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Impact of social support on Saudi women with type II diabetes living in Saudi Arabia

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IMPACT OF SOCIAL SUPPORT ON SAUDI WOMEN WITH TYPE II DIABETES
LIVING IN SAUDI ARABIA

An Abstract of a Thesis
Submitted
in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Fatimah Al-Khidhr
University of Northern Iowa
December 2019

ABSTRACT

The purpose of this study was to describe the impact of social support on Saudi women with Type II Diabetes. This study describes the different types of social support (emotional, instrumental/tangible, informational, and appraisal) offered to Saudi women who have Type II Diabetes living in Qatif City, Saudi Arabia. Lastly, this study aims to assess the types of social support that Saudi women receive from others (i.e. spouse, family members and friends, and peers) in order to improve the quality of life. A qualitative design, semi-structured interview technique was used. The data was collected by using a screening questionnaire and face-to-face interview. All the interviews were conducted in the Arabic with 20 women via face-to-face interview. Results indicated that women face challenges with diet change, exercise, and adherence to measure blood glucose levels after diagnosis with T2D. Not all women face challenges in adherence to taking the medication regimen. Women received most informational and instrumental support followed by less emotional support. No evidence of appraisal support was reported in this study. Some women relied on themselves and used several coping strategies for behavior change, including healthy diet and physical activity (walking). Social support plays a significant role in diabetes health; especially when improve the quality of life and strength self-care management.

Keywords: Saudi Arabia; Women; Type 2 Diabetes; Hyperglycemia; Self-management, Social Support; Quality of Life.

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This Study by: Fatimah Al-Khidhr

Entitled: Impact of Social Support on Saudi Women with Type II Diabetes Living in Saudi Arabia

has been approved as meeting the thesis requirement for the

Degree of Master of Arts

Date

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DEDICATION

This thesis is dedicated to the memory of my beloved mother, who passed away before I graduated with my bachelor's degree. However, I had promised to make my mother proud by the achievement of this monumental academic goal, and I hope that I have fulfilled that promise. My beloved parents, thanks for your endless love, prayers, support, sacrifice, guidance, patience, and everything you have done since I was born.

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CHAPTER I

INTRODUCTION

Diabetes Mellitus (DM) is a metabolic disorder characterized by the existence of chronic hyperglycemia with the disturbance of carbohydrates, protein, and fat metabolism, which is the result of insufficient secretion of insulin, incomplete action of producing insulin or both. There are three common types of DM including Type 1 Diabetes (T1D), Type 2 Diabetes (T2D), and Gestational Diabetes (GD). DM is an increasing worldwide health concern (Alotaibi, Perry, Gholizadeh, & Al-Ganmi, 2017). In addition, it has appeared as a major global epidemic as a result of the fast increase of weight gain, obesity, and lack of physical activity (Strom & Egede, 2012). The number of persons with DM was estimated at 171 million across the world by 2000 (Alotaibi et al., 2017). In 2015, an estimated 415 million people had diabetes (Barreira, Novo, Vaz, & Pereira, 2017). By 2030, the number of persons with DM is expected to be more than 552 million (Alotaibi et al., 2017).

Generally, the greatest prevalence of DM is predicted to happen in the Middle East and North Africa (Alotaibi et al., 2017). According to the World Health Organization (WHO; 2016), the prevalence of diabetes among Saudi population has reached 14.4% which means approximately 4.5 million people in Saudi Arabia have diabetes (Aljabri, Bokhari, Alshareef, Khan & Aljabri, 2018). A current study stated that above 50% of the Saudi population aged 30 years and older were either diabetic (25.4%) or pre-diabetic (25.5%; Al Dawish et al., 2016). Hence, diabetes is one of the ten main causes of mortality as well as a risk factor for developing other leading causes of death,

including heart disease and stroke, in older adults (Stephens, Rook, Franks, Khan, & Iida, 2010).

Furthermore, individuals with DM are more likely to develop various short- and long-term complications (Al Dawish et al., 2016) that mostly cause a decline in health-related quality of life and contribute to early death (Al Hayek et al., 2013). Diabetes can be managed traditionally by lifestyle modifications and medication in order to enhance blood sugar or glycemic control (Paul et al., 2007). Multiple studies have indicated that hemoglobin A1c (HbA1c) targets for glycemic control are 7% or less, in order to reduce the risk of diabetes complications (Badedi et al., 2016). In addition, diabetes patients must deal with the responsibility related to management of everyday living that can be achieved by self-care behaviors. The best way to manage diabetes requires day-to-day living to avoid the effect of diabetes that may influence both the quality of life and productive life among adults (Beverly & Wray, 2008).

Quality of life is a significant factor in diabetes management. If people have a low quality of life, they may reduce self-care, resulting in poor glycemic control, an increased risk of complications, and an increased prevalence of the diabetes (Al Dawish et al., 2016). Persons with diabetes have shown poorer quality of life compared to persons who do not have a chronic disease. However, persons with diabetes have a better quality of life compared to persons with other severe chronic illness such as heart disease, arthritis, stroke, lung problems, and multiple sclerosis. Nevertheless, persons with diabetes can enhance their quality of life by following specific interventions containing “the introduction of blood-glucose lowering agents, changes in insulin delivery systems, and

educational and counseling programs designed to facilitate the development of diabetes-specific coping skills” (p. 215; Rubin & Peyrot, 1999).

One known way to improve quality of life is to increase social support. Social support was defined by Kaplan, Cassel, and Gore (1977) as the degree to which an individual’s social needs (affection, esteem or approval, belonging, identity, and security) are met through various types of interactions. Sarason, Sarason, Shierin, and Pierce (1987) described social support as, not only the presence of individuals who can be relied on, but who also letting others know they care for, value, and love them. Lastly, Turner, Frankel, and Levin (1983) described social support as either experience or information from others that one is loved and cared for, valued and esteemed, and capable of counting on others when the need arises. There are four various types of social support: emotional support, instrumental support/tangible assistance, informational support, and appraisal support (van Dam et al., 2005). In addition, social support can arise from various sources, including spouses, family members and friends, and peers (informal support) as well as healthcare professionals and organizations (formal support). Social support can have either negative or positive effect (Strom & Egede, 2012).

Because individuals with DM have poor general health and lower quality of life (Al Dawish et al., 2016), social support plays a significant role in enhanced self-care behaviors, improved diabetes awareness, and minimized diabetes-related distress (Strom & Egede, 2012) and quality of life (Huang, Hung, Stocker, & Lin, 2013). Social support has been considered one of the main components in diabetes self-management in order to succeed in glycemic control and improve results (Strom & Egede, 2012). A study found

that diabetic patients who have larger support and confidence living with the disease have shown superior blood glucose control, better adherence to dietary plans, and less diabetes-related distress. Researchers who conducted a study on the role of social support in diabetes among African Americans discovered that positive social support is linked to glycemic control if the support is provided from spouses or adult children, in ways such as keeping a medical appointment, involvement in health-promoting activities (ie. eating and foot care), following recommended insulin regimen, and consideration of doctor visits (Tang, Brown, Funnell, & Anderson, 2008).

Saudi Vision 2030 has focused on a balanced and healthy lifestyle, which is the fundamental cornerstone of a high quality of life among the citizens and residents. In the past, regular sports have been limited, so this needs to be changed by inspiring widespread participation in sports and athletics activities. Additionally, partnerships with the private sector to create dedicated facilities and programs will empower the population to be involved in a wide range of sports and leisure activities. Moreover, Saudi Vision 2030 focuses on the public health care sector to promote preventive care and decrease communicable diseases. In addition, Vision 2030 motivates the Saudi population to use primary care centers as the first step to get treatment. Both health and social care are collaborated and integrated, supporting families to offer home care to their relatives when needed. Physicians will have superior training to enhance treatment related to non-communicable diseases such as heart disease, diabetes, and cancer that already threaten most population's health (Kingdom of Saudi Arabia, 2016).

The ultimate goal is to avoid getting diabetes through the prevention of a healthy lifestyle (Beverly, Miller, & Wray, 2008). The important components to follow for prevention of diabetes are balanced and healthy eating habits (Barreira et al., 2017). Additionally, there is some evidence that indicates that 30 minutes of moderate-intensity exercise 5 days weekly can prevent diabetes (Mokabel et al., 2017). Individuals who are already diagnosed with diabetes can continue successful management to diminish the risks for future complications (Beverly et al., 2008).

Purpose Statement

The purpose of this study is to describe the impact of social support from others on Saudi women with Type II Diabetes and the different types of social support offered to Saudi women who have Type II Diabetes living in Saudi Arabia. This study aims to assess the types of social support that Saudi women receive from others (i.e. spouse, family members and friends, and peers) in order to improve the quality of life.

Research Questions

The goal of this study is to investigate the following questions:

1. Who gives the most social support (i.e. spouse, family members and friends, and peers) to Saudi women who have Type II Diabetes?
2. How is social support utilized by Saudi women who have Type II Diabetes?
3. How does social support affect the behavior of Saudi women who have Type II Diabetes and enhance their quality of life?

Hypothesis

The hypothesis of this study is that Saudi women living in Saudi Arabia who have Type II Diabetes will experience a wide variety of social support that will improve quality of life.

Purpose of the Study

The researcher investigated the significance of the impact that social support has on Saudi women, as a way to fill in the gaps in their quality of life, as well as to increase the utilization of social support from others. The findings of this study will benefit Saudi women with Type II Diabetes living in Saudi Arabia. The study improves the understanding of how social support has affected Saudi women's behaviors and enhanced their quality of life. All different types of social support offered to Saudi women can help strengthen diabetic self-care behavior and be used as a guidance for developing diabetes care.

Delimitation

There were numerous delimitations in this study. First, only Saudi women living in Saudi Arabia aged 30 and older who have been diagnosed with T2D were included. Second, Saudi women living outside Saudi Arabia, non-Saudi women, women aged under 30 years, women diagnosed either with pre-diabetes or Type I Diabetes, and men were excluded. Third, there were 25 women who began the Social Support Screening Questionnaire, but did not complete the form, so they were not invited to the interview.

Limitations

Several important limitations of the study should be noted. First, posting the flyer in doctor's office without the researcher present at the hospital to recruit the participants was not effective. Second, there were thirteen people who complete the screening questionnaire who declined to participate in the study due to face-to-face interviews. Third, the time of collecting the data was challenging due to summer vacation and Eid Al-Fitr holiday. In addition, some participants appeared hesitant to express their experiences and stories related to coping and living with diabetes. The researcher did not dig for the reasons behind their reluctance so as not to exceed the participants' privacy. Fourth, the Ministry of Health made some changes in the treatment plans of diabetic patients, who are now required to see the doctor every 3 months instead of monthly visits; this change happened in May 2019. The last limitation deals with the fact that this exploratory study focused only on Saudi women who have T2D; additionally, the study was limited to Primary Health Care Centers. In addition, the findings of qualitative study may have limited generalizability to all diabetic patients at large.

Definition of Terms

Diabetes Mellitus (DM): a metabolic disorder characterized by the chronic increase of high blood sugar levels by the disturbance of carbohydrates, protein and fat metabolism resulting from defects in the pancreas that is unable to secrete insulin and/or the incomplete production of the insulin (Barreira et al., 2017).

Social support: “multidimensional experience in which people provide voluntary assistance to others and either have a formal or informal relationship with them” (Strom & Egede, 2012, p. 2).

Instrumental support: involves the provision of material goods, financial assistance, and services (Strom & Egede, 2012).

Emotional support: expressions of feeling indicating care, reflection, comfort, encouragement, and good listening ear. It usually does not present criticism (Dale, Williams, & Bowyer, 2012).

Appraisal support: “communication information that is relevant to self-evaluation and appropriateness of emotions, cognitions and behaviors; for example, motivation and encouragement to persist in problem solving” (Dale et al., 2012, p. 1362).

Informational support: giving information, advice, and suggestion that helps solve the problems (Dale et al., 2012).

Saudi Vision 2030: a new strategic plan for the Kingdom of Saudi Arabia that was adopted on April 2016 (Al-Hanawi, Khan, & Al-Borie, 2019).

Diwaniyyah: the daily or weekly gathering of relatives and friends and providing social support to older people (Al-Kandari, 2011).

CHAPTER II

LITERATURE REVIEW

Diabetes Mellitus (DM) prevalence is steadily increasing worldwide, in both developed and developing countries, and it is one of the main health problems of the 21st century. DM is a chronic disease that affects the pancreas' ability to make sufficient insulin, or the body's ability to use the insulin (Al Dawish et al., 2016). Globally, in 2015, an estimated 415 million people had diabetes. By 2040, an estimated 642 million people are expected to have diabetes. The WHO expects that diabetes will become one of the seven leading causes of death by 2030 (Barreira et al., 2017). Also, diabetes in most countries has become one of major causes of premature illness and death (Strom & Egede, 2012). Globally, the epidemic of diabetes has become widespread due to aging, poor food choices, sedentary behavior, lack of exercise, and obesity (Al Dawish et al., 2016).

According to the Centers for Disease Control and Prevention (2017a), there are two types of diabetes: Type 1 Diabetes (T1D) and Type 2 Diabetes (T2D). T1D occurs when the immune system attacks and destroys the cells of the pancreas, so it produces too little or no longer produces insulin (Bialo, 2018; CDC 2017a). T1D accounts for only 5% of all diabetes. The development of symptoms in T1D happens rapidly. Most of the people diagnosed with T1D are children, teens, and young adults. T1D has a strong genetic link. On the other hand, the pancreas of a person with T2D still produces insulin, but the body is not able to use the insulin effectively. T2D accounts for approximately 90% to 95% of all diabetes. The symptoms of T2D take a long time to develop, and it is

more commonly diagnosed in adults, but also can also occur in children, teens, and young adults. People with T2D often do not recognize any symptoms (CDC, 2017a).

The CDC (2017b) reports that nearly 30.3 million Americans have diabetes, which affects 9.4% of United States residents, as well 84.1 million had pre-diabetes in 2015. The same year, diabetes was estimated as the 7th leading cause of death. By 2050, the percent of U.S. adult residents that have diabetes may more than triple the current 9.4% (Joiner, Nam, & Whittemore, 2017). The highest rate of diabetes is 15.1% among American Indians/Alaska Natives, 12.7% among non-Hispanic blacks, 12.1% among Hispanics, while the lowest rate of diabetes is 8.0% among Asians and 7.4% among non-Hispanic whites (CDC, 2017b).

According to the WHO (2016), the prevalence of diabetes among Saudi population has reached 14.4% which means approximately 4.5 million people in Saudi Arabia have diabetes (Aljabri et al., 2018). Also, Saudi Arabia has been rated as the second highest occurrence of diabetes in the Middle East and the seventh highest worldwide. The International Diabetes Federation (IDF) reported that six of the ten countries with the highest rates of diabetes are found in the Gulf region: Kuwait, Lebanon, Qatar, Bahrain, UAE, and Saudi Arabia. The alarming increase in rates of diabetes above 25% in the adult population in these countries is due to an unhealthy diet and lack of physical activity. By 2030, the level of diabetes is expected to more than double the current rates (Al Dawish et al., 2016).

This paper focuses on T2D among the Saudi population because behavior changes and lifestyle modification related to a healthy diet, losing weight, and regular exercise

can influence the quality of life. T2D is a preventable and manageable disease, while it is not yet possible to prevent T1D and patients need to take insulin every day to survive. T2D has a late life diagnosis, whereas T1D patients live with it nearly their whole lives. Social support provided to diabetic patients may help to manage T2D and they may live a good quality of life with the disease.

Patients with T2D display a high risk of complications that impact length and quality of life (Stephens et al., 2010). Chronic high blood sugar levels are associated with several serious long-term complications, including eye problems and blindness, kidney disease, amputations, coronary artery disease, peripheral vascular disease, nerve damage (Trief et al., 2003), and problems of the cardiovascular system (Pamungkas, Chamroonsawasdi, & Vatanasomboon, 2017). Diabetic patients have a higher risk of contracting cardiovascular disease than people without diabetes (Barreira et al., 2017). Most of these complications might be prevented or delayed with behavior changes and lifestyle modification, particularly through appropriate food choices. Unfortunately, most diabetics struggle to keep blood glucose levels normal because they still do not achieve the strict adherence required to successfully manage it (Stephens et al., 2013).

People who have T2D should give attention to several tasks to manage it, such as lifestyle modifications, healthy behavior, and self-management, along with ongoing professional treatment (van Dam et al., 2005). Lifestyle modifications are mostly known to be free from side effects, and can present more effective results than some pharmacological interventions (Al Dawish et al., 2016). On the other hand, T2D can be prevented or delayed in adults at high risk for developing the disease by simple

inexpensive interventions of several lifestyle modifications, such as increasing physical activity, reducing body weight, and improving diet (Al Dawish et al., 2016; Joiner et al., 2017). A study concluded that patients who combined physical activity with healthy diet reached great glycemic control (Badedi et al., 2016).

Diabetes can frequently be managed through several tasks, such as a healthy diet, being physically active, suitable use of insulin, and additional medications that help to control blood sugar levels and avoid health complications (CDC, 2017b). The first initial treatment for patients with T2D is weight control or dietary changes and regular exercise. Afterward, if patients show poor glycated hemoglobin results, they must take medications including oral hypoglycemic (low blood sugar) medicine or insulin injection in order to control blood glucose well (Huang et al., 2013). Another option is an insulin pump is “a mechanical device that can be programmed to deliver insulin more like the pancreas does, making blood glucose testing, and insulin injections easier and more effective” (Bialo, 2018, p. 3).

Individuals living with diabetes visit the clinic a few times each year. In fact, the total hours to get formal diabetes care is less than 2 hours yearly (Schjøtz, Bøgelund, Almdal, Jensen, & Willaing, 2012). A nurse at Primary Health Care Center in Saudi Arabia explained that diabetic patients make appointments regularly with doctor and diabetes educators every 3 months in order to track the treatment plan and to get help with new ideas and strategies. Therefore, the total visits to get the appropriate treatment are four times yearly. Each month, diabetic patients need to return to the hospital in order to receive the prescribed medication without seeing the doctor (E. Al-Habib, personal

communication, July 24, 2019). Successfully managing T2D prevents long-term complications such as constriction of blood vessels, nephropathy and retinopathy, peripheral neuropathy, and troubles of the cardiovascular system and improves the quality of life for diabetics (Pamungkas et al., 2017).

People with T2D can manage their diabetes-related needs alone (Schiøtz et al., 2012). Managing diabetes requires certain behaviors from the patients to achieve good glycemic control (Stopford, Winkley, & Ismail, 2013) such as engaging in self-care behaviors, home blood glucose monitoring, taking medication, regular follow-up preventive services, reducing alcohol consumption, and ending tobacco use (Strom & Egede, 2012). Evidence shows that both behavior changes and lifestyle modification are involved in the management of diabetes, including increasing exercise, improving diet, self-monitoring blood glucose, examination of the feet, adherence to professional advice, and gaining diabetes knowledge (Stopford et al., 2013). In fact, guidelines encourage offering self-management support to diabetics in order to achieve high-quality care (Schiøtz, et al., 2012). Self-management of T2D demands help from multiple sources in a patient's social support network (Strom & Egede, 2012). There are many studies that have indicated that having a large social support network is related to improvement in diabetes self-management (Schiøtz et al., 2012).

Social Support

Social support can enhance self-management routines, as well as improve health care results. Social support can impact both physical and mental health. It also has become a protective method during stressful events. Individuals who have a high level of

social support showed improved health, less psychological issues, and fast recovery from chronic diseases. In contrast, individuals who have a lower level of social support may be affected more by stressful situations (Strom & Egede, 2012). Social support influences not only health but also mortality by three mechanisms: improved health behaviors, reduced harmful effects, and developed immune system function (Barrera, Glasgow, Mckay, Boles, & Feil, 2002).

Social support is defined as a “multidimensional experience in which people provide voluntary assistance to others and either have a formal or informal relationship with them” (Strom & Egede, 2012, p. 2). Social support can arise from various sources, including spouse, family members and friends, and peers (informal support) and healthcare professionals and organizations (formal support; Strom & Egede, 2012). Informal support is always free and easily available to persons whereas formal support is expensive to offer, strict, and not involving risk to some persons (Stopford et al., 2013).

Spousal support is reported to be the most important source of support (Costa, Pereira, & Pedras, 2012). Social support from a spouse is a primary assistance of adherence in diabetes management regime, such as food preparation and purchase, medication administration, and exercise. Spouses are often involved in all these tasks (Trief et al., 2003).

Support provided from family and friends can play an important role in developing a patient’s glycemic control (Badedi et al., 2016). In addition, support provided from family and friends can highly reduce the need of using professional health care (Heins et al., 2016). Family support is crucial in the ability of patients to keep the

treatment regimen (Stephens et al., 2013). Furthermore, support provided from family may have a greater support and/or less conflicted support that can lead to improved treatment adherence, illness adaptation, and glycemic control (Trief et al., 2003).

Social support provided from peers can play important role in helping with self-management. In addition, peer support is significant in sharing of life experience in regard to living with diabetes and may provide several advantages to peer supporter, “such as by achieving an increased sense of interpersonal competence, gaining new personal relevant knowledge and receiving social approval from the person they help” (p. 1361; Dale et al., 2012).

Not all social support is helpful. Social support can either have positive or negative impacts (van Dam et al., 2005). Social support may be wanted behavior and have a positive impact, but it can be interpreted as negative social pressure (e.g. nagging, criticism, or unwanted behavior) and have a negative impact (Stopford et al., 2013).

Types of Social Support

Social support is commonly categorized into four various types: emotional support, instrumental support/tangible assistance, informational support, and appraisal support (van Dam et al., 2005). Emotional support involves sharing emotional burdens through sympathy, warmth, and reassurance by providing encouragement and expressing concern (Sit, Wong, Clinton, Li, & Fong, 2004). For example, providing relaxation and motivation when patients facing distress or frustration through a long course treatment for diabetes care is emotional support (Pamungkas et al., 2017).

Instrumental/tangible support involves the provision of material goods, financial assistance, and services (Strom & Egede, 2012). In addition, it involves the helping with duties or doing a chore (Sit et al., 2004), for instance, helping patients accomplish particular tasks like scheduling an appointment to see health care providers or assisting with insulin injections (Pamungkas et al., 2017). Other examples are food preparation, giving a ride, and buying food from the grocery store (Vongmany, Luckett, Lam, & Phillips, 2018). Additionally, providing services or financial assistance is helpful (van Dam et al., 2005).

Informational support involves providing information, advice, and access to new knowledge and skills in order to help them understand how to solve the problem, as well as explain to them the goals and ways to achieve it correctly (Sit et al., 2004), for example, a doctor could explain how important a healthy diet is for the diabetes patient and how to follow that diet.

Appraisal support involves helping patients comprehend how to deal with stressful events in a healthy way, providing coping strategies, and helping them find resources (van Dam et al., 2005). For instance, a patient can meet with a therapist to discuss the different healthy coping methods they could practice.

Social Support and Diabetes

Social support plays an important role in improving adherence to diabetes self-care, quality of life, as well as in diabetes knowledge (Stopford et al., 2013). Social support for patients living with diabetes results in lower levels of depression and in less worry and anxiety regarding T2D (Stephens et al., 2013). Social support may differ

through the progression of the disease and be beneficial when provided to individuals who need it to help them recover from T2D (Stopford et al., 2013).

Furthermore, social support has been considered one of the main components to diabetes self-management in order to succeed in glycemic control and improved results. A high level of social support to diabetes patients was frequently linked to healthier glycemic control, improved treatment adherence, increased quality of life, and better knowledge. Low level of social support in diabetes patients was linked to increased mortality and complications (Strom & Egede, 2012).

Social Support Affects Health and Quality of Life

Social support is a significant component of mental, social, and physical health. Primary relatives (e.g., parents and siblings) provide better support compared to secondary relatives (e.g., friends and neighbors). Individuals who have more social support systems were less affected by stress comparatively. People exposed to high stress and low social support have the poorest health outcomes (Al-Kandari, 2011).

Social support has been found to improve health in a variety of situations, such as postpartum, depression, hypertension, and cancer. Mothers in the postpartum stage are anticipating taking new maternal responsibilities and also play their regular roles in the family. In fact, mothers have new responsibilities and roles which might lead to feelings of pressure and stress. Social support plays a crucial role in both decreased stress levels and a better health status. Researchers have illustrated that there is a significant indirect relationship between social support and general health among Iranian postpartum women. The results of this study pointed out that social support provided to the mother had a

positive impact on the health-promoting lifestyle because the spouse and family provided support that made daily tasks easier for the mothers and lessened mental fatigue. In addition, family cared for the mother and baby at home for almost 40 days. Women who have more social support will expect improved physical, mental, and cognitive health, as well as being prone to fewer health problems compared to women who receive little social support, which might expose them to more general health problems (Hajimiri, Shakibazadeh, Mehrizi, Shabbidar, & Sadeghi, 2018).

Studies showed that social support during the postpartum period played an important role not only in the health of the mother, but also in the family. The results of a study revealed that social support provided to the mother had a positive impact on self-confidence to make the decision related to living a health-promoting lifestyle. Mothers in the postpartum period reported that spouse and family were the fundamental sources of emotional and tangible/instrumental support. However, health care professionals such as nurses and midwives could provide informational support to women in the postpartum period (Hajimiri et al., 2018). The existence of social support for women in the postpartum period showed a significant increase in breastfeeding, infant care, and maternal adaptation, whereas women with a lack of social support have significantly more stress and postpartum depression. Another study examined how women experienced social support during the postpartum period and the differently types and quantity received. The researchers found that the presence of emotional, informational, and instrumental support through the postpartum period made the postpartum period less

stressful, more enjoyable, and easier for mothers as well as varied in quality and quantity (Cornish & Dobie, 2018).

People with chronic disease are more likely to have a high risk of depression. Social support might potentially have a direct or an indirect effect on depression. Depression is more widespread among people who have diabetes than individuals who do not, which may affect metabolic control, resulting in complications with diabetes management. Researchers offered some evidence about perceived social support being linked to depression among adults who have diabetes in two different ways. First, in diabetic patients, high levels of perceived support are linked to lower levels of depression and perceived threat. Second, high levels of perceived support in diabetic patients was support are linked to lower levels of perceived threat. Receiving diabetes help from family and friends is associated with tangible/instrumental tasks (diet, exercise, foot care, and medication taking; Connell, Davis, Gallant, & Sharpe, 1994).

One study identified that married adults perceived greater levels of general social support and showed fewer depression symptoms compared to unmarried adults. Another study mentioned that married adults stated poorer levels of social support related to diabetes compared to unmarried adults. Therefore, while married individuals with a diabetic spouse are more likely to be conscious of the daily routine required to maintain a healthy life, it shouldn't be concluded that being married means the diabetic person is being positively supported in both adjustment and self-management (Connell et al., 1994).

Social support is important for caregivers too. Social support for caregivers might decrease the effect of depressive symptoms (Huang et al., 2009) and have positive effects on the caregivers' health. The primary family caregivers were spouse or daughter/son (Sit et al., 2004). The researchers assessed that the relationships between stressors, social support, depressive symptoms, and general health status of Taiwanese caregivers for persons with a stroke or Alzheimer's disease. The study found that caregivers of individuals with Alzheimer's disease had high levels of depression compared to caregivers of individuals with a stroke, thus affecting their psychological and general health status. In addition, older caregivers who were taking care of persons with behavioral problems had poor general health. However, caregivers who were receiving emotional support from family members and friends had fewer depressive symptoms (Huang et al., 2009). Familial caregivers received more emotional support, but less instrumental/tangible support and informational support (Sit et al., 2004).

A study conducted by Al-Kandari (2011) among elderly adults who were living in the family explored the relationship between social support, hypertension, and general health status in Kuwait. The study found a direct positive relationship between social support from family members and children (living in the same home) and general health status among the older adults. The greater number of children who live with the elderly in the same home, the more they feel well and have fewer somatic symptoms and reported fewer problems with hypertension. In addition, "Social support and social networking has a greater effect on the life of the elderly than on other age categories in the human population, given the decline in the general health of older adults due to psychological

functions” (p.184). Receiving social support from relatives and friends and greater level of quality of life leads to better health status and general health among people.

Moreover, in Kuwait, researchers discovered a relationship between a living spouse and the health of the elderly. An older adult whose spouse is still alive showed a better level of health, such as systolic blood pressure, diabetes, and somatic symptoms compared to an older adult whose spouse has passed away. In addition, the researcher indicated that there is no difference in getting support from friends and relatives among older women and men, but indicated differences in both the frequency and strength of contacts. Men were more likely to be involved in social life than women. Women are less likely to have social contact with relatives and friends compared to men. Men had more chances related to social activities than women. Past studies mention that older men who commonly attend the diwaniyyah (traditional gathering place) showed greater health status compared to men who rarely attend the diwaniyyah (Al-Kandari, 2011).

Patients who have cancer may need partner support to lessen the use of professional health care. If partners of cancer patients have lack of physical or psychological health, they might not always provide all the kinds of support the patients prefer. The solution is to substitute the partner support by using the formal health care system. Researchers have shown that the type of partner support received by patients was linked to the use of general practitioner care (GP). There were several patients who openly discussed their physical and emotional problems with the GP. Nevertheless, there were some patients who were less likely to discuss physical problems with the GP when their partner was actively engaged, and female patients were less likely to discuss

emotional problems with GP when felt their partner was being overprotective. In addition, female patients were less likely to discuss physical problems with GP due to their partner is protective buffering (hide own concerns to protect the patients) (Heins et al., 2016).

Furthermore, some people do not have social networks. Peer support-groups may be an advantage to people who have problematic social relations. Therefore, patients who experience deficits in social networks could compensate by joining a support group. The researchers evaluated the effects of two categories of support-group interventions for cancer patients, education and peer discussion. Peer discussion groups were beneficial for women who lacked emotional support from their partners, but was not found to be beneficial for women who had a high level of emotional support from their partner. The reason attending peer discussion groups was not beneficial was because the women had negative interactions with network members and felt as though their support deteriorated as a result. Educational groups were beneficial for women who started the study with more difficulties, such as lack of partner emotional support, lack of physician informational support, or lack of personal resources (Helgeson, Cohen, Schulz, & Yasko, 2000).

Social Support from Spouse/Partner

Spousal support involved in patients' diabetes care is a very important source of support. Spousal support could influence diabetes patients to deal with T2D. When one spouse has diabetes, the other spouse may be involved in activities such as buying and preparing food, medication administration, and involvement in physical exercise. Past

studies stated that treatment adherence is the most essential behavior that can be received from spouses, but it needs to be positive support, inspiration, encouragement, reminding and assisting the patient to plan for taking the treatment (Costa et al., 2012).

According to Costa et al. (2012), partners' support has been necessary in diabetes self-care. Support from a spouse has been discovered to be the greatest source of support to patients and offering instrumental/tangible, emotional and informational support. The support provided by a spouse is often needed for diabetics to change their lifestyle such as diet and exercise, and it is more likely to be achieved by the couple. The result of that study showed that there is a significance increase in spousal support (praise, encouragement, and reminding) for patients suffering from diabetes to adopt self-care behaviors. Additional positive reinforcements cause both higher perceptions of control behavior and intention to monitor glucose. Therefore, positive perception of partners' support frequently improves the action and coping plan, as well as assists patient with controlling the obstacles related to self-monitoring blood glucose.

A study found that spouses use various negative and positive social control strategies to influence their partners' health behavior. The results showed that two types: negative social control (warning) and positive social control (encouragement) were tried by spouse to make a better adherence diet. Both warning and encouragement were linked to patients' adherence to the suggested diet. Spouses who used warning behavior (e.g., diabetes complications, pointing out nutritional information, doubts, or concerns) were linked to poorer dietary adherence, while spouses who used encouraging behavior (e.g., intake healthy food, compliments on dietary management, and adoption of proper diet)

were linked to better dietary adherence. Actually, when spouses used more a positive tone and less forceful wording about recommended diet, the patients' dietary behavior improved (Stephens et al., 2010; Costa et al., 2012).

Spouses' participation in day-to-day diabetes management can help patients' adherence behavior and distress. Receiving support linked to health from family members, which is most often the spouse, seems to raise the adherence of patients in regard to diabetes regimen, including diet. Many diabetics identify that spousal support is the main form of help related to dietary adherence and useful in managing diabetes. Researchers carried out a study focused on daily dietary adherence and diabetes-specific distress among people who have T2D to investigate spouses' diet-related to control persuasion (positive) and control pressure (negative). The results showed that the effect of diet related to spousal support significantly increased patients' adherence while diet related to persuasion and pressure significantly decreased patients' adherence. Moreover, the effect of spouses' pressure was significantly increased in patients' diabetes-specific distress. Partners' appraisal of sharing responsibility for diabetes management was compared with partners who believed it was the patient's responsibility alone. The researchers found that the effect of spouses' support was significantly lower in diabetes-specific distress and the effect of spousal pressure was significantly lower in adherence (Stephens et al., 2013).

Because a spouse is important in patients' adherence to treatment, they should be involved in learning how to offer appropriate support in diabetes management. Patients who always have their spouse when attending medical appointments showed greater

results in diabetes outcomes and increased adherence compared to patients who attended medical appointments alone (Costa et al., 2012). Having a spouse attend diabetes education programs with obese women who have T2D was positive when compared to attending alone (Stopford et al., 2013). In addition, obese women with T2D who have their partners' support while attending education groups for weight loss showed greater losses, however, men attending alone showed a greater loss (van Dam et al., 2005).

Social Support from Family and Friends

The support from family and friends is provided free to individuals who suffer from T2D. Support provided from family and friends also may have a greater impact on health than support provided from health care specialists. A study investigated the relationship between family and friends support and glycemic control (HbA1c) in adults who have T2D. There is some evidence aimed at the beneficial influence of family support on glycemic control. Family support decreased glycemic control in males, but increased glycemic control in females. In addition, men who had larger social networks showed more reduction in glycemic control than women (Stopford et al., 2013). Females are more likely to receive and seek social support from family and friends in order to make appropriate changes regarding diabetes than males. Males frequently receive and seek social support from their partners in order to make fewer changes (van Dam et al., 2005). The same results were obtained by Stopford et al., (2013).

Social support from family members, which can include spouse and friends, is not always supportive behavior for patients living with diabetes. One researcher mentioned that family members can have a positive or negative effect on the health of diabetics, as

well as can conflict or facilitate self-care activities such as refilling prescriptions or buying groceries. Family members who can offer many types of social support such as emotional, informational, appraisal, and instrumental support have a powerful connection to adherence to self-care behavior among diabetics. An intervention for adults who have diabetes can include family members for increasing health outcomes. A study concluded that participants involved in the family intervention increased supportive behavior in family members' and decreased non-supportive behavior in family members' (Mayberry & Osborn, 2012).

A study conducted by Mayberry and Osborn (2012) found that family members who had more knowledge about diabetes self-care were connected to more supportive behavior towards patients, whereas family members who did not understand diabetes self-care were connected to non-supportive behavior. Therefore, patients who have fewer supports showed less adherence to diabetes medication, as well as worse glycemic control. Additionally, participants usually shared instrumental support they received from family members related to diabetes self-care behaviors in support groups more often than they shared emotional, informational, and appraisal support because instrumental support was a common of family support. Participants also reported non-supportive behavior and attempts to sabotage adherence to diabetes medication and glycemic control.

Social Support from Peers

Peer support is described as support from individuals who have experienced a stressful event, are gained knowledge related to specific behaviors and similar characteristics. Peer support may play important role in T2D patients, such as exploring

the emotion, problem solving, social support, goal setting, self-efficacy, and therefore self-management (Dale et al., 2012). Moreover, the benefits of peer support are the impact of diabetes on daily life instead of therapeutic information about diabetes. A peer may comprehend the situation of patients more than anyone from their own family or social network who may feel painful about particular issue or feel unhappy to offer support to the patients (Paul et al., 2007).

The most general models of peer support characterized in diabetes are face-to-face management programs, peer coaching, telephone-based peer support, and web and email-based support. These models can offer either one-to-one or group support that lead to exchange the knowledge and experience. In addition, peer support can offer one or more type of social support between each other, such as emotional support, appraisal support, and informational support (Dale et al., 2012). The benefits of a peer support model would decrease the feelings of loneliness, offer information that helps access healthcare services, and provide positive behavior that develops wellbeing and motivates health practices to be more positive with patients (Paul et al., 2007).

Social support provided from peers in group consultations, peer group session, telephone peer contacts, and Internet-based peer communication might improve lifestyle modification as well as result of care (van Dam et al., 2005). A recent study indicated that telephone peer support interventions show incomplete evidence of impact and effectiveness connected to diabetes (Dale et al., 2012). Descriptive studies presented that computer-mediated interactions using supportive statements look like support group members in face-to-face interactions. A study conducted among adults who have T2D

provided with computers and Internet access to diabetes information only, Internet-based peer group social support intervention, Internet-based individual coaching support, and Internet access peer group social support intervention and individual coaching support. The study found that after three months of intervention, diabetic patients who received the Internet-based peer group social support intervention significantly increased in perceived social support more than diabetic patients who received only access to diabetes information (Barrera et al., 2002). In addition, diabetic patients who received Internet access peer group social support intervention and individual coaching support greater increased in perceived social support, changed glycemic control, risk factors, and other outcomes not measured (van Dam et al., 2005).

Previous studies reported that some interventions used telephone calls or face-to-face group interactions, but they did not discover evidence about the intervention that can change the experience of social support to patients. Present studies indicate that intervention dependent on Internet-based interactions was capable of showing a relative increase in perception of support. The advantage of creating interventions develops the perception of social support in patients and reduces feeling of loneliness (Barrera et al., 2002).

Intervention/Education Programs

Diabetes education programs are considered one of the important components of overall management of diabetes. Patient education is a successful method of controlling and decreasing the diabetes complications (Al Hayek et al., 2013). In addition, patient education has greatly improved metabolic control. The most successful diabetes

education programs are sustained on good glycemic control and preventing diabetes complications. Studies presented that there were positive effects on quality of life and development of diabetes complications from diabetes education (Al-Shahrani, Hassan, Al-Rubeaan, Al Sharqawi, & Ahmad, 2012). Researchers indicated that several studies showed the advantages of diabetes education programs on overall management have increased the patient care causing a reduction in hospitalization (Al Hayek et al., 2013). Several studies pointed out that there is a significant benefit in glycemic control from offering education program for patients who have DM (Mokabel et al., 2017).

A study was conducted by Al Hayek et al. (2013) among type 2 diabetic patients at tertiary hospitals in Riyadh to assess the advantages of an education program on metabolic control and psychological well-being. Educational materials were used in the program like pamphlets/ handouts. Videotapes about DM were created and distributed to all patients. Education programs provided by diabetes educators as well as individuals counseling sessions with the doctors were organized. The study found that there was a significant improvement of the patients in the physical exercise (from 11.5% to 41.3%), self-management of blood glucose (from 21.1% to 44.2%), dietary plan (from 12.5% to 39.4%), compliance to medication, glycemic control, and depression level after 6 months of implementing diabetes education program.

Al-Bannay et al. (2015) conducted a study among Saudi women aged between 17 to 70 years old at risk or diagnosed with T2D at primary health clinics in Dammam to explore the outcomes of intervention of T2D education program. Researchers assigned participants in two groups: an intervention group participated in education program and

the usual care group received the usual care. The study found that women who participated in the intervention groups had improved blood sugar, 6-minute walk distance, quality of life, and diabetes knowledge compared to the usual care group after 6-weeks. Additionally, women reported that lifestyle-related health behavior was improved after participation in education programs.

Participants who were in the intervention groups indicated that they reported several benefits of the education programs. They commented specifically on being more physically active and developing their dietary behaviors and choices. Participants mentioned that they walked and danced with their children, liked eating fruits and vegetables, liked the education meeting on happiness and wellbeing, and practiced the relaxation workout daily. One participant also reported that she can pass the knowledge she learned during the education program to her diabetic mother and social network. In addition, diabetic women in the intervention group stated that they able to be more disciplined in monitoring blood glucose as well as self- managing insulin (Al-Bannay et al., 2015).

A study was conducted among type 2 diabetes patients at University Diabetes Center in King Abdul Aziz University Hospital in Riyadh to evaluate the effectiveness of 5-day diabetes education program on metabolic control. The participants were followed for one year after the completion of the program. Various educational methods had been used in the program, such as writing boards, photographs, videos. Educational methods given to diabetic patients included pamphlets and handouts. Additionally, individual logbooks were distributed to patients in order to record self-monitoring blood glucose at

home. The study found that after one year of education program there was a significant improvement in the metabolic control, except high density lipoprotein (HDL). There were also improvements in reduction of body weight and control of fasting glucose among T2D patients (Al-Shahrani et al., 2012).

A study conducted by Mokabel et al., (2017) at diabetic outpatient clinics of King Fahad University Hospital in Al Khobar sought to measure the efficacy of a diabetes educational program and to determine the predictors of compliance among patients diagnosed with type 2 diabetes. The primary focus of the educational program was on “understanding diabetes, risk factors control, cessation of smoking, nutritional and energy balance, carbohydrate awareness, glycemic index, insulin injection, and adjusting insulin dose after hypoglycemia and hyperglycemia, self-monitoring of blood glucose, benefits of physical activity and lifestyle changes” (p. 4). Handy pocketbooks and compact disks were distributed to all participants by the end of the educational program. The participants were measured three times: before the education program, 3 months later, and 6 months later of implementing the education program.

The study found that there was a significant decrease in both body mass index (BMI) and sugar accumulation level at the three-time intervals. Additionally, after attending the educational program patients had improved knowledge of diabetes including regular self-check of blood sugar, dietary regimen, foot care, exercise, and lifestyle behavior. They found an increase in acceptance of regular self-checking blood sugar. To start, before the program participants rated self-checking at 49%, at 3 months the rating was 59%, and finally after the program regular self-checking was 100%.

Moreover, the percentage of patients who habitually started to exercise was raised to 54% after health educational program, however the percentage fell to 28.2% at 6 months (Mokabel et al., 2017).

The researchers also found that compliance of the patients to medication adherence was significantly different in the three-time intervals. Generally, the rate of adherence was developed to 78% by the end of the study compared to the rate of nonadherence was decreased after the intervention. The same result is in line with Al Hayek et al. (2013), who found a significant development in the patients' adherence to medication regimen after they attended the diabetes education session. The researcher also showed that the patients were more likely to comply in dietary instruction than in exercise directions. In addition, at 3 months the patients were more likely to adopt the routine of examining both the feet and eyes every day, but at 6 months the patients' frequency dropped. The researchers found that the level of compliance raised through increasing the level of patient knowledge in regard to diabetes (Mokabel et al., 2017).

Researchers have mentioned in recent studies presented that Saudi people have poor knowledge about diabetes. The literature proposed that one of the important factors to maintain healthy lifestyle behaviors among diabetic patients in education programs is social support. The study participants recognized that the roles of inspiration and encouragement are part of maintaining positive lifestyle behaviors (Al-Bannay et al., 2015).

Social Support Affects Behavior and Enhances Quality of Life

Social support for diabetics plays a significant role, particularly in quality of life and self-management routines (Tang et al., 2008). Individuals living with diabetes need not only to adopt but also maintain several self-care behaviors (healthy diet, regular exercise, taking medication, and blood sugar monitoring, etc.) in order to reach and sustain an ideal blood glucose measurement. The greatest challenge in diabetes-related behaviors changes is adherence to healthy diet (Beverly et al., 2008) and often reported adherence to increased physical exercise (Beverly & Wray, 2008).

The researchers assessed social support and the relationship to diabetes-specific quality of life and self-care behaviors (dieting, physical exercise, self-monitoring of blood sugar, taking medication and/or insulin, and foot care) among African Americans who have T2D. The results of this study concluded that patients having positive support behavior (diabetes specific self-care behaviors) was significantly related to an increased frequency healthy dieting plan, spacing out carbohydrates equally through the day, and engaging in physical exercise at minimum of 30 minutes. Additionally, patients with negative support behavior was related to only one self-care behavior, which is taking medication as suggested by the physician, because taking medication is done alone in non-participation of the larger social environment. Moreover, satisfaction with support was related to developed diabetes-specific quality of life and only development of one self-care behavior, which is monitoring blood sugar. There was no social support related to foot care and taking insulin as recommended by the physician (Tang et al., 2008).

Spousal support can play significant roles in both helping or hindering necessary behavior change among diabetics. A study pointed out couples who have knowledge related to dietary self-care behavior such as planning, preparation, and monitoring can play a significant role in dietary adherence. In addition, “positive reinforcement increased dietary self-efficacy, whereas negative reinforcement decreased dietary self-efficacy” (p. 717). Couples working together on managing diabetes day-to-day significantly encouraged diabetic patients to adopt extra healthy eating patterns. Good spousal communication seemed not only to reinforce the self-care behavior but also develop dietary adherence. Spousal help and understanding of diabetes management leads to diabetic patients becoming more able to deal with everyday demands (Beverly et al., 2008). A study reported that spousal support was the most powerful impact on diabetic patients’ adherence to lifestyle modifications, for example, foot care, taking medication, and shared decision-making related behavior change that depends on long relationships between spouse and partner (Beverly & Wray, 2008).

The large variety of family behaviors may be a positive or negative impact on diabetes self-management. A recent study showed that an individual with T2D perceived family behaviors to be either facilitators of diabetes self-management, barriers to diabetes self-management, or equivocal (perceived both positive and negative) behaviors that support and/or impede diabetes self-management. The researchers found that when patients shared health goals with another family member who already had diabetes, the result is advantages to both family members because social support is offered to each other. Additionally, they will adopt healthier lifestyles, blood glucose monitoring, or

adhering to medication regimens. Diabetes patients who have family members living with diabetes may learn from them either their mistakes, attitudes, or skills that decrease diabetes risk factors as well as observe good behaviors (Vongmany et al., 2018).

Furthermore, patients explained the barriers related to managing their diabetes like juggling other family duties or being required to cook a meal for the family and separate meals for themselves. Diabetes patients also explained limited capacity or lack of engagement from family members (e.g., too busy, unable to workout together, unable to cook healthy meals, or unable to offer healthy food choices); the result was that the patients perceived lack of empathy and understanding related to the challenges of living with diabetes from their family members. In addition, families do not understand yet how important it is to support diabetics with daily self-management (Vongmany et al., 2018).

Further, individuals with diabetes reported that perceived equivocal behaviors from family members were either helpful or unhelpful. It can be helpful and welcomed when perceived facilitators reminder about self-management activities. In contrast, it can be unhelpful when perceived as nagging or demotivating remainder about self-management (Vongmany et al., 2018).

Other researchers revealed that family support increased the likelihood of diet self-management and regular exercise, diabetes self-care, and blood sugar monitoring. Several studies reported that increased social support led to behavior change in the following results: increased diabetes self-management, medication adherence, and adopting of nutritional and active lifestyle; and less depressive and stress-related symptoms (Strom and Egede, 2012).

The impact of social support plays a significant role in diabetes health; it especially improves the quality of life and strengthens self-management practices. Further use of all different types of social support will aid development of behavior and health outcomes. Social support provided to diabetes patients will help achieve better control and reduce the burden of the disease. According to Strom and Egede (2012), social support offered to diabetes patients can be a critical aspect of disease prevention and awareness.

The purpose of this research study is to describe the impact of social support from others and assess the types of social support that Saudi women receive from others. This research study provides evidence-based the important of social support to diabetes patients that will help them improve the quality of life, strengthen self-care behavior, and reduce the prevalence of diabetes among Saudi women.

CHAPTER III

METHODOLOGY

Research Design

A qualitative design was used in this study to understand the impact of social support on Saudi women living in Saudi Arabia who have T2D. Qualitative design is effective in understanding the effect of social support on Saudi women's behavior and on enhancing the quality of life. The researcher assessed which types of social support Saudi women with T2D commonly used, who gives the most help to support women with T2D, and how social support impacted women's behavior and improved the quality of life. A semi-structured interview technique was used in this study. The data was collected by using a screening questionnaire and face-to-face interview. Demographic data such as sex, age, marital status, and employment status were collected. The main purpose of using an interview was to allow women to talk about the impact of social support from others (i.e. spouse, family members, friends, and peers) on T2D as well as explore different types of social support offered to Saudi women.

The study was reviewed and approved by the Institutional Review Board (IRB) of the University of Northern Iowa for the Protection of Human Subjects. The study was also approved by the General Directorate for Research and Studies (GDRS) and Central Institutional Review Board in the Ministry of Health (Saudi Arabia).

Research Participants

The research study took place in Qatif city, Saudi Arabia, which is located in the Eastern Province. Participant selection was conducted through convenience and snowball

sampling. The participants were recruited using the following methods. The first method, participants were recruited from the doctor office in Primary Health Care Centers during their routine visit. Interested women contacted the investigator using either e-mail address, phone number or text. The second method, participants were recruited from social media sites about diabetes, such as WhatsApp groups, to send an invitation message. The third method, participants were recruited by giving participants the flyer with the QR code for screening and asking them to pass to any friends with T2D after their interview. The inclusion criteria were women 30 and older, living in Saudi Arabia, diagnosed with T2D, Saudi national, and provided voluntary informed consent. The exclusion criteria were women aged under 30 years, not living in Saudi Arabia, not a Saudi national, diagnosed either with pre-diabetes or Type I Diabetes, and men. Both marital status and employment status were not included as inclusion or exclusion criteria. Any participants who did not complete a screening questionnaire or consent form were excluded from the interview. All participants who were willing to participate in this study were asked to sign an electronic informed consent agreement prior to the interview process. Written consent from these women was signed prior to completion of the interview process. Twenty women were interviewed. The researcher selected adult women who can express their willingness to participate, give permission for the interview, and share their experiences during the interview.

Instrumentation

The interviews were tape recorded on a password protected recording device to confirm responses were documented accurately. All the interviews were conducted in the

Arabic language. Then, the researcher completed the transcription process by transcribing in Arabic language the recordings from each interview into a Word document as well as stored the transcriptions on a password secured device.

Procedures for Collecting Data

Data was collected via screening questionnaires and semi-structured interviews. An English language questionnaire and interview question were translated into the Arabic language. The researcher hung the flyer in the doctor office which asked women with T2D to contact the researcher if she was willing to talk about her experiences of living with diabetes and the impact of social support on her life. In addition, an invitation to participate sent via WhatsApp application to a diabetes group. Screening questionnaires were sent to make sure the participants met the criteria. Before the interview process, a written consent form was provided to participants to sign in order to assure that the participation was voluntary. Participants were informed that they were free to withdraw at any time, without giving a reason, and without cost. Participants who agreed to participate in face-to-face interview were scheduled for the interview by the researcher. At the end of the interview, the researcher asked the participants to pass the flyer to any friends who have T2D. A face-to-face interview was conducted with twenty Saudi women living in Saudi Arabia who have T2D. The interviews were approximately 15-34 minutes in length. There was no compensation offered to the participants.

The Interview

Interview questions were created by using semi-structured method that helped the interviewer and the interviewee to be flexible and allowed the conversation to flow more

naturally. Additionally, it allowed diabetic women talk about their experiences and stories related to coping and challenges living with diabetes. The semi-structure interview consisted of questions that helped describe the impact of social support from others on women who have T2D. The semi-structure interview guide was prepared in both Arabic and English language based on the request from the IRB. However, the interviews were conducted in Arabic, the women's native language. They lasted for approximately 15-34 minutes at a mutually agreeable time in a quiet place either at room of the Qatif Public Library or an office at the hospital over the summer of 2019. An interview question guide, pertaining to various aspects of the impact of social support as well as living with diabetes, was constructed. The interview guide and specifically placed probes were used only to facilitate the interview, but also deepened understanding. The researcher had done four pilot study to test out the effectiveness of the interview and to make the necessary modification of the interview guide.

Data Analysis

The tape recordings of the interview were transcribed into text documents in the Arabic language. The researcher began with transcriptions process by transcribing the interview into Arabic language, then translating to English language. Then, the transcripts were read several times with intention to extract the appropriate preliminary themes. In addition, the transcripts were re-read multiple times to recognize the deep meanings of the data and identify the patterns, themes, ideas, and concepts that may exist within the data. The researcher used a word-processing program to sort the interviews transcripts into main and sub-categories. Multiple quotations were used to illustrate each of the

categories. The themes were visibly determined and connected with representative examples from the original text. Participants' names have been identified in the analysis section as participant #1, #2, #3, #4, etc. for the purpose of anonymity.

CHAPTER IV

RESULTS

A total of 20 Saudi women with T2D were interviewed face-to-face in Qatif, Saudi Arabia. Four interviews did not provide helpful information and were excluded from analysis. Two participants were recruited from social media sites (WhatsApp groups) and 18 participants were recruited from the doctors' office. The interviews were done in an office at the hospital and took between 15-34 minutes depending on how women expressed their challenges and coping strategies due to diagnosis with T2D and their experiences with social support and lack of social support. All the interviews were conducted in Arabic, and the transcription was completed in both Arabic and English.

Of 16 included in analysis, all participants were 36 years and older, two were 30-39 years, four were 40-49 years, five were 50-59 years, four were 60-69 years, and one was 70 years and older. Ten of the participants were married, three were single, and three were widows. Both the married and widowed women had children either living with them or living close to them. All the participants have sisters and relatives living in the same city. Two of the participants were retired, two were employed full-time, and 12 were housewives. The average time since diagnosis with T2D was 8.75 years. The range of length of time since diagnosis with T2D were five participants (3-5 years), three participants (6-8 years), four participants (9-10 years), two participants (11-13 years), and two participants (16-20 years). The majority of participants were being treated with pills, not injections. Most of the participants have family history of diabetes. Two major

themes emerged from the data: (1) challenges to successful management of diabetes and (2) coping strategies in managing diabetes.

Theme One: Challenges to Successful Management of Diabetes

People living with T2D need to improve their habits by regular physical activity, healthy eating, taking medication, and monitoring and balancing blood sugar levels, all of which can be challenging. Each person has a different ability to successfully manage T2D and can be influenced by events in the person's life. Some women faced multiple challenges while managing and living with diabetes, but they tried very hard to get successful results in controlling blood sugar. However, other women did not attempt to manage their diabetes. Women accepted diabetes with several challenges because they did not feel motivated for behavior change, as well women were not aware of the seriousness of diabetes complications.

Adherence to Diet

Individuals living with T2D experienced varied challenges over time and in different situations. The most common challenge that was reported was diet change to successfully manage diabetes. Some women followed a strict diet change for their daily routine. They believe strongly that they must adhere to the recommended diet for diabetics and eat small portion sizes. Sometimes they consume sugars just for balancing their blood sugar. Participant #14 indicated:

I have some challenges in my diet. Previously, I drank milk and low-sugar tea. After my diagnosis, I cut off milk tea and tea forever. I never put sugar in my food. I eat a small piece of cake but no cream or chocolate decoration above it. I eat small quantities of food and good amount of fruits, vegetables and salads. I commit to eat three fruits a day. I stay away from dates, sweets, chocolates, bread and white rice. In my lunch, I eat 6 to 7 tablespoons of brown rice.

Participant #16 also reported:

Before I was diagnosed with diabetes, I put a little sugar in my food. Now, I drink milk tea and tea without sugar at all. I face some challenge at the beginning with the diet change. I eat less carbohydrates, so I eat rice and bread with caution. I consume good amount of fruits, vegetables, salads, and legumes. I never drink Pepsi and juices. I eat 10 grains of dates a day. I avoid eating sugars in my diet but if I crave to eat, I eat a small portion of it.

Other women integrated the disease easily to their life and managed diet change naturally with little effort. They reported that they had already eaten healthy food before their diagnosis and have good background of self-care behavior about diabetes. Actually, they only needed to make small changes to their dietary habits that they adopted since childhood. They strongly believe that they followed a healthy dietary habit that was suitable for diabetes. Participant #10 illustrated:

I ate like before but try to eat less foods. I put a little sugar in hot drinks. I consider my food is very light sugar. I only cut off Pepsi for one week and went back to drinking it, but according to its availability at home. I try to follow a diet, but when I notice that my weight has risen, then, I stop the diet plans.

A few women experienced T2D both as an incentive and as a constraint for a healthy lifestyle. According to participant #2: “I see that diabetes has made my life healthier than before. Also, I believe that following proper diet for diabetes prevents other diseases”. Participant #1 described that “diabetes may protect me from other chronic diseases such as cancer” due to the prevention of following healthy diet. Participant #18 also mentioned that she has benefits of healthful eating as well as she realized that there is relationship between stable blood sugar levels and diet change such as refraining from eating sugar and carbohydrates.

While some women only had to make slight change to their diet after diagnosis with T2D, most of the participants reported that they work hard to avoid specific foods or given up specific foods totally such as sugar, soft drinks, juices, fried food, and carbohydrates. Also, they replaced unhealthy option to healthy option. For example, participant # 11 explained:

Before I liked to eat sugar, and now I have little desire to eat sugar. I put a little sugar in hot tea milk and eat small portion of Bahraini Halwa. I stay away from sugar, dessert, carbohydrates, and Pepsi. I eat a small amount of rice and pastries. I eat a little bit of dates about 3 to 5 grains.

Similarly, for instance, participant #19 said:

I avoid soft drinks and juices, eating sweets and cakes. I replaced it by drinking water or fresh natural juice but in moderate quantities. I try to eat 3 to 5 grains of dates. If I would like to eat 7 grains of dates, I reduce consuming fruit that contain sugar. I add to my diet salads, soups, and legumes. I eat white rice and brown bread in moderate quantities and tried to stay away from the fried food and replaced it with grill foods. I drink all the hot drinks without sugar.

Some women with T2D follow very healthy diet, but they crave sweets a lot, and they cannot refrain eating sweet. Participant #20 said:

It was very hard to accept that I need to avoid sugars in the food. In gathering event, I have some challenges due to people I visited provide hospitality (cake, unhealthy snacks, and juices), so I try to eat or drink in small quantities. I like to eat ice cream, and I have suffered a lot in terms of abstaining or eating a little and I still suffer. Now, I eat rice in small quantities and place it in a separate dish to reduce the amount of carbohydrates roughly 3 to 4 tablespoons.

Participant #9 also added:

I love to eat sweets. I have suffered a lot in terms of abstaining from sweets and sugars and I still suffer. I do not resist eating cakes and sweets but try to eat one piece. I follow a diet for diabetics (low in carbohydrates, rich in proteins and salads). I never drink soft drinks.

An additional challenge woman with T2D reported that she had hard time to refrain from eating in the gathering. Participant #3 mentioned: “In large gathering, I try to refrain, but sometimes I do not have the ability to refrain, so I eat whatever I like”. Other woman with T2D reported that she did not refrain from eating at all in the gathering. Participant #6 indicated: “In large family gatherings, I do not mind and eat whatever I like. I consider this thing normal behavior”.

Adherence Exercise

Another common challenge that was reported by women diagnosed with T2D was physical activity to successfully manage diabetes. Fewer than half of the participants in this study reported that they adhere to the recommended exercise (mostly walking). Also, women believe that they got enough exercise through walking in their daily life and did not need additional physical activity. They are prevented to walk in Corniche (park) or sidewalk due to high temperature and humidity weather in Qatif, Saudi Arabia during the summer season when these interviews were conducted. Participant #2 stated that she does not face challenges with exercise because she likes to walk in her daily life. Also, according to participant #16: “I do not face challenges with exercise (walking). I always walk in the sidewalk near my home and still walk about 30 minutes every day”.

Participant #9 explained:

I do not face challenges with exercise because I usually walk an hour a day before I have diagnosed with diabetes. During the summer, I stop walking due to the heat of the weather, but when the weather gets moderate to cooler, I return to walking. I wish there was someone who joint with me in gym, so I will get more excited to go.

Participant #20 also reported that she likes to walk in her daily life approximately 30 minutes. She wishes to exercise in the gym or work out at home to burn calories during the summer.

An additional challenge is that when women were not able to exercise (walk) at all due to one chronic disease or often multiple health problems. Participant #3, participant #4, and participant #6 reported that they were walking approximately 30 minutes to one-hour previously. Right now, they stopped walking because they had arthritis. Similarly, participant #5 and participant #11 reported that they walked in the past but now they stop walking because they have problem in their knee. Participant #8 described:

In the first period of the diagnosis, I walked in Corniche daily or I went to my father's house and returned by walking. Now, I stop walking due to back pain and bone and joint problems. Also, if I walk a long distance, my blood sugar drops directly. I diminish walking especially during the summer because sometimes I suffer from a low blood sugar (hypoglycemia). I always put sweets in my bag because I fear that I am out and there is no one next to me. I wish to join swim classes, but it is not available in Qatif.

Actually, women with T2D are not motivated enough from people around them to change their own lifestyle regard to exercise. According to participant #5:

I wish to go walk in Corniche with my children, but mostly I could not walk because they (my children) were busy. A few times they have time to go walk with me in Corniche. I do not like to join a gym, despite my daughters have a membership subscription in order to practice exercise. Also, my daughters never encourage me to join with them.

However, women face some barriers to being physically inactive due to overwhelmed with heavy house chores, commitment with raising children, poor general health of their kids, lack of transportation, and lack of time. For example, participant #3

indicated: “I wish to join a gym, and I was encouraged by my daughter and daughter-in-law, but I refuse to participate because I am busy with housework”. Another example, participant #10 illustrated:

I try to exercise, but I cannot do it due to lack of sleep and raising children makes me busy. A short time ago, I underwent surgery and was banned from movement. Three months later, I undertake to exercise at home because I could not stay away from my young children. In addition, my sisters-in-law lost weight by exercising at home that give me motivation to do so.

For instance, participant #8 reported that she has forgotten and neglected herself because she was busy with her kids who have Sickle Cell Anemia and always need hospitalization. For example, participant #11 and participant #18 mentioned that they do not practice exercise (walk) for long hours because there is lack of transportation to Corniche. Lastly, participant #19 stated: “I hope I have more time to walk. I wish to join the gym, but I work two jobs. One from morning to noon and another from middle afternoon to beginning evening. Most of the time I am busy”.

In addition, women have cultural barriers to practicing physical activity daily. They did not adopt workouts during childhood. There were not exercise facilities available in the Qatif area for women. Six years ago, the government allowed to open women’s gym. Since this is new, some women do not like to join gym or may be unfamiliar with the exercise equipment. They may also be uncomfortable to wear workout clothes. Participant #18 indicated a combination of problems: “I wish to join my daughter in the gym, but I am afraid of using equipment and weightlifting tools because I have a hand problem”. Another cultural barrier is that when Saudi women have T2D

never exercise such as walk in Corniche or sidewalk because they do not like to walk in front of men. Participant #1 explained:

I bought a treadmill and placed it in my home to practice the exercise. I never exercises outside because I am not supportive of the idea that women can walk in Corniche or sidewalk in front of men. I wish in the future there is a walking trail for women only to practice exercise (walk).

Furthermore, financial barrier is reported by Saudi women living with T2D. They are unable to exercise at home because they cannot afford sports equipment. Participant #10 described:

I never exercise since I was diagnosed with diabetes. I wish to exercise at home in the near future. At earlier period, I want to buy equipment and weightlifting tools to place it at home, but I spend the money because of my husband's financial circumstances. In my area, there are no gyms.

On the other hand, a few women with T2D have the resources available at their home, but because they have lack of knowledge and do not have strong belief in the benefits of exercise to their general health and glycemic control, they do not use them. According to participant #3: "I never work out even though there are many fitness equipment at home. I do not like using them at all". Participant #7 stated: "I try to workout at home such as riding a bike. I used it a couple of times, but I stopped because I feel lethargy and difficulty moving".

Adherence to Self-monitoring of Blood Sugar

For women living with T2D, hyperglycemia, hypoglycemia, and fluctuating blood glucose level were experienced as challenges to everyday life. Participants in this study reported that constantly measuring blood glucose levels and keeping it in balance was one of the challenges they faced to manage their live with T2D. Most of the participants

adhere to both self-monitor and readings of blood glucose in the early years of the disease. After a while, they decide to quit self-check blood sugar because they are frustrated if they see the average blood glucose too high or too low. Participant #10 whose length of time since diagnosis with T2D was 5 years ago said:

At the beginning of the disease, I adopt self-monitoring daily and write down blood glucose readings in order to observe my level sugar. Right now, I do not measure because the blood sugar is stable. I feel the symptoms of falling and rising. I often experience a sudden low blood sugar (hypoglycemia), but I know how to act with it. For example, 2 days ago, I felt lethargy, so I ate 3 sweets with coffee. Five minutes later, I measured the average glucose 106 mg/dL.

Participant #4 whose length of time since diagnosis with T2D was 10 years ago also said:

Previously, I was self-monitoring blood sugar before and after eating regularly. Now, I do not monitor blood sugar because I get upset and think too much if I found high blood sugar (hyperglycemia), despite I do not eat a lot at night.

Additionally, participant #9 whose length of time since diagnosis with T2D was 20 years ago said:

I did not measure the average glucose daily because I become only thinking about blood glucose readings. I almost depends on how I feel about the symptoms of falling and rising. Then, I measure the average glucose to make sure.

However, some others stated that they had poor adherence to self-monitoring of blood sugar. Participant #3 and participant #6, both whose length of time since diagnosis with T2D was 6 years ago, indicated that they adopted self-measure of blood sugar irregularly. Participant #16 whose length of time since diagnosis with T2D was 8 years ago, stated that she does not monitor the blood glucose by herself, she needs someone to help her with that, but she felt the symptoms of falling and raising. Participant #7 whose length of time since diagnosis with T2D was 3 years ago said:

When the doctor gave me glucose meter, I used it only three days to monitor the blood sugar. Then, I stopped measuring it because I was bored and upset due to the blood sugar rise up. For example, I measured fasting blood sugar and found 195 mg/dL.

Adherence Medication

All women reported that they adhere to the recommended pharmacological regimens either pills or insulin as well as refilling/dispensing other medicines either from Al-Dawaa pharmacy or Primary Health Care Center pharmacy. One of the participants took insulin shots whereas the other 15 participants took pills. One of the 15 participants was using insulin, but now she shifts to treat by pills. Three of the 15 participants needed to use insulin during pregnancy, breastfeeding, or surgery. Participant #20 indicated:

I used insulin injection during pregnancy and breastfeeding. I had faced some challenges with needles insulin because I need to take multiple doses of different insulin, then I inject myself. I feel embarrassed when I am eating out or going to party because I need first inject myself insulin, then I can eat.

Women living with T2D adhere to taking the medication even if the blood sugar normal. Participant #16 described that she “took only one pill a day either morning or evening”. Sometimes normal fasting blood sugar level is 90 and 100 mg/dL. The blood sugar two hours after eating is no more than 125 mg/dL, but she prefers to take the pills for glycemic control.

Other challenges that women faced were when filling/dispensing medicines from Al-Dawaa pharmacy because different brands are distributed by different pharmacies. They experienced either hypoglycemia or hyperglycemia. Participant #8 said: “I have some challenges with the treatment of diabetes, especially medicines from Al-Dawaa pharmacy cause a low blood sugar (hypoglycemia) and fatigue, unlike the medicines I

have been prescribed from the Primary Health Care Center pharmacy”. Similarly, participant #14 said:

I have some challenges with new treatment from Al-Dawaa pharmacy cause a high blood sugar (hyperglycemia) unlike the medicines I have been prescribed from the Primary Health Care Center does not cause any rise or decrease in the level of blood sugar. For example, last month I experienced a high blood sugar directly measured the average glucose and found it to be 200 mg/dL.

Other Challenges Caused by Diabetes

Another challenge that was reported by women was symptoms of T2D that includes pain in the feet, weakness or fatigue, ulcers, sleep disturbance, anxiety and dizziness. Some of the participants reported that they have hard time getting wounds to heal. Participant #1 stated: “Wounds do not heal as quickly as before it takes almost a week to heal. Also, according to participant #11: “The important thing is that the people care about their health, especially the feet and wounds”.

Participant #9 mentioned that she experienced the challenge of pregnancy loss due to having T2D. Also, she has lack of immune system to protect her body from infections and cysts that appear from time to time. She said:

The most thing I suffer with diabetes is repeated miscarriage, and I had 5 miscarriages. I have an immunodeficiency that causes infections also wounds are slow to heal, for example, last year I did cholecystectomy, which is known the wound heals in two weeks, but as a diabetic it took almost a month to heal. Despite, a normal Hemoglobin A1c level is 4.8%. But these symptoms are the side effect of diabetes.

Psychiatric conditions contribute to increases or decreases in the blood sugar level. This was not a common challenge reported by the sample of Saudi women but was mentioned by a few women. Participant #2 indicated: “If I have bad emotional health, the

blood sugar goes up”. Participant #5 strongly believes that her average glucose is affected due to the situation she goes through. She said:

If I get nervous, upset, or there is a death in the family, the blood sugar rises up. Conversely, if I travel the average glucose ranges from 90 to 120 mg/dL. I noticed that when I do some movements and get out from the home, the level of blood glucose improves.

Additionally, participant #8 said:

If I get upset, or there is a death in the family, the blood sugar rises up (hyperglycemia). Before Ramadan and during Ramadan, the average glucose was 400 to 450 mg/dL. I try not to think a lot and focus only to stabilizing the sugar.

Theme Two: Coping Strategies in Managing Diabetes

When women are diagnosed with diabetes, they attempt to reach out to their social network to receive social support. Saudi women frequently used a wide variety of strategies in order to cope with diabetes and rely on social support. In addition, people around them can provide the support needed without being asked and help them cope with optimum diabetes management. This help can be delivered in four different types of social support (emotional, instrumental, informational, and appraisal). However, the support is needed from others like maintaining a healthy lifestyle, comprehending of administration needs, and helping avoid the risk of hypoglycemia or hyperglycemia. The vast majority of the women need support from others to feel togetherness and help them to cope easily with T2D.

Emotional Support

Emotional support makes an important contribution to person's well-being. Women with T2D reported that they received emotional support from family members (spouses, children, and siblings). Extended family played an important role in the

providing of emotional support that improves their emotional health when they were diagnosed with T2D and felt distress or frustration at the beginning of the disease.

Participant #9 reported that she was shocked when she was diagnosed with T2D. She said:

My sister is a nurse. She gave me psychological support, and she was with me for three days because I was depressed and crying. She tried to find out the causes of crying and whether this is a fear of side effects or complications of diabetes. After a short time, I accepted the disease.

Similarly, participant #20 reported that she was shocked that she has diagnosed with T2D. She stated: “My sisters gave me psychological support because I never accepted the disease in my life. I was deteriorating and crying because I saw my mother suffering from insulin needles. I was afraid of the disease”. Partners also provided a significant emotional support for women with T2D by creating positive environment and support during pregnancy loss. Participant #9 mentioned:

My husband never told me bad news that makes me upset and raises the blood sugar. He tries as much as possible not to bother me. Even if I get nervous, he ignores me, so the blood sugar does not get either high or low. He gave me a lot of support during the miscarriage period and says there is no problem even if we have no more children.

Moreover, the psychological impact of diagnosis with T2D was reported by some women. Family members showed sympathy, warmth, reassurance, care and love for women with T2D, so they expressed emotional burdens to them. Participant #11 stated that she was affected by diagnosis with T2D. She thought that she is not able to eat or move because she has T2D. She explained:

I was scared that I have been diagnosed with T2D. I thought that diabetics could not eat and refrain from movement. The hospital gave me a glucose meter and continued to measure blood sugar. I found that the average glucose in stable then I

felt reassured and overcame fear. I see diabetes disease as normal. I have adapted with T2D and realized that I can live with it. My daughters helped me a lot to be successful. Also, they provided to me psychological and moral support. I feel happy because of the attention of my son and daughters.

Participant #8 indicated that she has been affected by being a diabetic and always need to take medication. She said:

I was shocked that I have diabetes. I was psychologically affected by the treatment of diabetes because they immediately dispensed medication. These medications are lifelong. I accepted take the medication, but I try not to shift the stage of insulin injection. I feel more comfortable and reassured because of the attention of my children and sisters. Despite, I was affected due to my husband's lack of support. When I get tired, my children and sisters were always around me. I love this thing that makes myself positive and strong.

Lastly, participant #14 mentioned that she was affected by diagnosis with T2D. She said:

“I was surprised that I was diagnosed with diabetes. I feel comfortable and reassured because of the attention of my daughter”.

Other women reported that they have not been psychologically affected by the diagnosis with T2D because it is family history and have background about the disease.

According to participant #10: “I accepted the disease. I feel successful because I have moral support from my mother who asks about my health every day. I have a background about diabetes because my mother and sister were diagnosed with diabetes before me”.

Participant #16 also indicated:

I accepted diabetes because it is family history as well as I expected to develop the disease. I feel that I receive love from my children and husband. They do not wish that I have complications of diabetes in near future. I have a background about diabetes because my mother has diabetes before me, I saw her how she is suffering with it and died with stroke.

Lastly, participant #18 reported: “I have not been psychologically affected by diagnosis of T2D because it is a family history and my husband has diabetes. I feel happy because of my children’s attention to me and I always accept the advice from them”.

One woman reported that she has not psychologically affected by the diagnosis of T2D because she feels diabetes normal disease. Participant #6 stated:

I was not psychologically affected by diagnosis with T2D. I feel like everything is normal. I try to live with the disease even if it is serious disease. My daughters pay attention to me if I have a wound by reminding to clean the wound and take the necessary treatment.

A lacking or missing emotional support from family members to women with T2D could be related to feelings of disappointment or being all alone and the increased burden of diabetes. According to participant #7:

I do not have a lot of friends because I am unsocial. I do not come out of the house and very rarely talk to anyone. I feel that I do not have people (family members) around me who provide psychological support that help me cope successfully to manage T2D.

Instrumental Support

Instrumental support involves the provision of tangible help and services to others who may need material, costs, and supplies. Women with T2D depend on instrumental support as second type of social support to help them adopt self-care behavior.

Instrumental support is commonly offered by family members. According to participant #1: “My sister is a doctor. She followed with me to manage my life with diabetes”.

Participant #2 also indicated: “My family is shifting to eat healthy food. In the gathering day, they bring a fruit salad instead of dessert in order to that I can eat with them. While participant #7 stated that her family is not helpful on managing T2D, her friend is, she

said: “My friend set a certain time to walk with me in sidewalk. She encouraged me to continue walking”.

Other women with T2D have barriers with self-monitoring blood glucose and reading the prescription. Luckily, they have received instrumental support from family members around them. Participant #16 mentioned that her oldest son assisted with measuring the average glucose. Also, participant #4 reported that her daughters read the prescription and gave the instructions. She does not like to drink the medication directly. She prefers first to read the side effects, but she cannot see clearly because her eyes have cataracts.

Another woman with T2D has barriers with insulin shots. Fortunately, she has received instrumental support from family members assisting to take insulin injection. Participant #5 reported: “I received assisting from either my daughter or daughter-in-law to inject the insulin because I have a nerve in one of my fingers that makes it difficult for me to inject it”.

Instrumental support could play a part in providing grocery shopping and cozy shoes for women diabetic. Participant #3 mentioned: “My son bought natural sugar on dates for diabetics from Dammam. I often used it in tea or hot milk tea”. Participant #14 and participant #16 reported that their husband bought food that suits for diabetics. Participant #11 also indicated: “My third daughter bought me healthy foods suitable for diabetics, and she purchased comfortable diabetic shoes”.

Additional instrumental support could play a part in providing a quick reminder for women with T2D to take the medication, check the blood glucose level, visit the

doctor to continue a treatment plan, and need driving to the hospital. There are some differences in receiving instrumental support between married women versus single women who have T2D. Also, widowed women with T2D have received instrumental support totally different than single women. A number of married women with T2D reported receiving a wide variety of instrumental support from family members (spouses, children, and siblings). Participant #8 explained an example of reminders for doctor appointments, check the blood glucose level, take the medication, and giving a ride to the hospital. She said:

My oldest son always asked me if I monitor the blood sugar and whether I took the medication. He also reminded me of drinking enough water. He always gives me a ride to the hospital in order to see a doctor. My children and sisters remind me of the dates of the doctor's visit. Sometimes I have a low blood sugar (hypoglycemia), all my children observe, give medicines, serve foods that rise it up, and always measure average glucose to me (married).

Participant #9 reported example of giving a ride to the hospital and reminder of doctor visit. She said:

My husband always gives me a ride to the hospital when I have an appointment. I receive the treatment from private hospital. I get a message on my phone to remind of the appointment. Sometimes I get a call from the consultant doctor who treat me, because I reach over three months of the last doctor visit" (married).

Similarly, participant #10 indicated example of reminder to doctor appointment and giving a ride to the hospital. She said: "My mother always asks me if I have doctor appointments. My husband always gives me a ride to the hospital, but sometimes I prefer to walk in order to practice exercise" (married).

However, single women with T2D reported receiving less instrumental support from family members (siblings). Participant #2 reported example of no one reminding of a doctor appointment and not having a ride to the hospital. She said:

The first-time diabetes was discovered, my brother forced me to go to the hospital. But now there is no one to remind or force me to go see a doctor. I am the one who reminds myself. I come alone to the hospital (single).

Participant #7 mentioned an example of reminder to doctor appointment. She said: “In the past, the hospital called me to remind for the appointment. Right now, I am getting a message on my phone to remind of the appointment. No one in the family helped me manage my diabetes” (single). Participant #19 indicated example of reminder of taking the medication, need driving to the hospital. She said:

Sometimes my brothers give me a ride to the hospital to see a doctor. If I have vacation and the weather is moderate, I walk to the hospital for a quarter of an hour. If the weather is hot and my brothers are busy, I look for a driver to give me a ride to the hospital to see a doctor. There is no one to remind me of the medication. I am the one who reminds myself to take the medications (single).

Instrumental support for widow women with T2D is dissimilar to single women. Widow women reported receiving instrumental support from family members, either children or grandchildren. Participant #4 mentioned that her grandchildren scheduled an appointment to see the doctor. She illustrated:

My blood glucose is irregular. My grandchildren reserved an appointment at Safe Hospital in order to see doctor, who specialized in diabetes and endocrinology. The doctor asked me about the diet and how (high, low, or steady) fasting blood sugar. I told him that when I measured the average glucose, I found it 150 mg/dL or more and sometimes found it up to 200 mg/dL. The doctor gave me a medicine for diabetes, one pill in the morning to balance the level of sugar. I am still following with him for checkup. Nobody enters with me the clinic, but they give me a ride to the hospital and leave. In addition, I almost managed my life with diabetes alone (widow).

According to participant #6: “After the meal, I request my daughters to bring pills and water, so I can take the pills. My son gives a ride to the hospital. If I need dispensing of medicines from outside the hospital, he does so” (widow). Participant #18 said: “I have a driver who gives me a ride to hospital to see the doctor. But if I do not have a driver, my son gives me a ride to the hospital” (widow).

Instrumental support from family members is not always supportive behavior for married women living with T2D. A lacking or missing instrumental support from family members which can include husbands who had not been as helpful to women with T2D led to feeling of dissatisfaction with people in their social network. Participant #14 indicated: “My husband always gives me a ride to the hospital to see a doctor. No one reminds me of the medicines. I am the one who organizes my medications by myself” (married). Participant #5 reported lack of family support as her children were too busy with their own lives as well as her husband is old man, so he does not provide spousal support to her. She said:

I feel like no one is helping me to be successful. If my daughter is not at work, she assists with insulin injection but if she is at work, I try to inject myself insulin. My son always gives me a ride to the hospital. Unfortunately, no one reminds of the doctor's appointments, so I must remind myself (married).

Participant #3 also mentioned: “No one reminds me of taking the medicines. I regulate my medications by myself. No one reminds me of the dates of the doctor's visit, and I remember myself. I come alone to the hospital” (married).

Information Support

The participants in this study sought information to better understand diabetes, improve dietary behaviors, increase physical activity, comprehend the necessity of taking

medication, and monitor blood glucose. Women reported that they received informational support from family members (spouses, children, siblings), health care providers (diabetes nurse, physician, family physician), social media (YouTube, WhatsApp, Instagram), reading (book, magazine, booklet, brochures), television, and internet (Google, website).

Women with T2D depend on informational support as primary type of social support to help them solve the problem. Women received warning or encouragement informational support from family members in order to influence them to use coping strategies for diabetes. Family members play an important role in delivering information and influencing self-care behavior. A small number of the participants received warning informational support from family members because the women were showing poorer dietary adherence. Participant #6 stated: “My daughters told me do not eat too many sweets and carbohydrates because it is harmful to the health”. Also, Participant #10 stated:

My husband told me do not eat sugar in large quantities. However, if he sees me tired, he knows that the blood sugar has decreased. He advised me to eat sugar-rich foods and measure the average glucose.

The majority of the participants received encouraging informational support from family members because they want the women to have better dietary adherence, regular exercise, and taking medication. Participant #1 said:

My brother is a doctor. He told me that eating healthy food and practicing exercise (walk) that helps in the recovery of diabetes, so the medication can be ended. For example, he had colleague who was diagnosed with diabetes, and the average glucose was 400 mg/dL. However, he followed a healthy diet with regular walk, then he recovered from it. Now, he does not need to take the medication.

Also, participant #8 stated:

My sister always advised me that I need to eat healthy food with regular exercise (walk) because it is the best way to manage diabetes. Also, they told me that I have to take the pills, so I do not need insulin injections as my mother. In addition, my daughter taught me how to cook healthy cakes and sometimes we plan to cook healthy food together.

Lastly, participant #18 reported:

My son gave me advice on avoid eating sugar and using oils in my diet. He told me that I eat healthy food that a proper to diabetic. Also, my daughter told and encouraged me to join with her the gym.

Diabetic patients visit the clinic a few times each year to see health care providers which count as the secondary source of informational support. They learned the suitable care for their condition by asking diabetes nurse and physician. For example, participant #3 said: "I ask diabetes nurse. She gives me useful information about the importance of healthy diet and exercise". Another example, participant #16 indicated that she "asks her doctor and diabetes nurse about the diet". She always receives the information she would like to know from the health care providers. Last example, participant #9 indicated: "Diabetes nurse gave me brochures about diabetes. Also, doctor told me that emotional health plays a major role in stabilizing blood sugar levels".

Furthermore, diabetes nurses encouraged women to improve their quality of life and well-being by offering diet plan and giving educational lesson. Participant #11 indicated: "I feel happy with the attention from diabetes nurse providing a diet plan that suits my condition with diabetes". Similarly, participant #10 reported: "I feel happy with the attention from diabetes nurse providing a diet plan to lose my weight and manage my blood sugar level". Lastly, participant #14 mentioned: "I feel happy with the attention

from diabetes nurse that presented educational lesson about the diet and how I eat fruit and vegetables in my daily diet”.

In addition, a few women communicate with physician through WhatsApp if they have concerns. Participant #18 stated: “I communicate with family doctor through WhatsApp regard to the blood glucose reading, and I get the information I would like to know”. Similarly, participant #9 mentioned:

I communicate with my doctor on WhatsApp if I took insulin shots (Lantus). I send him blood glucose readings in order to adjust the dose. During Ramadan, I always send him to adjust the dose and avoid low blood sugar (hypoglycemia).

Moreover, social media sites serve as an important source of informational support related to T2D. Most of the participants own a smart phone and use social media sites for entertainment, so they can use social media for education about T2D. They can educate themselves by spending some time either reading posts or watching videos. Participant #7 indicated that she does not “look for any information related to T2D online”. But she always “reads the messages about T2D disease” that she receives on WhatsApp. Similarly, participant #19 mentioned that she does not skip any “posts about diabetes on social media sites such as WhatsApp and Instagram”. Lastly, participant #1 explained:

I follow YouTube channel for Rahmah Alghaili, who specialist and consultant in obesity and diabetes. I learned that diabetes treatment (Metformin) causes hair loss. It also turned out to eliminate vitamin B12, leading to anemia. Iron deficiency anemia leads to hair loss.

One woman suggested that diabetic patients need WhatsApp group led by specialists from the Ministry of Health in order to share their positive experiences with

other. In addition, they will support each other and will adopt and maintain successful management that reduce the burden of diabetes. Participate #20 said:

My doctor praises a patient who was taking insulin and challenged the disease by diet and regular exercise until she able to stop the insulin. But if she needs to control the blood glucose, she takes only pills.

She also added:

I suggested to my doctor open group in WhatsApp Application and add all patients in the group in order to encourage us. In the same time, she conveys her positive experience to give hope to patients who lack hope and support. The doctor liked the idea, but it was difficult for her to implement it. The roles in the group each patient follows a diet that fits with their position, self-monitor of average glucose when is fasting and after eating and measure their weights every weekend. After that, send their weight and blood glucose readings weekly in the group to give a strong motivation to all participant and reach the target. The admin and observers for WhatsApp group should be from the Ministry of Health, specialists in Diabetes and Endocrinology Disease.

While most of the participants in this study do not have a college education, they can peruse and use accurate information in order to be living with T2D successfully.

Participant #11 reported that “she attended several awareness campaigns at the Primary Health Care Center about diabetes”. She found it very useful way to educate diabetic patients. She “benefited from reading brochures that were distributed in the awareness campaigns”. Participant #8 also reported that she read a booklet about diabetes and watched an interview on TV about diabetes. Lastly, participant #4 stated:

Reading a magazine on diabetes and osteoporosis, and I learned how to overcome fear and lethargy from the disease. I learned also it is better to continue with the medicine and know which foods cause to rise or decrease blood glucose. If the blood sugar decreases, I should eat sweets or drink juice. I always read books about diabetes. Sometimes I watch programs about diabetes on tv.

Since family history is one of the risk factors related to T2D, some women with T2D have family members with similar illness. As a result, they depend on personal and

family's experiences like type of awareness and informational support. Participant #8 said: "I ask my mother, since she is diabetic. I ask my sisters based of their experience with my mother. Also, I have a background about diabetes since my mother and stepmother are diabetic". Participant #10 reported that she asks her sister. She provides a lot of support to her, more than her diabetic mother, because she is a nurse and diabetic. She also added: "My mother talked with me about feeling tired or lethargic, it is necessary self-monitor of blood sugar. She also talked with me about eating a small amount of carbohydrates".

Several participants indicated that they can search for accurate information by themselves if they have concerns. Participant #9 reported that she "checks reliable website such as Ministry of Health.gov.sa" to look for accurate information about T2D. Participant #20 stated that she "searches online on the effect of diabetes on the marital relationship".

Appraisal Support

No participants discussed appraisal support.

Self-Directed Behavior Change

While social support is an important part of coping with T2D, other strategies were self-directed. Diabetes management takes over everyday activities. Individuals living with T2D adopted some behavior changes, including adhering to a healthful diet and physical activity in order to get successful management. These behavior changes are the most important coping strategies for anyone who have T2D as well as have potential effect on diabetics' general health status.

Not every Saudi woman relied on social support, some Saudi women determined to make some changes to manage their T2D without relying on others. There are some differences in coping strategy with diet challenge between women have shorter time of diagnosis versus women have longer time of diagnosis with T2D. Women have different coping strategies related to diet challenge during early years compared to multiple years of living with T2D. Participant #7 whose length of time since diagnosis with T2D was 3 years ago mentioned: “I add legumes (lupins, lentils, black eyed beans, and beans) to my diet. I avoid eating traditional foods such as Sago”. Participant #2 whose length of time since diagnosis with T2D was 4 years ago indicated: “I do not put food in front of me, I occupy myself with other things, and get out from noon to night. Sometimes, in both holidays (Eid al-Adha and Eid al-Fitr) I eat unhealthy food but under control”. Participant #20 whose length of time since diagnosis with T2D was 5 years ago said: “I reduce the amount of rice, carbohydrates, and sweets. Sometimes I refrain from eating rice for 4 days and consume more salads, vegetables, and proteins”.

Another coping strategy with diet challenge for women who have longer time of diagnosis with T2D are more understanding their condition and adapting self-care behavior in diabetes management. Also, they were aware that uncontrolled diabetes can lead to complications. They work hard to cope with diet challenge by several methods. Participant #16 whose length of time since diagnosis with T2D was 8 years ago explained:

After my lunch, I like to eat sweet, so I eat sweet fruit such as half banana instead of dessert or cake. In large dinner on Friday, I sit with the group, but I put my food in a separate dish to control the quantity.

Participant #5 whose length of time since diagnosis with T2D was 10 years ago

described:

I cook for myself healthy food separately and cook another food for my family. I do not feel it is hard to make two meals, one for me, one for them. I avoid eating dates because the average glucose increased to more than 200 mg/dL.

Participant #18 whose length of time since diagnosis with T2D was 11 years ago said:

I followed the keto diet. I refrained from carbohydrates, milk and dairy products, Pepsi and juices. I eat protein, eggs, salads and vegetables. I benefited from the diet, which adjusted the blood sugar level and became stable. In addition, I stopped using insulin and took pills because the average glucose was 50 mg/dL before and after eating. I eat my dinner at the beginning of the evening, and it is very light.

Participant #8 whose length of time since diagnosis with T2D was 13 years ago, said:

I stay away from sweet foods, eat too little from the restaurants, never cook fried potatoes at home, use air fryers or grill in the oven. A month ago, I avoided eating white bread and replaced it with barley bread. At that moment, I never eat dates.

Also, participant #9 whose length of time since diagnosis with T2D was 20 years ago,

said: "I eat a few times from restaurants. I always cook my lunch to bring it with me at work because I can control my food more than buying food from restaurant".

Moreover, women with T2D have similar coping strategies related to physical activity. Almost all women depend on mainly walking in their daily life. Some of them have multiple health problems, but they work hard to exercise (walk) because they know the benefits of being physically active. Participant #11, participant #2, participant #16, and participant #6 reported that they used to exercise (walk) in their daily life, such as goes and back to Hussainiya (religious event), grocery stores, and mosque using their feet. In addition, participant #6 reported that she walks to her father's house and

participant #16 reported that she always walks in the morning for approximately 30 minutes.

Similarly, participant #19 indicated that she walks in her daily life, whether the place is near or far, she always walks about 30 minutes to an hour. Participant #20 also stated that she walks in her daily life, for example, she walks to drop off her son to school in the morning.

Some women reported that they tried to lose weight by being physically active at early years of diagnosed with T2D. Participant #7 stated: “The doctor told me weight loss was necessary because my weight was considered high. I have reached 67 kg (147 b) and still maintain that weight by walking approximately 30 minutes to an hour a day”. Participant #8 also mentioned: “I try lower my weight because it was 100 kg (220 b). I lose weight by walking every day and lose it quickly”.

Last coping strategy, a small number of women with T2D cope with physical activity during the summer in high temperature and humid weather. As result, they try to find ways to exercise. Participant #9 stated, “In some years during the summer, I joined a gym, but this summer I get laziness to join a gym”. Other participant #8 indicated that she walks in health mall [an initiative launched by the Ministry of Health to spread the culture of walking and provide a healthy environment to promote healthy behavior in a closed and secure place] that is suitable place to walk during the summer season. Also, she sometimes walks in the sidewalk near her home. Participant #18 reported that she continues to walk in Corniche almost 30-45 minutes or less a day depend on the weather during the hot weather.

CHAPTER V

CONCLUSION AND DISCUSSION

Saudi women with T2D described the impact of social support from others and assessed the types of social support they receive from others in order to improve their quality of life. Two major themes emerged from this study: (1) challenges to successful management of diabetes and (2) coping strategies in managing diabetes. In this chapter, the findings are discussed, recommendations for future research are suggested, and recommendations are offered.

The findings of this study indicate that participants face challenges with diet and exercise after diagnosis with T2D, but they face harder time being physical active than with dietary changes, because they did not adopt workouts during childhood. Challenges about diet changes indicated that some women with T2D follow a strict diet change, some make little effort to diet changes, some avoid specific foods or give up specific foods totally, and some follow a healthy diet, but crave eating a lot of sweets. Women need supports which could include grocery shopping tours providing by nutrition specialists to educate about nutrition labels and teach healthy options for snacks. Women also need more help from their spouses to enhance dietary adherence to a healthy diet and encourage them to follow daily demands of living with diabetes because spouses provided a lack of support to their wives. Also, women need help with healthy cooking techniques that support understand the necessary dietary recommendation for diabetic patients and learn healthy recipes.

Moreover, the findings of this study indicate that participants face several challenges with exercise. A few participants adhere to exercise (mainly walking) either walking in their daily life or walking in the Corniche (park) or sidewalk. The remaining participants face numerous challenges with exercise. The participants highlighted nine challenges to be physically active including one or multiple health problems, lack of motivation, being busy with housework, rising kids, their kids' general poor health, lack of transportation, lack of time, cultural barriers, and financial barriers. The most common reasons for the participants not being interested in exercise were having one or multiple health problems such as arthritis, knee problems, back pain, and bone and joint problems.

Women need resources in the community that provide social support like sports clubs for diabetic women in order to maintain and/or increase an exercise adherence. Additionally, women mentioned many times needing partner support who has an active lifestyle in terms of wanting to join a gym or go for walks to successfully adhere to exercise because they have cultural barrier to practice exercise daily. Some women also need free membership to join the gym and free childcare because some of them have financial barrier to afford sports equipment at home. As mentioned in Chapter 4, participants suggested walking trails for women only to practice exercise (walk). Lastly, women need to be provided awareness about the benefits of regular exercise on general health such as living a longer life without having cardiovascular risk factors, decreased hemoglobin A1c, improved joint flexibility, and increased quality of life.

In addition, some participants have limited coping strategies for being physical active. Participants complained about the heat in the summer. The weather in Qatif, Saudi

Arabia during summer is high temperature and extreme humidity that cause an issue to walk in the sidewalk or Corniche. Women should be encouraged by diabetes healthcare team to access health mall during the summer to walk in cooler environment and burn the calories.

The study found some participants face challenges with adhering to measuring blood glucose levels and keeping it in balance while others face challenges with poor adherence to self-monitoring of blood sugar. It seems women need an awareness program that focus on the benefits of checking the glycemic level daily, for example, better glycemic control and increased the quality of life. It is interesting to note some women need intensive training on blood glucose monitors to get correct readings and continue self-monitor blood sugar. Diabetes health educators should encourage the patients to achieve better monitoring. Moreover, all the participants do not face challenges in adherence to taking the medication regimen because it is easier than adherence to a healthy diet and regular exercise. An interesting finding, a few women with T2D face challenges in healing wounds, weakened immune system, and miscarriage. Although there was no question related to psychiatric conditions, some women in this study reported poor emotional health contributing to increases or decreases in the blood sugar level.

The study found the majority of the women received social support from family members (either siblings or mother), spouses, and children. The primary sources of social support that Saudi women received from were family and children. Women who have T2D commonly received informational support, followed by instrumental support, then

lastly, emotional support is received. Women did not report that they received appraisal support.

The participants received enough informational support either from family members, health care providers, social media, reading, television, or internet to help them solve problems. Most of the participants received informational support from siblings, children, husband, and mother either warning or encouragement information. Half the participants relied on the source of diabetes information from their physician or diabetes nurse if they have concerns about the diet plans or how to manage the blood sugar level. Most of the participants used WhatsApp, Instagram, and YouTube to educate themselves about T2D while a small number of the participants communicated with the physician on the WhatsApp if they have concerns related to blood glucose reading.

In addition, some participants read accurate information about T2D from brochures, books, and magazines. A few participants used Google and website whereas other watched television for additional information. As mentioned in Chapter 4, one participant suggested having a WhatsApp group directed by healthcare professionals from the Ministry of Health, so they can share their positive experiences with other diabetic women. This is important because women need to communicate with other women who living with diabetes to share health goals as well provide support to each other for adopting healthier lifestyle changes. Additionally, women need to learn from other diabetic women's positive behaviors, attitude, and skills that help them to reduce the risk factors related to diabetes.

This study found most of the participants received instrumental support from family members to support adopting self-care behavior. Instrumental support involves assisting with monitoring the average glucose and insulin injection, buying food from the grocery store, giving a ride to the hospital, scheduling an appointment to see diabetes healthcare team, and reminders. Some married women received a wide variety of instrumental support as reminder of taking medication, check the blood glucose level, and visit the doctor from family members (spouses, children, and siblings) than single women who did not have a reminder at all. Also, widowed women received instrumental support from family members, either children or grandchildren totally different than single women. Married and widowed women have family support (spouses or sons) to give a ride to the hospitals compared to women do not have the support for giving a ride. Some married women expressed dissatisfaction with their families' lack of supports such as absent motivation to exercise and no reminder of taking medication and doctor's appointment.

This study revealed some participants received emotional support from family members (spouses, children, and siblings) when they were diagnosed with T2D. Emotional support is needed for women to help them stay positive and good emotional health during distress and frustration periods. Family members are necessary to show sympathy, warmth, reassurance, care, and love for women psychological impact of diagnosis with T2D and need to take medications. Hence, women need to express their emotional burdens securely to people close to in order feel more comfortable and claimed. Also, several women received less emotional support because diabetes is one of

the family health history as well, they already have background about it, so they have not been as psychologically affected by the diagnosis with T2D. Women need to strengthen their social network to receive a wide emotional support and help with self-care management.

Finally, the study showed some participants relied on themselves and used several coping strategies for behavior changes, including healthy diet and physical active (walk). Several of the participants do not rely on social support from anybody including family members, spouse, and children because they can manage their disease alone as well, their level of self-management is enough for their needs. Participants with shorter time of diagnosis of T2D have coping strategies with diet change different than other participants with longer time of diagnosis.

Recommendation for Future Research

The current study used a convenience and snowball sample in a Primary Health Care setting for women only. Because the participants in this study commented more about informational and instrumental support and less about emotional support, future research should examine emotional support among Saudi women who have T2D to measure diabetes support from family members and spouses. Also, additional research is needed to focus on both sexes aged 30 years old and above to understand the differences in the types and quality of support they received or given by others (family member, spouse, family, friends, and children) with large sample sizes from the four regions of the country. The data is needed to collect by interview support team.

Recommendations

The participants in this study received many instances of informational support and instrumental support, but they need more emotional support from family members.

To increase emotional support:

- Families should provide support to their members who feel distress or frustration:
 - Family members should pay attention to psychological problems and provide positive effect on patient's care to achieve better diabetes control and preventive from emotional burdens.
 - Families should work towards improving emotional states for women with T2D and accept emotional burdens by active listening and encouragement.
 - Families should make stronger supportive network to maximize successful diabetes management and improve emotional states.
- Healthcare professionals at the hospital should do these preventive strategies that might help to live with diabetes:
 - When women are diagnosed with diabetes, diabetes care providers should disseminate information and guidance to the patients' family members that might support them in diabetes self-care behavior, special attention should be address the importance of emotional support.
 - Diabetes healthcare team should do creative strategies to encourage people to change lifestyle behavior related to diet and exercise, pay attention to their emotional health.

- Create awareness program provided by diabetes health educator that focuses on the benefits of regular exercise on general health and also benefits of checking the glycemic level daily to stay in a healthy range and increased quality of life. Additionally, encourage women to attend with one of family members to get intensive training on self-monitoring of blood glucose in order to get accurate readings and continue measuring the blood sugar.
- Ministry of Health in Saudi Arabia should set Diabetes Friendly Policy that can remove the barriers women face and provide preventive strategies including:
 - Provide fitness facilities managed by a sport coach in each Primary Health Care Centers with free membership for women who have T2D or high risk of developing diabetes. Also, these preventive strategies can ensure each area/neighborhood has facilities available and close to their home.
 - Create Fitness Motivation Program for women to have partner to exercise with; make sure patients receive support and are motivated to continue regular exercise.
 - Provide free childcare in each fitness facilities to encourage younger moms with T2D or high risk of developing diabetes to exercise.
 - Build a trail in each city for only women to practice walking, biking, and running; confirm a safe place available for all women to adapted physical activity habits.

- Designing and implementing Safe Nutrition Program for women who have diagnosed with T2D offering by nutrition specialists. Women encourage to attend with their spouses to get compressive education class about spacing out carbohydrates, teaching healthy cooking techniques, and learning healthy recipes that suitable to diabetic diet. Additionally, they invite to attend grocery shopping tours to educate about reading nutrition labels and choosing healthy option for everyday meals and snacks (e.g. fruits and vegetables and low-calorie products).
- Follow-up to evaluate diabetics patients' performance to exercise and dietary change that would be helpful to know if the policy works or not to adopts the habits for regular exercise.
- Establishing group on WahtsApp Application led by diabetes healthcare team for women to share their positive experiences with other diabetic women; make sure patients support each other and adopt healthier lifestyle changes related to diabetes. Additionally, encourage women to learn from other diabetic women's positive behaviors, attitude, and skills that help them to reduce the burden of diabetes.

With implementing these interventions, Saudi women with T2D can experience less challenges of self-care behaviors, increase in health-related quality of life, and improve the productivity of life. Diabetic patients who participate in these interventions can face healthier future and decrease diabetes complications. Also, diabetic women can

receive better social support from family members and spouses that prepare to meet Saudi Vision 2030 goals.

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APPENDIX A

INVITATION LETTER on WhatsApp (ENGLISH)

Impact of Social Support on Saudi Women with Type II Diabetes Living in Saudi Arabia

Dear Diabetic Woman:

I am inviting you to participate in this study about the Impact of Social Support on Saudi Women with Type II Diabetes Living in Saudi Arabia. This study is a part of my Master's research project at the University of Northern Iowa. I know that your time is very important. That is why I create the screening questionnaire would take only 2 minutes of your time. If you choose to participate in this study, please answer all questions and sign the consent form in order to give the investigator chance to contact with you about scheduling the face-to-face interview that will take 45 minutes.

The purpose of this study is to discuss the impact of social support in women living in Saudi Arabia have diabetes. All responses you provide will be kept anonymous.

Thank you for your time and participation.

Click to fill out screening form

Sincerely,
Fatimah Al-Khidhr
alkhidf@uni.edu
Graduate student at University of Northern Iowa

Susan Roberts-Dobie, PhD
Susan.dobie@uni.edu
Faculty supervisor, University of Northern Iowa

APPENDIX B

INVITATION LETTER on WhatsApp (ARABIC)

أثر الدعم الاجتماعي على المرأة السعودية المصابة بمرض السكري من النوع الثاني في المملكة العربية السعودية

عزيزتي المرأة:

أدعوك للمشاركة في هذه الدراسة حول تأثير الدعم الاجتماعي على النساء السعوديات المصابات بداء السكري من النوع الثاني في المملكة العربية السعودية. هذه الدراسة جزء من مشروع بحث الماجستير في جامعة شمال أبوا. أعلم أن وقتك مهم جداً. لهذا السبب قمت بتصميم استبيان الفحص، والذي سيستغرق دقيقتين فقط من وقتك. إذا اخترت المشاركة في هذه الدراسة، فالرجاء الإجابة على جميع الأسئلة والتوقيع على نموذج الموافقة لإتاحة الفرصة للباحثة للاتصال بك لتحديد موعد المقابلة الشخصية والتي تستغرق 45 دقيقة.

الغرض من هذه الدراسة هو مناقشة تأثير الدعم الاجتماعي لدى النساء اللاتي يعشن في المملكة العربية السعودية والمصابات بداء السكري. جميع الردود التي تقدمينها ستبقى مجهولة.

أشكرك على وقتك ومشاركتك.

انقري لملء نموذج الفحص

مع خالص التحية والاحترام،

فاطمه ال خضر

frk-2009@hotmail.com

طالبة دراسات عليا في جامعة شمال أبوا

سوزان روبرتس دوبي، دكتوراه

Susan.dobie@uni.edu

مشرف كلية، جامعة شمال أبوا

APPENDIX C

SOCIAL SUPPORT SCREENING QUESTIONNAIRE (ENGLISH)

1. What is your sex?
 - Women
 - Men

2. What is your age?
 - Under 30
 - 30-39
 - 40-49
 - 50-59
 - 60-69
 - 70 and older

3. Are you a Saudi woman living in Saudi Arabia?
 - Yes
 - No

4. What is your current employment status?
 - Full-time employment
 - Part-time employment
 - Unemployed
 - Student
 - Retired

5. What is your marital status?
 - Single, Never Married
 - Married
 - Separated or Divorced
 - Widowed

6. What type of diabetes do you have?
 - Pre-diabetes
 - Type 1 Diabetes
 - Type 2 Diabetes

7. How would you like to contact with the researcher?
 - Text message on WhatsApp _____
 - Email _____
 - Phone number _____

APPENDIX D

SOCIAL SUPPORT SCREENING QUESTIONNAIRE (ARABIC)

1. ما هو جنسك؟

- أنثى
- ذكر

2. ما هو عمرك؟

- أقل من 30
- 30 - 39
- 40 - 49
- 50 - 59
- 60 - 69
- 70 وما فوق

3. هل أنتِ امرأة سعودية تعيش في المملكة العربية السعودية؟

- نعم
- لا

4. ما هو وضعك الوظيفي الحالي؟

- موظفة بدوام كامل
- موظفة بدوام جزئي
- لا أعمل
- طالبة
- متقاعدة

5. ما هي حالتك الاجتماعية؟

- عزباء
- متزوجة
- منفصلة
- أرملة

6. ما نوع مرض السكري لديك؟

- مرحلة ما قبل السكري
- مرض السكري النوع الأول
- مرض السكري النوع الثاني

7. كيف تريد التواصل مع الباحثة؟

- رسالة نصية على الواتس أب _____
- الإيميل _____
- رقم الجوال _____

APPENDIX E

INFORMED CONSENT

**UNIVERSITY OF NORTHERN IOWA
HUMAN PARTICIPANTS REVIEW
INFORMED CONSENT**

Project Title: Impact of Social Support on Saudi Women with Type II Diabetes Living in Saudi Arabia

Name of Investigator(s): Fatimah Al-Khidhr

Invitation to Participate: You are invited to participate in a thesis project conducted through the University of Northern Iowa. The university required that you provide your writing agreement in order to participate in this project. The following information is provided to help you make an informed decision about whether or not to participate. Participation in this study is completely voluntary.

Nature and Purpose: The purpose of this study is to describe the impact of social support from others on Saudi women with Type II Diabetes; and the different types of social support offered to Saudi women living in Saudi Arabia who have Type II Diabetes. The researcher will assess the types of social support that Saudi women receive from others (i.e. spouse, family members and friends, and peers) in order to improve the quality of life.

Explanation of Procedures: A face-to-face interview will be scheduled with you to participate in this project. In an interview, you will be asked a series of questions related to the social support from others in your life. The interview will take approximately 45 minutes to be conducted by the investigator. Responses will be audio recorded to confirm responses are documented accurately. The responses will be transcribed into word documents. Some questions will arise from the conversation between the interviewer and yourself.

Privacy and Confidentiality: Your identity will be confidential whether or not you agree or refuse participation. To minimize the potential risk during the interview, all responses will be kept anonymous. The data will be kept for a maximum period of 1 years. The data and consent forms will all be destroyed with the help of a shredder machine.

Discomforts, Risks: Risks to participation are minimal. You may find risk or discomfort from participating in this study related to time and sharing personal stories.

Benefits and Compensation: There is no direct monetary benefit or cost to you if you participate in this study.

Right to Refuse or Withdraw: Your participation in this study is completely voluntary. You are free to withdraw or refuse participation at any time. In addition, you will not be penalized or lose benefits or rights to which you are otherwise entitled.

Questions: If you have questions regarding your participation in this study or about the study generally, please contact Fatimah Al-Khidhr at 00966561780205 or the project investigator's faculty advisor Dr. Susan Dobie at the Department of Allied Health and Human Services, University of Northern Iowa 0013192735930. For answers to questions about the rights of research participants and the research review process at UNI, you may contact the office of the IRB Administrator at 0113192736148.

Agreement:

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this project.

Signature Lines: **Your signature below indicates that you have read this entire form and that you agree to be in this study.**

(Signature of participant)

(Date)

(Printed name of participant)

(Signature of investigator)

(Date)

For more information, you can contact:
Saudi Diabetes & Endocrine Association
Website: sdea.org.sa
Email: sdea@sdea.org.sa
Phone: 013 8878970- 013 8876099

Qatif Central Hospital (Center for Diabetics and Endocrinology):
Website: moh.gov.sa
Phone: 013 8361000

APPENDIX F

INFORMED CONSENT (ARABIC)

جامعة شمال أيوا
نموذج الموافقة المستنيرة للمشاركات في البحث

عنوان المشروع: "أثر الدعم الاجتماعي على النساء السعوديات المصابات بالسكري من النوع الثاني في المملكة العربية السعودية"

اسم الباحثة: فاطمه محمد ال خضر

دعوة للمشاركة: أنت مدعوة للمشاركة في مشروع أطروحة أجريت من خلال جامعة شمال أيوا. طلبت الجامعة منك تقديم اتفاقية الكتابة الخاصة بك من أجل المشاركة في هذا المشروع. يتم توفير المعلومات التالية لمساعدتك في اتخاذ قرار مستنير بشأن المشاركة أم لا. المشاركة في هذه الدراسة طوعية تمامًا.

طبيعة الدراسة والغرض: الغرض من هذه الدراسة هو وصف تأثير الدعم الاجتماعي من الآخرين على النساء السعوديات المصابات بمرض السكري من النوع الثاني؛ وأنواع الدعم الاجتماعي المختلفة المقدمة للسعوديات اللاتي يعشن في المملكة العربية السعودية ولديهين مرض السكري من النوع الثاني. ستقوم الباحثة بتقييم أنواع الدعم الاجتماعي التي تتلقاها المرأة السعودية من الآخرين (أي الزوج، أفراد الأسرة، الأصدقاء، والأقربان) من أجل تحسين نوعية الحياة.

شرح الإجراءات: سيتم تحديد موعد لإجراء مقابلة وجهًا لوجه معك للمشاركة في هذا المشروع. في المقابلة، سيتم سؤالك سلسلة من الأسئلة المتعلقة بالدعم الاجتماعي من الآخرين في حياتك. تستغرق المقابلة حوالي 45 دقيقة، ويتم إجراؤها بواسطة الباحثة. سيتم تسجيل الردود الصوتية للتأكد من توثيق الردود بدقة. سيتم نسخ الردود في مستندات مايكروسوفت وورد. سنتشأ بعض الأسئلة من المحادثة بين الشخص الذي يُجري المقابلة ونفسك وبينك.

الخصوصية والسرية: ستكون هويتك سرية سواء وافقت أو رفضت المشاركة. لتقليل المخاطر المحتملة خلال المقابلة، سيتم الاحتفاظ بجميع الردود مجهولة. سيتم الاحتفاظ بالبيانات لمدة أقصاها سنة واحدة. سيتم إتلاف جميع نماذج البيانات والموافقة بمساعدة جهاز التقطيع.

المضايقات، المخاطر: مخاطر المشاركة ضئيلة. قد تجددين خطرًا أو انزعاجًا من المشاركة في هذه الدراسة المتعلقة بالوقت ومشاركة القصص الشخصية.

الفوائد والتعويضات: لا توجد فائدة مالية مباشرة أو تكلفة عليك إذا شاركت في هذه الدراسة.

الحق في الرفض أو الانسحاب: مشاركتك في هذه الدراسة طوعية تمامًا. أنت حرة في الانسحاب أو رفض المشاركة في أي وقت. بالإضافة إلى ذلك، لن يتم معاقبتك أو فقدان المزايا أو الحقوق التي يحق لك الحصول عليها.

الأسئلة: إذا كانت لديك أسئلة بخصوص مشاركتك في هذه الدراسة أو حول الدراسة بشكل عام، فيرجى التواصل مع الباحثة فاطمه ال خضر على الرقم 429-8191 (319) أو مستشارة هيئة التدريس في محققو المشروع الدكتورة سوزان دوبي في قسم الصحة والخدمات الإنسانية، جامعة شمال أيوا على الرقم 273-5930 (319). للحصول على إجابات عن الأسئلة المتعلقة بحقوق المشاركين في البحث وعملية مراجعة البحوث في جامعة شمال أيوا، يمكنك الاتصال بمكتب لجنة أخلاقيات البحث العلمي على الرقم 273-6148 (319).

الموافقة: لقد قرأتُ وفهمتُ المعلومات المقدمة وأتبيحتُ لي الفرصة لطرح الأسئلة لاتخاذ القرار. كما أنني على دراية بأنه مشاركتي طوعية ويمكنني سحب موافقتي وقتما أريدُ دون إبداء سبب ودون تكلفة. أفهم أنه سيتم إعطائي نسخة من نموذج الموافقة المستنيرة وستبقى النسخة الاصلية مع الباحثة. أنا موافقة على المشاركة في هذا المشروع.

خطوط التوقيع: يشير توقيعك أدناه إلى أنك قد قرأت هذا النموذج بالكامل وأنت موافقة على أن تكوني في هذه الدراسة.

(توقيع المشاركة) (التاريخ)

(الاسم الكامل للمشاركة)

(توقيع المحققة) (التاريخ)

لمزيد من المعلومات، يمكنك الاتصال بـ:

الجمعية السعودية للسكري والغدد الصماء:

الموقع الإلكتروني: sdea.org.sa

البريد الإلكتروني: sdea@sdea.org.sa

هاتف: 013 8878970- 013 8876099

(مستشفى القطيف المركزي (مركز السكري والغدد الصماء):

الموقع: moh.gov.sa

هاتف: 013 8361000

APPENDIX G

SOCIAL SUPPORT INTERVIEW GUIDE (ENGLISH)

1. Can you tell me a little about yourself? Your family and children?
Probes on family dispersal or being local:
 - Do your children live nearby?
 - Where did your children live?
 - Is your sister here in Qatif or somewhere else?
2. How many years ago were you diagnosed with diabetes?
3. Tell me about how diabetes has affected your life.
4. What are the biggest challenges you and your family have experienced due to diagnosis with diabetes?
Probes:
 - What about dietary changes?
 - What about exercise?
5. How have you been coping with this challenge?
6. Who has provided you the most help to manage your life with diabetes?
Probes:
 - What has this person done to help you?
 - Who else has been helpful? How?
7. What are some activities you would like to do with someone else that help you manage your diabetes?
8. Probe if they do not answer question 6 and 7:
What do you need the most to help you cope with diabetes?
9. How do you feel these people have helped you to be successful?
10. When you need help with diabetes related things like insulin injection or ride to the doctor office, how have people helped you manage your diabetes?
11. What do you think would be helpful for women who have just been diagnosed with diabetes?
12. Where have you gone to get information about diabetes? Were you able to find the information you wanted?

13. What are a few words you would use to support someone who has just been diagnosed with diabetes?

APPENDIX H

SOCIAL SUPPORT INTERVIEW GUIDE (ARABIC)

1. هل يمكن أن تخبريني قليلاً عن نفسك؟ عائلتك وأولادك؟
تحقيقات في تثبتت الأسرة أو كونها محلية:
 - هل يعيش أطفالك في مكان قريب؟
 - أين يعيش أطفالك؟
 - هل أختك هنا في القطيف أو في مكان آخر؟
2. منذ كم سنة تم تشخيصك بمرض السكري؟
3. أخبريني عن تأثير مرض السكري على حياتك.
4. ما هي أكبر التحديات التي واجهتها أنت وعائلتك بسبب تشخيص مرض السكري؟
تحقيقات:
 - ماذا عن النظام الغذائي؟
 - ماذا عن التمارين الرياضية؟
5. كيف كنت تتعاملين مع هذا التحدي؟
6. مَنْ الذي قدم لك أكبر قدر من المساعدة لإدارة حياتك مع مرض السكري؟
تحقيقات:
 - ماذا فعل هذا الشخص لمساعدتك؟
 - مَنْ أيضاً قدم المساعدة المفيدة إليك؟ وكيف؟
7. ما هي بعض الأنشطة التي ترغبين في القيام بها مع شخص آخر يساعدك على إدارة مرض السكري؟
8. تحقيق إذا كانوا لا يجيبون على السؤالين 6 و 7
ما الذي تحتاجينه أكثر لمساعدتك على التأقلم مع مرض السكري؟
9. كيف تشعرين أن هؤلاء الأشخاص ساعدوك على أن تكوني ناجحة؟
10. عندما تحتاجين إلى مساعدة فيما يتعلق بأشياء مرتبطة بمرض السكري، مثل حقن الأنسولين أو الذهاب إلى زيارة الطبيب، كيف ساعدك الناس في إدارة مرض السكري؟
11. ما الذي تعتقدين أنه سيكون مفيداً للنساء اللواتي تم تشخيص إصابتهن بمرض السكري؟
12. أين ذهبت للحصول على معلومات حول مرض السكري؟ هل تمكنت من العثور على المعلومات التي تريدينها؟
13. ما هي بعض الكلمات التي قد تستخدمينها لدعم شخص تم تشخيصه بمرض السكري؟