaking physicians (38%). The shortage of Mandarin-speaking family physicians is a challenge and it further exacerbates the difficulty of using the Canadian health system.

The type of health management strategies Chinese immigrants use vary depending on specific health conditions. However, self-diagnosis and self-treatment using medicines

brought from China and hot-cold balanced homemade meals are common practice in managing health for those who immigrated to Canada more recently (Wang et al., 2008). Some even travel back home to China to get treatment. Consulting a physician may not be the first and only choice when Chinese immigrants encounter minor health issues. Many indicated it is “too much trouble” to see a doctor (Wang et al., 2008). Self-treatment was the main treatment that Chinese immigrants in Toronto used to treat chronic fatigue and weakness (Lee et al., 2010). Participants consulted family doctors, specialities, TCM, and mental health services. They believed TCM treated the root of the issue, however, it usually requires long courses of treatment and it is not covered by health insurance. It is thought that family doctors and physicians in specialized practices do not help with the cause of the problem and mental health services are not well used because of the stigma attached to mental illness.

The published research into the health management strategies used by Chinese immigrants, especially in Mainland Chinese immigrants is scarce. A study that was done in Calgary examined the illness management strategies among Chinese immigrants living with arthritis and the factors that influence these strategies (Zhang & Verhoef, 2002). The study participants were a diverse group of Chinese descendents from Mainland China, Taiwan, Hong Kong, and Vietnam. The findings showed that those Chinese immigrants usually started using self-care remedies, followed by consulting Western physicians, consulting Chinese healers, and then returning to Western medicine. The management strategies of arthritis were influenced by the disease severity, personal and cultural factors.

Another study that examined the management of cardiovascular disease risk in 15 Mainland Chinese immigrants found that they were very diligent in seeking multiple sources of information to enable them to manage their health (Kong, et al., 2007). In contrast to other studies, participants in this study were very active in obtaining information from sources

including physicians, dietitians, and cardiac rehabilitation programs. However, they were skeptical of information offered to them and wanted to know more in order to make informed choices about what was best for them. Taking control of one's own disease was a predominant theme in the study. The severity of the disease, small sample size, and high education level of these participants might explain part of the differences between study findings. Unlike other studies, Chinese herbal medicine was not favoured in the treatment and Western medicines were often used exclusively when participants were managing their CVD. One explanation is that heart disease is considered a more acute illness and Chinese medicine is thought to be most helpful in treating chronic illness. Understanding how Chinese immigrants manage those health conditions might aid in understanding the strategies employed in T2DM management.

2.12 Current Research on the Management of Type 2 diabetes among Chinese Immigrants

The topic of chronic illness has attracted attention in the health and social science literature over the recent decades. One aspect that researchers are interested in understanding is the meaning of chronic disease to sufferers (Anderson et al., 1995). In addition, a number of researchers have discussed what it is like to live with a particular chronic disease such as diabetes. One assumption of this research is that, if health care professionals understand the lived experience, they can better appreciate the health needs of those with similar experiences and potentially develop services that meet those needs. However, research has mostly focused on understanding the meanings and realities of living with a chronic disease from the perspective of the majority culture (Anderson et al., 1995). There is a paucity of research that informs the experiences of people from Mainland Chinese among Canada's diverse ethnic communities, despite the high prevalence of developing T2DM among this population. One possible factor contributing to the lack of research could be the "Model Minority" stereotype

(Zane, Takeuchi, & Young, 1993). Chinese immigrants and other Asian populations are often seen as immune from social and physical ills (Zane et al., 1993). Second, Chinese immigrants are less likely to participate in a health research study when facing language, cultural, and structural barriers (Chun & Akutsu, 1999). Therefore, further research in exploring how Mainland Chinese immigrants manage their diabetes in day to day life and their lived experience is warranted.

One of the published research studies done in the United States used quantitative methods to examine the level of diabetes self-management and its association with demographic and diabetes related characteristics in 211 Chinese Americans with T2DM (Xu, Pan, & Liu, 2010). One of the findings was that participants were more likely to take medications but less likely to follow other self-management strategies, such as diet, physical activity, self-monitoring of blood glucose and foot care. Education level, employment status, and length of diagnosis all had an influence on the self-management practices. The results indicated that the self-management practices were suboptimal and need improvement.

There has also been some qualitative research done in United States by Chesla and Chun (2005) in the area of cultural and family challenges in management of T2DM by Chinese Americans. The study participants were 20 couples who were Cantonese-speaking Chinese immigrants with at least one member of each couple being diagnosed with T2DM. A number of culturally-unique concepts of diabetes, illness and health that are associated with TCM were evident in the narratives of patients and spouses. The concepts around yin/yang balance, hot/cold food were commonly discussed. One of the cultural challenges in the management of this disease included prescribed diabetic diets (Chesla, Chun, & Kwan, 2009). One typical example was rice. Rice is a major staple in Chinese diet. Participants found it extremely challenging to restrict the amount of rice or to switch to brown, red, or black rice. The concept of restricting the amount of certain foods also contraindicates with

the traditional concept of balancing food in the diet to promote overall health. Diabetic diets also complicated the practice of shared social experiences such as outings, meals, and celebrations with family and friends that included ritual meals. A person needing to follow a diabetic diet might withdraw from socializing over meals, and have an influence on the emotional well being of the person.

Participants also expressed culturally--specific views of exercise and physical activity. Even though everyone acknowledged the importance of exercise in managing health and lowering glucose levels, many believed that strenuous physical activity was harmful and preferred low to moderate levels of exercise were preferred (Chun & Chesla, 2004). Chelsa and Chun (2005) also examined the family response to T2DM in Chinese Americans. The interdependent view of self and a 'collectivism' social orientation provides the cultural background on how families respond to disease management. The person with diabetes was accommodated by his/her spouse, such as developing a shared diabetes care practice. The results indicated that self-management involves more than just the person with diabetes, and the family involvement is especially important in Chinese families.

As mentioned earlier, when someone immigrates to a new country, they go through a process of acculturation in many areas such as language, diet, and culture (McDonald & Kennedy, 2004). Chun, Chesla & Kwan (2011) explored how acculturation experiences affect the management of diabetes and perceptions of health among Chinese American immigrants. The relationship between acculturation and diabetes management is complex and multifaceted. The three key themes that emerged in the study were 1) utilizing health care, 2) maintaining family relations and roles, and 3) establishing community ties and 'groundedness' in the U.S (Chun et al., 2011). One of the limitations identified by the authors was focusing only on Cantonese-speaking Chinese immigrants, and they called for

future studies to include the growing number of Mandarin-speaking immigrants (Chun et al., 2011).

A study by Jayne and Rankin (2001) applied Leventhal's Self-Regulation Model to 30 Chinese Americans with T2DM aged from 46 to 80 years. Leventhal's Self-Regulation Model proposed that there are two parallel processes in illness management: cognition (the objective interpretation of a threat) and emotion (the subjective interpretation of a threat) (Leventhal, Meyer, & Nerenz, 1980). These two parallel processes are believed to be interactive. Both of these parallel processes have three components: representation, coping, and appraisal (Leventhal et al., 1980). Most participants were not clear about the cause and the lasting effects of diabetes. Taking medication and avoiding sweets were the most common cognitive coping strategies. Blood glucose monitoring was another coping strategy; however, it was only performed by half of the participants. Wishful thinking and not disclosing their diabetes to their employers were common emotional coping strategies. Participants lacked the ability to evaluate the effects of their coping strategies.

In conclusion, the available published research has provided some insights into factors such as the acculturation process, family and cultural factors, and language that appear to influence how Chinese immigrants in the United States manage their T2DM. However, further study is warranted in studying Mainland Chinese immigrants in Canada with T2DM. The results of this study will add to the literature in understanding how Mainland Chinese immigrants manage their T2DM through self monitoring of blood glucose, medication, diet, and physical activity.

3.0 PURPOSE AND RESEARCH QUESTIONS

3.1 Purpose

Diabetes is a chronic disease that is prevalent worldwide and requires self-management to achieve optimal results. Mainland Chinese immigrants have a high prevalence of developing T2DM due to a number of factors. However, available research in this area of study has been for the most part focussed on Chinese Americans from Hong Kong, Twaiwan, and Cantonese speaking provinces in Mainland China. Mainland Chinese immigrants come to Canada with their own distinctive cultural values, health care system, and language. The main purpose of this research was to explore how Mainland Chinese immigrants in Canada with T2DM manage their disease, particularly the use of medication, diet change, exercise, and glucose monitoring. By exploring the management strategies those Mainland Chinese immigrants with T2DM in Canada use, a greater understanding of this population can be reached. The results of this study can be used by health care providers to gain a greater knowledge of this population, and thus provide more culturally--sensitive and appropriate care.

3.2 Research Questions

The research questions were as follows: How do Mainland Chinese immigrants with T2DM engage in the self-management of the disease, particularly in medication taking, diet/nutrition, exercise, and glucose monitoring?

Sub questions:

- a) How do they evaluate the effectiveness of the strategies?
- b) What are some cultural views they hold in the management of T2DM?
- c) What are some barriers they encounter in achieving in optimal care?
- d) How do they acquire information in making informed decisions about their care?
- e) What is it like to live with T2DM in Canada?

4.0 METHODS

4.1 Philosophical Underpinnings

A paradigm is a set of basic beliefs that represent how the researcher views the world (Guba & Lincoln, 1984). The paradigm with which I aligned myself most with is that of social constructionism, which is rooted in the belief that there are many interpretations possible that can help us understand social reality and reality can be represented in multiple ways depending on the context where it is constructed (Daly, 2007). It emphasizes meaning-making as an interactive process between the participant and the researcher (Daly, 2007). Therefore, the researcher plays a significant role in the way the meanings are constructed. As a researcher conducting this analysis I realize that my results are based on the interaction between myself and the participants, as well as my interpretation of these interviews. The methodology of the study was phenomenology where the lived experienced of managing diabetes was the main objective of the study.

Ontology is concerned with our assumptions about the nature of “being” (Daly, 2007). I position myself as relativist where I believe no external reality can exist independently without those who experience it (Daly, 2007). In agreement with the constructionist paradigm, I have taken the subjectivist epistemological stance where I believe that the researcher plays a key role in shaping the direction and outcome of the inquiry (Daly, 2007).

4.2 Sampling Methods

4.2.1 Recruitment

The initial proposed sample size was 20. A total of 19 participants were interviewed, The number of participants, although small and non-randomly selected, was considered appropriate for this exploratory research where generalizability and statistical viability were not the primary objectives.

Participants were recruited from various locations in the Greater Toronto Area and surrounding cities, including Guelph, Burlington, and Hamilton (see Appendix A for recruitment poster). Snowballing was the main recruitment technique. An email containing information of this study was sent to the Guelph Chinese Scholar and Student Association email list. A local physician who has many Mandarin-speaking patients was contacted and recruitment posters were sent by the physician. After each interview, the participant was given a recruitment poster and asked to refer anyone they knew who met the criteria for the study. Researchers also contacted friends who attend Chinese churches in Toronto and surrounding cities to see if they might know someone who met the recruitment criteria. Interested and qualified people were asked to contact the researcher to schedule a time and place for interview to take place.

4.2.2 Participant Eligibility Criteria

During initial contact (i.e. telephone or email), participants were screened to ensure that they fit within the participant criteria described below.

Participant criteria included the following:

- a) Participants must self-identify as *Mainland Chinese immigrants or Canadian citizens from Mainland China*.
- b) Participants must have been diagnosed with T2DM *for a minimum of one year*, with no major complications (such as proliferative retinopathy, any cerebrovascular accident or myocardial infarction within 12 months, renal insufficiency, amputations). The reason for excluding people with complications was as follows: If they have complication, diabetes might not be their main medical concern and thus, the researcher might not be able to collect the depth of information that was desired.
- c) Participants were adults between *35-65 years of age*. The lower end of the age range was based on the assumption that people who are immigrants to Canada have to meet

certain selection factors set by Immigration Canada. They are most likely to have obtained a post-secondary degree and have gained work experience in their home country in order to successfully immigrate to Canada. People who are older than 62 years of old would be given a “zero” score under the age selection factor, thus making it really difficult for them to immigrate on their own (Immigration Canada, 2012). Therefore, seniors are most likely to immigrate to Canada under a family reunion program. They are less likely to speak English, be in the workforce, and may not be actively involved in the Canadian health care system.

- d) Participants have *lived in Canada for a minimum of one year*. Participants who have lived in Canada for less than a year might not have the opportunity to become connected with the Canadian health care system yet.

4.3 Data Collection Methods

The researchers received approval from the University of Guelph Human Subjects Research Ethics Board for the study (see Appendix B for certificate of approval).

Interested participants who met the criteria outlined above were invited to participate in the study. An interview date and time that were convenient for the participant was arranged. All interviews took place at participants’ homes to protect privacy and make participants as comfortable as possible. At the start of the interview session participants were given a letter of information about the study to read and a consent form to sign (see Appendix C for letter of information and consent form). They were provided with duplicates of these forms to take with them. Following informed consent, participants were asked to fill out a demographic questionnaire (see Appendix D for demographic questionnaire). The letter of information, consent form, and demographic questionnaire were available in both English and Simplified Chinese, and participants could choose to use either one. Participants were encouraged to ask any questions with regard to the study before the interview started. They

were also reminded that there were no right or wrong answers to the questions and the researcher was most interested in their personal views. Care was taken to promote a relaxed atmosphere to make the participant feel comfortable.

The in-depth, one-on-one interviews lasted between 45 and 90 minutes depending on the progression of the interview, the individual and their level of involvement in the interview. The researcher followed a semi-structured interview guide (see Appendix E for interview guide). The semi-structured interviews gave participants some latitude and freedom to talk about what was of interest or importance to them. It also allowed the conversation to flow more naturally and made room for new topics that were relevant to the interviewee to be explored (Hesse-Biber & Leavy, 2006). After the interview, participants were given a list of resources on diabetes management and counselling service if they experienced any discomfort due to the interview process (see Appendix F for additional resources for participants). Each participant received a \$25 gift certificate of their choice (President's Choice or Tim Horton's) in appreciation of their time.

4.4 Data Management

Upon submitting their consent forms, each participant was given an identification number, which was recorded next to their name on a master list. This master list was the only record that matched together the names and identification numbers of the participants and was used only for the purpose of data transcription, or in the case that a participant wished to withdraw from the study at a future date. The information from the demographic questionnaire was entered into an excel spreadsheet. Each interview was audio-recorded using a digital recorder. The audio files were transcribed verbatim and translated to English. The translation was not done word by word in order to conserve the whole original meaning of the sentences. Whenever needed, the researcher sought help from other bilingual professionals

in the translation process and provided explanations in brackets. All electronic files were encrypted using an approved encryption software program to further protect the data.

4.5 Data Analysis

4.5.1 Thematic Analysis

The data analysis methodology that was used for this study is thematic analysis (Riessman, 2008). Thematic analysis is used to identify, analyze and report patterns and themes within the data (Braun & Clark, 2006; Luborsky, 1994). It emphasizes the importance of understanding the content of a text, where “what” is said is more important than “how” it is said (Riessman, 2008). It is also well suited for analyzing semi-structured, open-ended interviews (Burnard, 1991). An inductive approach was taken where meaning units are identified first and categorized into different themes. This study followed the six phases of thematic analysis described by Braun and Clarke (2006).

The first phase was to familiarize myself with the data. Not only did I interview all the participants, but also transcribed them into Chinese language. In addition, I have translated them into English. Through the processes of transcribing and translating, I became familiar with the data in an in-depth way.

Phase two is when I began generating initial codes, by creating an initial list of ideas about what was in the data and what was interesting about the data. To accomplish this, coding was performed using a qualitative software program called MAXqda. Two coders, a current Guelph graduate student in the program and myself, participated in coding the first eight interview transcriptions (in English). We met to compare and discuss any discrepancies in coding. Discrepancies were minimal and resolved through discussion prior to further analysis.

The formation of initial codes then helped me move into Phase three of analysis described by Braun and Clarke (2006), where the initial list of the codes are sorted into

potential themes. Idea maps and diagrams were used to help visualize connections between codes. There are two basic approaches to identify themes proposed by Luborsky (1994). The first one is to look for statements that occur most frequently or are repeated. And the second is to look for statements that are marked in some way as being of greater meaning or importance to the participant. The way I chose to identify themes was by focusing on areas that appeared to have great importance to the participants and this remained consistent throughout my analysis. At completion of phase three, I had identified eight themes with many subthemes.

Phase four involved the refinement of the themes that were already identified. It required me to identify codes that could be further collapsed into each other and also to consider the validity of each of the initial themes in relation to the data set. In this stage, I began seeking themes that represented most of the participant's experience with the four components in diabetes self-management. I met with my advisor to discuss the strengths of these themes and how each theme connects with each other. At the end of this stage, I had narrowed down my list of subthemes by condensing them together and creating a figure showing how each theme relates to each other.

In Phase five, I needed to define and further refine the themes that were presented in my final write-up, writing descriptive labels and elaborating on the meaning of these themes. I described the essence of what each theme was about and gave the theme an appropriate name. I met with the second coder again and she checked the final naming and definitions of the themes, thus a consensus was reached in the end. In the final phase, Phase six, I had all the final themes and sub-themes worked out and began to choose examples and extracts from the data to illustrate the themes.

4.5.2 Personal Reflection on Doing Qualitative Research

Qualitative inquiry is an interactive and transformational process in which the researcher seeks to learn about and interpret life experiences of the participants (Hesse-Biber & Leavy, 2006). In this section of the thesis, I would like to acknowledge how my own background, gender, social class, ethnicity, values, and beliefs might affect the emergent construction of reality. By reflecting on the influence of self, I am hoping it will not only create a personal awareness of how this research is shaped by my own biography, but also allow the audiences to more fully understand my interpretation of the data.

The motivation of doing this research arose from several sources: my ethnicity; a critical analysis of the current state of knowledge in this area; my educational background; knowing someone with T2DM; and a desire to understand the diabetes management behaviours of Mainland Chinese immigrants.

One important strategy researchers often use to overcome the impact of difference in the interview process is to ‘match’ some of their important status characteristics with the participants, such as race, gender, age, etc (Hesse-Biber & Leavy, 2006). It allows the researchers to take advantage of their ‘insider status’ in gaining access to an interview and obtain cooperation and rapport in order to foster a greater understanding of the participants. It also helps to reduce the possibility of power and authority imbalances in the interview situation (Hesse-Biber & Leavy, 2006). Being a Mainland Chinese immigrant myself and someone who is fluent with the language provided me with the great advantages of being the ‘insider’ of the research that was just mentioned. The whole interview process was done in Mandarin, which made the interested and qualified people more likely to participate and allowed them to talk about their experience freely without any language barriers. Overall, being the ‘insider’ has helped to establish an open dialogue between myself and the

participants, and provided a greater opportunity for the voice of the participants to be heard and accurately represented.

Even though participants would view me as an ‘insider’, I am still aware that there are differences between myself and the participants, such as age and life experience. The average age of the participants at the time of interview was 50 years and the average age when they moved to Canada was 40 years. In contrast, I came to Canada at a much younger age (18 years of old). The age difference might be a challenge where participants might view me as someone who is younger and less equal in social status. Also 16 out of the 18 participants immigrated to Canada under the Skilled Worker’s stream, whereas I came to Canada initially on a student visa. As mentioned in chapter two, immigrants who came under the Skilled Worker’s category were usually well established back home. I would relate to some of the experiences as an immigrant, however, the experiences that they have gone through in settling in Canada at a much older age would not be the same as mine.

I have used the process of reflexivity as a tool in assisting me in understanding those differences. Reflexivity is “the process through which a researcher recognizes, examines, and understands how his or her own social background and assumptions can intervene in the research process” (Hesse-Biber & Leavy, 2006). Reflecting on those differences has assisted me in gaining new insights into the data. Throughout my data collection and analysis, I also kept a record of my thoughts by keeping a journal. After each interview, I reflected on the interview process by writing my own thoughts and reactions. This method helped me document how my experiences and biases may affect the study results.

I knew that it was crucial to engage participants from the beginning and develop rapport throughout the interviews. Thus, I used a number of strategies to promote the participants’ acceptance of my presence and purpose. I dressed very informally for the interviews and initiated casual conversation upon meeting the participants. I would often ask

them how long they have been in Canada, where their home towns are back home, and how they have been enjoying their lives in Canada. I would also tell them a little bit about myself and my background. As I then went on to explain the study and its purpose, I emphasized that there is no right or wrong answer and I was most interested in knowing their personal experience in diabetes management. Throughout the interviews, I chose words that were culturally appropriate and sensitive. In addition to attempting to reduce social distance through my choice of language and dress, I positioned myself as a learner. I spoke about being a graduate student in Applied Human Nutrition. I told the participants that I am not a diabetes patient myself and the value of their “expert” knowledge in my learning of this topic.

Throughout the interview, some participants would express the need for health-related information or communicate inaccurate knowledge in a particular area. I wanted to take on the helper role; however, I felt obligated to remain in my role as researcher. Also I do not have my Registered Dietitian credentials yet and felt it would not be appropriate and professional for me to give any specific diet advice. At the end of the interview, I provided them with a list of resources where they would be able to get professional information and also recommended that they seek help from their doctors.

As the interviews progressed, I felt compassion towards some of the participants as they spoke of the emotional struggles they encountered in dealing with diabetes management and the fear they expressed in facing the possible complications of diabetes. One female participant started crying when she shared with me the struggles in accepting the fact that she has diabetes. It was important for me to show sympathy and responsiveness; however, at the same time stay focused in the questions I was asking. There are also times where I felt frustrated when I was only able to get mere facts from some of the male participants. I acknowledged that it is difficult for middle age males to share their emotional struggles with a younger female adult in Chinese culture. I tried to probe as much as I could, but at the

same time still respected their personal boundaries. I also noticed that majority of the participants were reluctant to share how diabetes affects their social, work, and family lives. One possible explanation could be that the questions were exploratory and broad in nature. And they might not focus on things that happen to them personally due to the collectivism culture and their concern for their family as a whole.

In the initial coding process, I had a second coder whose ethnicity background is not Chinese. She would ask me questions about certain things in the transcriptions that have a cultural knowledge associated with it. That was when I stopped and realized that I have taken certain things for granted. One typical example was that many participants would describe the fullness of the stomach by saying “seven to eight points full” without giving further details on the meaning of this phrase. It is a common term in Chinese culture; however, without asking the participants what this means to them; I would have put my own voice in their explanation. In the later interviews, I would diligently step back and asked the “why” questions even when things might seem very obvious to me. It allowed me to see ideas from the participants’ point of view, instead of assuming their meanings.

One of the struggles that I encountered in doing this research was in the process of translation. It was not a challenging task to transcribe the interview into Chinese as the interview was done in Chinese. However, when it came to translation, there were two levels of challenges. First, the language participants used in the interview was spoken language. When trying to translate this into written English, it was hard to do without adding extra words to make the sentence sound logical and grammatically correct, but at the same time still keep the original meaning. Second, at times, it was a challenge to find the best English words to describe what the participants were trying to express, especially when it was an idiom. I have overcome the challenges by consulting other bilingual professionals and also providing explanations in brackets wherever necessary.

By reflecting on my personal thoughts and emotions in this research process, it helped me understand myself as part of the process of this discovery. I am also hoping it will help the reader gain a greater understanding how I interpret the data, and thus strengthen my integrity as a researcher.

4.5.3 Establishing Trustworthiness

How researchers define rigor in qualitative studies is much different from that of quantitative studies (Webster & Mertova, 2007). In quantitative studies, researchers want to ensure validity and reliability. However qualitative research aims to prove trustworthiness using different criteria (Webster & Mertova, 2007). Trustworthiness refers to credibility of qualitative research (Shenton, 2004). During the course of my project, I drew on four ways to establish trustworthiness of my results and these included: credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1999).

Credibility refers to how well the author's data representations and interpretations reflect the truth (Lincoln & Guba, 1999). Lincoln & Guba (1999) suggested using prolonged engagement and persistent observation for enhancing study credibility. Prolonged engagement and persistent observation refer to the scope and depth of the data being collected (Lincoln & Guba, 1999). Due to the design of the study, I was only able to spend a maximum one and half hours with each participant at the interview. However, my own background as a Mainland immigrant put me as an 'insider' of the culture and it was easier to get connected with the participants. At the same time, I was also conscious of not letting my appreciation and understanding of the culture influence my professional judgements (Lincoln & Guba, 1999). Before starting this project, I worked as a research assistant and interviewed mainland Chinese immigrants in Canada on a different project. It gave me the opportunity to get to know how mainland Chinese immigrants respond to certain questions. Moreover, I have spent sufficient time reviewing the current literature on this topic so I had a thorough

understanding of this topic. Additionally, I spent a great deal of time in transcribing and translating the interviews, which allowed me to get familiar with the data.

Transferability refers to how well the information gathered and presented enables others to make judgments about the applicability of this information in other contexts (Lincoln & Guba, 1999). Due to the nature of this project, the results might not be applicable to other immigrant populations. However, it would be applicable for other health conditions within the immigrant population that was studied.

Dependability is similar to the concept of reliability and has to do with consistency in the process of inquiry (Lincoln & Guba, 1999). Confirmability means questioning how well the products of the study are supported by the data and how they were influenced by the researcher's assumptions and values (Lincoln & Guba, 1999). The major technique for establishing dependability and confirmability is to keep an audit trail of the methods used in the data collection and analysis and practicing reflexivity (Lincoln & Guba, 1999). The audit trail includes raw data, summaries of the data, concept maps, descriptive memos of themes, and a thematic chart (how each theme connects with each other). I also described my ontological and epistemological position earlier and my own reflection on doing this qualitative research. I reflected on how my assumptions and cultural background might influence the way I interpret the results. Moreover, I have clearly outlined the steps involved in the thematic analysis so the readers can follow the procedures involved.

In summary, by addressing credibility, transferability, dependability and confirmability, as a researcher I am hoping to build trustworthiness of the results being presented here.

5.0 RESULTS

This chapter will begin with a summary of the demographic information of the participants. Then background information including diagnosis and perceived causes of diabetes will be discussed. Results from the thematic analysis will follow, including a description of the eight themes (Motivated to Control, Information Seeking, Negative Views towards Traditional Chinese Medication, Fear of Western Medication, From Mindless Eating to Mindful Eating, Level of Physical Activity Engagement Varied, Glucose Level Serves as Biofeedback to Changes, and Achieving Balance and Control). In the end, there will be a conclusion of the findings.

5.1 Profiles of the Participants

A total of 19 participants from Toronto and surrounding cities were recruited to participate in the interviews. However, one participant's data was eliminated from the study when it was later discovered that he was from Taiwan, which did not meet one of the recruitment criteria. In the end, a total of 18 interviews (8 were male, 10 were female) were included in the study. In addition, theoretical saturation was reached after 19 interviews, meaning no new ideas were heard in the end. The interviews were conducted from March to July of 2012. Their ages ranged from 41-61 years old with an average age of 50.2 years. The years they have lived in Canada ranged from 7-16 with an average of 10.7 years. All participants had post-secondary education except one participant with a high school diploma. The majority of the participants immigrated to Canada under the skilled worker category (89%) and only two immigrated under the family reunion category. Their length of diagnosis ranged from 3-13 years with an average of 7.6 years. See Table 1 for Summary of Demographic Information and Appendix G for Demographic Information for Each Participant.

Table 1 Summary of Demographic Information (n=18)

Characteristics	# of People (Percentage)
<i>Gender</i>	
Female	10 (56%)
Male	8 (44%)
<i>Age in years (Mean:50.2 years)</i>	
40-49	7 (39%)
50-59	10 (56%)
60-65	1 (5%)
<i>Length in Canada in years (Mean:10.7 years)</i>	
1-9	5 (28%)
10-19	12 (67%)
>19	1 (5%)
<i>Length of Diagnosis in years (Mean: 7.6 years)</i>	
1-5	6 (33%)
6-10	8 (44%)
>10	3 (16%)
<i>Education</i>	
High school diploma	1 (5%)
College diploma	3 (17%)
Bachelor	9 (50%)
Masters degree	4 (22%)
PhD	1 (5%)
<i>Immigration Category</i>	
Family reunion	2 (11%)
Skilled workers	16 (89%)

5.2 Background Information

In this section, how participants were diagnosed and the perceived causes of diabetes will be discussed. This will provide background information for the thematic results.

5.2.1 Diagnosis

Where and how participants were diagnosed with diabetes was the opening question of the interview. It not only helped participants to ease into the interview, but also provided the interviewer with background information about the participants' conditions. The participants were diagnosed through one of the following ways: physical check-up, physical symptoms led them to visit the doctor and thus diagnosis, and accidental diagnosis due to buying life insurance or immigration medical check-up.

For some participants, diabetes was diagnosed at their physical check-up. This patient was diagnosed at her annual physical examination:

"I get used to do an annual physical check up after coming to Canada. It was March in 1999 that I went to see my family doctor. I had blood work done as well. A week later I was told that my glucose level was a bit high and I need to pay attention." (Participant 4, female)

The following patient did not have any check-up done while he was in Canada in the first five years. He was diagnosed while he had his physical when visiting back home:

"I have moved to Canada since 2001 and it has been many years. I didn't go home in the past 5 years and therefore didn't have check up done. I got a regular physical in 2006 when I went back. Then I was diagnosed with diabetes." (Participant 2, male)

For other participants, physical symptoms led them to visit the doctor and diabetes was diagnosed after confirming the glucose levels.

"I was working in a furniture store. My heart was feeling a bit of uncomfortable everyday in the afternoon. I didn't feel good for a while. I went to see a family doctor. My blood glucose level was high after checking it and so was my urinary glucose level. That's when I was diagnosed." (Participant 3, male)

Finally, some participants were diagnosed in unexpected ways. A urinary glucose test is usually required while buying life insurance in Canada. There were two participants who had their diabetes suspected when buying life insurance.

“It was when I need to buy life insurance; the nurse came to my home and did a urinary test. The urinary sugar level was high. I went to see the doctor. And the fasting glucose level confirmed my diabetes diagnosis.” (Participant 1, male)

“When we moved to Canada in 2000, we decided to buy life insurance. We have to do a physical check up for the life insurance. I was told that my glucose level was high. My fasting plasma glucose was higher than 9. I had no idea when that started. I went to follow up with my doctor. Then the doctor prescribed me medication.” (Participant 7, female)

There were other participants who were diagnosed through immigration health screening, which is required for entrance into Canada. Fortunately, diabetes is not considered a serious health condition that prevented them from entering into Canada.

“I had to do a physical when immigrating to Canada, then I found out I have diabetes.” (Participant 12, female)

“It was through immigration physical check-up.” (Participant 18, male)

5.2.2 Perceived Causes of Diabetes

When discussing the perceived causes of diabetes, participants reported etiological factors for diabetes that centered on heredity factors, behavioural factors, and psychological stress. They often related to multiple etiological factors instead of a single factor. In regards to heredity, many participants asserted that diabetes runs in the family genes, which caused them to have diabetes. As a result, some had anxiety and fear over the possibility that diabetes would affect younger generations. This is captured by the following narrative in which the participant impressed upon her son the need to avoid ice cream, because she believed it will put him at risk for diabetes.

“I told him (son) that I have diabetes, so he has to be careful. I told him not to eat whatever. He likes to eat ice cream, but he sometimes doesn't listen to me, and I don't

know what to do. Then I told him that he will be unlucky if he gets diabetes in the future.” (Participant 4, female)

Other participants held strict behaviour interpretations of risk for diabetes. In this regard, some emphasized undisciplined eating habits such as too much sugar intake, and lack of physical activity rather than genetic or heritability facts as the etiological basis of this disease.

“I had too much sugar. I used to drink coffee. I was drinking one cup a day, with sugar, big packages. It doesn’t taste good to me if it is not sweet.... Also I like to eat food made of flour and rice; it has to do with diabetes as well. My job is to deliver meals; I have to eat at evenings. I was eating a lot of rice and dishes.” (Participant 9, male)

“Lifestyle could be one. I wasn’t paying much attention to the lifestyle. I was still eating sweet food. I would be very tired after work. After coming home, I would drink some liquor. I was drinking quite a bit of liquor at the time. I think it is bad for my health.” (Participant 2, male)

“Dislike of exercise is a typical one. (I am) a white collar. It is easier to get (diabetes) when your living condition is better. (For example): farmers, they have to work from morning to night, the quality of food they eat is not so good. There was no sugar left (in their body). They were all consumed.” (Participant 1, male)

“I don’t like to move, very few exercise. I was working in an office back home and less activity. I like to eat high fat and sweet food.” (Participant 14, female)

Finally, psychological factors were also identified in the etiology of diabetes. For this participant, he related his bad mood caused by not being able to find a professional job in Canada to the development of his diabetes. This was largely due to the fact that many Chinese people view physical and mental health as a unitary concept in contrast to the dualistic mind-body distinctions that are found in Western medicine.

“I didn’t have a job that was related to my background and was doing labour work, I had terrible mood. This might all have to do with me developing diabetes. It has many causes to it.” (Participant 2, male)

The following two participants noted that they were overburdened by a number of psychological stressors stemming from settling in Canada, demands of work and family responsibilities.

“I am thinking if it has to do with stress. I was doing my own business. And I was quite tired by the end of the day. My husband then got his job and he was busy with his stuff and I was busy with my own stuff. I think there was stress.”(Participant 13, female)

“After I immigrated to Canada, I couldn’t find a job at first and my English is not good. I went back to school, had a divorce, then I lost my job, had my own business. All these brought stress.”(Participant 10, female)

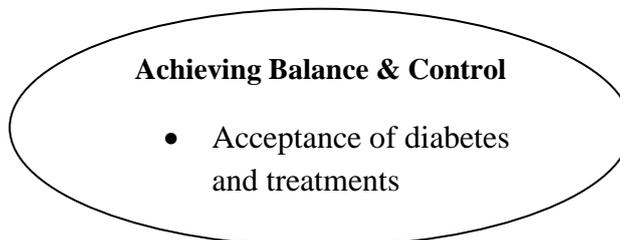
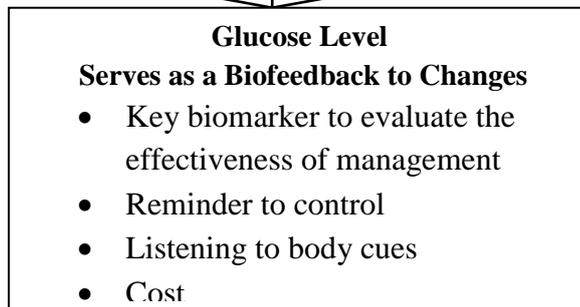
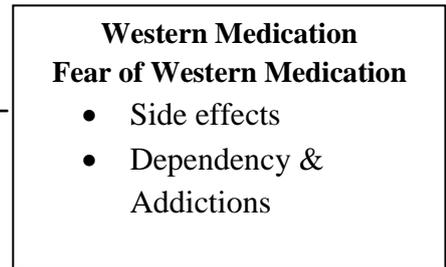
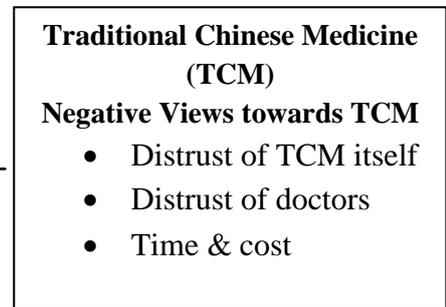
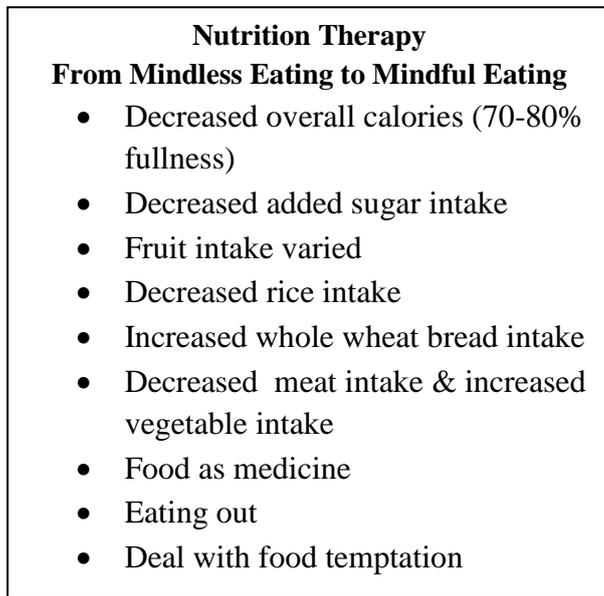
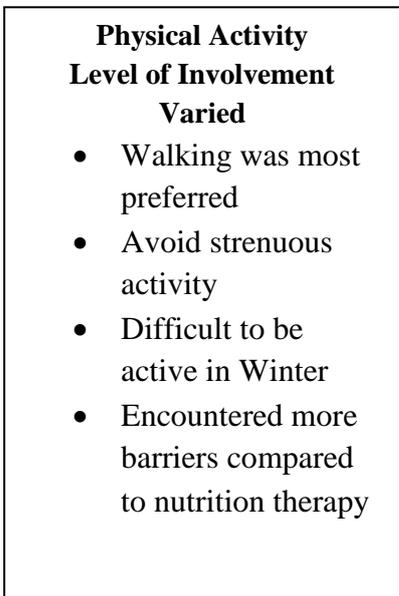
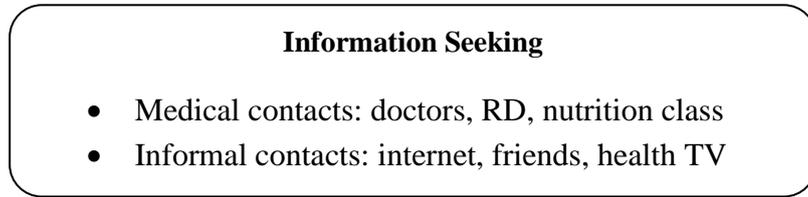
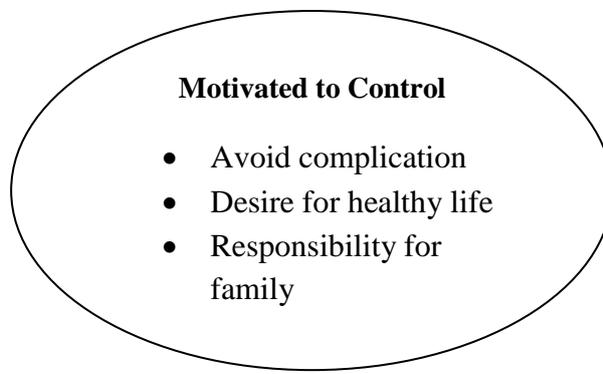
Overall, participants often identified multiple factors that contributed to the development of their diabetes, including heredity factors, behavioural factors, and psychological stress. It is important to recognize the perceived causes as it could have an impact on their treatment options.

5.3 Thematic Results

Self-management of diabetes mainly includes: medication, nutrition/diet, physical activity, and self-monitoring glucose. Participants who were interviewed were highly motivated to control their diabetes conditions. Some of the motivators included fear of complications, desire for a healthy life, and responsibility for family. In order to know how to control their diabetes, they were seeking information from a variety of sources including medical contacts such as doctors, diabetes specialists and attending nutrition classes, and informal sources such as friends, internet and TV health channels in China. Once they had the motivation and information, they were actively involved in the diabetes treatments.

Within the available treatment options, nutrition therapy and physical activity were the most preferred ways of managing diabetes because they were considered the most natural and non-invasive methods. Nutrition therapy and physical activity influenced each other and participants continued to find a balance between these two. However, participants seemed to encounter more barriers in being physically active when compared to controlling their diet. After weighing the ‘pros and cons’ of traditional Chinese medicine (TCM) and western medications, participants rarely incorporated TCM in their treatment; however, many still included medication to manage their conditions. Their goal was to reach an optimal glucose reading, as it was one of the key biomarkers they used to evaluate the effectiveness of their treatment. In return, the glucose level served as a biofeedback to the changes. In the end, participants came to a state where they felt that they achieved a balance and control over their conditions. How each theme relates with each other is presented in Figure 1.

Figure 1: Results of Thematic Analysis



5.3.1 Motivated to Control

Participants were motivated to control their diabetes conditions as they were highly involved in following their treatment plans. Some of the motivators they expressed included fear of diabetes complications, desire for healthy life, and responsibility for family.

5.3.1.1 Fear of complications

Over time, the high blood glucose levels of untreated or improperly managed diabetes can cause a variety of costly and potentially life-threatening complications, including blindness, heart disease, stroke, kidney disease, nerve damage, and erectile dysfunction (CDA, 2008). All participants were aware of some possible complications of diabetes and they were communicated in a fearful way.

“If you have complications, then you might have amputations and blindness. It is so terrible. I can’t live life with being blind.” (Participant 4, female)

“It is for my own health. I don’t want to get any complications, such as kidney dialysis. You will have to suffer more.” (Participant 5, female)

“But even now sometimes I think it is quite scary. I am afraid that I might get the complications when I am old one day. For example: kidney failure. I am afraid-what if I have to get (my) leg amputated?” (Participant 13, female)

5.3.1.2 Desire for healthy Life

Not only did participants have a strong fear of complications, they also had a strong desire for a healthy life. In fact, it also served as a motivator for them to be compliant with their management.

“I want to improve my health condition. Otherwise it is scary to have complications. If the glucose is high, you can’t live like that.” (Participant 18, male)

“I found that there is no way to cure diabetes.... I started to realize the seriousness of it when I know there is no cure to this and it can cause complications such as amputations, blindness and you could even die of complications. It was pretty scary. Therefore, I started to pay attention.” (Participant 8, male)

5.3.1.3 Responsibility for family

When asked about their source of motivations for continuing to follow the treatment regime, many talked about the importance of family and how diabetes management was part of family responsibilities. This was probably due to the collectivism social orientation mainland Chinese people hold, where the well-being and functions of the group are valued above personal desires and goals. They did not see diabetes management as a personal and individual matter; however, they saw it from a bigger perspective: how it might influence their family. They were concerned how the consequences of poor diabetes management would influence their responsibilities to look after their families. Also being influenced by the interdependent view of self, many talked about not wanting to be a burden to the family.

“I used to like ice cream and cake. I am still tempted to eat cake now, but then I pause and think, you still have to think about it. I think that this family needs me to manage. My husband and my mom don’t speak English and my son is not mature enough. This family still needs me. Therefore, if I take good care of myself (it) means (that I) reduce everyone else’s burden.” (Participant 4, female)

“I want to live better and I don’t want to be a burden to someone else. Another thing is that it is not the time for me to die yet, my mother is still alive. My daughter is still in school. Therefore, there are still people who need me.” (Participant 10, female)

“If I can’t look after myself one day, I will bother my child. It is better if I just die then, but my daughter is still young and I can’t die. Therefore, I am afraid to be a burden to her. Therefore, I have to think for the next generation and to keep healthy. I don’t want to suffer.” (Participant 14, female)

Overall, participants have used those sources of motivations to keep them focused on the diabetes management.

5.3.2 Information Seeking

When asked where and how they acquired information on diabetes management, it was through both formal and informal channels. The formal channel, which is the medical system, included health care providers such as family doctors, diabetes specialists, registered dietitians, and nutrition classes. The informal channel included online information, books, newspapers,

health TV programs in China and friends. Even though participants used both channels when acquiring general information on their diabetes management, they often turned to informal ways to provide them information when seeking detailed answers.

5.3.2.1 Formal Channels

Many of the participants visited either their family doctors or diabetes specialists on a regular basis; however, it was often for glucose testing and prescription renewals. Many complained that they did not get enough information from their doctors and suggestions for lifestyle changes were often given very generally. The following participant expressed her frustration at not being able to receive specific suggestions from her family doctor and specialists:

Interviewer: What about your own family doctor?

“No. I don’t think the family doctor has knowledge in this area. He measured my glucose and told me it was high. He told me that I have to exercise, but didn’t tell me how to. He also referred me to a specialist. I see him once a year.”

Interviewer: Did you find the specialist helpful?

“I don’t think it helped a lot. I would have my blood tested before seeing him and showed him all the reports. He would tell me what indicators are good and what are not good. He didn’t have any specific suggestions from (a) diet/nutrition perspective. All he told me are the big principles: you have to exercise, the amount of exercise, eat less sugar.” (Participant 7, female)

There were four participants who had seen registered dietitians; however, only one participant was followed up by a dietitian on a regular basis. They found the information they received from the dietitians was helpful, however, most of them only visited the dietitians once and there was no follow up done. The only participant who visited the dietitian every three months spoke highly about the care he received and his condition was well managed.

“Every time after I see the doctor, they will schedule me the next appointment. I have to see them every 3 months. It is either a RD or nurse that will measure my weight,

(blood) pressure, my diet pattern. It is really good. They are really good at keeping me at right pattern.”(Participant 9, male)

However, instead of working around his usual food pattern, he had switched from a traditional Chinese diet pattern to more of a western style. For example:

“I used to eat bun, stir fry, sausage, etc. Now the dietitian suggests me to have 2 pieces of whole wheat bread, egg, a bowl of salad every day with tomato, lettuce, peppers, and carrots. One plate every morning. The dietitian told me to eat all these. ...I didn’t eat those foods before. But now it is changed. I wasn’t used to it at first, but later I got used to it and think salad tastes good as well.” (Participant 9, male)

Very few participants have been referred to nutrition classes either by their family doctor or specialist. However, they only attended once and did not find the information they received was relevant to the Chinese diet. Therefore, they were not able to apply the information to their daily management.

“I have been to an educational session in Credit Valley Hospital. I was told the amount of food to eat. But the foods they talk about are different from our Chinese food....It was only one session. In general, it was dividing food into 15, for example bread is 15, and you can have two 15s in the morning. Then tells you how much to eat at lunch and dinner. They use bread as an analogy. It doesn’t match with the food we eat. I have the concept of eat more servings of vegetables, and etc. It gave me a rough idea: you need to control the food and exercise.”(Participant 7, female)

“I have been to a class about diet in Guelph. I have been there once and didn’t find it that helpful because it was target for Canadians. I can’t associate it with me.”(Participant 5, female)

Even though most of them expressed dissatisfaction with the care they received from the medical sources, they did like the medical system in Canada where they are being followed up on a regular basis, the free eye exam service for diabetes patients, and the availability of the universal health plan.

“The good thing about Canada is that it doesn’t cost me any money to do blood test. I get my HIAC tested every three months. I think it is really good this way. Another thing that Ontario is different is that it doesn’t cost anything to have your eye checked for diabetes patients.” (Participant 4, female)

“I like the follow up system here. It helps to know your glucose and diabetes condition more concisely. Also I can have timely communication with the specialist. It is faster to confirm a treatment plan. There is lack of follow up back home. There is no file system. Also doctor and patients don’t have long term relationships.” (Participant 16, female)

5.3.2.2 Informal Channels

Participants often turned to informal channels to search for information related to their daily diabetes management when they couldn’t receive them from formal channels. The internet was the most popular source of information. Due to language and culture barriers, many visited Chinese websites. It is unknown whether the websites they visited are credible sources of information. When deciding whether to follow any treatment suggestions on line, they often evaluated the perceived risk associated with it. If they believed there was no or low risk, many would test it out to evaluate the effectiveness:

“The website I was using is also very professional, it is worth believing. But other things on line can only be used as reference; you can’t believe it 100%. You can try it, if it is helpful then use it, if not, don’t continue with it. For example, someone said that chicken cooked with lemon can cure diabetes. I have tried this once, but it was not helpful at all, then I don’t use it anymore. I don’t mind trying it at first.” (Participant 2, male)

With the advanced technology, the TV channels in the home country are available for people in Canada to view as well. A couple of participants have relied on some health TV shows to receive information. The credentials the speakers had made them believe that the information they received was trustworthy.

“Yangshengtang is a TV show that many people in China are watching and it is with Beijing TV. They have professionals to talk about it; therefore, I don’t question it.” (Participant 2, male)

“It says on the TV that pork has too much fat, so I am afraid to eat too much. ... It says on the TV that you can eat cucumber as fruit, so is tomato.... The TV channel invites professionals in the area in China. They are trustworthy.” (Participant 14, female)

Information from friends was considered a trusted source of information for many participants. They might not turn to their friends for specific advice in diabetes management, however, when certain information was recommended to them, they would often try it out.

“My friend recommended (health product called propolis). All said it is pretty good after eating it, and then I believe it.” (Participant 14, female)

“A friend of mine back in China told me that eating strawberry has benefits. Now we eat more strawberries.” (Participant 6, male)

Finally, books and the health sections in newspapers in the Chinese language were other sources of information some participants used.

“I also bought some books about diabetes when I went back home.” (Participant 7, female)

“(I visit) www.51.ca and also including local newspapers.” (Participant 3, male)

Overall, participants in the study did utilize many sources of information including both formal and informal channels when managing their conditions. Most of them were disappointed with the information they received from the medical sources, therefore, informal channels were often used.

5.3.3 Negative Views towards TCM

None of the participants at the time of interview was using any herbal remedies or claimed to be using any other forms of TCM in their treatment. There were two participants that had used herbs in the past. One of them did see an effect, but had to stop due to cost and time concerns. The other one did not see any results. One possible reason that some participants did not consider using TCM is due to the following: TCM is valued and believed for its ability to cure the underlying cause of an illness; however, many stated that diabetes is a lifelong disease and is not curable. Therefore, TCM and diabetes treatment seem contraindicated with each other. Many claimed that the key to diabetes management is lifestyle change.

“I don’t believe this (TCM), it has no use. The key is to control your diet....I am able to control it with controlling diet and then what is the point to try it?”(Participant 1, male)

Some other reasons that many stayed away from TCM included: a distrust of TCM doctors in Canada, a distrust of TCM itself, and concerns about time and cost.

5.3.3.1 Distrust TCM itself

When it came to the discussion around incorporating TCM in their diabetes management, many held specific ideas about the nature and effects of TCM.

“It (TCM) can’t explain the mechanism of diabetes and it doesn’t know where to tackle” (Participant 1, male)

“I think it is very hard to reach a good result when using TCM to treat. It (diabetes) has already been pathological changes and can’t be treated with something that does not have regularity.... I personally think I am not producing enough insulin, so TCM can stimulate your pancreas to secrete more, it will only exhaust your pancreas.” (Participant 17, male)

For this participant, he claimed that older generations would trust TCM and TCM was supplemental and could not be used to treat anything.

“The older people believe that (TCM), I don’t believe it. People over 60 years old might believe that. ... We are younger generation. We don’t believe TCM like the older generation does. We have different kinds of education. TCM is not the main treatment, it is just supplemental. It is like health protection, you can’t use it treat anything.”(Participant 9, male)

Overall, many participants did not trust that TCM would be effective in managing their diabetes, and therefore it was not included in their current diabetes management plan.

5.3.3.2 Distrust TCM doctors

The majority of the participants viewed TCM and traditional Chinese doctors as two separate entities. They believed that in order for TCM to work, an experienced and skilled traditional Chinese doctor was required. However, many of them did not trust the traditional Chinese doctors’ skills and qualifications in Canada.

“I actually do believe in Chinese herbs, I also believe the doctors. But I don’t believe the ones on the market now. I don’t believe their skills. It won’t kill you but also won’t do any good. I don’t trust them.” (Participant 4, female)

“For the traditional Chinese doctors here, you don’t know them and who knows if they (are) cheating.” (Participant 7, male)

“I think there are very few good traditional Chinese doctors. I don’t believe a lot of traditional Chinese doctors and they are not really qualified. I don’t know if it works or not, maybe with the really good doctor, it would work.” (Participant 13, female)

5.3.3.3 Time & cost

Some participants voiced reluctance in using TCM in treatment not only because of their delayed treatment effects, but also because they usually required prolonged, time-consuming and cumbersome preparations:

“I just felt it was too much work. It was something that made me feel troublesome.... It is very slow to see an effect. Therefore, I don’t think I have the time and energy to put on to this. Especially here (in Canada), it is not practical to spend all this time and energy on it.” (Participant 8, male)

Cost was another reason that many have stayed away from TCM as visit to a traditional Chinese doctor, because it is not covered by Ontario Health Insurance Plan. And it is not covered by private insurance companies either.

“The herb is very expensive and the government doesn’t cover it. I don’t have insurance. I don’t have the money to go see a traditional Chinese doctor.” (Participant 4, female)

In summary, TCM was not being incorporated as a treatment option among the participants who were interviewed due the above reasons.

5.3.4 Fear of Western Medication

Among the 18 participants interviewed, 11 were taking oral medications, five were not taking oral medications, and two were on insulin. Two participants out of five who were not taking oral medication took oral medication when first diagnosed with diabetes; however, they got off medication when the condition was managed with lifestyle change alone. When asked the role that medication plays in their treatment for those who were taking medication,

they acknowledged that it helps lower the glucose levels. However, at the same time they expressed this strong fear of medication, and were especially concerned about the side effects and the dependency and addiction that could be associated with medication. This fear of medication led them to prefer lifestyle changes when managing their conditions, even though the majority of them still had to combine both medication and lifestyle changes in their management to achieve optimal glycemic control.

5.3.4.1 Side Effects of Medication

Almost every participant who was interviewed raised the concern about the side effects of medication. It stemmed from this culturally-specific notion of “each medication has three points of toxins”, which means medication is more or less toxic. This also ties with the general principle of traditional Chinese medicine that western medication is believed to have more side effects and herbs are considered ‘mild’ to the body. Having to take medication was considered “not a good thing”. When asked the source of this notion, it was considered a common knowledge:

“In my mind, as long as it is a medication, it has three points of toxins. If you can go without taking medication, then don’t take medication” (Participant 4, female)

“Medication always has side effects. It is a common sense. Inside of me always think having to take medication is not a good thing” (Participant 1, male)

Many of them were also concerned about the effect of medication on body organs, especially the kidney and liver. As they believed medication needs the kidney and liver to dissolve. Therefore, long term usage of medication would cause these organs to deteriorate.

“Another thing is I am just afraid my kidney might have problem. I am afraid that this medication would have side effect on my kidney.” (Participant 9, male)

5.3.4.2 Dependency and addiction

The fear of medication also came from the concern for dependency and addiction of medication. They acknowledged that diabetes is a lifelong chronic condition and the using of medication would be long term. The long term usage of medication would cause them to be

dependent on and addicted to it. The sense of being controlled by medication was not desirable. The following narratives demonstrated this:

“I was afraid that I would be addicted to it. I was afraid that I would not live without it.” (Participant 1, male)

“I always think it is still medication, my whole life needs to depend on it. I have to carry this everywhere I go. The dependency.” (Participant 12, female)

“One is side effect, and another is the hassle of taking medication every day. Also afraid of dependency I might have towards medication.” (Participant 16, female)

Overall, the fear of medication including the concern for side effects and dependency and addiction has caused participants to highly prefer lifestyle changes. However, after weighing the pros and cons of medication, many of them still had to include medication in their management.

5.3.5 Nutrition Therapy: From Mindless Eating to Mindful Eating

Lifestyle change, including diet therapy and physical activity, is usually the first line of treatment when someone is newly diagnosed with diabetes. When 2-3 months of lifestyle change does not lead to optimal glycemic control, then pharmacologic treatment should be initiated (CDA, 2008). The fear of medication’s side effects and negative views towards TCM has led the participants to strongly prefer lifestyle changes. As a result, they have made numerous changes in this area. In this section, specific changes they have made in their diets will be discussed.

Each one of the participants knew it was important to manage their diet when managing their diabetes. The changes that they have made in their diet before and after diabetes were captured in depth throughout the interviews. Even though each participant’s diet varied from each other, the overall theme that was captured throughout the interviews was this concept of “*from mindless eating to mindful eating*”. After being diagnosed with diabetes, they changed from eating whenever and whatever they wanted to watching what they ate. The total amount

of food consumed was reduced to reach optimal glucose readings. Also they started to be mindful about the amount of carbohydrate, protein, and vegetables they ate.

5.3.5.1 Decreased Overall Food Intake

This notion of “70-80% fullness” was used by many participants when asked how they decided the amount to eat at each single meal. It means that they were not hungry after eating, however, they could also go for more food if they wanted. This was the general guiding principle when deciding the amount of food to eat. Participants have learned to stop at this point so that they would not over eat. They believed that eating until full was associated with higher blood glucose levels and therefore, not optimal for diabetes management. The following narratives illustrated this point:

“I wasn’t limiting it before. I would eat whenever I want to. But now I know if I want to eat a biscuit, I can only have bite. I can’t eat freely. ...I don’t feel good if my stomach is full. About 70-80%. The amount is less than before.” (Participant 7, female)

“I just think if I am hungry, then (glucose) will not be too high. You can’t be too full. If you are too full, then glucose would be scary.” (Participant 11, female)

5.3.5.2 Carbohydrate

The word “diabetes” in Chinese is spelled as “Tang Niao Bing”, which directly translates to “sugar urinary disease” in English and implies a direct link between sugar and diabetes. That was a common belief that these participants held as well. Therefore, the first thing they did to their diet was to stay away from added sugar and foods that taste sweet, such as cakes, juice, and pop.

“I used to drink coffee. I was drinking one cup a day with sugar, big package. It doesn’t taste good to me if it is not sweet. But once I knew I have diabetes, then I don’t drink this anymore.” (Participant 9, male)

“I don’t drink juice. I also don’t drink any pop. I just drink water and tea. I was drinking juice before, but not so much, but don’t drink them anymore now because of the sugar.” (Participant 16, female)

They would often check the sugar level in the nutrition label and choose the type of food that has the least amount of sugar.

“I buy low sugar yogurt, 5%, the least amount of sugars.” (Participant 7, female)

*“I read the nutrition label when buy crackers. I buy low sugar and low sodium.”
(Participant 4, female)*

There was a consistency among participants with staying away from added sugar and sweets; however, they had different views when it came to sugar in fruit. One of the possible reasons that they had discrepancies around fruit was probably due to lack of knowledge on different sugar types and whether the sweetness in fruit should be a concern for diabetes patients or not. Participants could be grouped into three different categories according to their fruit intake and type. The first group was highly concerned about the sugar level of the fruit; therefore believed fruits should be avoided. However, they would often find a fruit replacement such as tomato to compensate the nutrients they lost in avoiding fruits.

“Basically I eat no fruit at all. I would taste it once in a blue moon, very rare. I don’t eat it unless there was a special need. .. Now I have added tomato. I eat one tomato every lunch.”

Interviewer: Why do you think you need to eat tomato?

“Because I lack of fruit, the source of vitamins was reduced. Therefore, I need to find a replacement. Tomato has a high tomato pigment; it is good for males as well. It also has a high vitamin C; you can eat it as fruit to begin with.” (Participant 1, male)

“I basically don’t eat any that is sweet. I was still eating apple at one point, but then got rid of the apple after. I think apple is still too sweet. Then I basically don’t eat any fruit, I eat tomatoes.” (Participant 2, male)

The second group stated they still have large servings of fruit due to either personal preference or not having knowledge in fruits when it came to nutrition therapy in diabetes management:

“I try to eat few bananas. I will eat one apple. I love to eat orange and watermelon. I eat quite bit of fruit in a day. .. I love fruit” (Participant 12, female)

“I eat a lot of fruit. I usually have some fruit in the morning. I would normally eat at least two fruits. I would also bring a fruit for lunch.... I eat anything, depending on my preference. I like most of fruits.... Now all fruit is sweet, not sure which one is good to eat. Majority of fruit is sweet.” (Participant 10, male)

The third group, which consisted of most of the participants, still consumed fair amount of fruits. However, they would choose fruits that tasted less sweet such as kiwi and avoid fruits that taste sweet, such as watermelon and banana.

“2-3 fruits in a day. I basically don’t eat any bananas. Sometimes I would have a bit when they (husband and son) eat. Therefore, I would try to choose low sugar fruit when choosing fruit. I eat a lot of kiwi.” (Participant 15, female)

Some of them would also split the fruits and have a smaller portion each time to avoid dramatic increase of the glucose level.

“I eat very little (fruit). For example, I am afraid to eat one apple at a time. I only eat half of it. Or I bring an apple with me work, I would eat half in the morning and the other half in the afternoon. I have tested with orange. My glucose level got higher right after eating an orange. Therefore, I only eat maximum half of an orange every day.” (Participant 3, male)

A couple of participants have also come up with creative ways to avoid the sweetness of fruit and still satisfy personal cravings. For example, this one female participant would choose the type of pear that is sour and eat the exterior rind of the watermelon.

“Also pear, the kind of pear that I eat most is that sour pear produced in Canada. I would buy bags of them. It is \$.99 a lb and they taste awful. .. they (husband and son) cut off the red part of the watermelon and then give me the rest. They would give me the watermelon they buy if it is not sweet. That’s when I can enjoy.” (Participant 15, female)

The majority of the participants had adopted a western style breakfast where bread and milk were the common foods they consumed for breakfast. They had an easy time choosing whole wheat bread or multi-grain bread over white bread as they believed whole wheat or multi-grain being better for diabetes management.

“I don’t eat any white bread, usually whole wheat. ... I prefer sesame bagel, don’t like the sweet ones due to sugar content.” (Participant 8, male)

Rice is a major staple in Chinese diet and the most common type of rice consumed is white rice. All participants talked about reducing their rice intake as they believed that large

intake of rice would increase the glucose reading and thus was not good for diabetes management.

“People live around me would say not to eat any rice. It is not good to eat too much rice for diabetes people. Therefore, I have reduced the rice intake.” (Participant 2, male)

“I eat less rice now. I used to eat one or one and half big bowl of rice, but now I eat less than one large bowl.” (Participant 3, male)

The concern for the rising glucose due to high intake of white rice had led some participants to mix white rice with brown rice or other kinds of food items, such as wheat, barley, and millet.

“I still eat white rice, but sometimes mixed with the brown rice. I used to eat 2-3 bowls of rice, but now only one bowl. Because the doctors said you can’t eat too much, therefore, I listen to the doctor and just one bowl.” (Participant 9, male)

Participants grew up with white rice and said that it was difficult to totally replace white rice with other types of rice. Family members’ preference for white rice also made it hard to make the change. The following participant expressed in her narrative the bad taste of brown rice. She also compared the switch to brown rice with the switch to whole wheat bread and commented how it was hard to cook two different kinds of rice within one household.

“It is not easy to switch to brown rice. The taste is not good. I am used to eat white rice....I would choose whole wheat bread for health. But the change of rice type is pretty big. We can buy different kinds of breads, but when you cook, everyone has to eat brown rice. It is hard to make two different kinds of rice. Therefore, I would eat what my family eats. Buying different kinds of bread is simpler” (Participant 16, female)

5.3.5.3 Decreased Protein Intake

In Chinese diet, the major source of protein is meat. Most participants not only reduced their carbohydrate intake, but also reduced their meat intake compared to before the diagnosis, or they chose healthier types of meat. When asked the reason behind it, there were different answers presented. The following quote is from a participant who reduced the

amount of meat he ate because he thought meat is an acid food and not good for controlling blood glucose levels.

“I used to eat more meat compared to now. I was eating a lot of rice and I would also eat a lot of meat. Then I found out that meat is acidic food and it is not that good for glucose controlling. ... Acidic food stimulates your glucose. Alkaline food helps with your glucose....Then I intentionally reduce the amount (of meat).” (Participant 3, male)

The following participants discussed that the reduced meat portion was due to the process of aging and body’s inability to digest meat well:

“I eat tofu and fish. I don’t eat that much meat, doesn’t get digested well. (I) don’t like it that much. ...I used to love meat. But now slowly, maybe it is not related to diabetes. It is related to aging, getting old.” (Participant 10, female)

“I don’t eat much meat for the past two years. I don’t want to eat meat. I just don’t have much appetite for meat. I wasn’t like that before.... It could be related to age, not very interested in meat.” (Participant 7, female)

Some participants have made the connection between meat intake and weight. They believed that increased meat intake would increase their weight; however, weight increase is not good for diabetes management. The following narratives demonstrated this point:

“I am intentionally eating less meat because it is not good to eat a lot of meat. Also if I want meat at night, my weight would be increased. And if my weight is increased, type 2 diabetes is for sure associated with weight.”(Participant 13, female)

“...Because I have to control my weight after delivery. Losing weight would be better for controlling diabetes. I would eat less meat. I try to eat with less oil” (Participant 16, female)

The decision to choose a healthier type of meat such as white meat might not be directly related to diabetes itself, but due to participants being more health conscious after being diagnosed with diabetes. For this participant, he chose white meat over red meat because it was considered healthier:

“I basically just eat white eat, hardly eat any red meat. I usually have chicken with low salt. ... I read it from the web. There is an article that says white meat is good.” (Participant 2, male)

Other health conditions such as high cholesterol were other reasons that some participants reduced their meat intake.

“...the problem with kidney is not to eat low quality protein and eat more high biological value protein. Therefore, I eat less meat now. I used to eat more meat. My meat intake is about half of what I used to eat.”(Participant 4, female)

“The doctors said my cholesterol is a little bit high. The ratio of the good cholesterol and bad cholesterol was a little off. The bad cholesterol level was a bit high. Therefore, he suggested me to reduce the variety of the meat eaten and choose the healthy meat, such as fish.” (Participant 1, male)

Overall, it was consistent to see that most of the participants reduced the amount of meat consumed, even though the reasons varied.

5.3.5.4 Increased Vegetable Intake

The health message around vegetables is always to promote higher intakes of vegetables due to their abundance of nutrients and health benefits. As discussed earlier, most of the participants have reduced their carbohydrate and meat intake; therefore, in order to balance their diet or make up the calories, they have increased their vegetable intakes accordingly. They also believed that vegetables are healthy foods that are not threats to glucose readings.

“For vegetables, I eat it with no limit until I am full. Because I have to rely on this to fill my stomach so I would have a sense of fullness.” (Participant 1, male)

“I never measure it (vegetable). It is a plate of vegetables anyways. I eat the biggest amounts of vegetables compared to carbohydrate and meat.” (Participant 4, female)

“I would have about 2-3oz of meat and the rest is vegetables. I would have one piece of bread as carbohydrate source. The rest is substituted with vegetables. I would try to eat a lot of vegetables.” (Participant 5, female)

5.3.5.5 Food as Medicine

In Chinese culture, it is common to characterize food as a natural healing agent or a form of medicine for a variety of physical ailments including diabetes. This belief is tied to the general principles of TCM which routinely incorporate foods into treatment regimens.

Even though the majority of the participants held negative views towards TCM, it was common for them to add certain easy-to-prepare food items into their diet to help with diabetes management because foods are natural. Bitter melon was the most common food some of them have added into their diet. It was believed that the bitterness in bitter melon would balance the sweetness.

“Bitter melon has low sugar content. Eating something that is bitter could detoxify you. Only bitterness could get rid of the toxins. Sweet foods have a hard time getting rid of the toxins.” (Participant 1, male)

The following participant was using lemon juice, cinnamon powder, curry powder and red wine to temporarily lower glucose. She stated those food items would help if she used them occasionally, but did not have a long term effect.

“I have tried many things, such as lemon juice, cinnamon powder, curry powder and red wine. All these have effects, but (the results) is not like when I take medications. If you haven’t had them for a while and tried for two days, then they really worked. But it doesn’t work if you have it every day.” (Participant 10, female)

Interestingly, many reported that they consumed certain foods to help diabetes management although they might be skeptical or have no evidence about their healing properties.

“If I feel like I have eaten too much today, then I would eat bitter melon at dinner.”
Interviewer: “do you think it is helpful?”

“It is helpful.”

Interviewer: “How do you know it is helpful?”

“I just think it is helpful. I have learned it from the internet”.

Interviewer: “Do you feel any difference?”

“Not really. Is it a psychological effect? I just use it to balance it out.” (Participant 3, male)

For this participant, she was using propolis (a food item derived from honey) which was recommended by a friend. She was confident that the product had an effect on her glucose because friends said it was good.

“I have been using a health product called propolis on and off. My friend recommended. All said it is pretty good after eating it, and then I believe it. My glucose is turning better, but I have been controlling it, so not sure if it is because of this (propolis).” (Participant 14, female)

The following participant was drinking different kinds of herbal tea in replace of water since there was no perceived risk associated with tea. However, the effects of it were not proven.

“I don’t have the money to see a traditional Chinese doctor. But I go online and find herb recipes myself and do it myself. I drink mainly tea. I try different kinds of tea, like guava tea, bitter melon tea. I switched them around. ... Doesn’t matter if it is helpful or not, but it is a comfort to the heart. These teas, Let me tell you. They are not medication, but it is a supplement to treatment. Doesn’t matter what, humans need to drink water. Then I would drink tea rather than water.” (Participant 4, female)

In summary, using different food items as medicine was common among the participants who believed the risks were low; however, the effects of the foods on diabetes management were unknown.

5.3.5.6 Eating Out

Eating out might pose extra challenges for diabetes patients, because there is less control over the foods served and how the foods are prepared. Some participants have simply avoided going to restaurants because of the added sugar in the dishes and also to avoid temptation.

“I usually don’t go to buffet restaurant, so I can be away from temptations. My family hardly goes out to eat. I usually cook something simple at home.” (Participant 7, female)

Others still enjoyed eating out, but would request no sugar be added to menu items or order menu items that do not have sugar added. The following narratives demonstrated these points:

“I hardly go to restaurant because of diabetes. I am concerned about the sugar level. If I do, I would tell the waiter not to put any sugar because I have diabetes.” (Participant 14, female)

“When we order food in a restaurant, they (husband and son) will say this is too sweet and you can’t eat, and they will order something that is not sweet for me.” (Participant 15, female)

5.3.5.7 Deal with Temptation

Even though the majority of the participants followed rigid dietary patterns, they still had temptations when faced with delicious foods that they thought were not healthy for diabetes management. The following participant was able to overcome temptation with the help and support she received from her family members:

Interviewer: Are there times that you overcome temptations?

“Yes, most of the times were because they (husband and son) force me. I actually cried because of this. One day, I was eating a watermelon, I had a bit and my husband came over and yelled at me and said “don’t eat it”. My son said what’s wrong with mom having a bit? Then I cried. At that moment, when they were trying to control me, I felt really uncomfortable and think they were too cruel.... I am lack of control when I face temptation. My family helps me. I think the love and care that I get from the family is pretty important... My son always reminds me that if you eat and eat, you will have to be on dialysis at later years.” (Participant 15, female)

Some participants would taste a few bits to deal with temptation while satisfying cravings.

“I would have mental struggles when face temptations. I would taste a few bits if I am the one that cook it because I don’t put sugar in the dish.” (Participant 14, female)

“If I want to taste it, I can try a little bit. And it was enough. If I want to eat strawberry, it was the same to eat one or two for me.” (Participant 1, male)

Moreover, the fear of possible complications of diabetes as mentioned earlier was one of the motivators that motivated people to follow lifestyle changes. It also helped some of them to overcome temptations.

Interviewer: How do you deal with food temptation?

“I can resist it”

Interviewer: How?

“The consequence of diabetes. I just want to control my glucose, therefore, (I) have to control my diet. (Participant 13, female)

Additionally, some of them have relied on their self-control ability and reminded themselves how the food item was not good for them to eat, therefore, managed to stay away from temptation.

“My main temptation is sweets. I do want to eat it. For example, the other day there were a lot of cakes on the table, I really wanted to eat, but I didn’t take them. There was some self-control. I would say this to myself “it is coated with sugar, but bullet inside.” It is not good for me to eat it, let it go and don’t eat it.” (Participant 10, female)

“When I was shopping at Costco, the cakes were so tempting. I would take it and put in my shopping cart. I would take it off after few steps. Sometimes I would go back after more steps and take the cake again. In the end, I would take it off the cart. There would be 2-3 times of struggles. Others might think it is very funny. But I know my mind was fighting. ... I didn’t buy it in the end. They looked so tempting. I really wanted to buy it and fulfill my cravings. But in the end, I didn’t buy it.” (Participant 10, female)

Even though majority of the participants who were interviewed were highly motivated and self-disciplined in diet management, there were still occasions that they did not overcome their temptation or eat accordingly to their plan. When asked how they dealt with this situation, many would often compensate by reducing their food intake at next meal to balance or following up with physical activity. This is best reflected by the following narrative:

Interviewer: What would happen if you didn’t eat as you planned?

“I would worry. I would have pressure. I would wonder all night thinking if the next morning’s glucose would be high. If I overeat at lunch, then I would intentionally make myself starve, and I will also exercise. I would exercise or not take any snack to make adjustment accordingly.” (Participant 16, female)

In summary, the majority of participants were very self-motivated and disciplined in diet management. The total amount of food that participants consumed was less than before. They were consuming less carbohydrate and protein, however, more vegetables compared to before. Using certain foods as medicine was common for some of them, even though the

effects were unknown. Lastly, they have utilized strategies to eat healthy while eating out and to cope with food temptations.

5.3.6 Physical Activity: Level of Involvement Varied

The words for ‘physical activity’ and ‘exercise’ are identical in Chinese language, therefore, the terms ‘physical activity’ and ‘exercise’ will be used interchangeably. When discussing the role of physical activity in diabetes management, everyone acknowledged the importance of it in lowering blood glucose levels and body fat by increased glucose disposal. They commonly believed that exercise helps the body to digest glucose and therefore, glucose would not be accumulated in the body and thus the level of glucose would come down. Unfortunately, none of them talked about how physical activity increases insulin sensitivity. For example:

“I exercise after dinner because of my diabetes. But it is also good for your health in general. It is for you to digest the food you eat at dinner. If you don’t burn it, it becomes glucose. When you exercise, the calorie is burned instead of becoming glucose.” (Participant 2, male)

“It (exercise) helps to lower down my glucose level. It helps with my digestion and burns some calories.” (Participant 3, male)

The level of involvement in physical activity varied among participants. Some of the factors that influenced how much they were involved in physical activity include: personal interest, time, severity of their condition, and level of family support. More details will be discussed in the following section.

5.3.6.1 Walking was most preferred

Walking was the most common and preferred type of aerobic exercise among the participants due to its feasibility and low intensity. Also walking, especially after a meal, is considered a healthy behavior in general in the Chinese culture as it allows the body to digest the food that is consumed. Most of the participants who were interviewed were still in the

workforce, therefore, they would often walk after dinner due to their work schedule. The speed and frequency of walking and time spent on walking varied among them.

“I would go for a walk. I would walk after lunch and dinner. I would go for a walk with my friend at noon. I walk about 6km for an hour (after dinner). The speed is moderate speed, faster than just a normal walk.” (Participant 2, male)

“Quite a number of friends told me that I have to walk after dinner, one hour. But it is so difficult for me to do it. One hour? I would usually walk around near the house for about 30 minute, not every day, just casual 2-3 times in a week.” (Participant 8, male)

5.3.6.2 Avoiding Strenuous Activity

Some possible reasons that participants were not often engaged in strenuous activity included the type of work they do and also cultural beliefs. Some of the participants worked extended hours doing physically-demanding manual labour. They would consider this to be part of their physical activity, and therefore, did not engage in other types of high intensity activity in order to achieve some balance in activity versus rest.

“Now it is basically my job. I have to work all the time, so less exercise. The thing I do most is to walk around. But there is a lot of energy expenditure at work. It is different than working back home.... But after coming here, the energy expenditure is pretty heavy in the day, so less exercise to keep balance. If I exercise on top of work, I feel really exhausted.” (Participant 17, male)

“I walk almost every day. Another thing is the type of work I do now. I do chemical analysis and have to walk around all day long. I rarely have time to sit except when it is break time.” (Participant 3, male)

The following participant believed that strenuous physical activity can actually compromise one's health. This is probably due to the cultural beliefs in balance and equilibrium as essential components of physical health.

“I am not engaged in any strenuous activity. But now I mainly walk. From (a) knowledge perspective, it is not good for diabetes patients to be involved in strenuous activity. Walking is really good. I used to play soccer but no anymore.” (Participant 2, male)

5.3.6.3 Difficult to be Active in Winter

Some participants voiced the difficulty of being physically active during the winter season, as walking outdoors became harder due to the weather conditions in Canada. They talked about using a treadmill or stationary bike when the weather conditions did not allow for outdoor walking. However, some still preferred walking outdoors as it allowed them to enjoy the fresh air and nice view.

“I am usually indoors at winter time. But if I could go out, I would prefer to go out. I usually walk 3 rounds around the neighborhood for about half hour (3000 steps). If it is too cold or raining or snowing, then I don’t go out. I don’t like the treadmill that much. It is very boring to walk on it. I can’t keep it going for even 30 min.”
(Participant 7, female)

“I do it (walking) more often in this season (summer). I would do less at winter times. We have a treadmill at home. It is not that comfortable to use the treadmill. It is passive and not like when I want to walk outside, it is proactive. It is very comfortable. I would enjoy the outside view and the fresh air. It is something that I know I have to do.” (Participant 10, female)

In order to increase their physical activity levels, one of the strategies some participants used was to intentionally incorporate it into their daily routine. Examples included walking to places instead of taking the bus or driving, or climbing stairs instead of taking the elevators.

“I try to walk to places. If I can walk to places, then I wouldn’t take the bus or drive.”
(Participant 16, female)

“I walk from home to the bus stop in the morning, from bus stop to subway. Then transfer another bus to downtown. If time allows, I will walk from the subway to my school instead of taking the street car. There is about 20 min of walking each way.”
(Participant 11, female)

“I also walk when I deliver food. I would take the stairs and don’t take the elevator if it is five stories.” (Participant 9, male)

5.3.6.4 Encountered More Barriers Compared to Diet Management

When comparing the level of involvement and determination participants had in diet change and physical activity, it was obvious that they were not as motivated in physical activity compared to diet change, as more participants voiced difficulty in being physically

active. This participant's narrative sheds some light on the difference in physical activity and diet change. She discussed how it involved more decisions when she wanted to walk:

"I want to eat simple, eat less. You have to dress properly when exercise. You have to walk out, decide where to walk and who you are going to walk with. There are so many decisions." (Participant 11, female)

Many of them talked about wanting to be more active; however, there were more barriers they encountered compared to diet change. Some barriers they discussed included: not having the time, disliking physical activity in general, and no exercise partner. The following participant talked about not having time in the day to do physical activity due to family and personal responsibilities:

"For example, after coming back from school, I have to cook. My husband will go walk the dog and he will do the dishes. I then have to check out the kids' homework. After done school work with them, I have to wash them and put them to bed and it is about 9pm. I then have to do my homework because I haven't done anything for next day. Then when do you go for a walk? ... I know I have to exercise. But there are just too many things and I don't have time to do it." (Participant 11, female)

A couple of participants talked about dislikes of physical activity in general and they preferred to do things that are quiet.

"I don't have the desire and tendency to exercise. I like to do things that are quieter (slow in motion)." (Participant 1, male)

"This (exercise) is a pain in my heart. I don't have a way. I didn't like to exercise even when I was little. I like to do quiet things. I like to think. I am lacking the amount of exercise." (Participant 8, male)

For this participant, she found it hard to walk due to not having a person to walk with.

"It is harder for me to exercise than to resist the delicious food. I know there are a lot of benefits in walking, but I don't like to walk alone. Therefore, I don't do as expected." (Participant 12, female)

Even though some participants were not as involved in physical activity, there were others who were still quite motivated and determined. Some of the factors that helped them

engage in regular physical activity included family support, their personal interest in physical activity, and the severity of their diabetes condition. For this participant, her family support was a big motivator that helped her to walk.

“Sometimes three (husband and son) of us would go for a walk, at least two of us. I don’t go alone. My son would drag me to go with him. If he is doing his homework, then my husband would go with me.” (Participant 15, female)

The following participant had a personal interest in physical activity and found it easy to be physically active.

“The reason that I didn’t exercise before was because of my busy job. I used to like exercise. My exercise level decreased after coming to Canada. I used to exercise quite a bit back home. I didn’t find it painful to do it.” (Participant 13, female)

Recently this participant had a stroke and the severity of her condition had motivated her to exercise multiples times daily.

“I do (exercise) it every day. I don’t eat much at dinner, and then go for a walk around 8-9pm. I would walk for about 40 minutes, faster than just causal walking. Overall, it is basketball, aerobics class, and walking. I exercise 3 times in a day. I do it almost every day, 6-7 days in a week... I am just afraid of the stroke. The source of motivation comes from that I don’t want to get another stroke.” (Participant 14, female)

In summary, participants acknowledged the role physical activity plays in diabetes management. However, they encountered more barriers in being physical active compared to managing their diet. The level of physical activity involvement varied among participants depending on the severity of their condition, personal interest and level of support they received. Walking was the most preferred method and strenuous physical activity was often avoided. Moreover, they found it harder to be physically active in winter seasons.

5.3.7 Glucose Level: Serves as a Biofeedback to Changes

Glucose reading was one of the key biomarkers they used in evaluating the effectiveness of their diabetes management. It also served as a biofeedback to changes they made in western medication, nutrition therapy, and physical activity. When participants were

newly diagnosed with diabetes, they were self-measuring their glucose levels on a regular basis. However, after knowing their bodies and establishing a basic routine, they were measuring it on a non-regular basis ranging from once a day to once in a couple of months. The cost of the test strips was another concern that many of them did not measure their glucose on a regular basis. Majority of them often measured their fasting glucose in the morning and very small percentage of people measured pre- and postprandial glucose levels.

5.3.7.1 Glucose Level Serves as a Biofeedback to Western Medication

As it has been discussed earlier, all participants were concerned about the side effects, dependency, and addictions associated with western medication in long term usage. Based on the severity of their conditions, mostly the glucose levels, some participants changed their medication dosage on their own without seeking medical consultation. For this patient, her dosage of medication was based on the severity of her condition.

“Sometimes, I found my glucose was not that high. But I was thinking if I was taking medication all the time, would it have side effect? I was worried. Then I stopped the medication for a while, maybe I can lower the glucose on my own without the medication... and then if I found out that my glucose is higher, then I would take some medication, but if not high, then I wouldn’t take any.” (Participant 13, female)

Moreover, as long as the glucose levels can be controlled, many prefer to use less medication dosage or take less types of medication. For example:

“I just know that taking medication for a long term would have some effect on our organs. I am worried about the side effects. I know that medication needs kidney and liver to dissolve it. You are not taking it just for one or two days, it is a long term thing. Therefore, if I can have it controlled using one medication, and then I won’t want the second one. Less is better. I would rather spend time on my diet and exercise.” (Participant 7, female)

“I am afraid that taking too much medication is not very good for my own physical health because I think medication would always have negative side effects... I heard it from somewhere that if it is a medication, it has three points of toxins. I believe what the doctor says. I just think it is better if it is in fewer amounts if it can still control my glucose level.” (Participant 2, male)

Finally, the high glucose levels after reducing medication dosage or temporarily getting rid of medication have made many of them to accept that medication was necessary in their current treatment despite the negative effects associated with it. For example:

“I would measure the glucose myself, and find out it (reduce the dosage of medication) doesn’t work. I have tried a couple of days ago. I reduced one pill the night before, and the glucose went up. And I know I can’t reduce the dosage.” (Participant 18, male)

“I think I still need medication. I once tried to get rid of medication because my level was well under control. But after getting rid of the medication, the glucose level went up right away. Doesn’t matter how much I paid attention to my lifestyle. Therefore, I brought medications back.”(Participant 2, male)

5.3.7.2 Glucose Level Serves as a Biofeedback to Nutrition Therapy

Even though participants followed the general pattern that was discussed under nutrition therapy when making food choices, the changes they made in food, specifically the amount of food and the timing of the meal, were further influenced by glucose levels. When the glucose levels were high, they would often trace back and find out reasons why they were high, thus making adjustments in food choices accordingly. This is best reflected by the following narratives where the participants would test glucose levels after consuming certain foods and then adjust the amount they consumed next time.

“...And I have also tested my glucose level. When we make dumplings, it is so delicious. I tested the glucose level afterwards and it went up to 8. Then I have to pay attention to (the amount) I eat next time. Now I eat maximum of five dumplings each time. I have learned to know how much to eat through my experience.” (Participant 3, male)

“I test it (glucose) two hours after eating. I really like to eat a corn. I ate a whole one once. Then realized no good and question if it is all right to eat a whole one at once. I didn’t pay attention to it at first. Then at third time, I started to feel uneasy. I felt like I need to test my glucose level. The 2hPG was 13.4, and then I realized I can’t eat glutinous corn this way. But then I had some left in the fridge and I am the only one likes to eat it at home. Then I started to eat only 1/3 of it each time. After eating it, the 2hPG was only 6 something. Then I know you can eat this, but only 1/3 at a time.” (Participant 4, female)

“(When the glucose is high), I would think if I ate anything that is sweet, to guess if I over ate anything. I would make changes accordingly. If I eat this one fruit and I

found out that fruit made my glucose high, then I would eat less next time or not eat it at all.” (Participant 7, female)

Not only glucose reading guides the amount of the food being consumed, it also affected when participants consumed their food. Participants most often measured their fasting glucose levels in the morning. In order to reach an optimal glucose level, they often avoid eating anything after dinner and before going to bed. For example:

*“I would go for walk after dinner. I would not eat anything after coming home from the one hour walk I had. I usually don’t eat anything before going to bed.”
(Participant 2, male)*

The rationale behind this practice was eating food before going to bed did not allow the body to digest the food; as a result, the glucose would be accumulated in the body and caused high glucose level. For the following participant, he connected the morning fasting glucose level with what he ate for dinner the night before. The high level of fasting glucose caused him to adjust his future dinner intake.

“If the number is high, then I know I ate too much. If it is high in the morning, I know I ate too much last night. Then I would make adjustment to what I will eat at dinner. I started to pay attention. I would find out the reason why the glucose is higher; maybe it was because the fruit I ate a little while ago. I will adjust according to the level. I adjust continually through experience. It is very necessary. I didn’t pay attention to it before, but now I have one (glucose machine), then I can self-evaluate and self-monitor all the time.” (Participant 3, male)

5.3.7.3 Glucose Level Serves as a Biofeedback to Physical Activity

Participants’ physical activity level varied from each other depending on the severity of their conditions, the level of support they received, and their personal interest in physical activity. Not only physical activity was used as a proactive treatment to manage their conditions by many; but it was often used as an ad hoc response when finding out glucose levels were high. The following participants increased the amount of exercise or started exercising when the glucose levels were high:

Interviewer: “How do you judge how well you are doing?”

Participant: “Blood glucose number. And also the amount of food intake. For example, I ate quite a lot the night before, then I exercise, the glucose isn’t that bad. If you were afraid the glucose would be high the night before, you went to bed hungry, the number was high the next day. Then you would be scared.”

Interviewer: “What would you do in that case?”

Participant: “I have to observe. Another thing is to take preventative steps, consistently. Also increase the amount of exercise.” (Participant 10, female)

Interviewer: “How long do you run?”

Participant: “Slow run for about 20 min. I would run around 7pm after dinner and before going to bed. I noticed that this kind of running is quite helpful in lowering glucose. The glucose level would come down. When I find out that my glucose is high, I would quickly go for a run. I would sweat a lot and the glucose would come down.” (Participant 13, female)

For this participant, he realized that he had to exercise after knowing the glucose was high without exercise after dinner.

“I was having dinner with friends; I had coffee and didn’t exercise after coming home. My glucose was 7ish the next day, it was about 8. Therefore, I know I have to exercise. If I don’t, my glucose next day would be high.” (Participant 2, male)

5.3.7.4 Glucose Level as a Reminder to Control

Abnormal glucose levels also served as a reminder to some participants that they were diabetes patients, and therefore they remembered to control their conditions. For patients who were asymptomatic, it was easy for them to forget that they have diabetes.

“It can remind me all the time. It helps when (I) face temptations. If I don’t measure it frequently and have no symptoms, I would ignore it and think I am not diabetic. Sometimes, my son likes to eat out and we would enjoy delicious food. You know all those dishes have sugar added; otherwise the taste would not be that good. It is really hard to resist the temptation. Measuring frequently can remind me. For example, if my glucose is high this morning and if we go out to eat tonight, I would pay special attention to the food I am eating. I think measuring it frequently would give me stronger power to resist the temptation.” (Participant 15, female)

“If the number is high, for sure I have to remind myself. I have to watch closer with what I eat. It has the function of reminding me.” (Participant 6, male)

“It supervises me. If I don’t measure it often, I wouldn’t know my glucose conditions. It reminds me. If your glucose is good, you know you are doing well lately. If it is not good, I know I have to be careful. I have to give myself warnings that it will take away my life. Sometimes I have to remind myself, this is not good for my eyes, heart. If I am not careful, it will kill me.” (Participant 10, female)

5.3.7.5 Frequency of Measurement

The frequency of glucose measurement was often influenced by the stability of their conditions and how their glucose levels were for a period of time. When glucose levels were reached within their desirable range, the study participants take “breaks” from active lifestyle intervention occasionally, by testing less or not at all and eating foods that are not otherwise seldom consumed. The following narrative demonstrated this:

“If my glucose is well controlled this time, then I will lose control a little bit. I would not control it that tight. But if it is not well controlled next time, then I know I need to have a tighter control.” (Participant 7, female)

On the other hand, high or unstable glucose levels often caused them to measure glucose more often and keep monitoring them for a while.

“It depends how I feel if it is stable or not. I measure once a week or once every two weeks. If there is a period of time that is unstable, then I would measure it 7-8 times....I look at the fasting plasma glucose level. Like for this period of time, I think it is pretty stable. I hardly measure it anymore.” (Participant 4, female)

“If I think I am doing pretty good lately, then I won’t measure it even in a week. When the glucose is high, then I would exercise, use a herbal supplement, but the results were not that good. Then I would measure it more often. I have to observe to see what the reasons are and have to pay special attention. If there is a period of time that I was doing well, then I measure it less often.” (Participant 10, female)

Some other reasons that most participants didn’t self-measure glucose on a regular basis included: knowing their body and cost of the test strips. Knowing the body included body listening and monitoring. Many of them paid close attention to cues that blood sugar levels may be high or low. They also had to interpret what those cues mean and recognize

unique patterns of body response that lead to higher or lower blood sugar. In the end, they often tested the blood sugar level to validate if cues were accurate or not.

“I know my own body condition. If I got up to pee a couple of times at night, my glucose in the morning would be for sure high. Another thing is that if I feel my feet are itchy at night, then I think my glucose would be high. If my glucose is under control, then it wouldn't be itchy. If my body sends me signals, then I know my glucose is in trouble and it needs to be controlled.” (Participant 2, male)

“It (self-measuring glucose) is very important. I can know my condition. I could know what (it) is like when I am having high glucose. For example, when I feel dizzy, then I would test my glucose and find out. Once you have those feelings again, you know what is your glucose at.” (Participant 17, male)

The cost of the test strip was another reason that caused some of participants not able to monitor glucose regularly. The glucose machine is often free for diabetes patients; however, they had to pay for the test strips. For participants who did not have medical coverage through work, it was a financial burden to them.

“The reason that I don't keep monitoring is because of the cost. It is \$100, if you measure it 3 times a day, then it will be gone quickly. It is about \$200-\$300 a month, then it is a big expenditure. You would be better off spend that money on vegetable and don't eat anything else. Don't you agree?” (Participant 11, female)

“My specialist suggested me to do it three times fasting glucose, but I can't do it. The first thing is that I am working now. I can't do it if I am not home. The second thing is that the cost of the strip is pretty high. It is about \$80 for a hundred strips. It is not that affordable. I don't follow what the specialist says, but I would test it if I don't feel too good.” (Participant 12, female)

Overall, self-measured glucose was used as a major biomarker to evaluate the successfulness of diabetes management. It was believed to serve multiple functions in their diabetes management. Most importantly, it played a role as a biofeedback to indicate when to use western medication, food choice (amount and timing), and physical activity until they have achieved balance and control in their management. Once their conditions became more stable and they were getting to know their body cues, they were measuring blood glucose

levels less often. The cost of the test strips was another challenge to achieve regular measurement for some participants.

5.3.8 Achieving Balance and Control

The end goal of being motivated to control, seeking information and being actively involved in the self-management of diabetes was to achieve balance and control in diabetes management. Before achieving this, it was also important to come to an acceptance of the diabetes itself and its treatment options.

5.3.8.1 Acceptance of Diabetes & Treatments

The first step that many participants took before engaging in any treatment option was accepting that they were ‘a person with diabetes’. Many of them were not in a denial stage in which they refused to believe they have diabetes. They often quickly started to focus on the treatment options rather than the emotional aspects. For the following participant, he accepted that he had diabetes quickly after the diagnosis and started to lose weight immediately.

“There was nothing I could do to change, it was hopeless, helpless (I have to accept as it is since it is the reality). Not so much reaction. It was like I got it, then I got it. There was nothing I could do to change the fact that I have it. ...I reduced the amount of sugar right away. I was able to control my diabetes by controlling the sugar level (in my diet). I lost 10lb in the first one to two months from 150lb to 140lb. The weight was stable for the past nine years.” (Participant 1, male)

For a few participants, it was harder to accept that they had diabetes at first, especially when there was no family history or symptoms. The initial reaction was often associated with negative emotions such as shock, fear, and depression. However, once the test results were confirmed, they would finally come to accept the fact they have diabetes. For example:

“When I went for the check up, I requested to have both blood and urinary (glucose levels) checked. After two days, I got a phone call and was told that I have diabetes. I was scared to faint at the moment, diabetes? There is no one in my family who has diabetes, how can I have diabetes? I said is it possible that it was a wrong diagnosis? Then he said do you want to come have another test done then? I went for another check and it was diabetes again. Then I had to accept it.” (Participant 10, female)

Not only did they have to accept that they had diabetes, they also had to come into acceptance of the treatment options after weighing the pros and cons. For the following participant, he stopped drinking red wine and eliminated sweet food in his diet when he found out that they were not good for diabetes management:

“I used to make my own red wine, then I read from the internet that says red wine is not good for diabetes. I stopped it right away, including sweet food. Once I found out it is not good for my health, I would stop it right away.” (Participant 3, male)

For this participant, she got used to eating less and has accepted it as part of her lifestyle, and finally it became natural to her.

Interviewer: “What is it like to follow this diet?”

Participant: “I wasn’t used to it at first. I was thinking maybe I was eating too much before and I have to eat less now. I felt that I was having fewer blessings. ...I wasn’t used to it at first, then slowly I was used to it. After I get used to it, it becomes natural to me.” (Participant 15, female)

The process of accepting western medication as a part of the treatment options was not easy due to the side effects, dependency, and addiction that participants believed were associated with it. However, when the condition was not controlled without medication, they came to the acceptance of medication and the role it played. The following narrative vividly expresses- how one woman had to accept medication as being part of her body when lifestyle changes failed:

“I was hostile towards medication. When I see the white pill, the yellow pill, I always think this stuff has toxins. It is not good for the body. I was against (it). But I can’t not take it....The doctor prescribed me half pill a day for me. But then, it didn’t work, the symptoms were not managed. I refused to increase the amount and tried to adjust my food intake. The so-called ‘adjusted food intake’ was just to reduce the amount of food. I had lost a lot of weight as a result. I was eating less and refused to take more medication, then lost weight. But in the end, it still didn’t work. ...Slowly there were friends that tried to persuade me and said that I have to treat this medication as my friend. It is to maintain your health, it is a friend that keeps you healthy and don’t refuse it. There were a lot of friends that tried to persuade me. Then, slowly and gradually, I accepted it.” (Participant 10, female)

Balance was achieved in the end when participants were able to walk the fine line between the demands of diabetes management and the need to live a healthy “normal” life. For the following participant, he sees himself as a normal person with just the need to control the amount of food he eats. The demands of diabetes management were not threats to his healthy “normal” life.

“Diabetes is not curable and (I) can’t completely cure it. It is a life-time disease. If you control it well, then you won’t get complication in life time. You are just like a normal person. I am just a little bit weaker than others because I ate less. I controlled the amount of energy/calories I ate purposely.” (Participant 1, male)

They have also learned to balance their diabetes and management through experience, such as knowing their body cues and learning how to manage diabetes. As it was mentioned earlier, throughout time, they learned to recognize their bodies’ signals and interpret if it is high or low blood sugar. With trials and errors in diet management, many of them had formed their individual and unique patterns of eating habits as well.

The need to control diabetes was communicated very often throughout each interview. The participants took an active role to control diabetes, rather than being controlled by diabetes. It gave them a sense of autonomy and power that was helpful in the management. For example:

“My son would always remind me so and so had leg amputation and so and so had dialysis. But I believe in God and I am not afraid of this. I don’t see myself as diabetes patients, just high glucose and need to control it.” (Participant 15, female)

“Just need to figure out how to control it. Diabetes itself is not scary; the scary part is the complications. If the glucose level is well controlled, then I face two conditions. One is well controlled and stay at the current level. The other is didn’t control it well and have complications.” (Participant 4, female)

In summary, these participants accepted that they had diabetes and were actively involved in treatment. They also came into acceptance of their treatment options when weighing the pros and cons associated with them. Balance and control were achieved in the

end where they aimed to live a healthy “normal” life with the responsibilities of diabetes management.

5.4 Summary of Results

The demographic results from both female and male participants show that the participants are highly educated middle aged Mainland Chinese immigrants who have been living in Canada for a long period of time and most of them had their diabetes diagnosed after moving to Canada. The ways they were diagnosed with diabetes included: regular physical check-up, symptoms led to diagnosis, purchasing life insurance and immigration process. They believed diabetes was caused by multiple factors, including heredity factors, behavioural factors, and psychological stress.

Thematic analysis described the data in rich detail and answered the research questions that were posed. Participants were motivated in diabetes management and some motivators that were explored included fear of complications, desire for healthy life, and responsibility for family. They were also actively involved in information seeking where they received information needed from formal and informal channels. Once they had the motivations and information for management, they were actively involved in the treatment options.

The treatment options for them included TCM, western medication, diet management, physical activity, and glucose monitoring. The participants hold negative views towards traditional Chinese medication. Some reasons include distrust of TCM itself, distrust of traditional Chinese doctors in Canada, and time and cost involved in getting traditional Chinese treatments. The participants were also afraid of western medication as they were concerned about the side effects and the dependency and addiction it might bring; however, many of them still had to include western medication as part of treatment plans to manage their condition.

As a result of negative views towards TCM and fear of western medication, they preferred lifestyle interventions. Lifestyle interventions included nutrition therapy and physical activity. These participants have changed from mindless eating to mindful eating where they decreased their carbohydrate intake, meat intake and increased their vegetable intake with less overall food intake compared to before. The level of physical activity involvement varied among participants as it depended on multiple factors, including personal interest, severity of condition, and availability of exercise partner. Walking was the most preferred method of physical activity and they were rarely involved in strenuous exercise or physical training. Participants encountered more barriers in physical activity compared to diet management as they found it was easier to control their diet. The purpose of lifestyle intervention was to reach an optimal blood glucose level, as it was a key indicator that they used to evaluate the effectiveness of their intervention. Blood glucose levels also served as a biofeedback to the effectiveness of using western medication, nutrition therapy, and physical activity. The end goal was that participants reached a state of balance and control where they aimed to live a normal “healthy” life while controlling the diabetes.

6.0 DISCUSSION

This section will begin with a discussion of results compared to previous literature and CDA guidelines. Next, study strengths and limitations will be discussed. The section will conclude with a discussion of implications for future research and practice.

6.1 Compare to Previous literature

What is unique to the results of this study was that majority of participants did not favor TCM in their treatment. Even though some of them did incorporate some components of TCM, such as using food as medicine, they did not see it being part of TCM. None of them were using any herb remedy, acupuncture, or massage at the time of interview. Unlike what Chesla and Chun (2005) found in their study, none of them mentioned any concepts around yin/yang balance and hot/cold food in their narratives. When explaining the possible cause of diabetes, they did not use any culturally unique concepts of diabetes that are associated with TCM. A couple of possible explanations include: First, the participants in this study were well educated where all of them had post-secondary education except one. They might view their disease more from a scientific perspective and see TCM less of credit due to lack of empirical evidence. Second, the average age of the participants in this study was around 50 years, compared to the average age of 60 in Chesla & Chun (2005) study. The older generation of immigrants might have had more exposure to TCM while in China, and therefore, favoured TCM treatment. This unique result of this study suggests that health care providers should always ask their Asian patients with diabetes if they are using any components of TCM. Some patients might not think of telling their health care providers that their diabetes management practices include some components of TCM.

Some other results of the present study where participants found it a challenge to switch to other kinds of rice and avoiding strenuous physical activity were similar to what Chesla & Chun (2004) found in their study. Even though this study did not specifically look into how

family members respond to the participants' diabetes management strategies, as Chelsa & Chun (2005) did, the results did provide some evidence that the majority of the partners were supportive. This likely reflects the cultural influences of the interdependent view of self and a 'collectivism' social orientation.

The dissatisfaction with health care providers that was expressed among most of the participants was similar to what Ahmad et al (2004) found in their study that examined Chinese immigrant women in Canada. The participants complained that they did not receive detailed information about diabetes management, and that limited time and attention was given to them from their doctors. As mentioned in the literature review, there are differences in the health care systems in China and Canada, and not knowing the differences might be one reason that mainland Chinese immigrants were disappointed with the service they received. It is also an indication of how well they have integrated to the Canadian medical system. As in China, doctors were the primary health care providers who provide service in all areas such as diet, physical activity, etc. Therefore, the participants were used to receiving all their health information from doctors. In comparison, diabetes specialists, diabetes educators, and dietitians provide more specialized service in diabetes management in Canada. Also, there are seminars organized by professional groups in diet and physical activity. If the participants did not have a chance to visit those specialized health providers, they might not receive all the information they need. As a result, participants turned to informal channels, such as internet sites and health TV channels in China to seek out information.

The thematic result of achieving balance and control was similar to what has been reported in the literature found in non-Chinese populations. Paterson, Thorne, & Dewis (1998) reviewed 43 qualitative interpretive research reports pertaining to the lived experience of diabetes. The major finding was that balance is a key metaphor of the experience of diabetes. They also concluded that control of diabetes management is part of the

developmental process where someone learns to find a balance between diabetes management and live a healthy “normal” life. Therefore, balance and control in diabetes management is a common concept regardless of ethnicity.

6.2 Compare to CDA guidelines

All participants were very knowledgeable about the possible complications of diabetes, such as blindness, kidney dysfunction, and amputation. However, none of them mentioned the possible complication of cardiovascular disease. Statistics from CDA (2012) shows that up to 80% of patients with diabetes will die as a result of a heart attack or stroke. The possible complications of diabetes have already served as motivation for the participants to be highly involved in their lifestyle interventions. However, knowing the high risk of developing heart disease or having a stroke might help them to take their medication and monitor their glucose on a more regular basis.

The negative view towards western medication was deeply rooted in participants’ lives. It is important that health care providers respect their views, but at the same time explain the necessity of medical intervention when a condition progresses to certain stage. They could also encourage participants to be more involved in lifestyle changes. Also if health care professionals diagnosis them at pre-diabetes state, there might be a high success rate of keeping them at pre-diabetes rather than progressing into diabetes because they were highly motivated and preferred lifestyle intervention.

Managing the carbohydrate content of meals is an important part of diabetes diet management. CDA (2008) suggests replacing high-glycemic-index carbohydrates with low glycemic-index carbohydrates in mixed meals. Unfortunately, participants in this study had no knowledge on the glycemic-index of foods. The sweetness or sugar level in the food was the most used guideline they followed when deciding whether the food is acceptable or not in diet management. However, they lacked knowledge about different kinds of sugar and how

they influence the body's blood glucose levels. They were correct in adding dietary fibre into their diet, such as barley, brown rice, and whole wheat bread.

Additionally, participants in the study reduced their protein intake; however, the CDA stated there is no evidence that usual recommendation of protein intake (15-20% of total daily energy) needs to be changed for people with diabetes. The participants might put themselves at risk for protein malnutrition if the protein intake is reduced significantly. Overall, it is imperative that participants receive training in diabetes diet management so that proper strategies can be applied.

Participants in the study acknowledged that the important role that physical activity plays. However, many of them encountered barriers in reaching the CDA recommendations for physical activity and none of them were involved in any resistance exercise. Part of this could be due to the educational system in China that has always encouraged academic success over extra-curricular involvement in sports and physical activity.

Frequent measurement of blood glucose was recommended by the CDA with both pre- and postprandial measurements. Participants in the study measured their blood glucose levels less frequently once their conditions became more stable and they started to know their body cues for high or low blood glucose levels. Participants seem to be able to take proper follow up actions based on the readings of the glucose.

Overall, there are some gaps between CDA guidelines and practices among the participants who were interviewed. It is important for an integrated diabetes health care team to find out where the gaps are and how to improve the care they provide for their patients.

6.3 Study Limitations, Strengths and Implications

6.3.1 Study Limitations and Strengths

The sample size was small, consisting of 18 adults in a convenience sample. In addition, the study population consisted of a specific group of mainland Chinese immigrants

(the majority of them came to Canada on skilled workers category and are highly educated). Given these criteria, the results pertain to this group and cannot be generalized to a large population.

However, the convenience sample and the small sample size were both appropriate given the exploratory and qualitative study design. Conducting 18 interviews was sufficient to provide the depth of understanding that was desired, especially given that the responses were starting to be repetitive towards the end. The extent of the questioning and probing involved with the interviews helped the participants to provide thoughtful answers.

The majority of the participants were recruited from Chinese churches using a snowballing method; however, their religious background was not assessed. A couple of them brought up the topic of faith when answering some questions, but it was not explored in detail. Their religious background might play an important role in helping the management. Also people who were managing their diabetes well might self-select them into the study. Both of these limitations might affect the results of the study.

Nevertheless, there were many strengths of the study. First, the interviews were conducted using participants' first language; thus allowed them to share their experience without any language barrier. Second, the researcher did a thorough self-reflection of how her own background might affect the interpretation of the study results. It increased the transparency of the study and allowed the reader to form a better picture of how the study results were drawn. Third, the study's rigor was achieved by establishing trustworthiness, which includes credibility, transferability, dependability, and confirmability.

6.3.2 Contribution to Literature

From the literature review conducted for this study, it was evident that few studies have focused on self-management of diabetes among mainland Chinese immigrants, especially in a Canadian context. In-depth interviews and a qualitative study design were

useful in filling this gap and capturing interesting data looking at how mainland Chinese immigrants are involved in the self-management of type 2 diabetes. It could have been difficult to capture such insight using other methods (such as survey or focus group) given the complexity of the issue and the depth of conversation that was needed to unveil the experience of these participants.

6.3.3 Implications for Future Research

This study only interviewed the person with diabetes, and the family member was not involved. Having the partner involved in the interview might help provide a more in-depth picture of the management of diabetes since they are usually quite involved in the process.

Future research can look into interviewing dietitians and diabetes educators who have experience in providing service to this population group. Views from health care providers on what strategies have worked effectively could be worth sharing with others who might not have experience in counseling this group of people. Future research can also look into developing a health communication plan for mainland Chinese immigrants with type 2 diabetes. Previous research has suggested that the most preferred way to communicate the risks and benefits of consuming fish to Chinese-Canadian women was using video (Fung, 2009). A similar study could be done to find out the best communication channels to communicate diabetes information to them.

Furthermore, future research can focus on interviewing mainland Chinese immigrants who came to Canada on other immigration programs other than skilled workers, even though it is a more common type of immigration stream. Those who came on refuge programs, family reunion, or enterprise initiatives by the government might face different issues and how they manage diabetes might be worth exploring as well.

Lastly, participants in the study were highly in favour of diet management; therefore, it is extremely important that culturally appropriate diet counseling tools to be developed for

this population. The current ‘Just the Basics’ education tool uses a plate model, however, Chinese people often share dishes and the concept of portion control is lacking. How future research can help in developing appropriate diet counseling tools for this population is an urgent issue.

6.3.4 Implications for Practice

There was a lack of knowledge among participants about the biological underpinnings of diabetes development. The strict behaviour interpretations of the development of diabetes have also influenced how people viewed diabetes treatment. For example, some may believe that controlling diabetes simply entails controlling one’s food intake and engaging in physical activity, thus ignoring pharmaceutical interventions. Therefore, it becomes important for health professionals to take the time to explain to their patients about the biological causes of diabetes, thus limiting confusion and promoting proper treatment regimens.

Canadian Diabetes Association (CDA) together with the Vancouver Chinese Advisory Committee had translated materials in diabetes management into Chinese. Some of the translated materials include: Just the basics, prediabetes, and Type 2 diabetes-the basics. This information can be accessed on www.diabetes.ca/chineseinformation. There is also a Chinese information and support line that provides information, support and referral services to people affected by diabetes in Cantonese and Mandarin. The translated material aimed to provide culturally appropriate information. However, at the time of the interviews for this study, there was only one participant who mentioned receiving information from CDA on a regular basis. Therefore, it is very important to make already existing resources available and accessible for mainland Chinese immigrants with type 2 diabetes.

Many of the participants in this study had never visited a RD or diabetes educator. One of the reasons could be that they were doing well on their own in lowering glucose levels so that their physicians did not see a need to refer them. However, the physicians probably

did not have the time to further find out what exactly they were doing to manage it. Thus, it would be beneficial for physicians who have mainland Chinese immigrants with type 2 diabetes patients to make RD or diabetes educator services or nutrition classes available even to patients who have their diabetes well managed.

Even though participants' weight and height information were not collected, most of them were in a normal weight category from mere observation. We often associated type 2 diabetes with overweight; as a result, health care providers might miss this group of people who have higher risk of developing diabetes even with normal weight. Therefore, it is important to screen mainland Chinese immigrants for high urinary or blood glucose levels at annual checkups and start intervention at an earlier stage to slow down the progression of the disease.

Health care providers such as doctors, nurses, dietitians, and diabetes educators can benefit from this study by knowing more about the commonly-held thoughts and beliefs regarding the self-management of diabetes. Thus, they would be able to target some of the myths and provide appropriate and correct guidelines when providing services. Health care providers can also develop diabetes programs that target mainland Chinese immigrants using results from this study. Diabetes professional groups could also start support groups for mainland Chinese immigrants with diabetes. Starting a support group for this group of people would be really beneficial where they would be able to share their experiences, struggles and even start exercise programs for those who did not have exercise partners.

7.0 CONCLUSION

The main objectives of the current study were to explore how mainland Chinese immigrants with type 2 diabetes engage in the self-management of diabetes in Canada. Thematic analysis was used in the data analysis and the results were based on 18 participants.

Overall, participants were highly motivated in their diabetes management with some motivators such as fear of complications, desire for healthy life, and responsibility for families. They were seeking information on how to manage their diabetes from both formal and informal channels. With the motivation and information they possessed, they were actively involved in the self-management of diabetes. They didn't include TCM in their treatment due to the negative views they had towards it. They had a fear of western medication because of the possible side effects associated it, however, many of them had to take medication when their condition was not managed with lifestyle intervention alone. Participants were in favour of lifestyle intervention, including diet management and physical activity. They changed from mindless eating to mindful eating, specifically, reducing their overall food intake with reduced carbohydrate, protein and increased vegetable intake. They acknowledged the importance of physical activity in diabetes management, but encountered more barriers in achieving the desired level of physical activity. Glucose level was used a biofeedback to the changes they made in western medication, nutrition therapy, and physical activity. In the end, balance and control were achieved where they have learned to manage their condition while living a "normal" life.

In summary, this study has contributed to the literature by providing a greater understanding of the management of type 2 diabetes by Mandarin-speaking immigrants from mainland China. Health care providers can use the findings from this study to develop culturally appropriate counseling tools and thus, improve the service they provide to this group of people.

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9.0 APPENDICES

Appendix A: Recruitment Poster in Chinese

UNIVERSITY
of GUELPH

CHANGING LIVES
IMPROVING LIFE

贵湖大学营养系的研究人员 在研究患有二型糖尿病的

我们需要您的帮助!

我们正在招募符合以下条件的参与者:

1. 来至中国大陆的移民或者公民
2. 年龄在 35-65 之间
3. 已在加拿大居住至少 1 年时间
4. 已患有二类糖尿病至少 1 年时间, 并没有其他严重的并发症, 例如: 视网膜病变, 肾衰竭, 截肢, 心脏疾病。

您的参与将帮助我们更好的了解来至中国大陆的移民或者公民如何自我管理二类糖尿病。这将是一对一的访谈, 1-1.5 个小时的时间。如果您对这项研究项目感兴趣, 并且符合以上条件, 我们欢迎您发邮件至 youyou@uoguelph.ca 或者打电话至 519-824-4120, 转分机 54479.

为了感谢您的参加, 我们将会赠与**\$25** 面值的礼物卡

联系方式

Judy Sheeshka, PhD, RD.
Family Relations and Applied Nutrition
University of Guelph
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Esther Huang, BAsC, MSc student
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youyou@uoguelph.ca

这个研究项目已通过了贵湖大学研究伦理委员会#12FB032

We want your opinion!



Researchers at the University of Guelph are looking for participants to talk about their experiences with Type 2 Diabetes

We are looking for participants who:

1. Are immigrants or citizens of Canada from Mainland China
2. Aged between 35-65 years
3. Have lived in Canada for a minimum of one year
4. Have been diagnosed with type 2 diabetes for a minimum of one year and without major complications (such as: eye disease, stroke, heart attack, kidney disease, amputations)

Your participation will help us understand how Mainland Chinese immigrants with type 2 diabetes self manage their disease. We only require 1.5 hours of your time. If you are interested, please e-mail youyou@uoguelph.ca or call 519-824-4120 ext 54479 for more information

Contact Information

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This project has received approval from the University of Guelph Research Ethics Board #12FB032

Appendix B: Certificate of Approval

	<h1>RESEARCH ETHICS BOARD</h1> <p>Certification of Ethical Acceptability of Research Involving Human Participants</p>
<p>APPROVAL PERIOD: March 26, 2012 to March 26, 2013</p> <p>REB NUMBER: 12FE032</p> <p>TYPE OF REVIEW: Delegated Type 1</p> <p>RESPONSIBLE FACULTY: JUDY SHEESHKA</p> <p>DEPARTMENT: Family Relations & Applied Nutrition</p> <p>SPONSOR: N/A</p> <p>TITLE OF PROJECT: Self-management of Type 2 diabetes among Mainland Chinese Immigrants in Canada – a qualitative study</p> <p>The members of the University of Guelph Research Ethics Board have examined the protocol which describes the participation of the human subjects in the above-named research project and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement.</p>	

The REB requires that you adhere to the protocol as last reviewed and approved by the REB. The REB must approve any modifications before they can be implemented. If you wish to modify your research project, please complete the Change Request Form. If there is a change in your source of funding, or a previously unfunded project receives funding, you must report this as a change to the protocol.

Adverse or unexpected events must be reported to the REB as soon as possible with an indication of how these events affect, in the view of the Responsible Faculty, the safety of the participants, and the continuation of the protocol.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research protocols.

The Tri-council Policy Statement requires that ongoing research be monitored by, at a minimum, a final report and, if the approval period is longer than one year, annual reports. Continued approval is contingent on timely submission of reports.

Membership of the Research Ethics Board: B. Beresford, *Ext.*; F. Caldwell, *Physician*; K. Cooley, *Alt. Health Care*; J. Clark, *PoliSci (alt)*; J. Devlin, *OAC*; J. Dwyer, *FRAN*; M. Dwyer, *Legal*; D. Dyck, *CBS*; D. Emslie, *Physician (alt)*; H. Gilmour, *Legal (alt)*; G. Holloway, *CBS (alt)*; B. Ferguson, *CME (alt)*; S. Henson, *OAC (alt)*; L. Kuczynski, *Chair*; J. Minogue, *EHS*; I. Newby-Clark, *Psychology (alt)*; L. Niel, *OVC (alt)*; A. Papadopoulos, *OVC*; B. Power, *Ext.*; L. Robinson, *CBS*; V. Shalla, *SOAN (alt)*; L. Son Hing, *Psychology*; J. Srbely, *CBS (alt)*; T. Turner, *SOAN*; E. van Duren, *CME*.

Approved:

Date: _____

per

Chair, Research Ethics Board

Appendix C Information Letter & Consent Form in Chinese



同意书

中国大陆移民如何自我管理第二类糖尿病

您被邀请参加由贵湖大学家庭应用系和应用营养部门的 Judy Sheeshka 博士及注册营养师 和 Youyou (Esther) Huang 研究生所进行的学术研究。这个项目的结果将会被用于 Youyou (Esther) Huang 的科学硕士的论文项目中。

如果您对这个学生研究有什么问题或疑问，可以随时联系 Judy Sheeshka 博士及注册营养师: (519) 824-4120, ext. 54479, jsheeshk @uoguelph.ca 或者 Esther Huang: youyou@uoguelph.ca.

研究项目的目的

此项研究项目是研究患有二类糖尿病的中国大陆移民如何自我管理这个疾病，特别是在药物，饮食，运动，及血糖的管理上。这项学术项目不是用于治疗您的二类糖尿病。

步骤

如果您志愿参与这个项目研究，我们将会要求您做以下的事情：

- 聆听 5 分钟有关这个项目的目的，目标和研究问题
- 签同意参与这项学术研究的同意书
- 填写个人问卷调查表
- 1 个小时到 1.5 小时左右的一对一采访
- 数据分析后，我们将以邮件的方式告诉您结果。您可以在一周内提供对结果的任何意见或者建议。

有可能的风险及不适应

您可能对某些问题不是很确定。我们是想了解您的个人看法，所以没有对或错的答案。您提供的所有信息都将会是保密的。

参与者或社会从中得到的益处

您所提供的信息将会帮助我们更好的了解患有二类糖尿病的自我管理。也有助于医务人员在今后提供更适合中国文化背景的医疗服务。

参与的报酬

为了谢谢您的时间，您将会受到价值\$25 的 Walmart 或者 President Choice 的礼物卡。

保密性

我们会尽我们的所有努力来确保与这个研究项目有关的个人信息的保密性。

每位参与者都会给予一个佚名。只有研究员才可以获得佚名和个人问卷表的信息。个人问卷表的信息将会被转移到电子数据表里。所有的录音都会下载到由密码保护的电脑里。当这些文件被翻译成英文后，这些录音会从录影机里被删去。在整个过程中，参与者的真实姓名不会被使用。同意书和个人信息问卷调查将会保存在与录音抄本不同的带锁的文件柜里。只有研究人员才有钥匙。所有有关这项研究项目的资料都将会被保存在 **Dr Sheeshka** 的带锁的研究室里。所有的个人信息问卷表，同意书，任何笔记，电子文件都会在 3 年后完全消除。

参与和退出

您有选择是否参与这个研究项目。即使您同意参与，您也可以随时退出，并不会带来任何后果。您也可以要求您的数据从这个研究中消除。即使您不想回答某些问题，您可以仍旧保留在这个研究中。在采访结束后，如果您不想您的意见被使用到这个研究中，你可以联系 **Dr. Sheeshka**，并要求她将你的采访录音或任何在采访中所做的笔记删除。在特殊需要的情况下，研究人员可能会将您的数据从这个研究中消除。

参与者的权利

您可以在任何时候退出或停止参与，这将不会导致任何的处罚。您也不会因为参与这个研究学习而给予任何的法律索赔，权利授予和救济。这个学术研究已经审查且通过了贵湖大学研究伦理委员会 的批准。如果您对自己作为参与者的权利有任何问题，联系方式：

Director, Research Ethics

电话: (519) 824-4120, ext. 56606

University of Guelph

邮箱: sauld@uoguelph.ca

437 University Centre

传真: (519) 821-5236

Guelph, ON N1G 2W1

参与者的签名

我已经阅读了以上关于“中国大陆移民如何自我管理第二类糖尿病”的信息。我的问题已经被回答了，我同意参加这个学术研究。我也得到了这个表格的一份复印件。

参与者的名字（请用英文拼音）

参与者的签名

日期

见证人的签名

见证人的名字（请用英文拼音）

见证人的签名

日期

Appendix C Information Letter & Consent Form in English



INFORMATION ABOUT THE RESEARCH STUDY:

Self-management of Type 2 diabetes among Mainland Chinese Immigrants in Canada

You are asked to participate in a research study conducted by Dr. Judy Sheeshka and Esther Huang of the Department of Family Relations and Applied Nutrition, at the University of Guelph.

If you have any questions about this study, please feel free to contact Dr. Sheeshka at (519) 824-4120, ext. 54479, or Esther Huang at youyou@uoguelph.ca.

PURPOSE OF THE STUDY

The goal of this study is to determine how Mainland Chinese immigrants with type 2 diabetes engage in self-management of the disease, particularly in medication taking, diet, exercise, and self monitoring glucose. Please keep in mind that this study is NOT for clinical treatment.

PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things. The interview will be conducted in Mandarin.

- Listen to a 5 minute presentation describing the purpose, objectives and research questions for the study
- Sign and date a consent form
- Fill out a demographic questionnaire
- One to 1.5 hours of one-on-one interview with the researcher
- After the data analysis, research results will be shared with participants to address the accuracy of it. You will have the option to provide feedback or comments within one week time frame

POTENTIAL RISKS AND DISCOMFORTS

Some participants may feel uncertain when responding to some of the questions. There are no right or wrong answers, and all the information you provide will be kept completely confidential.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

The feedback you provide on how you engage in type 2 diabetes management will help us understand this population and thus help provide more culturally appropriate and sensitive care.

PAYMENT FOR PARTICIPATION

There is no payment for participating in this study. However, in appreciation of your time, you will receive \$25 gift certificate to Walmart or President's Choice.

CONFIDENTIALITY

Every effort will be made to ensure the confidentiality of any identifying information that is obtained in connection with this study.

All participants will be given a pseudonym in the research process. Only the student researcher and advisor will have access to participant pseudonyms and demographic information. Data from the demographic questionnaires will be entered into a spreadsheet with no identifiable information. The interviews will be downloaded onto a encrypted folder, then the digital files will be erased from the digital recorder permanently. The interviewed will be transcribed and translated with pseudonyms; participants' actual names are never used. The printed consent forms and demographic questionnaires will be stored in a locked filing cabinet separately from printed transcripts. Only the student researcher and faculty advisor will have access to the key. All study materials will be kept in Dr. Sheeshka's locked lab. All paper copies of demographic questionnaires, consent forms and notes will be shredded and electronic data files will be erased after 3 years.

PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may ask to have your answers or parts of it, removed from the study database. You may also refuse to answer any questions you don't feel comfortable answering, and still remain in the study. If you decide after you have completed the interviews that you don't want us to include your information in the study, you can contact Dr. Sheeshka and ask her to destroy your interview recording and any notes researchers made throughout the interview. The researcher may withdraw you from this research if circumstances arise that warrant doing so.

RIGHTS OF RESEARCH PARTICIPANTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. This study has been reviewed and received ethics clearance through the University of Guelph Research Ethics Board. If you have questions regarding your rights as a research participant, contact:

Research Ethics Consultant **Telephone: (519) 824-4120, ext. 56606**
University of Guelph **E-mail: sauld@uoguelph.ca**
437 University Centre **Fax: (519) 821-5236**
Guelph, ON N1G 2W1

SIGNATURE OF RESEARCH PARTICIPANT

I have read the information provided for the study “Self-management of Type 2 diabetes among Mainland Chinese Immigrants” as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Name of Participant (please print)

Signature of Participant

Date

SIGNATURE OF WITNESS

Name of Witness (please print)

Signature of Witness

Date

Appendix D Demographic Questionnaire in Chinese



个人信息问卷表

加拿大中国大陆移民二代糖尿病的自我管理

感谢您对这项研究的支持和参与。在开始之前，请您回答以下几个问题。如果您有任何疑问，请随时提出来。

1. 您是在哪一年出生的? _____
2. 您的出生地? _____
3. 您在加拿大已经居住多长时间了? _____
4. 您的教育背景
 - 高中
 - 大专
 - 本科
 - 研究生
 - 博士
 - 博士后
 - 其它
5. 您是通过什么方式来到加拿大的?
 - 投资移民
 - 技术移民
 - 家庭团聚
 - 其他 _____
6. 您是在哪年被诊断有二类糖尿病的?
_____年

Appendix D Demographic Questionnaire in English



DEMOGRAPHIC QUESTIONNAIRE

Self-management of type 2 diabetes among Mainland Chinese immigrants in Canada

Thank you for participating in the study! Before beginning the interview, I would like to ask you a few questions. Please feel free to ask any questions you may have.

1. What year were you born? _____
2. Identify the city of your birth _____
3. How many years have you lived in Canada? _____
4. What is your educational background?
 - High School
 - College
 - University
 - Masters
 - PhD
 - Post Doc
 - Others _____
5. Under what category, did you immigrant to Canada?
 - Skilled worker
 - Investors/entrepreneurs
 - Family reunion
 - Others _____
6. When were you first diagnosed with type 2 diabetes?
Year _____

Appendix E Interview Question Guide Chinese

采访问题大纲

1. 您可以告诉我你是什么时候在哪里被诊断有二类糖尿病的吗？您当时的反应是什么？
2. 您认为是什么因素/原因导致了您患有二类糖尿病？
3. 在糖尿病的控制（在饮食，药物，运动，自我血糖检测）上，您接受过哪方面的教育/指导？
4. 您目前是如何控制您的糖尿病病情的？
 - a) 药物：您有使用药物来控制你的糖尿病吗？您认为药物在管理/控制糖尿病上起什么作用？您觉得药物是必须并且有帮助的吗？
 - b) 饮食：自从被确诊后，你在饮食上有什么改变？您是怎么知道需要有这些改变的？您有没有因为二类糖尿病从您的饮食上除去或者加上什么新的事物吗？
主食/蔬菜/蛋白/水果/饮料
早餐/中餐/晚餐/点心
如吃东西的时间和次数。
遵循二类糖尿病的饮食要求感觉如何/是什么样的感觉？您在面对诱惑的时候，是如何处理？如果没有按原计划做，会怎么办？
 - c) 运动：你现在有参与哪些运动？（跑步，快走，游泳，等），（在跟被确诊前一样吗？）自从确诊后，您在运动方式上有什么改变？您是如何知道需要有改变的？哪些运动你目前是自己做或者和他人一起？
 - d) 自我监测血糖：您自己量血糖吗？怎么量？多久一次？你觉得经常量您的血糖是需要的吗？如果没有经常量，是为什么呢？有什么障碍吗？你是如何知道需要自我监测血糖的？您还有其他方式来监测您的血糖呢（如何知道自己的血糖指标？）
 - e) 在您的糖尿病控制中，您有加入任何中国传统医药成分吗？例如：药草，针灸，饮食，按摩，治疗的运动？
您觉得(根据)你的传统/背景（饮食习惯，结构，成长的环境），如何(可以更好的)帮助你管理？
在加拿大（医疗，环境，空气，药物报销）如何帮助/改善或者改变你的糖尿病控制？
5. 您是从什么渠道得知这些控制的方法的？您认为这些信息的来源可靠吗？您会验证您所得到的信息吗？
6. 您能够这么坚持的动力来自哪里？
7. 糖尿病对你的工作/社交/家庭生活有什么影响？您的家人在疾病的管理中起了什么作用？

Appendix E Interview Question Guide English

Interview Questions Guide

1. Please tell me about your type 2 diabetes, when and where did you first get diagnosed?

What was your reaction when you first found out?

2. What do you think could have caused your type 2 diabetes?
3. What kind of education do you have in type 2 diabetes management in terms of diet, medication, exercise, and self-blood glucose monitoring?
4. What are you currently doing to manage your type 2 diabetes?
 - a). medication: do you take medication in managing your type 2 diabetes? What is your view on medication in the management of diabetes? Do you think it is necessary and helpful?
 - b). diet: what are some of the changes you have made since the diagnosis? How did you find out about any changes in diet? Have you eliminated/included new food in your diet? Staple/vegetable/meat/fruit/juice
Breakfast/lunch/dinner
Time of meal/frequency
Portion size
Have you made alternatives to your food choice? Have you changed when or how often you eat? What was it like to follow a diabetic diet/restricting your diet?
 - c). exercise: what do you do for physical activity? What are some changes you have made since the diagnosis? How did you find out about any changes in exercise? What kinds of physical activity do you participate in by yourself or with others?
 - d). self-monitoring blood glucose: Do you assess glucose yourself? How and how often do you measure your blood glucose? How did you find out about self-monitoring? (Where did you get the information?). Do you think it is necessary to

measure your blood glucose regularly? If not measure regularly, why? What are barriers? What are other ways you monitor your blood glucose?

e) Do you include any element of Chinese traditional medication in your management? such as herbs, acupuncture, dietary therapy, massage, and therapeutic exercise?

5. Who/where do you go to acquire information when making changes in diet, exercise, etc? Do you think they are reliable source of information?
6. Where does motivation/willpower/self-determination come from?
7. How does diabetes affect your work life, social life, and family life now? What are your family members' roles in your management? How did your management of diabetes affect your family relationships or dynamic?

Appendix F Additional Resources for Participants



List of Resources

If you have any concern about your type 2 diabetes, please contact your family doctor first.

For University of Students ONLY:

1. University of Guelph Counselling Services
Telephone: 519-824-4120, extension 53244
2. University of Guelph Student Health Services
Telephone: 519-824-4120, extension 52131

For Both University of Guelph Students and Non-Students:

1. Canadian Diabetes Association www.diabetes.ca
2. Chinese diabetes information line toll free (operated under Canadian Diabetes Association): 1-888-666-8586
3. Diabetes Care Centre Guelph
Website: www.diabetescareguelph.com
Address: 83 Dawson Road, Guelph, ON, N1H 1B1
Telephone: 519-840-1964
4. Guelph Community Health Centre
Website: www.guelphchc.ca
Address: 176 Wyndham Street North, Guelph, ON, N1H 8N9
Telephone: 519-821-6638
5. Family Counselling and Support Services
Website: www.familyserviceguelph.on.ca
Address: 109 Surrey E, Guelph, ON, N1H 3P7
Telephone: 519-824-2431
6. Community Torchlight
Website: www.communitytorchlight.com
Local 24-hour Distress Line: 519-821-3760
Toll Free 24-hour Distress Line: 1-877-821-3760
Local 24-hour Crisis Line: 519-821-0140
Toll Free 24-hour Crisis Line: 1-877-822-0140

Appendix G Demographic Information for Each Participant

P #	Gender	Year Birth	Age	Hometown	length in Canada	Education	Immigration	Year	Length of Diagnosis
1	M	1958	54	Sichuan	10	Masters	skilled worker	2003	9
2	M	1962	50	Sichuan	10	Bachelor	skilled worker	2006	6
3	M	1962	50	Tianjin	10	Bachelor	skilled worker	2008	4
4	F	1951	61	Hubei	21	High School	Family Reunion	1999	13
5	F	1965	47	Jiangsu	12	Diploma	Family Reunion	2004	8
6	M	1963	49	Hebei	7	Bachelor	skilled worker	2007	5
7	F	1953	59	Hunan	13	Masters	skilled worker	2000	12
8	M	1972	40	Shanghai	11	Bachelor	skilled worker	2009	3
9	M	1961	51	Shenyang	6	Bachelor	skilled worker	2007	5
10	F	1960	52	Shandong	16	PhD	skilled worker	2008	4
11	F	1966	46	Xinjiang	7	Masters	skilled worker	2005	7
12	F	1963	49	Xinjiang	10	Diploma	skilled worker	2002	10
13	F	1965	47	Changchun	10	Bachelor	skilled worker	2009	3
14	F	1960	52	beijing	12	Diploma	skilled worker	2002	10
15	F	1962	50	Tianjin	7	Bachelor	skilled worker	2002	10
16	F	1971	41	Sichuan	12	Bachelor	skilled worker	2001/2011*	
17	M	1961	51	Changchun	7	Masters	skilled worker	2003	9
18	M	1957	55	Changchun	12	Bachelor	skilled worker	2000	12

*This participant was diagnosed with gestational diabetes in 2001 and continued for a period of time after the delivery. And she was again diagnosed with gestational diabetes in 2011. At the time of interview, it was more than a year after the delivery and she was diagnosed with type 2 diabetes.