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Department of Chronic Care Nursing

(Factors Associated With Diabetes Self Care Practices among Jordanian Adult Using Theory of Planned Behavior: a National Study)

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Authorization Form

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This Thesis (Factors Associated With Diabetes Self Care Practices among Jordanian Adult Using Theory of Planned Behavior: a National Study) was successfully defended and approved on 31\8\2020

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Dedication

This thesis is dedicated to the memory of my beloved father, Damen AL-Dalaen, who passed away before I finished my master's degree.

I also dedicate this work to my mother; thank you for the unconditional love, guidance, and support that you have given me.

I am eternally grateful to my brothers and to my sisters. I am also grateful to my advisor, for her continuous support and encouragement.

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Initially, I wish to grant my gratitude to Allah for endowment me the strength, ability, and knowledge to achieve this academic work. Although this Master's thesis is certified to merely one person, in fact it must be certified to many individuals. Consequently, I want to appreciate those persons that were extremely supportive in helping me to accomplish my dream. First, I want to express thanks for the members of my thesis committee, their input was extremely helpful. I would exceptionally like to convey my true thankfulness to my supervisor, Professor Zeinab Al-Wahsh, for her continuous guidance, support, and encouragement throughout the research process. I dedicate this academic work for the Jordanian patients with diabetes who inspire me to conduct this study.

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List of Abbreviations

No.	Abbreviation	Meaning
1	WHO	World health Organization.
2	IDF	International Diabetes Federation.
3	ADA	American Diabetes Association.
4	SCBs	Self-care behaviors.
5	MAPADM	Medication adherence and physical activity for patients with diabetes.
6	MA	Medication adherence.
7	PA	Physical activity.
8	AMA	Attitudes toward Medications Adherence
9	SNMA	Social Norms about Medications Adherence.
10	BM	Behavior for Medications.
11	PBCMA	Perceived Behavioral Control for Medications Adherence.
12	APA	Attitudes toward Physical Activity.
13	SNPA	Social Norms about Physical Activity.
14	PBCPA	Perceived Behavioral Control for Physical Activity.
15	BPA	Behavior For Physical Activity
16	DM	Diabetes mellitus.
17	CINAHL	Cumulative Index to Nursing and Allied Health Literature.

18	T1D	Type 1 Diabetes.
19	T2D	Type 2 Diabetes.
20	TPB	Theory of Planned Behavior
21	EBESCO	Elton B. Stephens Company.
22	SPSS	Statistical Package for Social Science.
23	MAT	Measurement of Adherence to Treatment.
24	PAQ-DP	Proportion of adherence & Global assessment of adherence.
25	ID	Identity Document
26	SCPs	Self-care practices

Factors Associated with Diabetes Self-Care Practices among Jordanian Adults Using the Theory of Planned Behavior : a National Study

By

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Abstract

Background

In Jordan, Diabetes Mellitus (DM) is the fifth leading cause of death. The important keystones in preventing DM complications are performing Self-Care Behaviors (SCB) such as diabetic Medication Adherence (MA) and engaging in Physical Activity (PA). The Theory of Planned Behavior (TPB) illustrates the relationship between three major constructs: behavioral attitudes, subjective norms (SN), and perceived behavioral control (PBC). The combination of the three constructs will shape the patient's behavior (i.e., performing SCB).The objectives of this study are to assess the diabetic MA and PA levels (i.e., adequate and inadequate) among Jordanian diabetic patients, assess the frequency of the levels of TPB constructs (i.e., behavioral attitudes, SN, and PBC) regarding diabetic MA and PA among Jordanian diabetic patients, identify the patients, identify the predictors of PA adherence among Jordanian diabetic patients, detect the relationships between participants' demographics and TPB constructs regarding SCB (MA and PA) among the participants, and detect the relationships between the TPB constructs among the participants.

Methodology

The current study uses a cross-sectional correlation design and convenience sampling to recruit 400 (Female = 144, Male = 156) diabetic patients from four public hospitals in Jordan as participants. Based on the TPB, two tools (MA & PA) are modified and used to collect the data regarding the factors that are associated with patients' diabetic MA and engagement in PA.The used tools include subscales consisting of items rated on a five-point. Likert scale constructed to measure the independent variables of attitude, SN, PBC, and demographic variables to perform the two SCBs.

Results

Around one quarter of the patients (n=112, 28%) had an HbA1clevel higher than 8; about half of the study participants (n= 219, 54.8%) had inadequate diabetic MA, and about two thirds of the sample (n=260, 65%) had inadequate adherence to PA.
The findings of a regression model illustrated that four factors were significantly predictors to diabetic MA: marital status (p=0.03), DM complication type (p= 0.001), SN (p=0.001), and PBC (p=0.001). In relation to performing PA, the regression model indicated that the following factors were significant predictors: presence of DM complication (p=0.001), SN (p=0.01), and PBC (p= 0.001). Finally, three constructs of TPB correlated significantly with each other.

Conclusion

There are several chronic illnesses in Jordan nowadays; however, diabetes could be the most prevalent. This could lead to a higher burden on both the health care personnel (such as the physicians and the nurses) and the patients themselves. The health care providers should build their practices on the latest knowledge available in the diabetes

field. Clinical instructors and nursing educators in nursing schools can utilize the results (demographic variables and TPB constructs) of the current study to educate patients about what to expect if they adhere to diabetic medications. The Electronic Health Record of the patients should reflect the predictors of both MA and PA adherence. Thus, nurses' assessment will be focused on the major factors that affect the patient's adherence. Publication of the study findings in highly prestigious nursing journals with high impact factors is highly recommended. Furthermore, the researcher could present the findings of the study at both local and international nursing conferences. Replication of this study using a larger and more diverse sample is highly recommended

Chapter One: Introduction

Overview

Diabetes Mellitus (DM), disorder that affects the endocrine system, is considered to be a major challenge internationally (Al-Lawati, 2017). The World Health Organization (WHO) defined diabetes as a chronic metabolic disorder that occurs mostly as two main forms: either ineffective utilization of body insulin or inadequate insulin production (WHO, 2019). Several negative complications might affect vital body organs, such as the nervous system, renal system, cardiovascular system, and eyes (WHO, 2019).

There are three main types of diabetes: Type 1 DM (T1DM), Type 2 DM (T2DM), and gestational diabetes (Xiang et al., 2018). Previously, T1DM was called insulin-dependent or juvenile/ childhood-onset DM. It is characterized by insufficient insulin production; thus, it requires the administration of insulin daily (Lovic et al., 2020). It is idiopathic and not preventable. T2DM was previously known as non-insulin-dependent or adult-onset DM. It is characterized by the ineffective use of insulin by body tissues. It is the most prevalent type of DM and could occur as a result of overweight. Gestational diabetes is characterized by high blood glucose values, yet below the diagnostic values of T1DM and T2DM, and occurs during pregnancy (WHO, 2016).

The morbidity and mortality rates of DM have been addressed in the literature (Aguilar-Palacio et al., 2017; Elling, Surkan, Enayati & El-Khatib, 2018). Concerning the morbidity rate, statistics indicated that in 1985, around 30 million people were suffering from DM (Choi & Ho, 2018). The International Diabetes Federation (IDF) reported that the number of affected people was 463 million internationally in 2019 and expected to be approximately 592 million by 2035 (IDF, 2020).

In the Arab countries, the overall prevalence of DM ranged between 9% and 33%. For example, it was 9.80% in Yemen , 25.40% in Kuwait,25.83% in the United Arab Emirates , 29.10% in Saudi Arabia, and 33.60% in Bahrain (Meo et al., 2019). The prevalence of DM in Jordan was 13 per 100 people(WHO, 2016). In 2019, Ajlouniet al. conducted a descriptive prospective study to identify DM pattern in Jordan between 1994 and 2017. The statistics indicated that the overall age- standardized prevalence rate of DM increased from13.0% in 1994 to 17.1% in 2004, 22.2% in 2009, and 23.7% in 2017. In terms of the prevalence in different genders, the study indicated that the rate among adult females was 12.3% in 1994 and increased to 16.9% in 2004, 18.8% in 2009, and 18.1% in 2017. Conversely, the prevalence among Jordanian males was 14.2% in 1994 and increased to 18.3% in 2004, 26.8% in 2009, and 32.4% in 2017 (Ajlouni et al., 2019).

DM is among the top 10 causes of adult deaths, and it was estimated that it caused four million deaths globally in 2017 (IDF, 2017). In 2016, DM was the seventh leading cause of mortality across the globe. A recent WHO report indicated that in Jordan, the proportional mortality was 7% of total deaths of all ages and that DM was the fifth leading cause of death in 2016 (WHO, 2016).

Scholars of diabetes divided the DM complications into two main groups: macro-vascular complications (for instance, vascular disorders such as peripheral insufficiency to lower extremities, and cardiac problems such as myocardial infarction) and micro-vascular complications (for example, nephropathy, retinopathy, and neuropathy) (Chawla, Chawla& Jaggi, 2016; WHO, 2019). It is anticipated that if the health care providers implement appropriate therapeutic measures, the associated cost of DM and threats of both morbidity and mortality will decrease (Cheng, Wang, Lim & Wu, 2019).

Jutterström, Hörnsten, Sandström, Stenlund and Isaksson (2016) described SCBs as the process in which the patients use their skills and knowledge to carry out recommended behaviors. Many activities can be included under the SCB umbrella, such as physical activity (PA), prescribed diet adherence, weight loss, medication adherence (MA), and blood glucose monitoring (Bonger, Shiferaw &Tariku, 2018). Nowadays, several therapeutic modalities are available, such as non-pharmacologic treatment modalities (e.g., PA) and pharmacologic modalities (e.g., insulin and an oral hypoglycemic agent) (DeWit, Stromberg& Dallred, 2016).These modalities should be applied wisely taking into consideration the intended treatment goal for patients (Yu, Liu, Sanchez, Nemunaitis& Brunicardi, 2015).

The important keystones in preventing DM complications are performing SCB and PA(Albikaw, Petro-Nustas& Abuadas, 2016). Such behaviors should be incorporated into the clinical decision-making process to maintain or enhance the overall health status of diabetic patients (Ayele, Tesfa, Abebe, Tilahun& Girma, 2012; Yehualashet, Takele, Tegegne& Ayele, 2019). To control the risk of DM complications such as hyperglycemia and meet the DM treatment goals, it is highly recommended for the patients to follow the recommended SCB (Zandinava, Shafaei, Charandabi, Homayi& Mirghafourvand, 2017; Zhou, Chen, Yuan& Sun, 2016). The literature indicates that there is a positive correlation between carrying out SCB properly by the patients and reducing the rate of complications (Reisi et al., 2016).

A study conducted by Pokhrel et al. (2019) reported that the following factors could affect the patient's SCB performance. First, numerous socio-demographic factors have been significantly associated with SCB of patients affected by DM. These factors include monthly income, employment status, educational level, physical inactivity, and patients'

age. In addition, religious faith, patients' abilities and capabilities, and cultural and social factors could have a relationship with the patients' SCB (Pokhrel et al., 2019).

The TPB model has been utilized in many health studies (Akbar, Anderson& Gallegos, 2015).The researcher employed the TPB to guide the current study. Icek Ajzen developed this theory from the theory of reasoned action (Ajzen, 1991, 2015). This theory specifically illustrates the relationship among three major constructs: attitude, subjective norms (SN), and perceived behavioral control (PBC). The combination of all the major constructs will shape the individual's ultimate behavior. Several previous studies in different fields (such as health care & psychology) utilized the TPB (Asare, 2015). For example, Dashtian, Eftekhar Ardebili, Karimzadeh Shirazi, Shahmoradi and Azam (2017) conducted a descriptive cross-sectional study to identify the predictors that could have an impact on MA and the levels of PA among 160 Iranian patients with T2DM using the TPB. The results showed that around half of the participants had an unsatisfactory level of PA. Concerning the TPB, the results indicated that both MA and PA had a significant relationship with PBC (Dashtian et al., 2017).

Other similar findings were reported by Damayanti, Tamtomo and Indarto (2018), who conducted a study in Indonesia. The results revealed that DM self-care practices could have an indirect impact on the participants' SN and attitude (Damayanti et al., 2018). However, to the researcher's knowledge, few studies have been conducted in the Jordanian context to address the SCBs among patients with DM using the TPB. An example of these studies is a descriptive correlational study (Albikawi & Abuadas, 2015) that explored the SCBs among Jordanian patients with DM and assessed their correlates. Therefore, the objective of this study is to investigate the factors associated with SCBs

among Jordanian patients with DM through utilization of the TPB. Thus, the researcher of this study will address the gap in the literature by using a strong theoretical framework.

Statement of the Problem

Since 1980, researchers across the globe have reported important data concerning the prevalence pattern of DM (IDF, 2020). Countries that are located in the low- and middle-income zone have witnessed a faster increase in DM rates than those that are located in the high-income zone (Ajlouni et al., 2019).

Several factors, including population aging, better survival, not participating in PA for a long time, and obesity, are expected to contribute to higher DM rates (IDF, 2020). In Western countries such as America, the number of DM cases doubled from 1970 to 2000 (Abraham, Pencina, Pencina& Fox, 2015). Similarly, in the Jordanian context, the statistics about DM revealed that the prevalence of DM increased from 1994 to 2004 (Ajlouni, Khader, Batieha, Ajlouni& El-Khateeb, 2008). The Jordanian governmental agency through the prime minister has implemented essential measures to control and prevent DM in Jordan by 2020.The increase in the social cost and the high prevalence rate of DM in addition to the mortality and morbidity rates highlight that we need more studies identifying contributing factors and designing appropriate therapeutic modalities (Ajlouni et al., 2008, 2019).

SCBs are essential to prevent long-term DM complications. For the affected patients to manage the symptoms of diabetes properly, the following activities should be carried out: taking medication properly, self-monitoring of blood glucose, weight management, cessation of smoking, exercise, healthy eating, and a healthy lifestyle (Devarajooh & Chinna, 2017). These activities are considered vital for achieving optimal health care outcomes. However, in the current study, the researcher addressed only PA and MA. It

has been reported in the literature that SCBs are positively correlated with quality of life improvement, complication reduction, and glycemic control (Shrivastava, Shrivastava& Ramasamy, 2013).

Furthermore, it has been reported that multiple factors have an impact on SCBs. Those factors include the patient's economic status, the existence of morbidities and complications, social support, age, and sex (Amente, Belachew, Hailu & Berhanu, 2014; Ayele et al., 2012; Gautam, Bhatta & Aryal, 2015). According to WHO, the factors that contribute to the medication non-adherence status of the patients can be classified into four categories: a) patient-related factors such as age and gender; b) provider–patient/health care system factors such as consultation sessions; c) social factors such as family support; and d) socioeconomic factors (Lam & Fresco, 2015). The few studies carried out in Jordan did not pay adequate attention to the recommended SCBs and did not investigate the patients' SCBs comprehensively (Hailu, Mariam, Belachew &Birhanu, 2012). Moreover, the cultural attributes of the Jordanian people could have been underestimated in the earlier studies (Kim & Lee, 2019). So, this study examined this clinical problem by exploring the social actors of Jordanian Diabetic patients, attitude, and social pressure, by using the TPB.

Significance of the Study

The incidence and prevalence of DM in Jordan are considered to be among the highest in the world, making it an alarming medical issue (Bakkar, Haddad& Gammoh, 2017). It has been shown that suboptimal adherence to SCBs such as medication and PA is correlated with insufficient glycemic control, and leads to the appearance of diabetes complications, and recurrent hospital admissions, in addition to a high cost burden on health care resources (Basu & Sharma, 2019). Nevertheless, patients face many

challenges and difficulties in performing the patterns of SCBs recommended by the health care provider for diabetes, which leads to a low rate of their adherence to these behaviors. Therefore , the reality is that adherence among diabetic patients is not promising (Aschalew, Yitayal, Minyihun & Bisetegn, 2019). Moreover, many previous studies did not use standardized tools to measure diabetes-associated SCBs (Hailu et al., 2012). Therefore, there is an urgent need to develop instruments that are appropriate for Arab countries to identify determinants of adherence to SCBs.

The TPB constructs (attitude, SN, perceived behavioral control) can be used as a conceptual framework to examine factors correlated with diabetes SCBs among Jordanian adults. The findings of the present project will support and guide the upgrading of future medical care interventions to improve health outcomes for patients with diabetes. Accordingly, this research project aimed to identify SCBs and their associated factors among patients with diabetes in Jordan. Conducting this study will help the nursing programmers, administrators, researchers, educators, and practitioners identify the beliefs and attitudes of the Jordanian patients toward DM by measuring the correlation between the SCBs of the diabetes patients and their socio-demographic characteristics. This study could provide directions for nursing programmers (i.e., people who are specialized in nursing informatics) to design electronic patient records that encompass the risk factors for diabetes incidence as well as the most common SCBs. Nursing researchers may carry out research projects in the future that depend on the findings of this research project. Nursing practitioners should build their practices and provide care for patients with diabetes based on the current study's recommendations.

Theoretical Framework

A scientist named Icek Ajzen has been credited with designing the TPB Ajzen (1991) developed the theory to predict individual behavior. Few studies have used this theory as a framework to understand the adherence to PA and the MA among Jordanian patients with DM. Accordingly, the researcher of this study utilized a modified version of the TPB to fill this gap in the literature. This theory originated from the theory of reasoned action, which states that behavior is the product of three different processes: behavioral attitudes, SN, and PBC (Conner, 2020). For terminological consistency and coherence, the researcher of the current study utilized the term "Self-Care Behaviors" (SCBs) instead of "Self-Care Practices" for the whole research project except the title. This change was made because of the researcher's intention for the study to be consistent with the utilized theory (the Theory of Planned Behavior [TPB]).

According to the theory, the first predictor of behavior is behavioral attitudes, which relates to how a person thinks and feels about the behavior and reflects on their expectations and evaluations of the behavior. This can be divided into two aspects: effective attitude and instrumental attitude (Steinmetz, Knappstein, Ajzen, Schmidt& Kabst, 2016). An effective attitude relates to whether a person believes the behavior to be enjoyable or unenjoyable, whereas an instrumental attitude refers to whether the behavior is believed to be beneficial or harmful. These are not always clear-cut, however, and an individual might have a mixture of effective and instrumental attitudes (Conner, 2020). The second predictor of behavior is SN, which relates to the support given or not given by family, friends, or significant others. Similar to attitudes, SN can be divided into two different types: injunctive and descriptive norms. Injunctive refer to whether others

encourage an individual to do behavior, and descriptive norms relate to whether others in a person's social group engage or do not engage in same behavior (Lin et al., 2020).

The third predictor of behavior based on the TPB is PBC, which is the extent to which a person has confidence in their ability to carry out the desired behavior. This could be linked to the perception that a person has the capabilities to overcome potential barriers and challenges (Dilekler, Doğulu & Bozo, 2019).

The TPB states that when a person perceives an activity is enjoyable with good benefits, where they have the support and encouragement of others as well as members of their social group that have already engaged in the behavior and ultimately feel that they have the ability to meet the demands of a task, they will form stronger ability and be more likely to engage in the activity (Ferreira & Pereira, 2017). DM represents a stressful event in the patient's life, and therefore the role of the nurse is to help the patients adapt to this stressful event and maintain SCBs and adherence to reasonable lifestyle changes (Arambepola et al., 2016). Changing SCBs is one of the cornerstones of diabetes treatment; however, changing behavior is challenging. Diabetes patients' attitudes toward SCBs will affect how likely they are to perform those behaviors (Macedo, Cortez, Santos, Reis& Torres, 2017). For example, if DM patients believe that practicing PA will make a positive difference to their chronic illness, then it is more likely that they will perform the PA. Furthermore, SN look at what others in the DM patient's social circle and people that the patient interacts with think about the behavior, and therefore the DM patient's behavior is to some extent shaped by what others around them believe, particularly those close to the patient. Consequently, if people around the DM patient are practicing the PA and the patient is considering it and they found it to be beneficial, then the patient is more

likely to practice the PA. In short, SN answers the question "What do others think about the behavior?" (Dilekler et al., 2019).

PBC in DM looks at whether the DM patient believes they have the tools or means required to demonstrate the behavior. For example, if the DM patient thinks that they are not physically able to perform PA, then they will be less likely to perform it (Lin et al., 2020). Similarly, if they believe that they cannot afford the PA, then they will be less likely to perform it. Thus, in short, PBC answers the question "Can I do it?" The three above-mentioned constructs play an important role in shaping the patient's desire to perform the SCBs (Dilekler et al., 2019).

Aim of the Study

The present study aims to investigate the contributing factors to SCBs among the Jordanian patients with diabetes. In addition to this broad goal, the study has the objectives that are outlined below.

Objectives of the Study

1. To assess the diabetic MA and PA adherence levels (i.e., adequate and inadequate) among Jordanian diabetic patients.
2. To assess the frequency of the levels of TPB constructs (i.e., behavioral attitudes, SN, and PBC) levels regarding diabetic MA and PA adherence among Jordanian diabetic patients.
3. To identify the predictors of diabetic MA among Jordanian diabetic patients.
4. To identify the predictors of PA adherence among Jordanian diabetic patients.
5. To detect the relationships between participants' demographics and TPB constructs regarding SCBs (MA and PA) among the participants.
6. To detect the relationships between the TPB constructs among the participants.

Table 1: Definitions of the Study Variables

Conceptual	Operational
Adherence	
Adherence is defined as the extent to which a person's behavior of taking medication, following a diet, and/or executing lifestyle changes corresponds with agreed recommendations from a health care provider (Oldenmenger et al., 2017)	Adherence was assessed by the Medication Adherence and Physical Activity for patients with DM (MAPADM) Questionnaire (Boas, Lima& Pace, 2014; Ghazanfari, Niknami, Ghofranipour, Hajizadeh&Montazeri, 2010; Jannuzzi, Rodrigues, Cornélio, São-João&Gallani, 2014). Based on median scores, there are two levels of adherence: adequate and inadequate
Socio-demographic Characteristics	
Socio-demographic characteristics are defined as the characteristics of a population, such as the age, gender, and income of the people within the population (Cambridge Dictionary, 2020) .	The researcher developed a questionnaire to measure the demographic data of the participants. These data included: gender, marital status, age, current living situation, employment status, monthly income, , diabetes duration, type of diabetes, HbA1c level, treatment method of diabetes, and DM complications

Theory of Planned Behavior Constructs	
In psychology, the TPB links one's beliefs and behavior. The theory states that a person's behavioral attitude, SN and PBC together shape an individual's behaviors (Ajzen & Madden, 1986)	The researcher used a modified version of the MAPADM Questionnaire to measure the constructs of the theory. More details about this tool are available for the readers in the Methodology section
Self-Care Behaviors	
Self-care behavior is the act of caring for yourself when you are ill or to stop yourself from becoming ill (Cambridge Dictionary, 2020).	In this study, the researcher used the MAPADM to measure the SCBs of Jordanian diabetic patients (Boaset al., 2014; Ghazanfariet al., 2010; Jannuzziet al., 2014). These SCBs include PA and MA
Medication Adherence	
Medication adherence is defined as the degree to which the person's behavior corresponds with the agreed recommendations from a health care provider (WHO, 2019).	This variable was measured by the MAPADM Questionnaire. The Behavior (Adherence) for DM Medications (BM) section consists of seven items that utilized a Likert scale including Always = 1, Very often = 2, Sometimes = 3, Rarely= 4, Never = 5. The total score for the whole subscale ranges from7 to 35 points. The researcher utilized the calculated median for the cutoff point between adequate adherence and

	inadequate adherence. A score in the range of 7–28 is considered inadequate adherence, while a score in the range of 29–35 is considered adequate adherence
Physical Activity	
PA is defined as any bodily movement produced by skeletal muscles that requires energy expenditure, including activities undertaken while working, playing, carrying out household chores, traveling, and engaging in recreational pursuits (WHO, 2018).	This variable was measured using the MAPADM Questionnaire. The. Behavior (Adherence) for Physical Activity (BPA): A Likert scale that ranged from Very likely = 1 point to Very unlikely = 5 points was used in this section. The total score for the whole subscale was 5 to 25 points. The researcher utilized the calculated median for the cutoff point between adequate adherence and inadequate adherence. A score in the range of 5–14 is considered inadequate adherence, while a score in the range of 15–25 is considered adequate adherence

Summary

DM is regarded as one of the major chronic health problems internationally. In Jordan, the prevalence rate of diabetes is alarming, and the Jordanian government started to highlight diabetes as a serious health problem among Jordanian people. Unfortunately, diabetes could lead to serious health complications for the affected patients if not managed properly. Many studies reported the significance of adherence to SCBs in controlling and reducing the complications of DM. Although there are many types of SCBs, in this study the researcher discusses both PA and MA in depth. To the best of the researcher's knowledge, only a few number of studies have addressed the SCBs of Jordanian patients who suffer from DM by using the TPB. Therefore, it is crucial to investigate DM patients' SCBs and identify their relationship with the patients' demographics. The current study aims to assess the level of SCBs and examine the relationship between demographic characteristics and SCBs among Jordanian patients with diabetes. The TPB was used as the theoretical framework of the current study.

Chapter Two: Literature Review

Introduction

The aims of the current study are to assess the relationships between SCBs (e.g., MA & PA) and TPB constructs such as behavioral attitudes, SN, & PBC. This chapter describes the published studies that discuss the topic of SCBs among diabetes patients. The chapter also sheds light on the TPB constructs and the relationship between these constructs and patients' socio-demographic characteristics, as well as the relationships between these constructs and MA and PA.

Search Strategy

The researcher used the CINAHL, MEDLINE, PubMed, and EBSCO databases, as well as Google Scholar scientific databases. The databases were searched utilizing the following key words: "SCBs" (and comparable terms such as self-care practices, self-care activity, & therapeutic regimen), "patients with diabetes mellitus" (DM) (comparable terms of DM patients, and diabetes patients), "medication adherence" (oral hypoglycemic agent and anti-diabetic medication, medication commitment), "physical activity" (exercise, physical fitness, & sport) in addition to "Jordan" in diverse arrangements.

Eligibility Criteria of this Review

The eligibility criteria utilized for this literature review are outlined below. First, the study should be published between 2013 and 2019 with some exceptions. These exceptions were using the old references to cover some missed data that was not found within the stated time limits. Furthermore, the definitions of the study concepts and instruments were obtained from these resources. Second, the study should be in the English language. Third, the study focused on the SCBs experience of adults with

diabetes. Finally, the study discussed the relationships between TPB constructs and healthy behaviors such as adherence to PA and diabetic MA.

Overview of DM

DM is a major chronic health problem internationally (American Diabetes Association [ADA], 2019). WHO (2019) defined DM as a group of metabolic disorders characterized and identified by the presence of hyperglycemia in the absence of treatment. It is caused by defects in insulin secretion, insulin action, or both, and disturbances of carbohydrate, fat and protein metabolism(WHO, 2019).

Globally, the number of people with DM is steadily rising, particularly in low- and middle-income countries (Roglic, 2016).The age-adjusted prevalence of DM among adults rose from 4.7% (108 million) in 1980 to 8.5% (422 million) in 2014, with the greatest rise in low- and middle-income countries (Roglic, 2016). Regarding the international statistics, in 2019 it was estimated that 463 million (9.3%) adults aged 20–79 years were living with diabetes, and the number was estimated to increase to 578 million (10.2%) by 2030 (Saeedi et al., 2019).

Uncontrolled glucose levels were reported to cause about four million deaths annually (WHO, 2019). Furthermore, the IDF estimated that the annual global health care expenditure on diabetes among adults was USD760 billion in 2019, which is expected to be USD825 billion by 2030 (Saeedi et al., 2019). The statistics indicated that the prevalence of diabetes in the Middle East is the second highest in the world after the Caribbean and North America. It is estimated that the prevalence rate of diabetes will increase from 39 million people in 2017 to 82 million people in 2045 in the Middle East (Choi, Lee, Lee, Kang& Choi, 2017)

The prevalence of T2DM in Jordan is high and increasing at a significant rate every day (Alghadir, Alghwiri, Awad& Anwer, 2016). The diabetes prevalence rate in the Jordanian population was reported to be 32.4% for males and 18.1% for females in 2017 (Ajlouni et al., 2019). In Jordan, the number of annual diabetes-related deaths was 400 males and 350 females for patients aged 30–69 years and 450 males and 490 females for patients aged over 70 years (Roglic, 2016).

According to WHO (2019), diabetes types can be described as follows. T1DM is characterized by destruction of the β-cell inside the pancreas, which usually occurs as a result of autoimmune disease. This leads to insufficient production of insulin to meet the body's needs. This is common in infants and young people. Conversely, T2DMis caused by tissue receptor resistance to insulin due to dysfunction of the β-cell that could occur at different degrees. This is the most prevalent type of diabetes, and both obesity and overweight contribute to its incidence (Bhupathiraju & Hu, 2016). Gestational DM occurs in the last trimester of pregnancy and can sometimes be clearly evident before the gestational period (Wexler et al., 2018).

The published reports on diabetes (WHO, 2019) illustrated that diabetes can be manifested through a list of symptoms, such as weight loss, blurring of vision, polyuria, thirst. Other symptoms of diabetes include coma (in severe conditions when the treatment is inadequate or lacking), dehydration, nonketotic hyperosmolar condition, and ketoacidosis.

DM can lead to several complications if blood sugar is not controlled adequately. These complications include neuropathy, nephropathy, retinopathy, nonalcoholic fatty liver disease, erectile dysfunction, cataracts, foot ulcer, cerebrovascular disease, peripheral arterial disease, and heart problems (WHO, 2019).

The treatment of DM requires good control of the patients' complications by the caregivers/ health care providers, as well as successful cooperation from the patient (Abate, Tareke &Tirfie, 2018).

Several types of SCBs, such as foot care, taking medication as prescribed, blood glucose management, cessation of smoking, PA, and following a healthy diet and lifestyle (Aschalew et al., 2019), are mentioned in the literature. The results of publications highlight the importance of performing SCBs such as disease management properly and achieving the treatment targets and goals (Niguse, Belay, Fisseha, Desale& Gebremedhn, 2019). Aschalewet al. (2019) reported that there is a positive correlation between SCBs and good glycemic control. Furthermore, complication reduction might improve the patient's quality of life (Aschalew et al., 2019).

In the current study, MA and performing PA were studied. The rationale behind choosing MA is the great advantages of this factor for the patients. These advantages might include blood glucose control, complication reduction, and optimal treatment of the patient. According to Cranefield, Mahmoud, Padget and Rocha (2017), it has been reported that the average adherence to long-term medications for chronic diseases such as DM in developed countries is approximately 50%, and this rate decreases significantly in developing countries. MA was reported to range between 31% and 71% (Cranefield et al., 2017). Poor adherence to the prescribed medications consequently leads to worsening the status of the patient, increases the mortality rate, and leads to a significant financial burden on both the patient and the health care system (Cranefield et al., 2017).

Likewise, PA adherence was selected since performing PA on a regular basis could lead to several benefits for the patients' health status, for instance, controlling the blood

glucose level, which is a result of most of the diabetes prevention programs, and reduction in patients' mortality (Lima, Benedetti, Oliveira, Bavaresco& Rech, 2019). Moreover, participating in regular PA could contribute significantly to improving the cardiorespiratory fitness, reducing the lipid level, decreasing the blood pressure, and ameliorating the glycemic control of the patients.

Factors Associated with Patients' Adherence to Anti-Diabetes Medications

The reported results indicated poor MA in patients diagnosed with DM that ranged widely from 38% to 93% (Cramer, Benedict, Muszbek, Keskinaslan & Khan, 2008; Farr, Sheehan, Curkendall, Smith, Johnston & Kalsekar, 2014; Krass, Schieback & Dhippayom, 2015). In this section, many factors, including demographic factors, will be discussed.

Demographic Factors and Adherence to Diabetic Medications

Many studies have shown variations in the reported level of MA of patients with diabetes according to gender, marital status, age, current living situation, employment status, educational level, diabetes duration, type of diabetes, HBA1c level, treatment method, and complications. The relationship between these demographic factors and patients' MA is explored in this section.

The researcher identified studies on the relationship between MA and the gender of patients with diabetes. A study was conducted by Awodele and Osuolale (2015), who utilized a retrospective research approach to assess the effect of MA on the patient's health outcomes. The sample consisted of 240 Nigerian patients with diabetes. The results revealed that most of the participants had negative views in relation to their medication

(e.g., unaffordable) (Awodele & Osuolale, 2015). The study also concluded that non-adherence increased the rate of both mortality and morbidity.

However, a contrasting finding was reported by Habtu, Uwingabire, Mureithi and Gashegu (2019), who carried out a study to determine the association between 127 patients' adherence to the prescribed treatment regimen and a number of socio-demographic variables, including the gender of the patients with DM. The utilized method was a descriptive cross-sectional approach. The results illustrated that patient gender is considered one of the significant predictors of MA (AOR=10.60; 95% CI: 1.55–72.32; p=0.016). In addition, males (n =61, 67.8%) tended to have more adherence than females (n =21, 56.8%).

A study conducted by Habtu et al. (2019) revealed that there is a strong correlation between the participants' marital status and anti-diabetes MA. Single or divorced patients (n =56, 72.7%) tended to have more MA utilization than married patients (n =26, 52.0%). A possible explanation for this result is that married patients could have more familial responsibilities because of their wives and children, whereas single or divorced patients could be free of such familial responsibilities.

Different results concerning the correlation with marital status were reported by Marinho et al. (2018).The researchers conducted a study in Canada to explore the association between the participants' socio-demographic factors and adherence to different aspects of anti-diabetic treatment. The results showed around two thirds (70%) of married patients had more adherence to the medication than unmarried patients. Some studies suggested that married patients perceived that they have more social support and have more reminders and help from their partners than unmarried patients.

The findings of a study conducted by Awodele and Osuolale (2015) illustrated that more than half of the sample (57%) were aged over61 years. The findings reported a significant correlation between the patients' age and nonadherence to the diabetes medication (n= 62, 89.9%). In contrast, a study conducted by Habtu et al. (2019) found that respondents aged 65 years and above were about 52 times more likely to have adequate MA than respondents aged 34−44 years.

Basu et al. (2019) conducted a descriptive study with Indian patients to assess self-care practices and their associated factors. The sample consisted of 375 patients with diabetes. The results showed that more adherence to the prescribed medication was evident in patients who live alone or in a nuclear family. Using the researcher's experience and knowledge, it can be concluded that the higher adherence of participants who live alone or in a single family could be due to the fact that if the patient lived in a single family, they could receive more social support than if they lived in an extended family (Basu & Sharma, 2019).

Similarly, Sankar Lipska, Mini, Sarma and Thankappan (2015) found that the MA was greater among patients who received supportive instruction from their families than among patients who did not receive such support.

A study conducted by Alqarni, Alrahbeni, Al Qarni and Al Qarni, (2019) found a significant correlation between employment status and MA (p= 0.037), as around half of the sample were employed and had high MA (n= 46, 44.2%). (Alqarni et al., 2019; Lima-Dellamora, Osorio-de-Castro, Madruga& Azeredo, 2017).

In Jordan, a study using a cross-sectional design was conducted by Adwan and Najjar (2013) to examine the relationship between 178 Jordanian DM patients' demographics

and DM self-management. The study findings revealed a weak positive relationship between patients' monthly income and DM self-management. In other words, this could mean that increased income led to an increase in patients' adherence (Adwan & Najjar, 2013). Likewise, Nejaddadgar, Solhi, Jegarghosheh, Abolfathi and Ashtarian (2017) conducted a cross-sectional correlational study to identify factors that affect patients' adherence to a treatment regimen (such as regular drug use). The results showed that there was a significant difference between patient income and MA ($p < 0.001$) (Nejaddadgar et al., 2017).

A study conducted by Awodele and Osuolale (2015) showed no significant association between educational level and DM MA. Conversely, Abebaw, Messele, Hailu and Zewdu, (2016) conducted a cross-sectional institution-based study to evaluate anti-diabetic MA and the correlated factors among 288 patients with diabetes in one selected hospital in Ethiopia. The researchers utilized systematic sampling. The study showed that 85.1% of the participants adhered to the prescribed medication. Moreover, the regression results indicated a significant association between educational level and anti-diabetic MA (AOR = 14.27; 95% CI: = 3.0; 67.82) (Abebawet al.,2016).

A descriptive cross-sectional study was conducted to measure the participants' (with DM) anti-diabetic MA and duration of DM diagnosis. The participants were 369 patients who attended primary care settings in Palestine. The regression results showed that duration of DM diagnosis could be a predictor of MA(Elsous et al., 2017). Similarly, Abebaw et al.'s(2016) study indicated that duration of DM diagnosis is significantly associated with anti-diabetes MA (AOR = 6.10; 95% CI: 2.03; 18.34).

A study conducted in Jordan by Gharaibeh and Tawalbeh (2018) explored the level of SCBs among Jordanian DM patients. The results of the study showed that there was a significant association between patients' type of DM and type of medication and the level of self-care practices. In other words, the diabetes self-care practices were significantly higher for patients with T1DM than those with T2DM.

Another cross-sectional descriptive correlational study was conducted by Alqarni et al. (2019). The results of the study indicated that patients with T2DM tended to have a higher level of MA utilization (Alqarni et al., 2019).

A retrospective study was conducted to determine factors influencing MA among Japanese DM patients. The sample consisted of 884 DM patients. The findings of the study revealed that MA among Japanese DM patients was influenced by HbA1C levels (the OR for the logistic regression was 0.82) (Horii, Momo, Yasu, Kabeya& Atsuda, 2019). Conversely, in the Japanese context, Hashimoto et al. (2019) found that HbA1c level was associated with patients' adherence to the prescribed medications; however, this association was not statistically significant ($p = 0.111$). The sample consisted of 157 patients with DM (Hashimoto et al., 2019).

Maina (2016) studied the factors that are associated with nonadherence to oral hypoglycemic medications. The sample consisted of 113 participants with DM from the outpatient clinics at Mbagathi Hospital. The researcher assessed the use of oral hypoglycemic agents as the treatment method among the participants. The results indicated that the use of two or more oral diabetic drugs was significantly associated with non=adherence to the patient's medication (AOR = 6.51; 95% CI: 1.63−25.03; $p< 0.006$) (Maina, 2016).

Conversely, Hashimoto et al. (2019) conducted a descriptive cross-sectional correlational study and found that the type of treatment method (exercise therapy, diet therapy, & insulin therapy) was associated with patients' adherence to the prescribed medications. The researchers selected 157 patients with DM from four clinical settings (Hashimoto et al., 2019).

Fukuda and Mizobe (2017) conducted a retrospective correlational study to investigate the association between diabetic medication non-adherence and the occurrence of DM complications. The sample (n = 11,331) consisted of diagnosed DM patients, and the study reported that the occurrence of complications (such as chronic arterial occlusion, cerebrovascular disease, & ischemic heart disease) was significantly higher in the non-adherent patients. The study also reported higher cumulative healthcare expenditures among non-adherent DM patients compared with adherent patients (Fukuda & Mizobe, 2017).

Simpson, Lin and Eurich (2016) conducted a retrospective cohort study to identify the relationship between MA and DM complication incidence. The sample consisted of 54,505 patients with diabetes. The sample was selected from a large U.S. claims and integrated laboratory database. The results indicated that complications of diabetes could be reduced through good adherence to the prescribed medications (Simpson et al., 2016).

Similarly, Yashkin and Sloan (2018) conducted a longitudinal correlational study using a secondary data analysis approach. The researchers obtained the data from the U.S. Centers for Medicare & Medicaid Services. The author included 71,533 patients in the final sample for data analysis purposes. Results illustrated that lower complications can be predicted by proper MA (Yashkin & Sloan, 2018). It is reasonably expected that

avoiding or neglecting the health care providers' instructions and health recommendations concerning the diabetes treatment measures will be positively associated with the development of diabetes complications. Therefore, increasing the patients' awareness of the importance of MA is imperative. This awareness can be promoted using a variety of resources, such as TV shows, distributing brochures to the public, and providing health education for hospitalized patients with DM (Fukuda & Mizobe, 2017).

Theory of Planned Behavior and Medication Adherence among Diabetic Patients

Akbar et al. (2015) systematically reviewed the TPB studies that predicted SCBs in DM at-risk populations. The review included 16 studies and reported that constructs of TPB were predictive factors for all the behaviors of the DM populations. This theory consists of three constructs: behavioral attitudes, SN, and PBC.

Habtu et al.'s (2019) study indicated that the patients had unfavorable attitudes toward DM and its prescribed treatment regimen. In contrast, the inferential statistics illustrated that there was no significant link ($p = 0.492$) between the patients' attitude and adequate adherence to the prescribed treatment regimen (SCBs).

Fai, Anderson and Ferreros (2017) conducted a quantitative study to explore the relationship between the use of oral anti-hyperglycemic agents and the attitudes of 115 African Americans diagnosed with diabetes. The findings showed that patients' attitude was not a significant predictor of the behavior ($p = 0.492$).

One possible explanation for this result is that usually, patients with DM illustrated that community stigma could play a significant role in forming their unfavorable attitude toward diabetes and diabetes management (Fai et al., 2017). Therefore, they had low

adherence to the prescribed medication. This study provides empirical evidence of the importance of using the TPB to study the behavior and attitude of patients.

The above-mentioned quantitative study showed that the relationship between the SN construct and the patients' behavior concerning the utilization of oral anti-hypoglycemic agents was not significant (p = 0.807). The study sample consisted of 115 African American patients with diabetes. The rationale for this study was that positive support from the most important individuals that surround the patients could positively direct the patient to have more adherence to use prescribed medication for DM (Fai et al., 2017).

Moreover, Wu and Liu (2016) conducted a descriptive study to measure the correlations between different constructs of the TPB and patients' adherence to oral anti-diabetic medication. The sample consisted of 130 Chinese patients with diabetes. In this study, the researchers used normative beliefs (expectations of others) to refer to the participants' subjective norms. The study's findings illustrated that there were correlations between the total score of the TPB and the adherence to the use of oral anti-diabetic medication (p=0.011).

A quantitative study conducted by Fai et al. (2017) in the U.S. found that the relationship between the PBC construct and the patients' behavior concerning the utilization of an oral anti-diabetic agent was significant (p = 0.006). Dashtian et al. (2017) used the TPB to guide a descriptive cross-sectional study to determine the most crucial predictors of MA among 160 patients with diabetes. The results showed that MA can be predicted by PBC. These results can be supported by the following rationale. The patients who believed that they have more ability to overcome the barriers and challenges that are

associated with taking anti-diabetes medication probably have more adherence to anti-diabetes medication than patients who do not have such control (Dashtian et al., 2017).

Physical Activity

PA plays a significant role in both the prevention and the treatment of chronic illness (Anderson & Durstine, 2019). Based on a systematic review, the benefits of PA were: a) enhancing the patient's quality of life; b) mental health empowerment; c) a positive contribution to the overall physical function of the client; d) balance increment; e) supporting the development and the functioning of both the client's bones and muscles (i.e., musculoskeletal system); and f) weight reduction and control. The latest guideline for the appropriate way to perform PA indicates that the client should engage in at least 150 minutes of aerobic physical exercise per week (that ranges from moderate to severe in terms of intensity) (Bullard et al., 2019).

Adherence to Physical Activity among Diabetic Patients

A study conducted by Alhariri, Daud and Saghir (2017) used a descriptive design to identify factors that are associated with adherence to diet and exercise among T2DM patients in Yemen. The results of the study indicated that about 15.2% of the participants had low adherence to the recommended PA.

Moreover, a study was conducted by Koponen, Simonsen and Suominen (2017) to identify determinants of PA among patients with T2DM. The sample consisted of 2,866 patients recruited from five municipalities in Finland. The results showed that approximately 90% of the patients indicated that they did receive a recommendation concerning the importance of PA. However, only a small percentage of them (36%) reported that they engaged in PA on at least five days per week.

Physical Activity and Demographic Variables

Several studies have shown variations in the reported level of PA of patients with diabetes according to gender, marital status, age, current living situation, employment status, educational level, diabetes duration, type of diabetes, HbA1c level, treatment method, and complications. The relationship between these demographics and patients' MA is explored in this section.

A study carried out by Shettigar, Shivaraj and Shettigar (2019) used a cross-sectional questionnaire-based approach to investigate 220 adult Africans with diabetes. The results indicated that about half (51.8%) of the participants engaged in PA. Moreover, the findings showed that there was no significant association between gender and exercise

adherence (Shettigar et al, 2019). The most common reason for not exercising was a lack of time, which was followed by a lack of motivation.

Bhatti, Manzoor, Korai and Khaliq (2018) conducted an exploratory study to measure SCBs (such as MA) and identify socio-demographic correlations among 382 Pakistani patients with diabetes. The sample was recruited using the purposive sampling method. For the data collection, the authors used a semi-structured questionnaire. The results of the study illustrated that the participants did not follow any specific guidelines or standards for self-care. From a different perspective, however, the participants' socio-demographic characteristics (sex, marital status, educational level, monthly income, and age) were associated with SCBs (Bhatti et al., 2018).

Parajuli, Saleh, Thapaand Ali (2014) conducted a cross-sectional study in Nepal. The sample size was 358, and participants were recruited from the endocrine or medicine outpatient department. As indicated by the study results, 42.1% were nonadherent to the PA (Parajuli et al., 2014).

Nejaddadgar et al. (2017) conducted a correlational cross-sectional study in the Iranian context in which the researchers collected the data about self-care determinants from 382 patients with diabetes. The researchers recruited the sample from the Diabetes Center of Ardabil. The results indicated that around 75% of participants did not have a regular PA program (Nejaddadgar et al., 2017).

A descriptive cross-sectional study conducted by Shettigar et al. (2019) showed that younger participants preferred to participate in high-intensity exercise, whereas the older participants (i.e., those aged >40 years) preferred moderate exercise. The sample consisted of 220 individuals with DM selected from a university hospital in Africa

(Shettigar et al., 2019). Younger participants (i.e., those aged <40 years) tended to have more physical fitness and power than older participants (n = 42). Therefore, they have more ability to engage in high-intensity physical exercises. Health care providers should design appropriate physical exercise programs that match the PA of the patients given the age element of patients (Shettigar et al., 2019).

Using a descriptive cross-sectional approach, Jadawala et al. (2017) assessed the participants' adherence to PA. The researchers collected the data from 290 Indian patients with diabetes. The findings of the study revealed that Indian patients were not adherent to the PA. In relation to the association between the participants' demographics and the adherence to the PA, the study findings showed a significant correlation (p = 0.001) between the type of patients' family (nuclear versus joint) and the level of adherence to the PA. Patients who live with a nuclear family reported higher adherence to the PA (n = 75,79.1%) than patients who live with a joint family (n = 46,20.9%) (Jadawala et al., 2017). PA adherence was higher in patients with a positive family history of diabetes than others ($p = 0.001$), as well as in participants in an upper-middle socioeconomic class than lower ones ($p = 0.047$). Divorced patients were more non-adherent to PA than married and widowed patients ($p = 0.021$) (Jadawala et al., 2017).

In the South African context, in a correlational cross-sectional study conducted by Mutyambizi et al. (2020), the researchers investigated factors that are associated with adherence to diabetes SCBs (such as PA adherence) among patients at two public hospitals in Gauteng, South Africa (n =396). Concerning the relationship between the participants' employment status and PA, the results indicated that only 9% adhered to

PA; however, PA was found to be associated with education, being a student, and being within a higher wealth index (Mutyambizi et al., 2020).

Similarly, Alhariri et al. (2017) carried out a descriptive study to evaluate the adherence to self-care practices among 210 Yemeni patients with diabetes. The authors used a structured questionnaire to collect the required data for this study. The main objective of the study was to assess the participants' adherence to the self-care practices (such as PA adherence). The study illustrated that the level of adherence to exercise was 15.2% among the participants. It also illustrated the association of a number of socio-demographic characteristics with patients' adherence to exercise, for example, PA adherence was significantly higher among patients who were aged under 60 years ($p<0.020$) and those who were taking oral hypoglycemic medication ($p =0.001$) (Alhariri et al., 2017).

Shettigar et al. (2019) conducted a non-experimental study utilizing cross-sectional approach to identify the relationship between different demographic characteristics of the patients and their participation in PA. The sample consisted of 220 Indian patients. The results showed that only half of the study population were educated about PA by a healthcare professional (Shettigar et al., 2019).

Furthermore, this study was conducted to identify the patients' factors associated with such PA adherence. Of the total number of study participants, 133 (45.6%) were reported to adhere to PA and 157(54.4%) did not adhere to PA. Younger patients (aged <55 years) were more likely to adhere to PA than older patients. Male patients were two times more likely to adhere to PA than female patients. Patients with a high level of education (graduate and above) were four times more likely to adhere to PA than others. Married

participants were two times more likely to engage in PA than participants who were single. Participants who had a diabetes duration ≤10 years and T2DM patients had a statistically significant association with their adherence condition and were two times and five times more likely to engage in PA than with their counterparts, respectively (Jadawala et al., 2017).

The rationale behind this study result is that having longer diabetes duration could mean that the patients visited the diabetes clinics recurrently, and therefore they would have more opportunities to receive instructions and recommendations from the health care providers concerning the suitable strategies for maintaining the normal/therapeutic blood glucose level and preventing the diabetes complications. This may lead to positive values about adherence to anti-diabetes medication among patients (Jadawala et al., 2017).

The researcher identified a number of studies on the relationship between adherence to PA and type of DM of patients with diabetes. For example, in the Jordanian context, Gharaibeh and Tawalbeh (2018) found a significant correlation between the type of diabetes and participants' self-care practices (PA) ($p < 0.001$). The researchers collected the data using a cross-sectional descriptive design. The sample of 310 Jordanian patients was recruited from governmental hospitals located in the central part of Jordan using the convenience sampling method. The researcher approached the outpatient clinics of these hospitals (cardiovascular, diabetes, and endocrine clinics) for recruiting participants (Gharaibeh & Tawalbeh, 2018).

Marinho et al. (2018) conducted a descriptive correlational cross-sectional study to identify factors that are associated with adherence to self-care practices among 476

patients with diabetes who received treatment in the outpatient clinic of one general hospital. The study results indicated that only 22.5% of the participants adhere to PA. Furthermore, a number of laboratory and complications affected the participants' engagement in self-care activities. These factors can be summarized as follows: HbA1c level, cholesterol levels, high-density lipoprotein (HDL), occupational performance, macro-vascular complication, and body mass index (BMI) in addition to being younger. In relation to HbA1c level, the regression statistics showed that there is strong correlation between HbA1c level and self-care practices (especially doing physical exercise) ($p<0.001$) (Marinho et al., 2018).

In another study (Alhariri et al., 2017), the researchers utilized a descriptive correlational design to identify factors that could impact the patients' adherence to an exercise plan and dietary recommendation. They recruited 210 participants. The results indicated that in general, the participants demonstrated low adherence to a therapeutic regimen (SCBs). Furthermore, the results indicated that there was a strong statistically significantly correlation between adherence to regular exercise and glycemic control (HbA1c<7%) ($p = 0.032$). The agreement among the above researchers concerning the relationship between HbA1c level and PA may be explained by the fact that patients with HbA1c >7% do not participate in the PA due to the associated complications (Alhariri et al., 2017; Marinho et al., 2018).

A study conducted by Alhariri et al. (2017) included 210 patients with a confirmed diagnosis of diabetes. The findings of the study illustrated that the participants reported a low level of adherence. Furthermore, the results revealed that diabetes treatment method

(oral hypoglycemic agent versus insulin) was significantly correlated with exercise adherence ($p = 0.001$) (Alhariri et al., 2017).

Bilal, Osman and Omer (2017) carried out a cross-sectional study to measure the impact of PA on the complication development among 100 Sudanese patients. The results showed that only one quarter of the patients were performing exercises, and that this was evident in the high blood glucose level and the increasing level of HbA1c, total cholesterol and HDL. The reported complications included retinopathy (30%), neuropathy (25%), cardiovascular system diseases (13%), blood vessel diseases (9%), and nephropathy (6%).

Similarly, Bukht et al. (2019) conducted a descriptive cross-sectional study to assessing the relationship between PA and the incidence of diabetes-associated complications. The sample consisted of 997 patients who were recruited from an outpatient clinic in Bangladesh. The results indicated that around two thirds of the participants were either inactive or engaged in low PA and that 65.1% of them were overweight/ obese. Also, low PA was connected with three diabetes-related complications ($p < 0.001$): Hypertension, retinopathy, and nephropathy (Bukht et al., 2019).

Theory of Planned Behavior toward physical activity among diabetic patient

Lima et al. (2019) conducted a study in the Brazilian context using a population-based, cross-sectional, quantitative approach. For data collection purposes, the researchers utilized the following questionnaires: the International Diabetes Attitude Questionnaire and the International Physical Activity Questionnaire. The results showed that there was a significant association between positive attitudes concerning the physical care of diabetes and PA (Lima et al., 2019).

Similarly, Karimy, Koohestani and Araban, (2018) conducted a cross-sectional correlational study to investigate factors that correlated with the patient self-care activities (smoking self-care, diet self-care, sport self-care, and blood glucose test). The sample of403 Iranian patient was recruited from an outpatient clinic for diabetes treatment in Zarandieh province. The results showed that one of the most significant predictors of self-care (sport self-care) was the patients' attitude ($p < 0.001$). An explanation of the study result is that having a positive attitude toward performing diabetes self-care practices could generate adequate energy that enabled those patients to participate in PA on a regular basis (Karimy et al., 2018).

A descriptive cross-sectional study was conducted by Paleeratana (2019). The sample comprised 134 patients with DM. The study findings showed that SN and PBC strongly correlated with behavioral intention and SCBs. PBC was the most important factor predicting intentions (Paleeratana, 2019).

It can be concluded from these findings that SN plays an important role in patients' perception of the diabetes condition and the prescribed therapeutic regimen. Therefore, it is highly recommended that the health care providers establish and implement educational programs that target the SN of those patients and change these norms so the patients will have more adherence and commitment to the treatment plan (Al-Sahouri et al., 2019).

A literature review was carried out by Al-Sahouri, Merrell and Snelgrove (2019) to identify barriers related to diabetes management plan adherence among patients with diabetes. The results indicated that there was inadequate adherence to the diabetes management plan (including foot care, adherence to diet, level of adherence, PA,

medications and blood glucose monitoring) among the Jordanian patients. Furthermore, the study illustrated that several factors could have impacted the patients' adherence to the therapeutic regimen of diabetes. These factors included religious, cultural, and social factors. For instance, patients' cultural background, friends and family members could affect the patients' adherence.

Dashtian et al. (2017) carried out a descriptive cross-sectional study using the TPB to identify the most important predictors of PA. The sample was selected from a health care center in Iran. The researcher recruited 160 patients with diabetes using random cluster sampling. The findings indicated that PBC was predictor of the patients' participation in PA(Dashtian et al., 2017).

Plotinkoff, Lippke, Courneya, Birkett and Sigal (2010) carried out a study to investigate the adoption of the TPB to gain a better understanding of PA in the DM population. The sample of the study included 2,311 DM patients who completed a structured TPB self-report. The TPB accounted for 23% and 19% of the variance in PA for T1DM and T2DM patients, respectively. The PBC construct of PA was the main predictor of the patients' PA(Plotnikoff et al., 2010).

Using a prospective descriptive approach, Rahmati- Najarkolaei et al. (2017) examined the lifestyle selection among 350prediabetes patients. The researchers used the TPB and its associated socio-cognitive factors to gain an understanding of the lifestyle pattern. A structured questionnaire was used for the data collection. The results of the study indicated that there was a significant correlation between exercise behaviors (the dependent variable) and the three constructs of the TPB (the independent variables), such as SN. This association was evident at the starting point as well as one month later ($p<$

0.01). It is therefore highly recommended that the health care providers modify the lifestyle of those patients to facilitate the prevention and the progression of prediabetes into diabetes (Rahmati-Najarkolaei et al., 2017).

In a cross-sectional study conducted by Paleeratana (2019), data was collected from 212 patients who received care at a health care center in Thailand. The main objective of the study was to investigate the relationship between the different constructs of the TPB. The results indicated that there were strong correlations among the three major constructs of the TPB and that these correlations were statistically significant (correlation was significant at the 0.01 level and 0.05 level [2-tailed]). The correlation coefficients for correlations among variables were as follows: attitude toward self-care management and subjective norms support (r =0.520), attitude toward and perceived behavioral control (r = 0.327), and social norms with perceived behavioral control (r = 0.275). This correlation means that all the constructs are consistent with the same theory (Paleeratana, 2019).

Level of the Three Constructs of the TPB

Fattahi, Nikanjam, Barati and Mehr (2019) conducted a descriptive cross-sectional study to identify the level of TPB constructs among Iranian patients with diabetes. The sample included 320 patients with T2DM. The results indicated that the three constructs of the TPB (toward PA) had the following mean scores: attitude –M = 82.34; SN –M = 87.53; and PBC –M = 64.06. Likewise, Mohebi et al. (2018) conducted a descriptive study to assess the level of TPB constructs among 325 patients visiting a clinical setting for diabetes in Iran. The findings illustrated that the mean score for the social support construct was M = 50.32.

Relationship between Patients' Demographics and TPB Constructs

In Fattahi et al.'s (2019) study, the results revealed significant correlations between participants' socio-demographics characteristics and TPB constructs. The researchers examined the correlation between several patients' demographics (such as gender, age, educational level, employment status, and marital status) and TPB constructs. However, few of these correlations were significant. Participants' age had a positive significant correlation with behavioral attitude ($p = 0.011$). Marital status had a positive significant correlation with behavioral attitude ($p = 0.003$) and SN ($p= 0.002$). Similarly, the correlations between participants' demographics and social support were tested in Mohebi et al.'s (2018) study. The results showed that both patients' gender and marital status had a significant positive correlation with the social support construct ($p= 0.043$,$p = 0.011$, respectively).

Summary

This literature review presented the most recent data on the SCBs of patients with DM (mainly adherence to anti-diabetic medications and engaging in appropriate PA). Reviewing the literature demonstrated that many studies have been conducted worldwide regarding the level of SCBs among patients with diabetes that had identified significant variations in the level of adherence. The researcher divided the identified studies into two themes in accordance with the study purpose. These two themes are MA and PA.

This literature review discussed the relationship between the three constructs of the TPB and patients' adherence to the prescribed medication. The second theme was engaging in PA and its correlates. The literature indicated that few studies have been conducted in Middle Eastern countries, including Jordan, on this topic, and that the

previous studies focused on patients' adherence to treatment and associated socio-demographic factors.

The literature also documented information concerning the impact of the TPB constructs on the patients' engagement in PA. Initially, the literature indicated that SN is associated with patients' self-care activities (PA). With respect to scientific methods utilized in previous research, a cross-sectional, descriptive correlational design was adopted by most of the studies. Finally, the reviewed literature reported that there are statistically significant interrelationships between the constructs of the TPB. Therefore, the gap in the identified literature is that few studies examine the correlation between demographics and SCBs of the patients with diabetes especially in the Arab world. Considering the gaps identified in the extant literature, this study needs to have baseline information about the correlation between the socio-demographic factors and adherence to SCBs among patients with diabetes in Jordan. Moreover, the main predictors of medication non-adherence are needed.

Chapter Three: Methodology

Overview

This study aims to assess the SCBs of Jordanian patients diagnosed with diabetes. The following sections in this chapter will discuss the design, setting, population and study sample, ethical considerations, study instrument, pilot testing, data collection procedures, and data analysis.

Research Design

A descriptive, cross-sectional correlational design was used to address the research questions. Concerning the utilization of the cross-sectional aspect of the utilized design, Polit and Beck (2018) reported that this approach is appropriate for investigating the intended research problem at a single point in time. Particularly, this type of research design enables the researcher to conduct an investigation using a specific study sample at one time instead of multiple times. This is appropriate for the present study, in which the researcher plans to use a cross-sectional research design as data will only be collected once from patients with DM within a brief time period.

There are several advantages of using a cross-sectional design, and they are available in nursing research textbooks (e.g., LoBiondo-Wood & Haber, 2017; Polit & Beck, 2018). First, cross-sectional designs usually require less time than other types of research methodology. Second, studies that employ this type of research design have readily available findings because of the huge amount of collected data. Third, minimal confounding data exist in relation to maturation (Polit & Beck, 2018).

According to Polit and Beck (2018), the correlational design is a highly useful design for research studies since many of these studies are beyond the researcher's ability to

manipulate, control, and randomize. This is similar to the present study, in which the researcher intends to describe the factors that are associated with the SCBs of patients with DM.

There are several benefits of using this type of research design, initially, the researcher could have significant flexibility as aresult of using this type of design; therefore, the complex associations among the study variables could be easily examined and identified. Another benefit of using this type of research design is that this approach can help the investigator identify significant results about a specific research problem that could not be addressed by manipulation (i.e., the SCBs of patients with DM). Finally, the subsequent experimental studies might be designed based on the findings of this type of research methodology (LoBiondo-Wood & Haber, 2017; Polit & Beck, 2018).

Setting

The current study was conducted in public Jordanian hospitals located in three different areas (i.e., the northern, central and southern areas of Jordan). The patients were selected from both inpatient wards and outpatient clinics (medical & surgical). The selected hospitals were AI-Karak Hospital, Jameel Al-Totangi Hospital, Al-Bashir Hospital, and Princess Basma Teaching Hospital. The researcher chose these hospitals as the patients who attend these hospitals represent diverse socioeconomic backgrounds. The rational for choosing patients from governmental hospitals because these hospitals used similar policies and regulations and this facilitate data collection procedures. Furthermore, the researcher selected two hospitals from the central region of Jordan since the total population of this region of Jordan constitutes 63.5% of the population of the

country (Ministry of Health [MOH], 2020). The following paragraphs provide an overview of the selected hospitals.

Al-Karak Hospital is a government hospital located in Al-Karak. It was established in 1992 and consists of 15 units and 310 beds (MOH, 2020). This hospital has the following inpatient units: Internal Medicine Department (women, men), Department of Obstetrics and Gynecology, Department of General Surgery (men, women), Department of Prematurity, Children section, Intensive Care Department, and Coronary Cardiac Care. Around 1,042 patients were admitted to the hospital in 2018 (MOH, 2020).

Jameel Al-Totangi governmental Hospital is located in Amman and was established in 2001. The hospital consists of buildings and units with 143 beds (MOH, 2020). It has both inpatient and outpatient departments. Inpatient units include the Emergency Department, Medical and Surgical ward, Operation unit, Critical Care units, Maternity units, Pediatrics, and Dialysis unit. There are several outpatient units that include several sectors in different sub-specialties, such as a diabetes clinic, medical clinic, surgical clinic, cardiology clinics, and general dental clinics. Around 938 patients were admitted to this hospital in 2018 (MOH, 2020).

Al-Bashir Hospital was founded in 1954 and is a major government hospital in Jordan with a capacity of 1,100 beds. Around 7,000 patients receive health services daily; and1.5 million patients receive health services yearly. Al-Bashir Hospital has two outpatient DM clinics that serve 1,500 patients monthly (MOH, 2020).

Princess Basma Teaching Hospital was opened in 1960 with an operational capacity not exceeding 50 beds. This hospital was considered as the major government hospital in the northern area of Jordan at that time. With the increase in population in this area and the increase in the workload of the hospital, the number of beds for the hospital was

increased to 120 equipped beds in 1970. The MOH stated that at the beginning of the twenty-first century, many specialized units were opened, some of which serve all northern areas, such as the laser unit for ophthalmology, the endoscopy unit, the gastroenterology unit, and the echocardiography unit, which includes the latest medical devices in this field (MOH, 2020). Around 1,849 patients were admitted to this hospital in 2018.

Population and Study Sample

All the participants in the current study were DM patients attending the hospitals described above. The inclusion criteria for participation in the study are: a) the age of the patient must be at least 18 years (adult patients not pediatric patients); b) participants with a confirmed diagnosis of DM for at least six months since it was demonstrated that the adherence to medications started after six months (Riegel et al., 2017); c) patients who attended one of the above-mentioned hospitals; and d) patients who agreed to participate in the study (by giving informed consent). The exclusion criteria for participation are: a) patients who require intensive care (such as patients with myocardial infarction or respiratory distress) and cannot respond; and b) patients who have any mental or sensory impairment that prevents them from participating in the data collection phase of the study.

Sampling

Sampling is defined as "a process of selecting a portion or subset of the designated population to represent the entire population" **(**LoBiondo-Wood & Haber, 2017, p. 224).The sample was selected using the purposive sampling method.

Sample Size

The sample size is the number of respondents who are necessary for the achievement of a statistically valid conclusion (Polit & Beck, 2018).The researcher used G*power soft ware analysis to calculate the sample size of the study. The following parameters were used: alpha 0.05, power of 80%, moderate effect size, 2-tailed measure. The chosen statistical test was Pearson correlation. The resulting sample size was 356 participants. However, to overcome the problems of incomplete questionnaires and incorrectly given data, the total sample size was 400 (adding a 10% attrition rate for recording error or non-response).

Study Questionnaire

The MAPADM structured self-report questionnaire was adapted by the researcher based on those used in previous studies (Boas et al., 2014; Ghazanfari et al., 2010; Jannuzzi et al., 2014). These studies incorporated the following original tools: the Measurement of Adherence to Treatment (MAT) questionnaire, the Physical Activity Questionnaire for Diabetic Patients (PAQ-DP),and the Proportion of Adherence and Global Assessment of Adherence). In the current study, the MAPADM questionnaire was used, which consisted of the following sections: A) patients' demographics; B) medication adherence and physical activity for patients with DM; and physical activity questionnaire (Appendix A).

Patients' Demographics Section

This section consists of two subscales; the first one is patients' demographic information, while the second one is current diabetes status. The first subscale for demographic information includes seven variables: gender, marital status, age, current living situation, employment status, monthly income (Jordanian Dinar), and educational

level. These variables can be divided in terms of measurement level into two main categories, namely dichotomous (gender) and categorical (marital status, current living situation, employment status, and educational level) variables, in addition to continuous variables (age and monthly income).

The second part of the patients' demographics section is called the Current Diabetes Status subscale, which measure diabetes-associated information such as DM diagnosis date, type of diabetes, HbA1c level, treatment method of diabetes, and DM complications. These variables can be divided in terms of measurement level into two main categories, continuous variables (diabetes diagnosis date), interval (HbA1c level), categorical (type of DM, treatment method of diabetes), and dichotomous (DM complications).

Diabetic Medication Adherence Based on the Theory of Planned Behavior

The MA questionnaire includes four subscales based on the TPB, namely behavioral attitudes (seven items), SN (four items), PBC for MA (six items), and behavior for MA (seven items). A full description of the subscales is provided below.

Attitudes toward DM Medications Adherence (AMA): This subscale consists of seven items to examine attitudes toward adherence to anti-diabetic medication. The questions were answered on a 5-point Likert scale (strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree). Questions were scored as follows: Strongly disagree= 1 point, disagree = 2 points, neither agree nor disagree= 3 points, agree =4 points, strongly agree = 5 points. The sum of questions 1 to 7 represents the total score. The total score for the whole subscale ranges between 7 and 35 points. The median score was used to distinguish the two levels of attitude (i.e., favorable & unfavorable); the

scores that ranged from 7 to 23 indicate an unfavorable attitude, while the scores that ranged from 24 to 35 indicate a favorable attitude.

Social Norms about DM Medications Adherence (SNMA): This section consists of four items that utilized a Likert scale ranging from strongly disagree (1) to strongly agree (5). The total score for the whole subscale (four items) is 20.Based on the median; the total score for this section was divided into two parts: scores of19 and 20 mean that the patient receives encouragement to adhere to medications; while the scores from 4 to 18mean that patient receives discouragement to adhere to medications.

Perceived Behavioral Control for DM Medications Adherence (PBCMA): This section consists of six items that utilized a Likert scale ranging from strongly disagree (1) to strongly agree (5). In this study, one item was deleted for the purpose of reliability (for more details, see the Pilot Study section). The total possible scores for the whole subscale ranged from 5 to 25. The scores that range from 21 to 25 indicate that the patient finds it easy to control MA, while the scores that range from 5 to 20 mean that the patient finds it difficult to control MA.

Behavior (Adherence) for DM Medications (BM): This section consists of seven items that utilized a Likert scale of always = 1 point, very often = 2 points, sometimes = 3 points, rarely = 4 points, never = 5 points. The total possible points for the whole subscale ranged from 7 to 35, where the scores that range from 7 to 28 indicate that the patients have inadequate MA, while the scores that range from 29 to 35 indicate that the patients have adequate MA.

Physical Activity Questionnaire Adherence Based on the TPB

This part of the questionnaire includes four subscales based on the TPB, namely attitude toward PA (seven items), SN (four items), PBC for PA (six items), and behavior for PA (five items). A full description of the subscales is provided below.

Attitudes toward Physical Activity (APA): This section includes a Likert scale that ranged from 1 to 5 points. The scores for the whole subscale ranged from 7 to 35 points. The median score was used to distinguish the levels of attitude. The scores from 26 to 35 indicate a favorable attitude, while the scores from 7 to 25 indicate an unfavorable attitude.

Social Norms toward Physical Activity (SNPA): A Likert scale that ranged from strongly disagree = 1 point to strongly agree = 5 points was used in this section. The total score for the whole subscale is from 4 to 20 points; the scores from 4 to 16 indicate that they received discouragement from significant people while the scores from 17 to 20 indicate that patients received encouragement from significant people.

Perceived Behavioral Control for Physical Activity (PBCPA): A Likert scale that ranged from strongly disagree = 1 point to strongly agree = 5 points was used in this section. The total score for the whole subscale ranged from 5 to 35 points. In this study, two items were deleted for the purpose of reliability (for more details, see the Pilot Study section). Therefore, the total score for the whole subscale ranged from 3 to 15 points. The scores from 10 to 15 indicate it is easy to control adherence to PA, while the scores from 3 to 9 indicate it is difficult to control adherence to PA.

Behavior (Adherence) for Physical Activity (BPA): A Likert scale that ranged from very unlikely = 1 point to very unlikely = 5 points was used in this section. The total

score for the whole subscale is5 to 25 points, where the scores from 16 to 25 indicate adequate adherence to PA, while the scores that from 5 to 15 indicate inadequateadherence to PA.

Translation Process

The researcher utilized the WHO guideline (WHO, 2020b) for the translation process that included the following steps: (1) forward translation from English (as the source language) to Arabic (as the target language) blindly by a bilingual expert; (2) back translation from Arabic to English blindly by a bilingual expert; and (3) comparison of the back-translated versions and originals. The first two steps were done by two clinical nurse specialists. These translators were fluent in both languages and familiar with the nature of this study since they work as clinical instructors. The third step was undertaken by a bilingual expert (an Assistant Professor in Adult Health Nursing), who compared the back-translated and original versions to appraise their semantic equivalence in meaning. This translator was fluent in English and knowledgeable in instrument development (WHO, 2020b). Moreover, an English native speaker checked the back-translated versions with the originals for equivalence in meaning.

Pilot Study

A pilot study is defined as a small-scale study intended to examine the method that is designed to be utilized in a more rigorous, larger study (Polit & Beck, 2018). Before carrying out the current study, the researcher conducted a pilot study to achieve the following objectives: to assess the instruments' feasibility and to determine whether any modifications needed to be made prior to using the study instruments (e.g., identifying possible new items for both the Patients' Demographics Questionnaire and the

MAPADM scale, determining the suitability and quality of the translated Arabic tools (the reliability of the Arabic versions was tested by using Cronbach's alpha reliability coefficient), assessing the clarity and comprehension of the existing items from the patients' perspective, appraising the required time for completing study questionnaire evaluating the appropriateness of the study procedures and methods, identifying any extraneous variables that have to be controlled, and recognizing any potential problems that may occur during the data collection (Polit & Beck, 2018).

Reliability of the Utilized Tool in the Pilot Study

Reliability analysis allows the properties of the tool and its items to be studied. Cronbach's alpha was utilized to assess the internal consistency of the tool that evaluates the consistency of subjects across the items on the whole tool (Polit& Beck, 2017). Polit and Beck (2018) stated that the acceptable reliability of the intended tool could be expressed by a Cronbach's alpha of 0.70 and above. The total MAPADM scale alpha coefficient was 0.83, indicating acceptable internal consistency. The Cronbach's alpha for the eight subscales ranged from 0.71 to 0.99 during the data collection period. The procedure of "Alpha if item deleted" was used in this section, and the results revealed that of any of the items could not lead to enhancing the Cronbach's alpha of the total MAPADM significantly. During the process of the tool's adaptation to Jordanian culture, the researcher made significant modifications (such as combining different subscales into one new subscale). Therefore, the current format of the MAPADM scale and its eight subscales varies a little from the original available tools (the MAT questionnaire, the PAQ-DP, and theProportion of adherence and Global assessment of adherence) in the literature (Boas et al., 2014; Ghazanfari et al., 2010; Jannuzzi et al., 2014) As a result, it

was not possible to compare the reliability of the present study's tool and the previous similar tool(s). All the reliability tests of the MAPADM and subscales in this study are summarized in the Table 2.

Table 2: Cronbach's Alpha (α) of The MAPADM Scale and Subscales in The pilot Study (n=40)

Scale / Subscales	A
The Whole MAPADM Scale	0.83
Social Norms about DM Medications Adherence subscale	0.71
Attitudes Toward DM Medications Adherence subscale	0.72
Perceived Behavioral Control for DM Medications Adherence	0.76
Behavior for DM Medications subscale	0.91
Attitudes toward Physical Activity subscale	0.93
Social Norms about Physical Activity subscale	0.98
Behavior for Physical Activity subscale	0.99
Perceived Behavioral Control for Physical Activity subscale	0.99

Results of the Pilot Study

A pretest of the MAPADM questionnaire was conducted with 40 Jordanian patients with DM who were selected from a government hospital located in south Jordan. Ethical approval was obtained from the Research Ethics Committee at the Faculty of Nursing at Al-Isra'a University prior to conducting the pilot study. The researcher initially obtained permission to conduct the pilot study from the Chief Executive Officer of the Hospital,

who referred the researcher to the Nursing Director of the Hospital. Then, the researcher visited and coordinated with the head nurse of selected hospital ward to collect the data.

The researcher briefed the patients about the study and distributed the invitation letter to them. At that point, patient information sheets were distributed to patients who expressed interest in participating, and informed consent was given by the patients (to preserve their rights). When the patients started completing the questionnaires, the researcher asked them to add any comment(s) regarding items' clarity and difficulty. Moreover, the patients were given an opportunity to suggest new items for the study questionnaires. Spaces were provided for these qualitative comments at the end of each questionnaire.

The following sections discuss the results obtained in the piloting. The sample consisted of 23 males and 17 females aged between 26 and 85 years. Most of the patients in this pilot study suffer from T2DM (n = 34). The pilot study identified a few minor matters. However, none of the patients suggested adding any new items to the tool, and therefore no new items were added.

Regarding the reliability of the Arabic tool, the researcher utilized Cronbach's alpha statistics to illustrate the internal consistency reliability of the eight subscales of the MAPADM scale. The results indicated that the six subscales had satisfactory to excellent Cronbach's alpha scores. The scores for these subscales were SNMA– $\alpha = 0.71$, AMA –$\alpha = 0.72$, BM– $\alpha = 0.91$, APA– $\alpha = 0.93$, SNPA– $\alpha = 0.98$, and BPA– $\alpha = 0.99$. However, two subscales had critically low Cronbach's alpha scores (see Table 1).These subscales were PBCMA– $\alpha = 0.52$ and PBCPA– $\alpha = -0.21$. As a treatment measure, the researcher used the procedure of "Alpha if item deleted" to examine individual items to establish how each of the items affected the reliability of the scale (Hajjar, 2018), and it was used

for item refinement. Regarding the PBCMA subscale, the findings revealed that if PBCMA1 (i.e., access medication free-of-cost) was deleted, the overall reliability score for the PBCMA subscale increased from $\alpha = 0.52$ to a satisfactory level of $\alpha = 0.76$. In relation to the PBCPA subscale, the results indicated that two items affected the overall reliability score of the PBCPA subscale. These items were PBCPA1 (For me, doing 30 minutes of moderate physical activity at least 5 days a week is difficult) and PBCPA2 (Doing 30 minutes of moderate physical activity at least 5 days a week is up to me). Accordingly, the researcher deleted these two items and the Cronbach's alpha scores increased significantly from $\alpha = -0.21$ to $\alpha = 0.99$. It is important to note that the overall Cronbach's alpha for MAPADM (after the above-mentioned remedies) was estimated to be $\alpha = 0.83$, which is suitable to use with the current study population.

Furthermore, in relation to the tool's clarity, some patients indicated that a few items were unclear or difficult to answer. Accordingly, the researcher added extra answers to some items. For example, the researcher added an extra answer to item 11 (i.e., How is your diabetes treated?) in the second part of the Patients' Demographics Questionnaire (i.e., the Diabetes Current Status subscale). The new answer was "have more than one treatment method", and in this way the patient could choose this answer if they received more than one type of DM treatment. Another example is in the SNMA subscale on the MAPADM scale, where the researcher added an item to SNMA 1(i.e., family members older than 18 years) to clarify what "my children" means for the patients.

The research protocol and procedures were adequate and appropriate. However, the researcher checked the completed questionnaires to avoid having some incomplete questionnaires (i.e., having missed data). Finally, no extraneous variables were identified, and no problems occurred during the data collection procedures. The total MAPADM

scale alpha coefficient was 0.83, indicating excellent internal consistency. The Cronbach's alpha for the eight subscales ranged from 0.71 to 0.99 during the data collection period.

The procedure of "Alpha if item deleted" was used and revealed that deleting any of the items could not enhance the Cronbach's alpha of the total MAPADM significantly. During the process of the tool development, the researcher made significant modifications (such as combining different subscales into one new subscale). Therefore, the current format of the MAPADM scale and its eight subscales varies a little from the original available tools in the literature (Boas et al., 2014; Ghazanfari et al., 2010; Jannuzzi et al., 2014). As a result, it is not possible to compare the reliability of the tool used in the present study and the previous similar tool(s). Then, The Content Validity Index (CVI) was then validated by asking three experts in health promotion and public health. These experts were provided with a brief description of the study purposes and the tool and content validity index form for scoring the items in the tool. This tool in addition to CVI form was sent to the jury by e-mail.

The Content Validity Index (CVI) included a rating scale of four choices for each item in the questionnaire as follows: 1=non-relevant; 2=somewhat relevant; 3=relevant but requiring a minor change; 4=relevant. After the content validation process, the experts gave four for all items, where the total CVI for the tool was 1.00.

Ethical Considerations

Approval was obtained from the Institutional Review Board of Al-Israa University of Jordan and the MOH prior to conducting this study. Approval was also obtained from the authors who used the original study tool before starting the data collection (Appendix B). Furthermore, the researcher obtained written informed consent from the participants.

Anonymity was maintained throughout the study by using a data collection ID (specified by the researcher for the purpose of data collection), and the participants were asked to avoid mentioning their names or any form of actual ID (such as Identity Document, phone numbers, and file numbers).

The participants were made fully aware of the study purpose, expectations, and significance, and given contact information to access the researcher and to express interest in participation (through the participants' information sheet). Regarding informed consent, the researcher asked the patients to sign the informed consent form before distributing the study questionnaire. Concerning the data protection, principles of data protection in research were maintained. All the data were treated, analyzed and presented as group data. For security purposes, the data were retained within a locked cabinet. Only the investigator has access to this cabinet.

Data Collection Procedure

Initially, ethical approval was obtained from the selected hospitals. Subsequently, the researcher contacted the head nurse of each of the selected hospitals (Al-Karak Hospital, Jameel Al-Totangi Hospital, Al-Bashir Hospital, and Princess Basma Teaching Hospital) and outlined the study purposes. In addition, the head nurses were given brief explanation of the study. Next, the researcher obtained a list of eligible patients admitted to the ward during the data collection period. A total of 100 patients were selected from this list (in this way, the researcher selected an equal number of patients from each selected hospital). Suitable rooms were selected for data collection, such as the meeting room. Then, the researcher made a plan for data collection with the head nurse during the duty hours. The researcher (a master's program student in Nursing Sciences) distributed the study questionnaires herself at each hospital. It is important to note that four forms were

distributed to the patients in this order: cover letter, information sheet, informed consent form, and the study questionnaires. Patients who expressed interest in participating in the study were contacted by the researcher, who were available in the room. The researcher gave an informed consent form to those patients. After participants had signed the informed consent form, they were given the study questionnaires. All the questionnaires were coded. All the collected data were then stored in a private place known by the researcher alone. The data were collected over a month (collection started in June 2020).

Data Analysis

All the completed questionnaires were reviewed for legibility and completeness. The Statistical Package for the Social Sciences (SPSS) version 26.0 for Windows (George, 2020 Chicago) were used for the data analysis. In preparation for the data analysis, all the study variables were clearly labeled and identified in one SPSS computer file (data set) according to the level of measurement. It is vital to note that all the information regarding variables' names, coding values, and other related information was documented digitally in a complete manner. The documentation chiefly included preparing the researcher's codebook (Polit & Beck, 2018).

Prior to the official analysis, a preliminary analysis was conducted to summarize the data statistically, examine the trends, and check for input data errors. The first stage of analysis involved checking distributions and frequencies of variables. These are reported in terms of the mean (M), standard deviation (SD) of the mean (for continuous measures), and numbers and percentages (for nominal measures). Following this, scales were constructed for continuous variables, typically by taking the mean of contributing items.

Attitude, SN, PBC, and adherence to diabetic medication and PA were measured on a Likert-type scale with adjusted values ranging between 1 and 5, with 5 representing the

most positive perception and 1 representing the most negative perception. Multiple regression analysis was used to examine the predictors of adherence to diabetic medication and PA.

Summary

In this chapter, the researcher explained the methodology utilized in this research project. A cross-sectional, descriptive correlation design was used to conduct the current study. This design was used to collect data at one point in time. This chapter also identifies the variables and discusses their associations (Polit & Beck, 2018). The researcher collected the data from four hospitals that were chosen conveniently. About 400 patients with diabetes were chosen to participate in this study using the convenience sampling technique. The hospitals were Al-Karak Hospital, Jameel Al-Totangi Hospital, Al-Bashir Hospital, and Princess Basma Teaching Hospital.

A questionnaire consisting of socio-demographic data and DM self-care TPB (MAPADM) was used to collect data. A pilot study was conducted with 40 patients to ensure that the questionnaire was understandable and clear and to calculate the time required to complete the questionnaire. SPSS version 26.0 was used to analyze the data.

Regarding the data collection procedures, the researcher designed a plan for data collection in collaboration with the head nurse in each of the selected hospitals. The ethical principles of nursing research were followed adequately. The researcher followed data cleaning measures adequately before moving to the actual data analysis measures. Both descriptive and inferential statistics were used for the data analysis.

Chapter 4 :Results

Overview

This chapter will describe the wide range of descriptive statistics utilized in this study, including range, standard deviation, mean, median, percentages, and frequencies. Furthermore, the chapter will provide details about the correlation between the dependent and independent variables to illustrate the relationship between these two types of variable. These correlations will be reported using regression measures. SPSS version 26 was utilized for the data analysis.

Description of the study sample

The sample of the study consisted of 400 Jordanian patients with diabetes. The demographic variables of the study sample are summarized in Table 3. The mean age of the participants was 60.18 years (SD =12.21), with a range of 20 to 86 years. The patients' monthly income ranged from 30 to 1000 JD (M = 312.10, SD = 169.47). The diabetes duration of the study patients ranged from 1 to 35 years (M = 12.02, SD = 8.57). The majority of the patients were female (n = 244, 61.0%), married (n = 381, 95.3%), live with family (n = 358, 89.5%), unemployed due to their health condition(s) (n = 136, 34.0%), have high school education (n = 232, 58.0 %), haveT2DM (n = 344, 86.0%), have HbA1c with a laboratory result over 8.0 (n = 112, 28.0%), and use more than one treatment method (e.g., insulin & oral treatments) (n = 167,41.8%). In addition, more than two thirds of the study sample have a diabetes complication (n = 325, 81.3%), while around half of the study sample have more than one type of diabetes complication (n = 221, 55.3%) (see table 3)

Table 3
Characteristics/Demographics of the Study Sample (n=400)

Variable	Frequency (%)	M (SD)	Median	Minimum	Maximum
Age		60.18 (12.21)	60	20	86
Monthly income		312.10 (169.47)	250	30	1000
Diabetes Duration		12.02 (8.57)	10	1	35
Gender					
Female	244 (61.0 %)				
Male	156 (39.0 %)				
Marital status					
Single	11 (2.8 %)				
Married	381 (95.3 %)				
Separated/Divorced	4 (1.0 %)				
Widow	4 (1.0 %)				
Living Situation					
Live Alone	1 (0.3%)				
Live with Family	358 (89.5 %)				
Live with Relative	41 (10.3 %)				
Live in Elderly house (nursing home)	0 (0 %)				
Employment Status					
Employed Full Time	36 (9.0 %)				
Employed part Time	69 (17.3 %)				
Unemployed, looking for a job	73 (18.3 %)				
Unemployed due to my Health Condition(s)	136 (34.0 %)				
Retired	86 (21.5 %)				
Education					
Less than High School	106 (26.5 %)				
High School	232 (58.0 %)				
College Diploma	16 (4.0 %)				
Bachelor's Degree	36 (9.0 %)				
Master's Degree	6 (1.5 %)				
Doctoral Degree	4 (1.0 %)				
Type of Diabetes					
Type 1	53 (13.3 %)				
Type 2	344 (86.0%)				

Other	3 (0.8%)				
HBA1c					
< 6.0	23 (5.8 %)				
6.1 – 6.5	36 (9.0 %)				
6.6 – 7.0	53 (13.3 %)				
7.1 – 7.5	101 (25.3 %)				
7.6 – 8.0	75 (18.8 %)				
> 8.0	112 (28.0 %)				
Treatment Method					
Oral Medication	158 (39.5 %)				
Insulin	75 (18.8 %)				
Using More than One Treatment Method (e.g., insulin and oral medication)	167 (41.8%)				
Complication presence					
Yes	325 (81.3 %)				
No	75 (18.8%)				
Type of Complication					
Not Available (N/A)	74 (18.5 %)				
Athersclerosis	29 (7.2 %)				
Eye Disease	46 (11.5 %)				
Foot Problems	19 (4.8 %)				
Kidney Disease	5 (1.3 %)				
Nerve Damage	5 (1.3 %)				
Problems Related to sexuality	1 (0.3 %)				
Having more than One type of Complications	221 (55.3%)				

Reliability of MAPADM

The total MAPADM scale alpha coefficient was 0.91, indicating acceptable internal consistency. The Cronbach's alpha for the eight subscales ranged from 0.70 to 0.99 during the data collection period of the actual study. All the reliability tests of the MAPADM and subscales in this study are summarized in Table 4.

Table 4
Cronbach's Alpha (α) of The MAPADM Scale and Subscales in The Actual Study (N=400)

Scale / Subscales	A
The Whole MAPADM Scale	0.91
Social Norms about DM Medications Adherence subscale	0.93
Attitudes Toward DM Medications Adherence subscale	0.71
Perceived Behavioral Control for DM Medications Adherence subscale	0.70
Behavior for DM Medications subscale	0.97
Attitudes toward Physical Activity subscale	0.70
Social Norms about Physical Activity subscale	0.94
Behavior for Physical Activity subscale	0.99
Perceived Behavioral Control for Physical Activity subscale	0.99

Levels of Self Care Behaviors

Table 5 reported the number and percentage for each level of adherence to diabetic medication and PA. The total score for each section of diabetic medication adherence and PA (behavior) was divided into two levels (i.e., inadequate & adequate). The results indicated that about half (n=219, 54.8%) of the participants reported inadequate adherence to diabetic medication. Furthermore, the study results showed that about one third of study participants reported having an in adequate level of adherence to the recommended PA (n= 260, 65 %).

Table 5: Diabetic Medication and Physical Activity Adherence levels (i.e., adequate and inadequate) among diabetic Jordanian patients (n= 400)

Levels of Diabetic Medications Adherence	***Score***	***N***	***%***
Inadequate adherence	7- 28	219	54.8%
Adequate adherence	29-35	181	45.2%
Levels of Physical Activity Adherence			
Inadequate adherence	5-14	260	65.0%
Adequate adherence	15-25	140	35.0%

Levels of Theory of Planned Behaviour Constructs

The results indicated that approximately half of the patients have a favorable attitude toward MA (n = 224, 56%), while the percentage of patients who have an unfavorable attitude is lower (n = 176, 44%). In relation to social norms about MA, 221 patients reported having encouragement (55.2%). Conversely, 179 reported having

discouragement (44.8%). The majority of the participants in the current study reported that it was easy to controltheir perceived behavior (n=241, 60.3%). Toward medication adherence In contrast, less participants reported this was difficult (n=159, 39.7%).

From a different perspective, regarding the patients' attitude toward PA, the results revealed that about one third of the patients had an unfavorable attitude toward PA (n=129, 32.3%), whereas most of the participants had a favorable attitude toward PA (n=271, 67.7%).

One third of the participants had encouragement to perform PA (n=127, 31.7%). Conversely, almost two thirds of the patients had discouragement (n =273, 68.3%). Finally, in relation to the PBC for PA, only a few participants reported that this was easy (n=55, 13.7%), while most of the participants reported that it was difficult (n=345, 86.3%).

Table 6: Levels of TPB Constructs toward Self-care Behaviours (n=400)

TPB Constructs Level	Score	N	%
Attitudes Toward DM Medications Adherence (AMA)			
Unfavorable attitude	7-23	176	44%
Favorable attitude	24-35	224	56%
Social Norms about DM Medications Adherence (SNMA)			
Encourage	19-20	221	55.2%
Discourage	4 -18	179	44.8%
Perceived Behavioral Control for DM Medications Adherence (PBCMA)			
Easy control	21-25	241	60.3%
Difficult control	5-20	159	39.7%
Attitudes toward Physical Activity (APA)			
Unfavorable attitude	7 -25	129	32.3%
Favorable attitude	26-35	271	67.7%
Social Norms toward Physical Activity (SNPA)			
Encourage	17-20	127	31.7%
Discourage	4-16	273	68.3%
Perceived Behavioral Control for Physical Activity (PBCPA)			
Easy control	10-15	55	13.7%
Difficult control	3 -9	345	86.3%

Medication Adherence Correlates

The correlation measures presented in Table 7 revealed that the independent variables marital status, complication presence, complication type, attitude, SN, and PBC are correlated with MA, the dependent variable. The findings revealed a significant low negative correlation between MA and marital status ($r = -0.11$; $p = 0.02$) and a significant low positive correlation between MA and complication presence ($r = 0.14$; $p = 0.004$). Conversely, the findings revealed a significant low negative relationship between complication type and MA ($r = -0.22$; $p = 0.001$) and a significant low positive correlation between MA and attitude ($r = 0.14$; $p = 0.004$). The results also indicated that SN has a low positive relationship with MA ($r = 0.35$; p

= 0.001). Similarly, the study results revealed a significant low positive correlation between MA and PBC (r = 0.32; p = 0.001). Conversely, the findings revealed no significant correlation between MA and the rest of the variables (see Table 7).

Table 7: Correlates of Medication Adherence (n= 400)

Variables	Correlation Coefficient	Significance
Gender	- 0.03	0.50
Marital Status	- 0.11	0.02*
Age	- 0.06	0.23
Living Situation	- 0.04	0.48
Employment Status	- 0.-09	0.83
Monthly Income	- 0.01	0.79
Education	0.04	0.49
Diabetes Duration	- 0.07	0.18
Diabetes Type	0.02	0.96
HBA 1c	0.22	0.66
Treatment Method	- 0.41	0.41
Complication	0.14	0.004**
presence	- 0.22	0.001**
Complication Type	0.14	0.004**
Attitude	0.35	0.001**
Social Norms	0.32	0.001**
Perceived behavior Control		

Note: *Significant < 0.05 ; ** Significant < 0.01

Physical Activity Correlates

Moreover, the correlation measures presented in Table 8 revealed that independent variables are age, living situation, monthly income, educational level, complication presence, complication type, behavioral attitude, SN, and PBC are correlated with PA, independent variable.

The findings revealed a significant low negative correlation between adherence to PA and age ($r = -0.26$; $p = 0.001$) and a significant low negative correlation between adherence to PA and living situation ($r = -0.14$; $p = 0.006$*). Conversely, a significant low positive relationship was revealed between monthly income and adherence to PA ($r = 0.12$; $p = 0.02$*). Furthermore, a significant low positive correlation was revealed between adherence to PA and educational level ($r = 0.13$; $p = 0.01$). The results also indicated that complication presence has a low positive relationship with adherence to PA ($r = 0.33$; $p = 0.001$). Likewise, the study results revealed a significant low negative correlation between adherence to PA and complication type ($r = -0.29$; $p = 0.001$). Moreover, a significant low positive correlation was detected between adherence to PA and behavioral attitude ($r = 0.27$; $p = 0.001$). Similarly, a significant low positive relationship was identified between SN and adherence to PA ($r = 0.31$; $p = 0.02$*). Finally, the findings revealed a moderate positive correlation between adherence to PA and PBC ($r = 0.59$; $p = 0.001$).Conversely, the findings identified no significant correlation between PA and the rest of the variables (see Table 8).

Table 8: Correlates of the Physical Activity Adherence (n= 400)

Variables	Correlation coefficient	Significance
Gender	- 0.07	0.16
Marital Status	- 0.03	0.61
Age	- 0.26	0.001**
Living Situation	- 0.14	0.006**
Employment Status	- 0.02	0.68
Monthly Income	0.12	0.02*
Education	0.13	0.01*
Diabetes Duration	- 0.09	0.08
Diabetes Type	0.01	0.91
HBA 1c	0.04	0.38
Treatment Method	- 0.01	0.97
Complication presence	0.33	0.001**
Complication Type	- 0.29	0.001**
Attitude	0.27	0.001**
Social Norms	0.31	0.001**
Perceived behavior Control	0.59	0.001**

Note: *Significant < 0.05; ** Significant < 0.01

Predictors of Medication Adherence

The main predictors of MA were tested using multiple linear regression analysis, which revealed that the model statistically significantly predicted MA (F = 17.96, p =0.001). The R^2 for the model was 0.215, and the adjusted R^2 was 0.203. Tables 9 and 10 display the unstandardized regression coefficients (b), standard error (SE b), standardized regression coefficients (B), and t statistics for each variable (t).

As shown in [Table 9] , 21.5% (R^2 =−0.215) of the variance in the dependent variable (MA) was illustrated by the regression model as a whole. Moreover, the outcome showed a predictive model of six predictors, four of which were significantly related to MA: marital status, complication type, SN, and PBC. SN had relatively higher prediction effects (B = 0.75,p <0.001) compared with the rest of the predictors. The findings showed that marital status (t = 2.25, p = 0.03), complication type (t = −3.93, p = 0.001), SN (t = 5.26, p = 0.001), and PBC (t =3.49, p = 0.001) were the significant predictors of MA among Jordanian patients with diabetes. The beta coefficient for marital status was −2.48, representing that a 1 point increase in marital status is correlated with a 2.48 point decrease in MA. Moreover, the beta coefficient for complication type was −0.47, representing that a 1 point increase in complication type is correlated with a 0.47 point decrease in MA. The beta coefficient for SN was 0.75, representing that a 1 point increase in SN is associated with a 0.75 point increase in MA. Furthermore, the beta coefficient for PBC was 0.52, representing that a 1 point increase in PBC is associated with a 0.52 point increase in MA.

Table 9: The Predictors of Medication Adherence to SCBs among Jordanian patients with diabetes (n= 400)

Variables	B	SE b	β†	T	*P* value	95% CI	
						Lower	Upper
Marital Status	-2.48	1.10	-0.10	2.25	0.03*	-4.65	-0.31
Complication Presence	-0.94	1.06	-0.05	-0.88	0.38	-3.03	1.15
Complication Type	- 0.47	0.12	-0.23	-3.93	0.001*	-0.69	-0.23
Attitude	0.25	0.14	0.09	1.87	0.06	-0.01	0.52
Social Norms	0.75	0.14	0.27	5.26	0.001*	0.47	1.04
Perceived behavior Control	0.52	0.15	0.18	3.49	0.001*	0.23	0.81

b: Unstandardized beta; B: Standardized beta; CI: Confidence Interval, standard error (SE b)

* Significant $p < 0.05$ level

†$R^2 = 0.215$; Adjusted $R^2 = 0.203$; $F = 17.96$, $p = 0.001$.

Predictors of Physical Activity

In relation to PA, Table 10 shows that the multiple regression analysis revealed that the model statistically significantly predicted PA ($F = 32.37$, $p = 0.001$). The R^2 for the model was 0. 42.8% ($R^2 = -0.428$), and the adjusted R^2 was 0.414. Regarding the dependent variable (PA), the outcome showed a predictive model of nine factors, three of which were significantly related to PA: Complication presence, SN, and

PBC. Complication presence had relatively higher prediction effects (B = 2.68, p <0.001) compared with the rest of the predictors.

The findings showed that complication presence (t = 3.39, p = 0.001), SN (t = 2.61, p = 0.01), and PBC (t =11.46; p = 0.001) were the significant predictors of adherence to PA among Jordanian patients with diabetes.

The beta coefficient for complication presence was 2.68, representing that a 1 point increase in complication presence is correlated with a 2.68 point increase in adherence to PA. Moreover, the beta coefficient for SN was 0.23, representing that a 1 point increase in SN is correlated with a 0.23 point increase in adherence to PA. The beta coefficient for PBC is 1.00, representing that a 1 point increase in PBC is associated with a 1.00 point increase in adherence to PA.

Table 10: Predictors of Physical Activity (n= 400)

Variables	B	SE b	β†	T	P value	95% CI	
						Lower	Upper
Age	- 0.04	0.02	- 0.08	- 1.93	0.06	- 0.08	0.001
Living Situation	- 0.36	0.74	- 0.02	- 0.49	0.62	- 1.83	1.09
Monthly Income	0.001	.001	0.02	0.55	0.58	- 0.002	0.004
Education	- 0.18	0.26	- 0.03	- 0.68	0.50	- 0.69	0.34
Complication presence	2.68	0.79	0.18	3.39	0.001*	1.13	4.24
Complication Type	- 0.06	0.09	- 0.04	- 0.71	0.48	- 0.24	0.11
Attitude	0.09	0.09	0.04	0.94	0.35	- 0.09	0.27
Social Norms	0.23	0.09	0.11	2.61	0.01*	0.06	0.41
Perceived behavior Control	1.00	0.09	0.49	11.46	0.001*	0.83	1.17

b: Unstandardized beta; B: Standardized beta; CI: Confidence Interval, standard error (SE b)

* Significant at the 0.05 level.

†R^2 = 0.428; adjusted R^2 = 0.414; F = 32.37, *p* =0.001.

Correlations between the Theory Constructs

The Pearson correlation coefficient was obtained to identify any significant relationships ($p < 0.05$). The correlation measure findings (Table 11) indicated that there is a significant positive weak correlation between the attitude score and both the SN score ($r = 0.38$, $p \leq 0.01$) and the PBC score ($r = 0.32$, $p \leq 0.01$). Moreover, there is a positive correlation between the SN score and the PBC score ($r = 0.47$, $p \leq 0.01$).

Table 11: Correlation Matrix of TPB Constructs (n = 400)

	TPB Constructs		
TPB Constructs	Attitude	Social Norms	Perceived behavior Control
Attitude	1	0.38**	0.32**
Social Norms	0.38**	1	0.47**
Perceived behavior Control	0.32**	0.47**	1

Note: *Significant < 0.05; ** Significant < 0.01

Correlation between demographics and TPB Constructs toward Medication Adherence

The results presented in Table 12 reveal the correlation measure between participants' demographics and TPB constructs that are linked with MA. The findings indicated that most of the participants' socio-demographic factors have a significant correlation with the three constructs of the TPB with the exception of the following demographic factors: monthly income, diabetes duration, gender, marital status, living situation, and employment status. Monthly income has a positive significant

correlation with both SN(r = 0.039) and PBC (r = 0.024). In addition, both gender and employment status have a significant negative correlation with attitude (r = −0.038,r = −0.019, respectively).Marital status has a significant positive correlation with both attitude (r = 0.042) and PBC (r = 0.028). Living situation has a significant correlation with both attitude (r = 0.027) and SN (r = −0.047).

Table 12: Correlation between demographics and TPB Constructs Toward Medication Adherence (n = 400)

Constructs/ Demographic	Attitude (MA)	Social Norms (MA)	Perceived behavior Control (MA)
Age a	0.045**	0.016*	- 0.032**
Monthly income a	- 0.002	0.039**	0.024**
Diabetes Duration a	0.006	- 0.011	- 0.010
Gender b	-0.038**	0.003	- 0.009
Marital status b	0.042**	0.010	0.028**
Living Situation b	0.027**	- 0.047**	0.003
Employment Status b	-0.019**	- 0.007	-0.005
Education b	0.055**	0.022**	- 0.031**
Type of Diabetes b	0.027**	0.034**	0.022**
HBA1c b	0.058**	0.064**	0.023**
Treatment Method b	-0.068**	0.105**	0.098**
Complication presence b	0.069**	-0.029**	0.097**
Complication Type b	-0.047**	0.045**	- 0.050**

Note: (a) Pearson Correlation Measure ; (b)Spearman Correlation Measure
** Note: *Significant < 0.05; ** Significant < 0.01

Correlation between demographics and TPB Constructs Toward Physical Activity

The findings presented in [Table 13] revealed the correlation between participants' demographics and TPB constructs that are linked with PA. The findings indicated that most of the participants' socio-demographic factors have a significant correlation with the three constructs of the TPB with the exception of the following demographic factors: monthly income, marital status, and HBA1c level. Monthly income has a significant positive correlation with PBC (r = 0.126). Marital status has a significant negative correlation with attitude (r = −0.118) and a significant positive correlation with PBC (r = 0.38).

Table 13: Correlation between demographics and TPB Constructs Toward Physical Activity (n = 400)

Constructs/ Demographic	Attitude (PA)	Social Norms (PA)	Perceived behavior Control (PA)
Age a	-0.086**	- 0.082**	- 0.227**
Monthly income a	0.011	0.006	0.126**
Diabetes Duration a	-0.004	-0.117**	-0.053**
Gender b	-0.052**	-0.029**	-0.102**
Marital status b	-0.118**	0.005	0.38**
Living Situation b	-0.068**	-.052**	-0.215**
Employment Status b	-0.058**	-0.195**	-0.051**
Education b	0.157**	0.106**	0.141**
Type of Diabetes b	-0.047**	0.020**	-0.019**
HBA1c b	0.065**	0.047**	-0.002
Treatment Method b	-0.026**	-0.27**	-0.037**

Complication presence b	0.113**	0.148**	0.132**
Complication Type b	-0.128**	-0.157**	-0.132**

a Pearson Correlation Measure ** Significant at the 0.01 level;
b Spearman Correlation Measure

Summary

The study sample consisted of 400 Jordanian patients with diabetes whose age ranged from 20 to 86 years. The majority of the patients were female, married, live with family unemployed due to their health condition(s), have a high school education, have T2DM, have HbA1c with a laboratory result over 8.0, and use more than one treatment method (e.g., insulin and oral treatments). Moreover, more than two thirds of the study sample has a complication, while around half of the study sample has more than one type of diabetes complication.

The results revealed a significant weak negative relationship between MA and both marital status (r= -0.11) and complication type (r= -0.22), but a positive relationship with complication presence, behavioral attitude, SN, and PBC. Conversely, a significant negative relationship was found between adherence to PA and living situation, age, and complication type, but a positive relationship was found with monthly income, educational level, complication presence, behavioral attitude, SN, and PBC. From a different perspective, the regression model showed that four factors were predictors of MA: marital status, complication type, SN, and PBC. In relation to the PA variable, the regression results indicated that complication presence; SN and PBC are significant predictors of PA. Finally, the study findings revealed that three constructs of the TPB are correlated with each other.

The study results also reported the level of TPB constructs in relation to MA and PA. From a different perspective, the current study revealed that most of the participants' demographic factors have a relationship with the three constructs of the TPB toward MA (such as age, living situation, and educational level).Likewise, the majority of the demographic factors have a relationship with the three constructs of the TPB toward PA (such as age, gender, employment, educational level, & employment status).

Chapter 5: Discussion

Overview

This study aimed to identify factors that are associated with SCBs among Jordanian patients with DM. This chapter summarizes the major findings of the present study and discusses these findings in light of the prior research reports and existing theory in the literature. The researcher adds some personal reflections to a number of interesting issues that were raised by the study findings to enrich the study from her personal experience. Furthermore, implications have been identified based on the significant findings of the study and will be provided for the readers in separate sections. The study limitations and recommendations to remedy these will be clarified. Ultimately, the researcher will add a conclusion to this chapter to summarize the whole of the current research project.

Demographic Characteristics

In this study, data were collected from 400 Jordanian patients with diabetes. The demographic results indicated that the majority of the participants had T2DM (86.0%). A higher percentage was reported in Nepal by Jadawala et al. (2017), who found that 131 patients (98%) had T2DM. In contrast, Abateet al. (2018) found that

242 patients in Ethiopia (58.2%) had T2DM, which is lower than the reported results in the present study. This variation could be attributed to the variation in context. Likewise, Gharaibeh and Tawalbeh (2018) reported lower percentages in the Jordanian context, finding that about half of the participants (n = 169, 51.6%) had T2DM. The higher percentage of T2DM in the present study could be due to the fact that T2DM is the most common type of diabetes (ADA, 2020).

The present study reported that the majority of the participants have complication presence due to diabetes (n = 325, 81.3%). In the Japanese context, Hashimoto et al. (2019) indicated that approximately 30% of the sample population reported having complications. However, in Canadian context, Simpson et al. (2016) found that only 18% of the 9,793 selected Canadian patients reported having complications as a result of their diabetes condition.

The findings of this study revealed that patients usually had more than one type of diabetes complications. The most commonly reported types of diabetes complications in this study were eye disease (n =46, 11.5%) and atherosclerosis (n =29, 7.2%). In contrast, Simpson et al. (2016) reported that the most commonly reported complications were macro-vascular complications (n = 8245, 15%), such as stroke and myocardial infarction, followed by micro-vascular complications (n = 2813, 5%), such as peripheral vascular disease and nephropathy. Similarly, Fukuda and Mizobe (2017) reported different results in Japan than those reported in the present study. They found that retinopathy (n = 375, 3.9%) and ischemic heart disease (n = 268, 2.8%) were the most prevalent complications.

The current study results also indicated that 167 patients (41.8%) reported receiving more than one treatment method (e.g., insulin and oral treatments). A lower

percentage of patients was reported by Alqarni et al. (2019), who found that less than one quarter of the Saudi Arabian patients received more than one type of treatment (n = 93, 24.8%). Likewise, Jadawala et al. (2017) reported that about one third of the participants (n = 51, 38.3%) received more than one type of diabetes treatment.

The present study's findings illustrated that about one third of the participants had an HbA1c level> 8.0 (n =112, 28.0%). Conversely, Alqarni et al. (2019) reported that less than one third of the patients (n = 62, 16.5%) had an HbA1c level> 8.0. However, Jafarian- Amirkhizi et al. (2018) revealed that about 33% Iranian patients had levels higher than 9%.

Medication Adherence

The results of the present study indicated that about 54.8% of the participants had inadequate adherence to the prescribed medication. Conversely, about 45.2% of the participants had adequate adherence. Habtu et al.(2019) found that 35.4%) of the partcipants that selected from District Hospital, Rwanda had inadequate adherence to the prescribed medication, while 64.4% had adequate adherence. This indicates that the adherence level of the participants in Habtu et al.(2019) study is higher than the adherence level in our study.

Other studies highlighted that the inadquate MA in patients diagnosed with DM ranged widely from 38% to 93% (Cramer et al., 2008; Farr et al., 2014; Krass et al., 2015). This could indicate that there is great variation in the reported results across the different studies concerning the level of adherence to diabetes medication internationally.

Regarding the correlation between MA and different factors, the present study indicated that six factors were significantly associated with patients' adherence to the prescribed medication. In relation to the behavioral attitude, the present study's findings are consistent with those of Fai et al. (2017), who found no significant association between behavioral attitude and MA among African Americans (p =0.492). Likewise, Habtu et al.'s (2019) study found that there was no significant relationship (p = 0.492) between behavioral attitude and adequate adherence to the prescribed treatment regimen (SCB).

Regarding the association between complication presence and MA, the findings of the present study are consistent with those of Simpson et al. (2016) and Fukuda and Mizobe (2017), in the Japenese context who reported that MA is significantly associated with complication presence.

The present study's findings illustrated that patients' marital status, complication type, SN as well as PBC are significant predictors of MA. The results revealed that married patients had higher MA than unmarried patients. This result aligns with that of previous research that reported consistent findings concerning the association between marital status and MA (Habtu et al., 2019; Marinho et al., 2018). It is possible that the presence of a close supportive system surrounding the patients (such as their spouse) increases the adherence ability of the patients to be more compatible with their diabetes condition and provides the required psychological support.

In relation to the complication type, the study's findings indicated that complication type negatively predicts the patients' adherence to anti-diabetes medication. A possible reason for this result is that some types of diabetes complication (macro-vascular complications, such as cerebro-vascular stroke, and

micro-vascular complications, such as retinopathy in addition to the secondary resultant complications, such as vascular dementia and Alzheimer's disease) could hinder the patients' adherence to the prescribed medications. Another predictor of MA in the present study was SN. The results of the present study are consistent with those of the study conducted by Wu and Liu (2016), who found that there was a correlation between the total score of normative beliefs and adherence to the use of an oral anti-diabetes agent. The reader should take into consideration the operational differences between the reported SN in the current research project and the SN in Wu and Liu's (2016) study. Conversely, the present study's results contradicted the findings of Fai et al. (2017), who reported that there was no association between SN and the use of an oral anti-hypoglycemic agent among Chinese participants. The participants in this study in China were not receiving adequate social support from close others such as peers and spouses. Conversely, it seems that the culture and traditions in the Jordanian society encourage the patients to adhere to the prescribed medications. The last predictor of MA in this study is PBC. This finding aligns with those of previous studies in the literature (Dashtian et al., 2017; Fai et al., 2017),which found a strong relationship between PBC and MA. Patients with higher PBC scores tend to have higher adherence to the prescribed medication than patients with lower PBC scores. Using the definition of PBC (Ajzen, 1991), it can be concluded that having higher confidence and ability enables patients to overcome MA barriers and adhere to the prescribed medication.

Physical Activity

The present study indicated that about 65% (n = 260) of the participants had inadequate adherence to PA. Conversely, the results illustrated that 35% (n = 140) had

adequate adherence to the recommended PA. Likewise, Koponen et al. (2017) found that about 36% of participants reported that they engaged in physical exercise on at least five days per week. In contrast, Alhariri et al. (2017) reported that 132 (63.8%) Yemeni participants had low adherence to the recommended PA.

The present study found that nine demographics factors were significantly associated with patients' adherence to PA. In relation to age, the present study's findings are consistent with those of Bukht et al. (2019). Conversely, inconsistent findings were reported by Shiriyedeve et al. (2019), who found that there was a non-significant negative association between adherence to PA and age ($r = -0.085$).

Concerning the association between living situation and PA, the findings of the present study are not consistent with those of Basu et al. (2019), who reported different results in the Indian context. It was reported that lower participation in PA is evident in patients who live with a joint family ($n = 204, M = 70.5$) ($p = <0.05$). In contrast, there was higher participation in PA among patients who live alone or with a nuclear family ($n = 49, M = 57$).Similar findings were reported by Jadawala et al. (2017), who showed a significant correlation ($p = 0.041$) between the patients' family type (nuclear versus joint) and the level of PA.

Regarding the monthly income impact on PA, the present study found that there was a significant association between monthly income and PA. Likewise, Mutyambizi et al. (2020) found that doing exercise is associated with the socioeconomic status of South African patients with patients with diabetes. Furthermore, Bhatti et al. (2018) found that the correlation between the Pakistani patients' participation in the recommended exercise program (i.e., exercising at least 20 to 30 minutes per day on

at least five days per week) and the participants' monthly household income was significant (n= 65,61.3%) (p = 0.001**).

In relation to the educational level variable, the present study found a significant positive association between the educational level of the patients and PA. Another study found that there was significant correlation between educational level and PA Iranian study (p <0.005) (Nejaddadgar et al., 2017). Conversely, in the Indian context, it was reported that there was no significant association between the patients' educational level and their adherence to PA (Shettigar et al., 2019).

This study also revealed that there was a significant association between complication type and PA. Similarly, Bilal et al. (2017) revealed that PA can enable the Saudi Arabian patients to postpone, or even control, the presence of the complication (p=0.006), which is statistically significant. Likewise, it has been reported that that there is a strong relationship between physical activity and diabetes complications such as nephropathy, retinopathy, and hypertension ($p < 0.001$) among Bangladeshi patints with diabetes (Bukht et al., 2019). Complications of diabetes were found more often among the patients who were not performing exercises regularly than among the patients who were performing exercise regularly (Bilal et al., 2017).

Concerning the association between patients' behavioral attitude and participation in PA, the findings of the present study were significant. This study's result aligns with those of previous similar studies in the literature (Karimy et al., 2018; Lima et al., 2019). The results showed that there is a significant association between behavioral attitude and PA among Brazilian patients (OR=10.1; 95% CI: 6.34–20.1) (Lima et al., 2019). Similarly, Karimy et al. (2018) reported that the highest predictor

of self-care (sport type of self-care) is the patients' behavioral attitude ($p < 0.001$) among selected patients from Iran.

The identified results in the current study revealed that patients' PA can be predicted by the following factors: complication presence, SN, and PBC. The findings of a number of previous studies (Al-Sahouri et al., 2019; Paleeratana, 2019) were comparable to the current study's results regarding the association between SN and PA but in a different context. Furthermore, the association between PBC and PA has been validated by Plotnikoff et al. (2010), Dashtian et al. (2017), and Rahmati-Najarkolaei et al. (2017). Conversely, although the association between diabetes complications and PA has been reported in the previous studies (Bilal et al., 2017; Bukht et al., 2019), these studies measured the type of complication and not the complication presence.

It seems that patients who developed a diabetes complication recently usually tried to delay the progress of the complications by performing PA. Another possible explanation for this correlation is that the patients in the present study have higher awareness of the benefits of PA. Moreover, most of the media platforms (such as TV and National Radio) in Jordan play a significant role in enhancing such awareness as they have countless ongoing programs that emphasize the importance of PA. Similarly, SN positively predicted the patients' participation in PA. Families are connected in Jordan and they do encourage their relatives with DM to adhere to the prescribed PA program as they are concerned about the well-being of their loved ones. Finally, the study found that patients with a higher level of PBC have higher adherence to participating in PA than other patients. This could be attributed to the significant in motivating the patients to perform the recommended PA.

Relationship between Patients' Demographics and TPB Constructs

The current study found that most of the participants' demographics have a relationship with the three constructs of the TPB toward MA (such as age, living situation, and education). Likewise, the majority of the demographics have a relationship with the three constructs of the TPB toward PA (such as age, gender, employment, educational level, and employment status).

The findings concerning the relationship between age and attitude constructs toward PA in this study are consistent with those reported by Fattahi et al. (2019) In Iran. Similarly, the findings on the relationship between the participants' gender and SN toward PA in this study are consistent with the results of by the Iranian study of Mohebi et al. (2018) study. Conversely, there was inconsistency between the reported results in this study (about the relationship between marital status and social support for PA) and those reported by previous studies (Fattahi et al., 2019; Mohebi et al., 2018).

Implications

Clinical instructors and nursing educators in nursing schools can utilize the results (demographic variables and TPB constructs) of the current study to educate patients about what to expect if they adhere to diabetic medications. Nurses should encourage MA and PA adherence for patients who are at high risk of neglecting adherence behavior (such as patients who are single or suffer from diabetes complications).

The nurse should ask patients how they are feeling and if the diabetic drug is working better or if they are experiencing any new side effects, for example. All patient and caregiver questions can start a conversation and allow a patient to open up

about concerns that could possibly lead to non-adherence later since open dialogue is important for building trust.

The Electronic Health Record of the patients should reflect the predictors of both MA and PA adherence. Thus, nurses' assessment will be focused on the major factors that affect the patient's adherence. The systems must have the capability to highlight non-adherent patients for nursing interaction. The key is to implement tools and/or processes to allow nurses to more effectively target patients that need the most care.

Since socioeconomic factors and high treatment costs affect MA, the financial condition of patients should be assessed by nurses when prescribing medications and patients should be referred to social services if necessary. A person (e.g., spouse, family member, and friend) who has a favorable attitude toward another person should be involved in an exercise program. Nurses (or diabetes teams) may need to spend more time counseling patients about the social aspects of medication in addition to educating them about the health benefits of PA. This PA counseling can be delivered in person or by the telephone.

Publication of the study findings in highly prestigious nursing journals with high impact factors is highly recommended. Furthermore, the researcher could present the findings of the study at both local and international nursing conferences. Replication of this study using a larger and more diverse sample is highly recommended.

Conclusion

There are several chronic illnesses in Jordan nowadays; however, diabetes could be the most prevalent. This could lead to a higher burden on both the health care personnel (such as the physicians and the nurses) and the patients themselves. The health care providers should build their practices on the latest knowledge available in

the diabetes field. Furthermore, the patients should adhere to the prescribed therapeutic regimen including pharmacological treatment (such as the prescribed medication) and the recommended exercise or PA. This study revealed that the TPB is suitable to be utilized for guiding research projects about the adherence of patients with diabetes and for interpreting the identified findings. Furthermore, this study found that PBC plays an important role in predicting SCBs.

Limitations

The first limitation of this study is the inability to draw causal statements since the correlational design used is non-experimental. The second limitation related to the utilized design is that although the descriptive cross-sectional design enabled the researcher to collect a huge amount of data about the intended variables in this study and measure the correlation among those variables, the identified regression results in this study may not reflect the actual predictors of adherence among diabetes patients in Jordan. Furthermore, the utilized tool in this study was a self-report questionnaire. Although this type of questionnaire enables the researcher to collect the data in a systematic way, the detailed responses of the patients concerning their SCBs could not be captured adequately. Third limitation, regarding the data collection period, this study was conducted during the period in which Jordan witnessed the Coronavirus pandemic. Therefore, some of the study participants (patients with diabetes) were not available as they were not visiting their hospitals. Fifth limitation is about the using of purposive sampling technique that make the generizxability of the study result is limited.

Recommendations

A correlational design is a highly useful design for clinical research studies as many of the phenomena of clinical interest are beyond the researcher's ability to manipulate, control, and randomize. Adding a qualitative data collection measure (for instance, face-to-face interviews) in future research could overcome this limitation.

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Appendix A:

Study Questionnaire

Date: _____ **Data Collection Code: _____**

Dear Participant,

Please complete this questionnaire accurately and objectively. Your answers will be used for research purposes to assess the factors associated with the self-care practices among adult Jordanian diabetes patients. Your answers to this survey will be treated with the strictest confidentiality.

Thank you very much for your cooperation.

The Researcher: Bouthayna Al-Dalaen

Research Title: Factors Associated with the Self-Care Practices among Adult Jordanian Diabetes Patients Using the Theory of Planned Behavior

Instructions • ***This questionnaire contains two parts.*** • ***The first part relates to your demographic data.*** • ***The second part relates to basic information about your diabetes condition.*** • ***Please choose the most suitable answer that reflects your condition currently.*** • ***Please keep in mind that you have to choose only one answer.*** • ***Some questions require you to fill in the blanks.*** • ***There is no correct answer.***	
Demographic Information	
1 -	• **Gender:** o Female o Male
2 -	• **Marital Status:** o Single o Married o Separated/Divorced o Widowed
3 -	• **Age (in years):** ……
4 -	• **Current Living Situation:** o Live alone o Live with family members o Live with a relative o Live in a home for the elderly (nursing home) o Other: ……..

5 -	• **Employment Status:** ○ Employed full-time (40 hours per week) ○ Employed part-time (less than 40 hours per week) ○ Unemployed, looking for a job ○ Unemployed due to my health condition(s) ○ Retired
6 -	• **Monthly Income (in Jordanian Dinars):** ……..
7 -	• **Educational Level:** ○ Less than high school ○ High school ○ College diploma ○ Bachelor's degree ○ Master's degree ○ Doctoral degree ○ None
Second: Current Diabetes Status	
8 -	**Date of Initial Diagnosis with Diabetes:** Year (…….), for example, May 2010
9 -	**Type of Diabetes You Have:** ○ Type 1 ○ Type 2 ○ Other (please specify ……
10 -	**Your HbA1c Level (%):** ○ < 6.0 ○ 6.1–6.5 ○ 6.6–7.0 ○ 7.1–7.5 ○ 7.6–8.0 ○ > 8.0
11 -	**How Your Diabetes is Treated:** ○ Oral medications ○ Insulin ○ Diet ○ Physical activity ○ Using more than one treatment method ○ Other

12 -	**Do You Have Any of the Complications Associated with Diabetes?** o Yes o No **If yes, please check the answer that reflects your current status:** o Atherosclerosis (inflammation of arteries) [cardiovascular or stroke] o Eye diseases (e.g., diabetic retinopathy, cataracts) o Foot problems (e.g., poor circulation, ulcers, amputation) o Kidney disease (nephropathy) o Nerve damage (neuropathy) o Problems related to sexuality o Others ---------- **Have more than one type of complication** o Yes o No If Yes Write down ----------

Adherence of Diabetes Mellitus Patients with Medication and Physical Activity Questionnaire (ADMPMPAQ)

Instruction

- *This questionnaire is composed of two sections.*
- *This questionnaire deals with your perceptions of medication and physical activity adherence.*
- *Please note that moderate physical activity means walking, swimming, or cycling, which increases your heart rate a little and causes sweating.*
- *Medication for diabetes treatment means taking the tablets/administering the insulin.*
- *For each question, circle the answer that best describes your beliefs or feelings. Please answer all the questions.*
- *Please circle only one answer for each question.*

	First: Attitude Toward DM Medication Adherence (AMA)				
	Taking medication for diabetes treatment exactly as prescribed by my physician. Use the following scale: **1** =Strongly Disagree,**2**=Disagree, **3** =Neither Agree nor Disagree, **4** = Agree,**5** =Strongly Agree				
AMA1	**Causes side effects**				
	1	2	3	4	5
AMA 2	**Keeps the glycemia and diabetes under control**				
	1	2	3	4	5
AMA 3	**Prevents diabetes complications**				
	1	2	3	4	5
AMA 4	**Prevents hospitalization and death**				
	1	2	3	4	5
AMA 5	**Avoids or delays the need for insulin**				
	1	2	3	4	5
AMA 6	**Causes hypoglycemic symptoms**				
	1	2	3	4	5

AMA 7	**Causes hyperglycemic symptoms**				
	1	2	3	4	5
Second: Social Norms about DM Medication Adherence (SNMA)					
	When I take my insulin injections/or medications for diabetes treatment exactly as prescribed by a physician, I would be approved by… Use the following scale:				
SNMA 1	**My children (i.e., family members older than 18 years)**				
	1	2	3	4	5
SNMA 2	**My physician**				
	1	2	3	4	5
SNMA 3	**My spouse**				
	١	**2**	**3**	**4**	**5**
SNMA 4	**The nursing staff**				
	1	**2**	**3**	**4**	**5**
Third: Perceived Behavioral Control for DM Medication Adherence (PBCMA)					
	These make it easier to take medication for diabetes treatment exactly as prescribed. Use the following scale: **1** =Strongly Disagree,**2**= Disagree, **3** =Neither Agree nor Disagree, **4** = Agree,**5** =Strongly Agree				
PBCMA 1	**Associate time of medication with temporal markers (for example, early morning, after lunch…)**				
	1	2	3	4	5
PBCMA 2	**Taking the pills with me whenever I leave home**				
	1	2	3	4	5

PBCMA 3	**Being able to differentiate pills by color, shape and size**				
	1	2	3	4	5
PBCMA 4	**Having a routine and control over daily activities**				
	1	2	3	4	5
PBCMA 5	**This makes it more difficult to take medication for diabetes treatment exactly as prescribed: Having to take medication more than once a day**				
	1	2	3	4	5
Fourth: Behavior for DM Medications (BM)					
	Use the below scale for the following items: **1** =Always, **2**=Very Often**, 3** =Sometimes, **4** = Rarely, **5** =Never				
BM 1	**Have you ever forgotten to take the tablets/administer the insulin for the diabetes?**				
	1	2	3	4	5
BM 2	**Have you ever been careless with the time for taking the tablets/administering the insulin for the diabetes?**				
	1	2	3	4	5
BM 3	**Have you ever not taken the tablets/administered the insulin for the diabetes because of feeling better?**				
	1	2	3	4	5
BM 4	**Have you ever not taken the tablets/administered the insulin for the diabetes on your own initiative because of feeling worse?**				
	1	2	3	4	5
BM 5	**Have you ever taken one or more tablets/administered one or more units of insulin for the diabetes on your own initiative because of feeling worse?**				
	1	2	3	4	5
BM 6	**Have you ever interrupted the treatment for diabetes because you had let the tablets/insulin run out?**				
	1	2	3	4	5

BM 7	Have you ever not taken the tablets/administered the insulin for the diabetes for any reason apart from being instructed to do so by the doctor?				
	1	2	3	4	5

Fifth: Attitudes toward Physical Activity(APA)

APA 1	**Doing 30 minutes of moderate physical activity on at least five days a week would be**				
	Very harmful	Harmful	Neither beneficial nor harmful	Beneficial	Very beneficial
APA 2	**Doing 30 minutes of moderate physical activity on at least five days a week would be**				
	Very worthless	Worthless	Neither worthwhile nor worthless	Worthwhile	Very worthwhile
APA 3	**Doing 30 minutes of moderate physical activity on at least five days a week would be**				
	Very bad	Bad	Neither good nor bad	Good	Very good
APA 4	**Doing 30 minutes of moderate physical activity on at least five days a week would be**				
	Very stressful	Stressful	Neither relaxing nor stressful	Relaxing	Very relaxing
APA 5	**Doing 30 minutes of moderate physical activity on at least five days a week would be**				
	Very boring	Boring	Neither enjoyable nor boring	Enjoyable	Very enjoyable
APA 6	**Would feel sick if not doing 30 minutes of moderate physical activity on at least five days a week**				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
APA 7	**Doing 30 minutes of moderate physical activity on at least five days a week would make me**				

	Strongly Unsatisfied	Unsatisfied	Neither satisfied nor unsatisfied	Satisfied	Strongly satisfied
Sixth: Social Norms about Physical Activity (SNPA)					
	Use the below scale for the following items: **1** =Strongly Disagree,**2**=Disagree, **3** =Neither Agree nor Disagree, **4** = Agree,**5** =Strongly Agree				
SNPA 1	**People who are important to me think I should do 30 minutes of moderate physical activity on at least five days a week**				
	1	2	3	4	5
SNPA 2	**People who are important to me want me to do 30 minutes of moderate physical activity on at least five days a week**				
	1	2	3	4	5
SNPA 3	**People who are important to me would expect me to do 30 minutes of moderate physical activity on at least five days a week**				
	1	2	3	4	5
SNPA 4	**I am under pressure from my family or friends to do 30 minutes of moderate physical activity on at least five days a week**				
	1	2	3	4	5
Seventh: Perceived Behavioral Control for Physical Activity (PBCPA)					
	Use the below scale for the following items: **1** =Strongly Disagree,**2**=Disagree, **3** = Neither Agree nor Disagree, **4** = Agree,**5** =Strongly Agree				
PBCPA 1	**I see myself as sporty**				
	1	2	3	4	5
PBCPA 2	**I see myself as a physically active person**				
	1	2	3	4	5
PBCPA 3	**I see myself as fit and healthy**				
	1	2	3	4	5

Eighth: Behavior for Physical Activity (BPA)					
	Use the below scale for the following items: **1**=Very unlikely,**2**=Unlikely, **3** =Neither likely nor unlikely, **4** = Likely, **5** =Very likely				
BPA 1	**How likely it is that you would make a decision to do 30 minutes of moderate physical activity on at least five days per week**				
	1	2	3	4	5
BPA 2	**I expect to do 30 minutes of moderate physical activity on at least five days per week**				
	1	2	3	4	5
BPA 3	**I expect to make time to enjoy my favorite physical activities on at least five days per week**				
	1	2	3	4	5
BPA 4	**I expect to keep daily activity records to stay motivated**				
	1	2	3	4	5
BPA 5	**I expect to choose places with a pleasant environment and interesting sights for walking to increase the enjoyment of the activity**				
	1	2	3	4	5

Arabic Version of the Questionnaire

التاريخ: .....

الرمز المستخدم لجمع البيانات: .....

عزيزي المشترك/المشتركة:

السلام عليكم ورحمة الله وبركاته،

أرجو إكمال الاستبيان بشكل صحيح وموضوعي قدر المستطاع.
سيتم استخدام اجاباتك لغايات بحثية لتقييم العوامل المرتبطة بممارسات الرعاية الذاتية لدى مرضى السكري الأردنيين البالغين. إجابتك لهذا الاستبيان سيتم التعامل معها بسرية وخصوصية تامة.
شكراً جزيلاً لك لحسن تعاونك.

الباحثة: بثينه ضامن الضلاعين

استبانة: العوامل المرتبطة بممارسات الرعاية الذاتية لدى المرضى الأردنيين المصابين بالسكري البالغين باستخدام نظرية السلوك المخطط.
التعليمات: ☐ يحتوي هذا الاستبيان على جزئين. ☐ الجزء الأول: يتعامل مع بياناتك الشخصية. ☐ الجزء الثاني: يسأل عن المعلومات الأساسية عن حالة مرض السكري لديك. ☐ يرجى اختيار الإجابة الأنسب التي تعكس حالتك حاليًا. ☐ ضع في اعتبارك أنه يجب عليك اختيار إجابة واحدة فقط في بعض الأسئلة. ☐ هناك أسئلة تتطلب منك اختيار كل الإجابات التي تعكس حالاتك. ☐ تحتاج بعض الأسئلة لملء الفراغ. ☐ لا توجد إجابة صحيحة

١.البيانات الشخصية:					
١-	**الجنس:** ☐ ذكر	☐ انثى			
٢-	**الحالة الاجتماعية:** ☐ أعزب	☐ متزوج	☐ منفصل/مطلق	☐ أرمل	
٣-	**العمر (بالسنوات):**				

٤-	**الوضع المعيشي الحالي:** ☐ تسكن لوحدك. ☐ تسكن مع أحد أفراد الأسرة. ☐ تسكن مع أحد الأقارب ☐ تسكن في إحدى بيوت رعاية المسنين (دار الرعاية). ☐ أخرى:.....
٥-	**الحالة الوظيفية:** ☐ موظف بوقت كامل (٤٠ ساعة في الأسبوع). ☐ موظف بوقت جزئي (أقل من ٤٠ ساعة في الأسبوع). ☐ غير موظف، أبحث عن عمل. ☐ غير موظف بسبب حالتي الصحية. ☐ متقاعد.
٦-	**الدخل الشهري (بالدينار الأردني):** .....
٧-	**مستوى التعليم:** ☐ أقل من المدرسة الثانوية ☐ المدرسة الثانوية ☐ دبلوم ☐ درجة البكالوريوس ☐ درجة الماجستير ☐ درجة الدكتوراه ☐ لا شيء
٢.الوضع الحالي للسكري:	
٨-	**تاريخ التشخيص الأولي لمرض السكري:** السنة(.....) (على سبيل المثال ٢٠١٠)
٩-	**نوع السكري الذي لديك:** ☐ النوع الأول ☐ النوع الثاني ☐ اخرى، يرجى التوضيح.....
١٠-	**درجة الهيموغلوبين الغليكوزيلاتي (HBA1C) لديك المعروف باسم التراكمي (%):** ☐ أقل من ٦ ☐ من ٦,١ الى ٦.٥ ☐ من ٦,٦ الى ٧ ☐ من ٧,١ الى ٧,٥ ☐ من ٧,٦ الى ٨ ☐ أكثر من ٨
١١-	**كيف يتم علاج مرض السكري لديك؟** ☐ أدوية عن طريق الفم. ☐ الأنسولين.

	☐ حمية غذائية. ☐ النشاط البدني/التمارين الرياضية. ☐ استخدام أكثر من نوع علاجي للسكري. ☐ أخرى : ....
١٢-	**هل لديك أي من المضاعفات التي يمكن أن يؤدي مرض السكري الى ظهورها؟** ☐ نعم ☐ لا إذا كانت الإجابة بنعم، يرجى اختيار الاجابة التي تنطبق على صحتك أدناه: ☐ تصلب الشرايين (التهاب الشرايين) أو (القلب والأوعية الدموية أو الجلطة الدماغية). ☐ أمراض العين (مثل اعتلال الشبكية، اعتمام عدسة العين). ☐ مشاكل في القدم (على سبيل المثال: ضعف الدورة الدموية، القرحة، البتر). ☐ أمراض الكلية (اعتلال الكلية). ☐ تلف الأعصاب (الاعتلال العصبي). ☐ مشاكل متعلقة بالجنس. ☐ أخرى. ☐ لدي أكثر من نوع من مضاعفات السكري.

٣.استبانة التزام مرضى السكري بالأدوية والنشاط البدني:

التعليمات

- يتناول هذا الاستبيان التصورات التي لديك حول التزامك بالأدوية والنشاط البدني.
- يرجى ملاحظة أن النشاط البدني المتوسط يعني المشي والسباحة وركوب الدراجات، والتي تزيد من نبضات قلبك قليلا وتسبب التعرق.
- أدوية العلاج تعني أخذ حبوب السكري/ حقن الأنسولين
- ضع دائرة حول الإجابة التي تصف بشكل جيد معتقداتك وشعورك لكل سؤال.
- أرجو الإجابة على كل الأسئلة.
- علماً انه عليك اختيار اجابة واحدة.

أولا: الاتجاهات فيما يتعلق بالالتزام بأدوية السكري					
	أخذ الدواء (حقن او حبوب) لعلاج السكري تماماً مثلما تم وصفه من قبل طبيبي. استخدم المقياس التالي: 1 = لا أوافق بشدة ٢ = لا أوافق ٣ = محايد ٤ = أوافق ٥ = أوافق بشدة				
١-	يسبب اعراض جانبيه.				
	١	٢	٣	٤	٥
٢-	يضبط سكر الدم.				
	١	٢	٣	٤	٥
٣-	يمنع مضاعفات مرض السكري.				
	١	٢	٣	٤	٥
٤-	يمنع المريض من دخول المستشفى أو الموت.				
	١	٢	٣	٤	٥
٥-	يساعد في التقليل من جرعة الدواء اللازمة ويساعد في تقليل ممانعة الجسم لها				
	١	٢	٣	٤	٥
٦-	يسبب أعراض نقص السكر في الدم.				
	١	٢	٣	٤	٥

٧-	يسبب أعراض زيادة السكر في الدم.				
	١	٢	٣	٤	٥
	ثانيا: المعايير الاجتماعية حول الالتزام بأدوية السكري				
	عندما أقوم بأخذ حقن الأنسولين / أو الأدوية لمعالجة السكري كما وصفها الطبيب لي، يتم الموافقة على ذلك من قبل: استخدم المقياس التالي: 1= لا أوافق بشدة ٢ = لا أوافق ٣ = محايد ٤ = أوافق ٥ = أوافق بشدة				
١-	اطفالي (الذين تزيد أعمارهم عن ١٨ عامًا).				
	١	٢	٣	٤	٥
٢-	طبيبي.				
	١	٢	٣	٤	٥
٣-	زوجي.				
	١	٢	٣	٤	٥
٤-	الطاقم التمريضي.				
	١	٢	٣	٤	٥
	ثالثا: السيطرة السلوكية المدركة للالتزام بأدوية السكري				
	هذه العوامل التالية تسهل علي الالتزام في تناول الدواء الموصوف لي لعلاج مرض السكري تماما: استخدم المقياس التالي:1 = لا أوافق بشدة ٢ = لا أوافق ٣ = محايد ٤ = أوافق ٥ = أوافق بشدة				
١-	إقران وقت الدواء بالعلامات الزمنية(مثلا صباحا، بعد الغداء، .....)				
	١	٢	٣	٤	٥
٢-	اقتناء حبوب الدواء خصوصا عند مغادرة المنزل.				
	١	٢	٣	٤	٥
٣-	لدي القدرة على التمييز بين الحبوب من حيث اللون، والشكل، والحجم ولدي القدرة على تجديد جرعة حقنة للأنسولين				
	١	٢	٣	٤	٥

٤-	ممارسة الروتين (مثل الاستيقاظ في وقت محدد وتناول الوجبات في الوقت المناسب) والسيطرة على الأنشطة اليومية				
	١	٢	٣	٤	٥
٥ -	هذا يجعل من الصعب تناول الدواء لعلاج مرض السكري تمامًا كما هو موصوف: أتناول أدويتي أكثر من مرة في اليوم.				
	١	٢	٣	٤	٥
	رابعا: السلوك المتبع لتناول أدويه السكري استخدم المقياس أدناه للعناصر التالية: 1 = دائمًا ٢ = غالبًا ٣ = أحيانًا ٤ = نادرًا ٥ = أبدًا				
١-	هل سبق لك أن نسيت أن تتناول الحبوب أو ان تحقن نفسك بالأنسولين الخاص بمرض السكري؟				
	١	٢	٣	٤	٥
٢-	هل سبق لك وأن أهملت وقت تناول الحبوب أو الأنسولين الخاص بمرض السكري؟				
	١	٢	٣	٤	٥
٣-	هل سبق لك وأن توقفت عن تناول الحبوب أو ان تحقن نفسك بالأنسولين الخاص بمرض السكري بسبب أنك شعرت بتحسن؟				
	١	٢	٣	٤	٥
٤-	هل سبق لك وأن توقفت عن تناول الحبوب أو ان تحقن نفسك بالأنسولين كمبادرة منك فقط لأنك شعرت بالسوء؟				
	١	٢	٣	٤	٥
٥-	هل سبق لك وأن تناولت واحدا او أكثر من الحبوب أو واحدا أو أكثر من وحدات الانسولين كمبادرة منك فقط لأنك شعرت بالسوء؟				
	١	٢	٣	٤	٥
٦-	هل سبق لك وأن قمت بإيقاف العلاج فقط لأن الحبوب/الأنسولين قد نفذت؟				
	١	٢	٣	٤	٥
٧-	هل سبق لك عدم تناول الحبوب أو الأنسولين الخاص بمرض السكري لسبب بعيدا عن تعليمات الطبيب؟				
	١	٢	٣	٤	٥
	خامساً : الاتجاهات نحو النشاط البدني				

1-	ممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع سيكون				
	مؤذي جدا	مؤذي	محايد	مفيد	مفيد جدا
٢-	ممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع سيكون				
	بلا قيمة اطلاقا	بلا قيمة	محايد	له قيمة	له قيمة عالية
٣-	ممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع سيكون				
	سيء جدا	سيء	محايد	جيد	جيد جدا
٤-	ممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع سيكون				
	مجهد جدا	مجهد	محايد	مريح	مريح جدا
٥-	ممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع سيكون				
	ممل جدا	ممل	محايد	ممتع	ممتع جدا
٦-	سأشعر بالمرض لعدم القيام بممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع.				
	أوافق بشدة	أوافق	محايد	لا أوافق	لا أوافق بشدة
٧-	ممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع سيجعلني				
	غير راضي بشدة	غير راضي	محايد	راضي	راضي بشدة
	سادسا: المعايير الاجتماعية حول النشاط البدني استخدم المقياس التالي:1 = لا أوافق بشدة ٢ = لا أوافق ٣ = محايد ٤ = أوافق ٥ = أوافق بشدة				
١-	الأشخاص المهمون بالنسبة لي يؤيدون ويشجعونني على ممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع.				
	١	٢	٣	٤	٥
٢-	الأشخاص المهمون بالنسبة لي يريدون ويطلبون مني ممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع.				

	١	٢	٣	٤	٥
٣-	الأشخاص المهمين بالنسبة لدي متوقعين ومتأكدين انني اقوم بممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع.				
	١	٢	٣	٤	٥
٤-	أنا تحت ضغط واصرار من عائلتي أو أصدقائي لممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع.				
	١	٢	٣	٤	٥
	سابعا: إدراك ضبط السلوك المرتبط بالنشاط البدني				
	استخدم المقياس التالي:1 = لا أوافق بشدة ٢ = لا أوافق ٣ = محايد ٤ = أوافق ٥ = أوافق بشدة				
١-	أرى نفسي شخص رياضي.				
	١	٢	٣	٤	٥
٢-	أرى نفسي شخص نشيط بدنيا.				
	١	٢	٣	٤	٥
٣-	أرى نفسي لائقا وصحيا.				
	١	٢		٤	٥
	ثامنا: سلوك النشاط البدني				
	استخدم المقياس أدناه للعناصر التالية:				
	1 = غير متوقع جدًا ٢ = غير متوقع ٣ = محايد ٤ = متوقع ٥ = متوقع جدًا				
١-	ما مدى احتمالية أن تتخذ قرارًا بممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع				
	١	٢	٣	٤	٥
٢-	أتوقع ممارسة نشاط بدني مدته ٣٠ دقيقة ذو شدة متوسطة على الأقل ٥ أيام في الأسبوع				
	١	٢	٣	٤	٥

٣-	أتوقع تخصيص وقت للاستمتاع بالأنشطة البدنية المفضلة على الأقل ٥ أيام في الأسبوع.				
	١	٢	٣	٤	٥
٤-	أتوقع الاحتفاظ بسجلات النشاط اليومي للبقاء متحمسًا				
	١	٢	٣	٤	٥
٥-	أتوقع اختيار الأماكن ذات البيئة الممتعة والمشاهد المثيرة للمشي، لزيادة الاستمتاع في النشاط				
	١	٢	٣	٤	٥

Appendix B: Ethical approvals

جامعة الإسراء
Isra University

President Office — مكتب الرئيس

Ref: ..... — الرقم: 525/3/2020

Date: ..... — التاريخ: 2020/5/6

معالي وزير الصحة الأكرم

الموضوع: تسهيل مهمة طالبة الدراسات العليا بثينة ضامن الضلاعين

تحية طيبة وبعد،،،

تهديكم جامعة الإسراء أطيب تحياتها، ونرجو إعلامكم أن الطالبة بثينة ضامن الضلاعين رقمها الجامعي (AB0779) من كلية التمريض/تقوم بإجراء دراسة للحصول على درجة الماجستير في تخصص ماجستير تمريض الحالات المزمنة بعنوان:

"Factors associated with diabetes self-care practices among Jordanian adult using the theory of planned behavior national study"

"العوامل المرتبطة بممارسات الرعاية الذاتية لمرض السكري بين الأردنيين البالغين باستخدام نظرية السلوك المخطط للدراسة".

ويستدعي ذلك تطبيق دراستها على عينة من مرضى الحالات المزمنة (مرضى السكري) في مستشفيات وزارة الصحة.

راجين التكرم بالموافقة والإيعاز لمن يلزم تسهيل مهمة الطالبة في جمع المعلومات والمراجع لتدعيم رسالتها، شاكرين ومقدرين تعاونكم معنا.

وتفضلوا بقبول فائق الاحترام

رئيس الجامعة

أ.د. أحمد نصيرات

نسخة إلى: - أ.د. عميد البحث العلمي والدراسات العليا
- عميد كلية التمريض
ح.م/ح.م

Hashemite Kingdome of Jordan- Amman-Jordan المملكة الأردنية الهاشمية عمان الأردن
جامعة الإسراء هاتف: 4711710، 4711388 / فاكس: 4714500، 4711505 / ص. ب. 33 و22 مكتب بريد جامعة الإسراء 11622
Tel : 4711710, 4711388 / Fax : 4714500, 4711505 / P.O. Box: 22 or 33 Isra University 11622
e-mail president@iu.edu.jo www.iu.edu.jo

وزارة الصحة

الرقم تطوير/خطط/٢١٤٢

التاريخ

الموافق ٧/٦/٢٠٢٠

مدير مستشفى .....

تحية طيبة وبعد ،،،

أرفق طياً صورة عن كتاب مدير إدارة مستشفيات البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب أ / لجنة أخلاقيات /٥٩٤٤ تاريخ ٢٠٢٠/٦/٣ بخصوص الموافقة لطالبة ماجستير تمريض الحالات المزمنة **بثينة ضامن الضلاعين** من كلية التمريض في جامعة الاسراء إجراء بحث بعنوان :-

(Factors associated with diabetes self-care practices among Jordanian adult using the theory of planned behavior national study)

وذلك عن طريق توزيع الاستبيان المرفق صورة عنه على عينة من مرضى الحالات المزمنة (مرضى السكري) في المستشفيات الحكومية التابعة لوزارة الصحة .

أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة إجراء البحث أعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

مدير مديرية التعليم وتطوير الموارد البشرية

الدكتورة رهام الحمود

هـ م

المملكة الأردنية الهاشمية
هاتف: ٥٢٠٠٢٣٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب: ٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

المملكة الأردنية الهاشمية

وزارة الصحة

الرقم .....

التاريخ .....

الموافق .....

م ب أ/ لجنة أخلاقيات / ٩٢٤٤

١٢ ٦ ٢٠٢٠

مدير مديرية التعليم وتطوير الموارد البشرية

تحية طيبة وبعد،

اشارة لكتابكم رقم تطوير/خطط/٢٧٣٨ تاريخ ٢٠٢٠/٥/١١ بخصوص البحث العلمي المقدم من قبل طالبة الماجستير تمريض الحالات المزمنة / بثينة ضامن الضلاعين من كلية التمريض جامعة الاسراء.

أرفق بطيه قرار لجنة اخلاقيات البحث العلمي والمتضمن الموافقة على اجراء البحث العائد للمذكورة أعلاه.

للاطلاع واجراءاتكم لطفا.

واقبلو فائق الاحترام ،،،،،

مدير ادارة مستشفيات البشير

الدكتورمحمود سليمان زريقات

خ ع

المملكة الأردنية الهاشمية

هاتف: ٥٢٠٠٢٣٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٢٧٣٠ ٦ ٩٦٢+ ص.ب ٨٦ عمان ١١١١٨ الأردن . الموقع الإلكتروني: www.moh.gov.jo

وزارة الصحة

الرقم .....
التاريخ Moh/REC/2020/78
الموافق .....

قرار لجنة أخلاقيات البحث العلمي

اجتمعت لجنة أخلاقيات البحث العلمي بتاريخ ٢٠٢٠/٥/٢٨ لمناقشة ودراسة البحث العلمي المقدم من قبل طالبة الماجستير تمريض الحالات المزمنة / بثينة ضامن الضلاعين من كلية التمريض جامعة الاسراء .

بعنوان:

" Factors associated with diabetes self- care practices among Jordanian adult using the theory of planned behavior national stady "

وبناءاعليه قررت اللجنة الموافقة على اجراء البحث العائد للمذكورة اعلاه مع الالتزام بأخلاقيات البحث العلمي وحقوق المرضى،وتم التوقيع من قبل أعضاء اللجنة حسب الأصول.

مقرراللجنة/ رئيس وحدة تنمية الموارد البشرية خولة علاونة	**عضو** **مدير التمريض** الدكتور/نضال النسور	**عضو/مدير مستشفى** **الاسعاف والطوارئ** الدكتور/ عاصم الرواحنه	**عضو / مدير** **الشؤون الادارية والمالية** غالب عبدالرحيم القواسمي
عضو **المدير الطبي** الدكتور/ جمال حمدان	**عضو/ مدير مستشفى** **الباطني واشعة علاجية** الدكتور/ بشار بقاعين	**عضو/ مدير مستشفى** **النسائية والأطفال** الدكتور/ محمود دولة	**عضو / مدير مستشفى** **الجراحة وج.التخصصية** الدكتور / قاسم عبيدات

رئيس اللجنة
مدير ادارة مستشفيات القطاع البشير
الدكتور/ محمود سليمان زريقات

بسم الله الرحمن الرحيم

وزارة الصحة

الرقم د ط م د / خطط / ٢١٠٤٢

التاريخ

الموافق ٢٠٢٠/٦/٢٨

مدير مستشفى د. جميل التوتنجي

تحية طيبة وبعد ،،،

أرفق طياً صورة عن كتاب مدير إدارة مستشفيات البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب أ / لجنة أخلاقيات /٥٩٤٤ تاريخ ٢٠٢٠/٦/٣ بخصوص الموافقة لطالبة ماجستير تمريض الحالات المزمنة **بثينة ضامن الضلاعين** من كلية التمريض في جامعة الاسراء إجراء بحث بعنوان :-

(Factors associated with diabetes self-care practices among Jordanian adult using the theory of planned behavior national study)

وذلك عن طريق توزيع الاستبيان المرفق صورة عنه على عينة من مرضى الحالات المزمنة (مرضى السكري) في المستشفيات الحكومية التابعة لوزارة الصحة .

أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة إجراء البحث أعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

مدير مديرية التعليم وتطوير الموارد البشرية

الدكتورة رهام الحمود

المملكة الأردنية الهاشمية
وزارة الصحة
م. د. جميل التوتنجي - سحاب
الديوان
الرقم
التاريخ ٢٠٢٠/٦/٢٨

٢٠٢٠/٦/٢٨

وزارة الصحة

مدير مستشفى الدكتور جميل التوتنجي / سحاب

الدكتور احمد ابو زيد

هـ م

المملكة الأردنية الهاشمية

بسم الله الرحمن الرحيم

وزارة الصحة

الرقم ....

التاريخ ....

الموافق ....

مدير مستشفى ....

تحية طيبة وبعد ،،،

أرفـق طيـاً صـورة عن كتـــاب مدير إدارة مستشفيات البشير / رئيس لجنة أخلاقيـات البحث العلمي رقـم م ب أ / لجنة أخلاقيات /٥٩٤٤ تاريـخ ٢٠٢٠/٦/٣ بخصوص الموافقة لطالبة ماجستير تمريض الحالات المزمنة **بثينة ضامن الضلاعين** من كلية التمريض في جامعة الاسراء إجراء بحث بعنوان :-

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أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة إجراء البحث أعلاه .

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مدير مديرية التعليم وتطوير الموارد البشرية

الدكتورة رهام الحمود

٢٠٢٠/٦/٢٣

هـ م

المملكة الأردنية الهاشمية

هاتف: ٥٢٠٠٢٣٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب: ٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

وزارة الصحة

الرقم ...
التاريخ
الموافق ...

مدير مستشفى ......البشير......

تحية طيبة وبعد ،،،

أرفق طياً صورة عن كتاب مدير إدارة مستشفيات البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب أ / لجنة أخلاقيات /٥٩٤٤ تاريخ ٢٠٢٠/٦/٣ بخصوص الموافقة لطالبة ماجستير تمريض الحالات المزمنة **بثينة ضامن الضلاعين** من كلية التمريض في جامعة الاسراء إجراء بحث بعنوان :-

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أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة إجراء البحث أعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

مدير مديرية التعليم وتطوير الموارد البشرية

الدكتورة رهام الحمود

المملكة الأردنية الهاشمية
وزارة الصحة
إدارة مستشفيات البشير
29 JUN 2020
مستشفى الاسعاف والطوارئ
العيادات الخارجية

مستشفى البشير
د. احمد ناجي رواشدة
رئيس قسم العيادات الخارجية

هـ م

وزارة الصحة

الرقم: تطوير / بحث / ١٠٢١/١
التاريخ
الموافق

مدير مستشفى الأميرة بسمة التعليمي

تحية طيبة وبعد ،،،

أرفق طياً صورة عن كتاب مدير إدارة مستشفيات البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب أ / لجنة أخلاقيات /٥٩٤٤ تاريخ ٢٠٢٠/٦/٣ بخصوص الموافقة لطالبة ماجستير تمريض الحالات المزمنة **بثينة ضامن الضلاعين** من كلية التمريض في جامعة الاسراء إجراء بحث بعنوان :-

(*Factors associated with diabetes self-care practices among Jordanian adult using the theory of planned behavior national study*)

وذلك عن طريق توزيع الاستبيان المرفق صورة عنه على عينة من مرضى الحالات المزمنة (مرضى السكري) في المستشفيات الحكومية التابعة لوزارة الصحة .

أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة إجراء البحث أعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

مدير مديرية التعليم وتطوير الموارد البشرية

الدكتورة رهام الحمود

هـ م

المملكة الأردنية الهاشمية
هاتف: ٥٢٠٠٢٣٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب: ٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

Appendix C:

Permission to Use the Study Instruments

Letter to the First Author

Hello Dr. Fernanda Freire Jannuzzi,

I am Bouthayna AL-Dalaeen, postgraduate nursing student from AL-Isra'a University, Amman , Jordan writing my research titled "Factors Associated with Diabetes Self Care Practices among Jordanian Adult using Theory of Planned Behavior: National Study"

Under the direction of my supervisor Dr. Zienab Al- wahsh RN, MSN, Ph.D., Professor, Adult Care Nursing, Hashemite University, al-Zarqa, Jordan who can be reached at email: drzeinab@hu.edu.jo

I would like your permission to use the published version of the items that included in the manuscript tables **(**2 - 5**) in your article** (Beliefs related to adherence to oral anti-diabetic treatment according to the Theory of Planned Behavior**)**

In my research study to measure the factors associated with self-care practice among Jordanian Patients with Diabetes. I would like to use and print your survey under the following conditions:

- I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the instrument.
- I will send a copy of my completed research study to your attention upon completion of the study.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail bouthaynadalaen@gmail.com

sincerely,

Bouthayna Al-Dalaen

Postgraduate Student at

Israa University

Faculty of Nursing

Author Permission

Hi, Bouthayna!

First, I would like to apologize for the delay in responding to your email. I had to ask for approval of the other authors.

I send you the instrument in Portuguese and English versions. You can notice that, according to the Theory of Planned Behavior, the behavior is completely repeated in every question.

We agree with the use of the instrument for academic purposes.

Best regards

Professor de Magistério Secundário
Técnico, Colégio
Técnico de Campinas – Cotuca

Letter to the Second Author

Hello Dr. Ana Emilia Pace,

I am Bouthayna AL-Dalaeen, postgraduate nursing student from AL-Isra'a University, Amman, Jordan writing my research titled "Factors Associated with Diabetes Self Care Practices among Jordanian Adult using Theory of Planned Behavior: National Study"

Under the direction of my supervisor Dr. Zienab Al- wahsh RN, MSN, Ph.D., Professor, Adult Care Nursing, Hashemite University, Al-Zarqa, Jordan who can be reached at email: drzeinab@hu.edu.jo

I would like your permission to use the published version of the instrument that included in the manuscript (Measurement of Adherence to Treatment instrument) in **your article** (Adherence to treatment for diabetes mellitus: validation of instruments for oral antidiabetics and insulin**)**

In my research study to measure the factors associated with self-care practice among Jordanian Patients with Diabetes. I would like to use and print your survey under the following conditions:

- I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the instrument.
- I will send a copy of my completed research study to your attention upon completion of the study.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail bouthaynadalaen@gmail.com

Sincerely,

Bouthayna Al-Dalaen on May 20, 2020

Postgraduate Student at

Israa University

Faculty of Nursing

Author Permission

Dear Bouthayna AL-Dalaeen,

My name is Lilian Gomes and I was supervised by Professor Ana Emilia Pace, in conducting research on the validation of instruments for Brazilian culture to assess adherence to drug treatment for patients with diabetes mellitus (article entitled "Adherence to treatment for diabetes mellitus: validation of instruments for oral antidiabetics and insulin").

We emphasize that the two versions of the MAT instrument, which refer to the cited article, were developed based on the instrument originally prepared by Delgado & Lima (2001), in annex. Thus, we request that these authors be equally referenced in their work.

We have authorized the use of the two versions of the MAT instrument (MAT - OADs and MAT - Insulin) in your research and success in conducting it.

Best regards,
Lilian.

Profª Drª Lilian C. Gomes
Doutora em Ciências pela EERP-USP
Mestre em Enfermagem pela EERP-USP
Coordenadora do curso de Enfermagem – UNIFEG

Appendix D:

Invitation Letter

Email: bouthaynadalaen@gmail.com

Dear prospective participant/patient,

Study Title: Factors Associated with Diabetes Self-care Practices among Jordanian Adults using Theory of Planned Behavior: National Study

I am writing to invite you to take part in a research study. My name is Bouthayna Al-Dalaen. I am a master student at the Faculty of Nursing at the University of AL-Isra. I am currently conducting a research study to understand more about self- care behavior among Jordanian patients that may experience and the associated sociodemographic factors. This research project is supervised by Dr. Zeinab Al-Wahsh a Professor in the Faculty of Nursing,

Your participation is completely voluntary: you may choose to participate in this study or may choose not to participate. It's your choice, and deciding not to participate will not affect you in any way. If you have any questions before deciding whether or not to take part in the study I can sit with you and answer any questions. In case of you choose to participate, I will ask you to answer questions about general details of you and completing questionnaire about your self-care behavior that associated with your chronic medical condition (including the physical activity & the medication adherence). The completion of the questionnaires will take about 15-20 minutes.

Your name will not be used in this study. A code number will be used instead to protect your identity.

The next section (participants' information sheet) will give you a full insight about the study nature and your participation status. Lastly, I will be happy to contact you to discuss the project further and give you detailed information about the study, please contact me using these contact information;
Phone number: 0797960351
Email: bouthaynadalaen@gmail.com

Thank you for your help and co-operation.

دعوة للمشاركة في الدراسة

.عزيزي المشارك،

عنوان الدراسة: العوامل المرتبطة بممارسات الرعاية الذاتية لمرضى السكري البالغين الأردنيين باستخدام نظرية السلوك المخطط : دراسة وطنية

أكتب إليكم لأدعوكم للمشاركة في دراسة بحثية. اسمي بثينة الضلاعين. أنا طالبة ماجستير بكلية التمريض في جامعة الإسراء. أقوم حاليًا بإجراء دراسة بحثية لفهم المزيد حول ممارسات الرعاية الذاتية لمرضى السكري الأردنيين والعوامل الاجتماعية والديموغرافية المرتبطة بها أشرف على هذا المشروع البحثي الأستاذة الدكتورة زينب الوحش في كلية التمريض.

مشاركتك هي اختيارية بكل معنى الكلمة: يمكنك اختيار المشاركة في هذه الدراسة أوعدم المشاركة. انه اختيارك، واتخاذ قرار عدم المشاركة لن يؤثر عليك بأي شكل من الأشكال. إذا كان لديك أي أسئلة قبل أن تقرر ما إذا كنت ستشارك في الدراسة أم لا، يمكنني الجلوس معك والإجابة على تلك الأسئلة. في حال اخترت المشاركة، سأطلب منك الإجابة عن أسئلة حول التفاصيل العامة عنك وإكمال استبيان حول ممارسات الرعاية الذاتية الخاصة بك المرتبطة بحالتك الطبية المزمنة (بما في ذلك النشاط البدني والالتزام بالدواء). سيستغرق استكمال الاستبيانات حوالي ١٥ الي ٢٠ دقيقة.

لن يستخدم اسمك في هذه الدراسة. بدلا من ذلك، سيتم استخدام رقم خاص للترميز لحماية هويتك.

المقطع التالي (ورقة معلومات المشاركين) سيعطيك فكرة كاملة عن طبيعة الدراسة وطبيعة المشاركة. وأخيرا سأكون سعيدا بالتواصُل بك لمناقشة البحث بشكل إضافي وتزويدك بمعلومات مفصلة عن الدراسة، الرجاء التواصل معي عن طريق معلومات الاتصال التالية؛ رقم الهاتف: ٠٧٩٧٩٦٠٣٥١

البريد الإلكتروني: bouthaynadalaen@gmail.com

شكرا على مساعدتكم و تعاونكم

بثينة الضلاعين

ممرضة قانونيه و طالبه ماجستير

Appendix E:

Student Information Sheet Adopted From National Health Service (2011)

Email: bouthaynadalaen@gmail.com

Study Title: Factors Associated with Diabetes Self-care Practices among Jordanian Adults using Theory of Planned Behavior: National Study

Introductory Paragraph

You are being called to participate in a research study. Before you choose whether to take part or not, it is noteworthy for you to recognize why this study is conducted and what will be happening during the research project. So please read the subsequent information thoroughly. Take enough time to decide if you want to participate in the study or not. During your reading, feel free to ask me as soon as you face any difficulties in understanding any piece of information or if you need additional information. Moreover, you can contact me any time later if you still have any further questions.

What is the purpose of the study?

This study intends to gather data from Jordanian patients with diabetes about their self-care behaviour (medication adherence & physical activity) as well as, the associated sociodemographic characteristics.
This information will be used to enhance our understanding of the Jordanian patients' self-care during the course of their chronic illness, and to recognize whether the participants' demographic factor contribute to development of self-care behavior .

Why have I been chosen?

You are being asked to participate in this study because you are one of those Jordanian patients who received professional care at the Jordanian hospitals located at the south, middle, and the northern part of Jordan. You are selected conveniently among your roommates. You are eligible to participate in this research project if you meet the following criteria: you are older than 18 years, with a confirmed diagnosis of DM for at least 6 months, attended one of the study hospitals and agreed to participate in the study (evidenced through informed consent).

Do I have to take part?

You have the right to choose either to participate in the study or not. It's your decision. The study will be explained to you in this information sheet. Then, if you decide to participate, you have to sign the consent form. During the course of the study, you have the right to withdraw at any point, without presenting any reason. However, it's highly recommended to participate in the overall course of the study, so your self-care behavior of diabetes can be evaluated. If you choose not to participate in this study, this will not affect you in any way including the quality of the provided care at the hospital and/or any other privileges that could you receive.

What will happen if I take part?

If you agree to participate in the present study, you will fill a structured self-report questionnaire about the self-care behavior that associated with your diabetes condition. Also, the questionnaire contain information about your demographics. The time required to complete all the questionnaires is about ١٥ to 20 minutes.

What are the possible disadvantages and risks of taking part?

Any disadvantage or risk related to this study is unlikely. The risks related to this study are minimal and will not be superior than those usually encountered in daily life events. However, due to the topic of this study, you may become psychologically or emotionally distress. If this happens and want to stop the questionnaires filling at any time, you can do so.

What if something goes wrong?

It is extremely unlikely that anything will go wrong as a result of taking part in this study. However, if you feel unhappy to continue filling the questionnaires you can stop immediately and the counselor will speak to you in a private room. In addition, you can phone me at any time (using the phone number listed below) if you have a need to ventilate or debrief.

What are the possible benefits of taking part?

The benefits of conducting this study outweigh the probable risks. You will not gain any direct financial compensation for your involvement in this study. However, due to your participation in this study, you have a chance to expand your personal awareness about the diabetes self-care behavior that you may face during the course of your diabetes condition. Furthermore this study will offer worthy data for nurses aid in identifying patients' self-care behavior , easing their experience in the hospitals or outpatients diabetes clinics, and establishing an efficient diabetes treatment program and this will improve the quality of care for patients.

Will my participation in the study be kept confidential?

This study uses a questionnaire by which you are not required to write your hospital number. Moreover, your phone number will be requested, in order to remind you about the second data collection time. However, all data which are collected regarding you throughout the course of this study, will be kept rigorously confidential. To protect your identity, the primary investigator will collect the distributed questionnaires at each of the selected meeting rooms. Upon receiving the completed questionnaires, your data will be assigned a digital code, then this code will be used instead of your identifying data. Moreover, the personal computer of the primary investigator will be used to keep the collected data in locked files. So no other parties will be able to access your data.

What will happen to the results of the study?

The findings of this study will be reported in my master thesis and probably it will be published in afterward conferences, journals or books. If you desire to have a copy of the research report just contact me using the contact information listed below.

Who has reviewed the study?

This research project has been internally reviewed by the Research Ethics Committee at the Deanship of the Academic Research at the University of Isra and a research committee in each participating hospitals.

What if I have further questions?

If you have any additional questions, remarks, or claims. Use the following contact information; phone number: 0797960351 ; Email. bouthaynadalaen@gmail.com You are welcome. If you are interested in taking part, please contact the researcher.

ورقة معلومات المشارك

عنوان الدراسة :

العوامل المرتبطة بممارسات الرعاية الذاتية لمرضى السكري البالغين الأردنيين باستخدام نظرية السلوك المخطط : دراسة وطنية.

فقرة افتتاحية

أنت مدعو للمشاركة في دراسة بحثية. قبل ان تختار ما اذا كنت ستشارك أم لا، من الجدير بالذكر أن تدرك لماذا تجري هذه الدراسة وماذا سوف يحدث خلال المشروع البحثي. لذا يرجى قراءة المعلومات التالية بدقة. خذ وقتا كافيا لتقرر ما إذا كنت تريد المشاركة في الدراسة أم لا. خلال قراءتك، لا تتردد في سؤالي إذا واجهتك أي صعوبات في فهم أي معلومة أو إذا كنت تريد الحصول على معلومات إضافية. وعلاوة على ذلك، يمكنك التواصل معي في أي وقت بعد ذلك إذا كان لديك أية تساؤلات أخرى.

ما هو هدف الدراسة ؟

تهدف هذه الدراسة إلى جمع بيانات من مرضى السكري الأردنيين حول ممارسات الرعاية الذاتية الخاصة بهم (الالتزام بالأدوية والنشاط البدني) بالإضافة إلى الخصائص الاجتماعية والديموغرافية المرتبطة بهما. سيتم استخدام هذه المعلومات لتعزيز فهمنا للرعاية الذاتية للمرضى الأردنيين أثناء مرضهم المزمن ، وللتعرف على ما إذا كان العامل الديموغرافي للمشاركين يساهم في تطوير هذه الممارسات.

لماذا تم اختياري ؟

يُطلب منك المشاركة في هذه الدراسة لأنك أحد المرضى الأردنيين الذين تلقوا رعاية مهنية في المستشفيات الأردنية الواقعة في الجنوب والوسط والشمال من الأردن. تم اختيارك بشكل ملائم بين زملائك في الغرفة. أنت مؤهل للمشاركة في هذا المشروع البحثي إذا كنت تستوفي المعايير التالية: أن عمرك لا يقل عن ١٨ عامًا ، مع تشخيص مؤكد لـمرض السكري لمدة ٦ أشهر على الأقل ، وحضرت أحد مستشفيات الدراسة ووافقت على المشاركة في الدراسة (يتضح من الموافقة المسبقة).

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هل من الضروري المشاركة في البحث ؟

لديك الحق في اختيار إما المشاركة في الدراسة أم لا. إنه قرارك. سيتم شرح الدراسة لك في ورقة المعلومات هذه. ثم إذا قررت المشاركة، عليك التوقيع على استمارة الموافقة. أثناء الدراسة، لك الحق في الانسحاب في أي لحظة، ودون تقديم أي سبب. على أية حال، من المستحسن أن تشارك في الدراسة كاملة، حتى يتم تقييم ممارسات العناية الشخصية المرافقة لمرض السكري. إذا اخترت عدم المشاركة في هذه الدراسة، هذا لن يؤثر عليك بأي شكل بما في ذلك جودة الرعاية الصحية المقدمة لك.

ماذا سيحدث إذا وافقت على المشاركة في البحث ؟

إذا وافقت على المشاركة في الدراسة الحالية ، فسوف تملأ استبيان تقرير ذاتي منظم حول ممارسات الرعاية الذاتية المرتبطة بحالة مرض السكري لديك. أيضا ، يحتوي الاستبيان على معلومات حول التركيبة السكانية الخاصة بك. الوقت المطلوب لإكمال جميع الاستبيانات حوالي ١٥ الي ٢٠ دقيقة.

ما هي المخاطر و الأضرارالمحتملة من المشاركة؟

أي ضرر أو خطر متعلق بهذه الدراسة هو غير مرجح. المخاطر المتصلة بهذه الدراسة تكاد تكون معدومة، ولن تفوق تلك الأخطار التي تواجهها عادة في أحداث الحياة اليومية. على أية حال، بسبب موضوع هذه الدراسة، قد تشعر أنك تعاني من ضغوط نفسية أو عاطفية. إذا حدث ذلك وأردت إيقاف تعبئة الاستبيانات في أي وقت، يمكنك أن تفعل ذلك .

ماذا لو سارت الأمور بشكل سيء؟

إنه من غير المرجح لأبعد الحدود أن يحدث هناك أي شيء على غير ما يرام نتيجة لمشاركتك في هذه الدراسة. على أية حال، إذا شعرت بعدم الارتياح خلال ملء الاستبيانات يمكنك التوقف فورا وسوف يتحدث إليك المعالج النفسي في غرفة خاصة. إضافة إلى ذلك، يمكنك الاتصال هاتفيا بي في أي وقت (باستخدام رقم الهاتف المذكور أدناه) إذا كان لديك حاجة للفضفضة أو التعبير عن الضغط الذي واجهته.

ما هي الفوائد المحتملة من المشاركة؟

تفوق فوائد إجراء هذه الدراسة المخاطر المحتملة. لن تحصل على أي تعويض مالي مباشر لمشاركتك في هذه الدراسة. ومع ذلك ، بسبب مشاركتك في هذه الدراسة ، لديك فرصة لتوسيع وعيك الشخصي بممارسات الرعاية الذاتية لمرض السكري التي قد تواجهها أثناء الإصابة بمرض السكري. علاوة على ذلك ، ستقدم هذه الدراسة بيانات جديرة بالمساعدة للممرضات في تحديد ممارسات الرعاية الذاتية للمرضى ، وتسهيل تجربتهم في المستشفيات أو عيادات مرضى السكري الخارجيين ، وإنشاء برنامج فعال لعلاج مرض السكري ، وهذا سيحسن جودة الرعاية للمرضى.

هل مشاركتي في هذه الدراسة ستكون سرية ؟

إن الدراسة الحالية تستخدم استبيان لا يطلب منك كتابة رقمك . وعلاوة على ذلك، سيتم الحصول على رقم هاتفك، من أجل أن أذكرك بالمرة الثانية لجمع البيانات. على أية حال، فإن جميع البيانات التي سيتم جمعها منك خلال هذه الدراسة، سيتم الحفاظ على سريتها بصرامة. لحماية هويتك، سوف يقوم الباحث الرئيسي بجمع الاستبيانات الموزعة في كل من القاعات المختارة. عند استلام الاستبيانات، سيتم تعيين رمز رقمي خاص ببياناتك، ثم سيتم استخدام هذا الرمز بدلا من معلوماتك التعريفية علاوة على ذلك سيتم استخدام جهاز الكمبيوتر الشخصي للباحث الرئيسي للحفاظ على البيانات التي تم جمعها في ملفات مؤمنة. بحيث لن تتمكن أية أطراف أخرى من الوصول إلى البيانات الخاصة بك.

ماذا سيحدث لنتائج الدراسة؟

سيتم تدوين نتائج هذه الدراسة في رسالة الماجستير الخاصة بي، وربما سيتم نشرها بعد ذلك في المؤتمرات أو المجلات أو الكتب. إذا كنت ترغب في الحصول على نسخة من تقرير بحثي فقط عليك التواصل معي الاتصال باستخدام معلومات الاتصال الواردة أدناه

من قام بمراجعة الدراسة ؟

قد تم مراجعة هذا المشروع البحثي داخليا بواسطة لجنة أخلاقيات البحث في عمادة البحث العلمي في جامعة الاسراء و لجنة أخلاقيات البحث العلمي في كل مستشفى مستهدف من الدراسة.

ماذا لو كان عندي المزيد من الأسئلة ؟

إذا كان لديك أي أسئلة أو ملاحظات أو مطالبات إضافية. استخدم معلومات الاتصال التالية ؛ رقم الهاتف: ٠٧٩٧٩٦٠٣٥١؛ البريد الإلكتروني. bouthaynadalaen@gmail.com على الرحب والسعة. إذا كنت مهتمًا بالمشاركة ، برجاء الاتصال بالباحث.

Appendix F:

Consent Form (English) Adopted From National Health Service (2011)

Participants Identification Number for this project: _____

Title of Project:

Factors Associated with Diabetes Self-care Practices Among Jordanian Adults using Theory of Planned Behavior: National Study

Name of Researcher:

Bouthayna Al-Dalaeen

Read the following items carefully and then check the boxes:

1. I confirm that I have read and understand the information sheet dated …./…./… for the above study and have had the opportunity to ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my legal rights being affected. ☐

3. I agree to take part in the above study. ☐

Name of the participants:	Date:	Signature:
_____	_____	_____
Name of person taking consent (if different from researcher):	Date:	Signature:
_____	_____	_____
Researcher:	Date:	Signature:

_____ _____

When completed: 1 for the participants, 1 for researcher, 1 to be kept with university records

استمارة الموافقة

رقم المشارك التعريفي لهذا المشروع _____

عنوان الدراسة :

العوامل المرتبطة بممارسات الرعاية الذاتية لمرضى السكري البالغين الأردنيين باستخدام نظرية السلوك المخطط : دراسة وطنية

اسم الباحث: بثينة الضلاعين

اقرأ البنود التالية بعناية ثم ضع إشارة في المربع أدناه أمام كل بند:

1. أؤكد أني قرأت وفهمت ورقة معلومات الطالب بتاريخ .... / .... / .... الخاصة بالدراسة أعلاه، وأنه أتيحت لي الفرصة لطرح الأسئلة.

٢. أقر بأن مشاركتي في الدراسة هي اختيارية وأن لي الحق في الانسحاب من الدراسة متى شئت دون إبداء أي سبب، ودون أن تتأثر حقوقي القانونية

٣ . أوافق على المشاركة في الدراسة المشار إليها أعلاه

اسم المشارك :	التاريخ:	التوقيع:
_____	_____	_____
اسم الشخص الذي أخذ الموافقة (إذا كان مختلفا عن الباحث):	التاريخ:	التوقيع:
_____	_____	_____
الباحث:	التاريخ:	التوقيع:
_____	_____	

_____

عندما تعبأ: ١للمشارك ، ١ للباحث، ١ تبقى في سجلات الجامعة

—

Appendix G:

Abstract in Arabic

العوامل المرتبطة بممارسات الرعاية الذاتية لمرض السكري لدى البالغين الأردنيين باستخدام نظرية السلوك المخطط للدراسة الوطنية

اعداد

بثينة ضامن الضلاعين

اشراف

د. زينب حسن الوحش

الملخص

يعد مرض السكري خامس سبب رئيسي للوفاة في الأردن. تتمثل أحجار الأساس المهمة في الوقاية من مضاعفات مرض السكري في أداء سلوكيات الرعاية الذاتية مثل الالتزام بأدوية السكري وممارسة النشاط البدني. توضح نظرية السلوك المخطط العلاقة بين ثلاثة مفاهيم رئيسية: التوجه ، والمعايير الاجتماعية ، والتحكم السلوكي المدرك. تشكل هذه المفاهيم الثلاثة سلوك المريض. كانت أهداف هذه الدراسة هي: تقييم مستوى الالتزام بأدوية السكري ومستويات الالتزام بالنشاط البدني (أي كافية وغير كافية) بين مرضى السكري الأردنيين. تقييم مستويات مفاهيم نظرية السلوك المخطط (أي التوجه ، والأعراف الاجتماعية ، والسيطرة السلوكية المتصورة) تجاه أدوية السكري والنشاط البدني بين مرضى السكري الأردنيين. التعرف على مؤشرات الالتزام بأدوية السكري بين مرضى السكري الأردنيين. التعرف على مؤشرات الالتزام بالنشاط البدني لدى مرضى السكري الأردنيين. كشف العلاقات بين العوامل الديموغرافية للمشاركين ومفاهيم نظرية السلوك المخطط تجاه سلوكيات الرعاية الذاتية (الالتزام بالأدوية والنشاط البدني) بين المشاركين. كشف العلاقات بين مفاهيم نظرية السلوك المخطط بين المشاركين.

المنهجية:

استخدمت هذه الدراسة تصميم الارتباط المقطعي الوصفي ، استخدمت هذه الدراسة الحالية عينة ملائمة من ٤٠٠ مريض سكري (ذكور واناث) من أربعة مستشفيات حكومية في الأردن. بناءً على نظرية السلوك المخطط ، تم تعديل أداتين واستخدامهما لجمع البيانات المتعلقة بالعوامل المرتبطة بالتزام المريض بأدوية السكري وممارسة النشاط البدني. تضمنت الأدوات المستخدمة مقاييس فرعية تتكون من عناصر مصنفة على مقياس ليكرت من خمس نقاط ، تم إنشاؤها لقياس المتغيرات المستقلة للمواقف والمعايير الذاتية والتحكم السلوكي والمتغيرات الديموغرافية لأداء عمليتي الرعاية الذاتية.

النتائج:

ربع المرضى (n=112; 28%) لديهم نطاقات قراءة HBA1c أكثر من ٨ ؛ حوالي نصف المشاركين في الدراسة

(n= 219; 54.8 %) لديهم التزام غير كافٍ بأدوية السكري ، وحوالي ثلثي العينة (n=260; 65%) لديهم عدم كفاية الالتزام لأداء النشاط البدني . باستخدام نموذج الانحدار ، أوضحت النتائج أن أربعة عوامل كانت مرتبطة بشكل كبير بداء السكري: الحالة الاجتماعية (p=0.03) نوع مضاعفات داء السكري (p= 0.001) ؛ المعايير الاجتماعية (p=0.001) والتحكم السلوكي المدرك(p=0.001) فيما يتعلق بممارسة النشاط البدني ، أشار نموذج الانحدار إلى أن المتنبئات الثلاثة التالية: وجود مضاعفات السكري (p=0.001)؛ المعايير الاجتماعية (p=0.01) والتحكم السلوكي المدرك

(p=0.001) أخيرًا، ترتبط ثلاث مفاهيم من نظرية السلوك المخطط ارتباطًا وثيقًا ببعضها البعض.

الاستنتاجات:

هناك عدة أمراض مزمنة في الأردن في الوقت الحاضر. ومع ذلك ، يمكن أن يكون مرض السكري هو الأكثر انتشارًا. هذا يمكن أن يؤدي إلى عبء أكبر على كل من موظفي الرعاية الصحية (مثل الأطباء والممرضين) والمرضى أنفسهم. يجب على مقدمي الرعاية الصحية بناء ممارساتهم على أحدث المعارف المتاحة في مجال مرض السكري. يمكن للمدربين السريريين ومعلمي التمريض في مدارس التمريض الاستفادة من نتائج الدراسة الحالية (المتغيرات الديموغرافية وتراكيب نظرية السلوك المخطط) لتثقيف المرضى حول ما يمكن توقعه إذا التزموا بأدوية السكري. يجب أن يعكس السجل الصحي الإلكتروني للمرضى تنبؤات كل من الالتزام بأدوية السكري وممارسة النشاط البدني وبالتالي ، سيركز تقييم والممرضين على العوامل الرئيسية التي تؤثر على التزام المريض. يوصى بشدة بنشر نتائج الدراسة في مجلات تمريض مرموقة ذات عوامل تأثير عالية. علاوة على ذلك ، يمكن للباحث عرض نتائج الدراسة في مؤتمرات التمريض المحلية والدولية. يوصى بشدة بتكرار هذه الدراسة باستخدام عينة أكبر وأكثر تنوعًا.

Figure 1: Relationship between Medication Adherence and Selected Factors

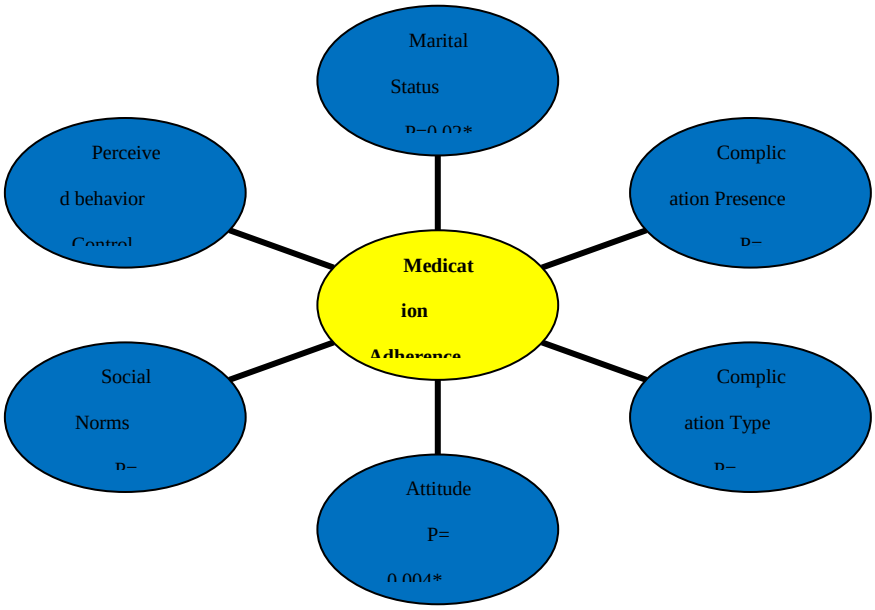

Figure 2 : Relationship Between Physical Activity Adherence and Selected Factors

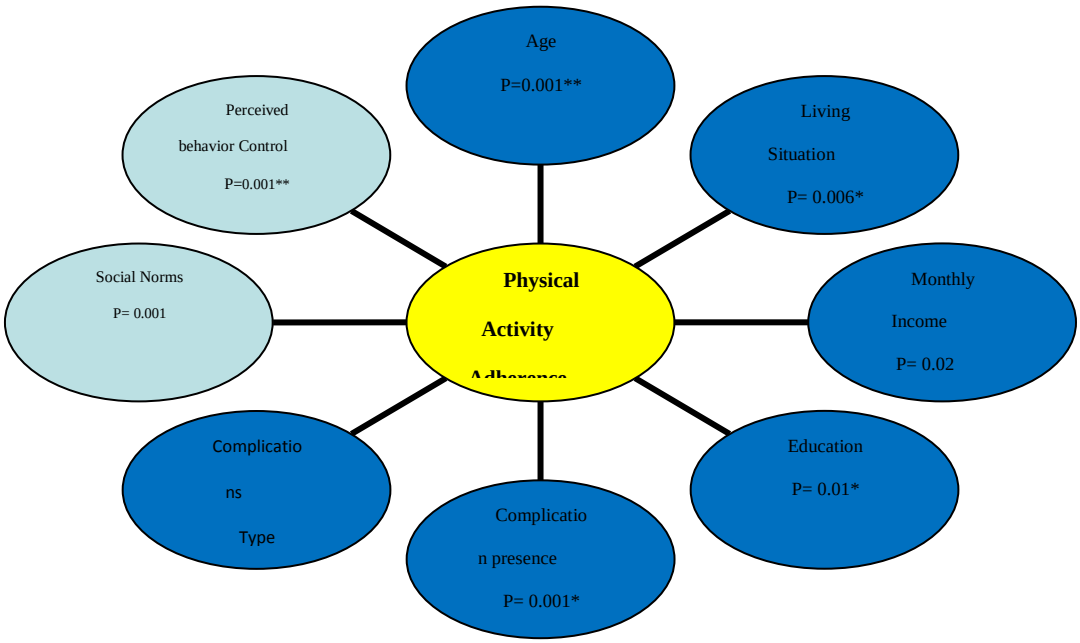

Figure 3. Scatter plot For Attitude toward Medication Predictor

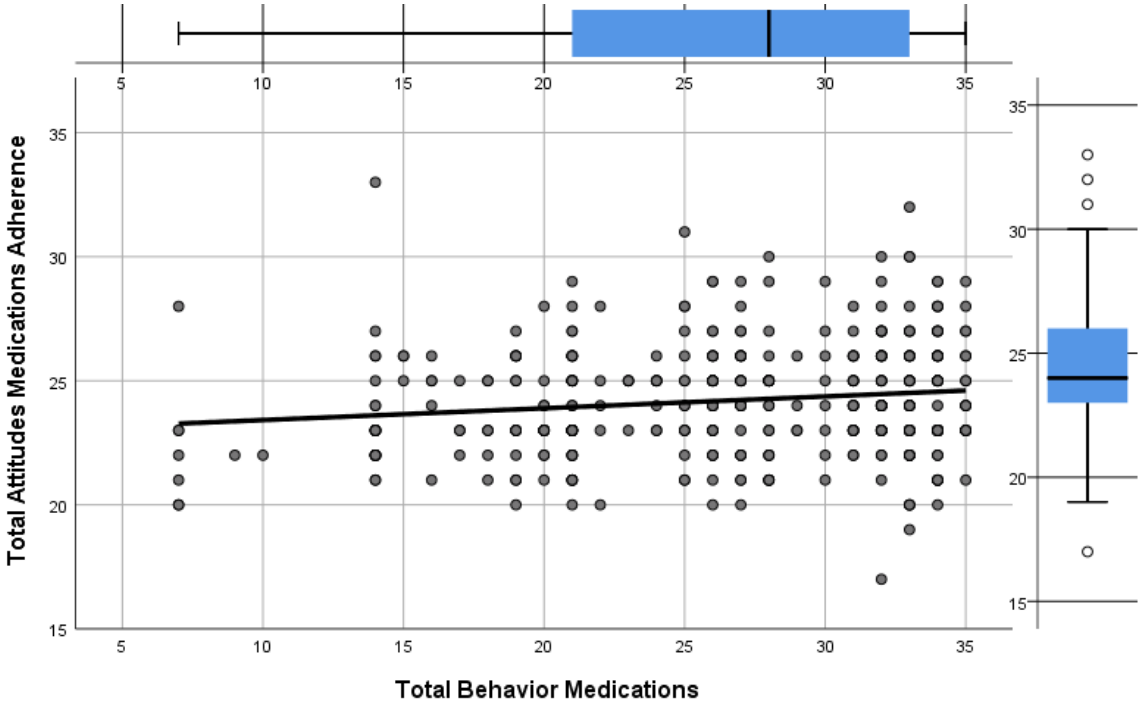

Figure 4. . Scatter plot For Social Norms toward Medication Predictor

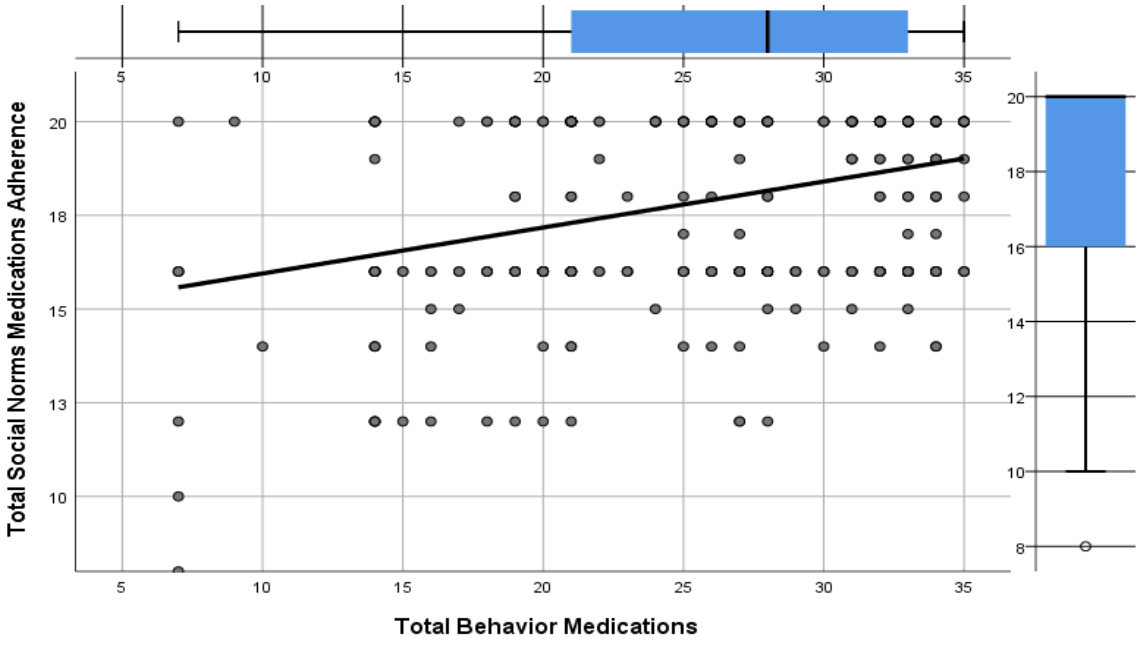

Figure 5. Scatter Plot for Perceived Behavioral Control Predictor toward Medication

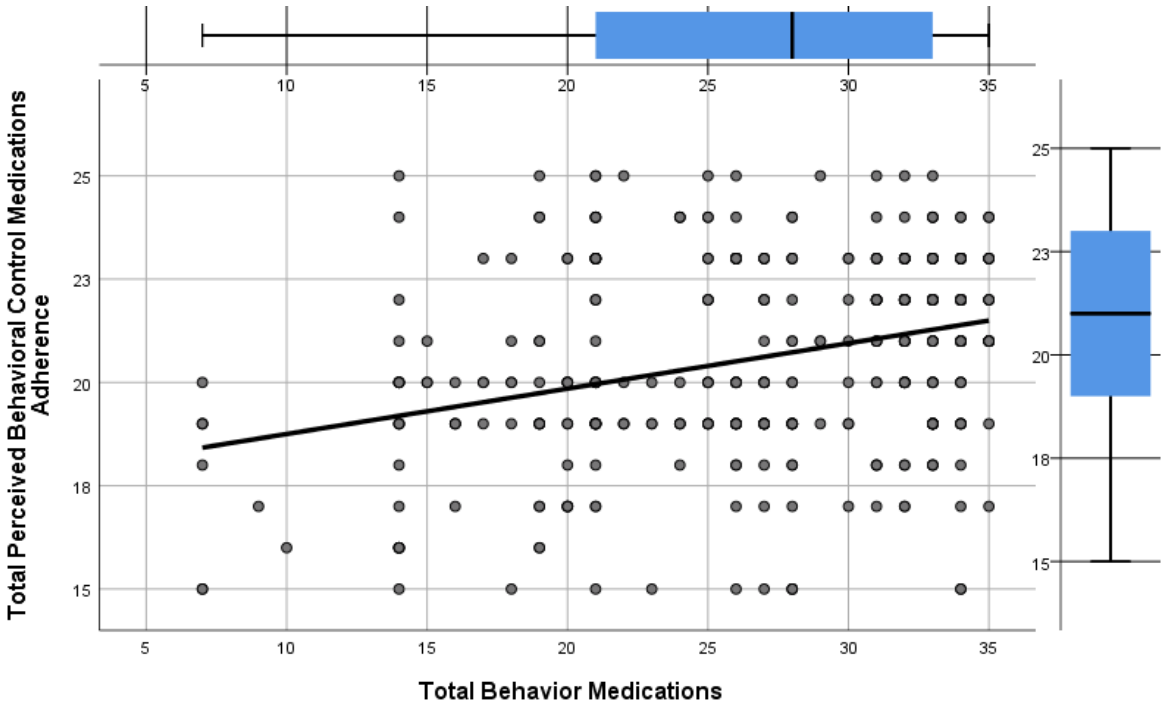

Figure 6. Scatter Plot for Age Predictor

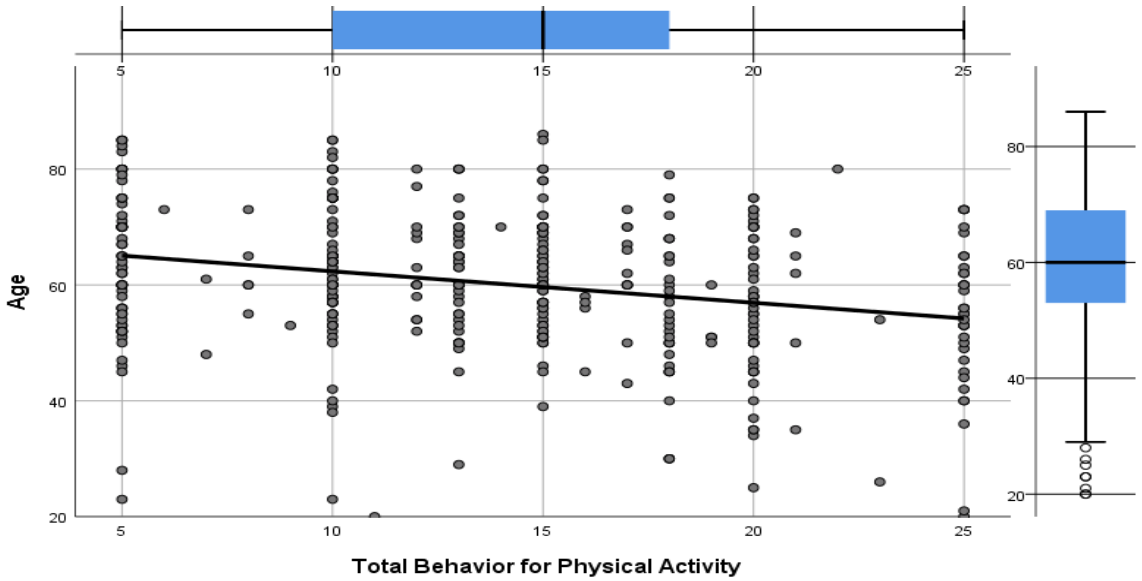

Figure 7. Scatter Plot for Monthly Income Predictor

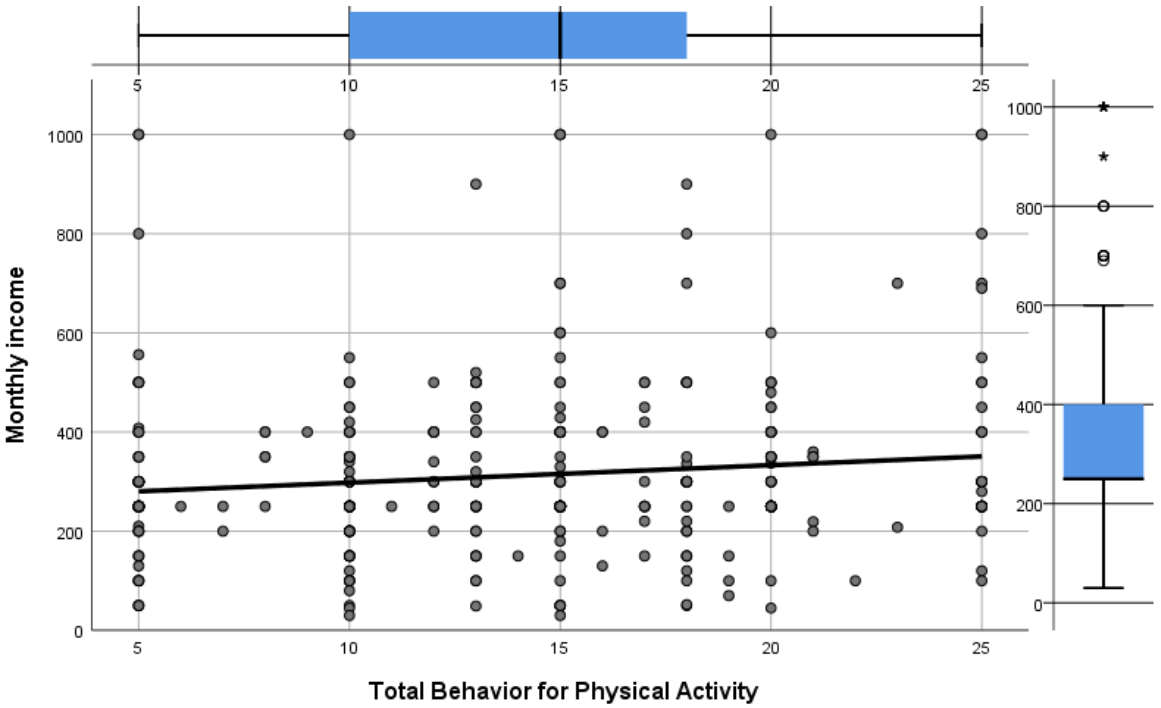

Figure 8. Scatter Plot for Attitude toward Physical Activity Predictor

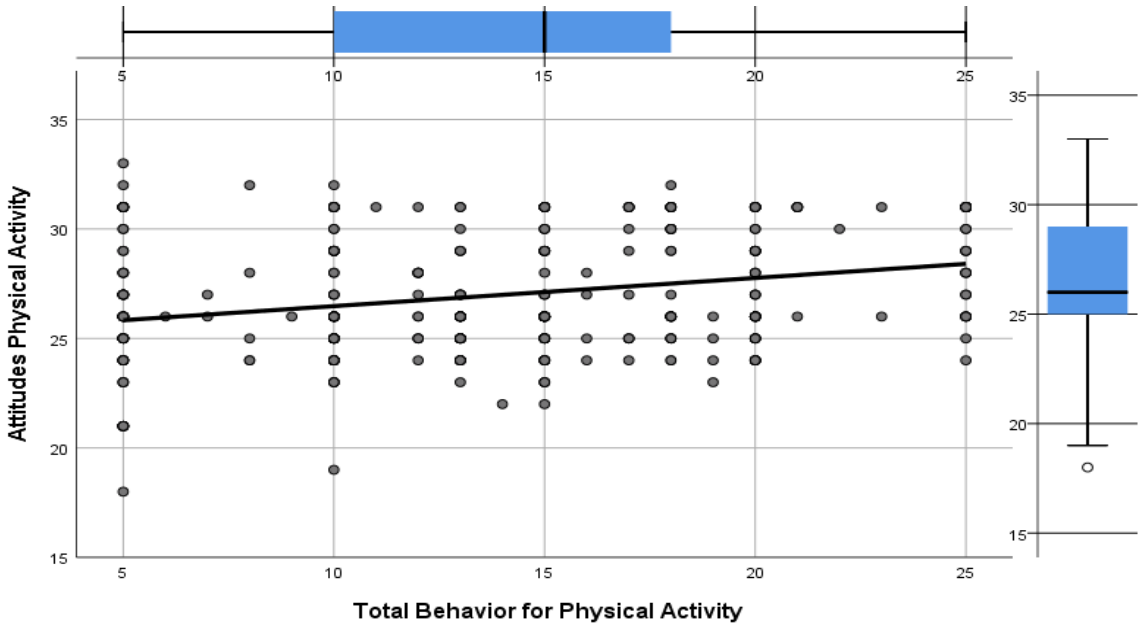

Figure 9. Scatter Plot for Social Norms toward Physical Activity

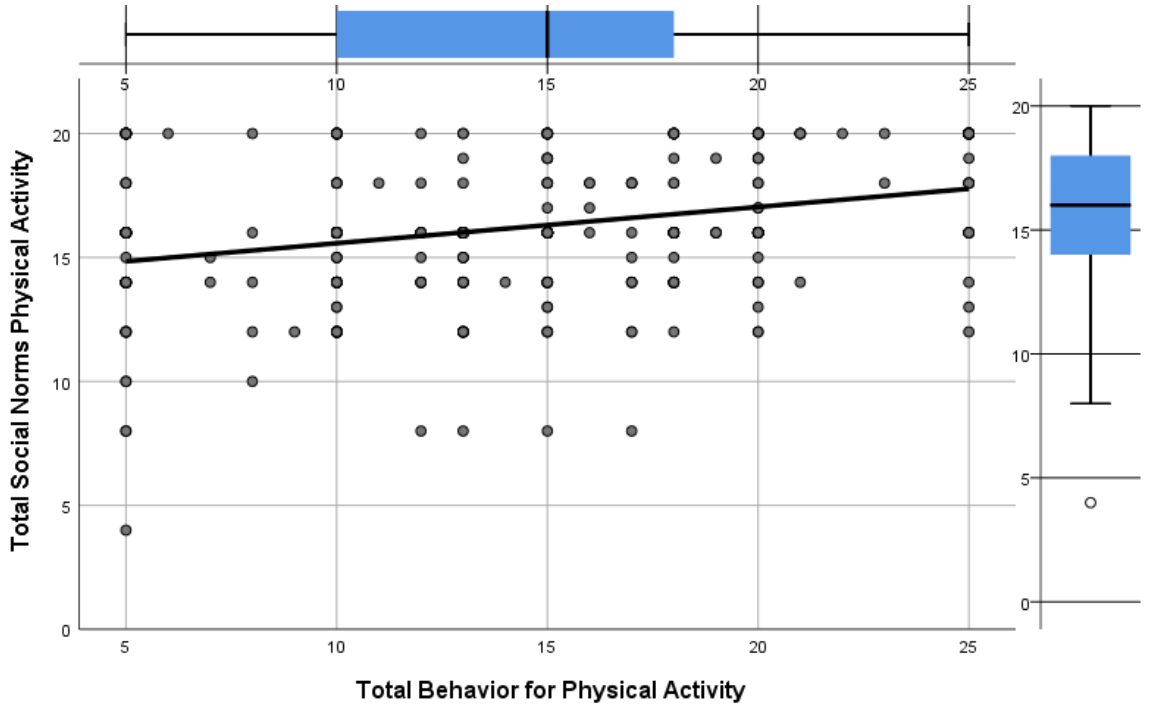

Figure 10. Scatter Plot for Perceived Behavioral Control toward Physical Activity