University of Baghdad

College of Nursing

Effectiveness of A Coping Style-Related Instructional Program on Self-Care of Patients with Diabetes Mellitus Type II at Endocrinology and Diabetes Center in Basra City

A Thesis Submitted By

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To Department of Adult Nursing

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In

Partial Fulfillment of the Requirements for the Degree of Master in Nursing Science

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هُوَ الّذِيَ أَنزَلَ السّكِينَةَ فِي قُلُوبِ
الْمُؤْمِنِينَ لِيَزْدَادُوَاْ إِيمَاناً مّعَ إِيمَانِهِمْ
وَلِلّهِ جُنُودُ السّمَاوَاتِ وَالأَرْضِ وَكَانَ
اللّهُ عَلِيماً حَكِيما

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*I certify that this thesis, which is entitled (**Effectiveness of A Coping Style-Related Instructional Program on Self-Care of Patients with Diabetes Mellitus Type II at Endocrinology and Diabetes Center in Basra City**) was prepared under my supervision at College of Nursing/ University of Baghdad in partial fulfillment of the requirements for the degree of master in Nursing Sciences with a specialty of (Adult Nursing).*

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We, the members of the examining committee, certify that after reading this thesis entitled ***(Effectivenes of A Coping Style-Related Instructional Program on Self-Care of Patients with Diabetes Mellitus Type II at Endocrinology and Diabetes Center in Basra City)*** *which is submitted by* ***(Saja Kareem Jassim)*** *from the Department of Adult Nursing, and we have examined the student in its contents, and what is related to it, and we have decided that it is qualified for pursuing the degree of* ***Master in Nursing Sciences*** *with a specialty of* ***Adult Nursing*** *and estimate of ( ).*

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Dedication

To

My dear father, who was kept away from me by fate, but still in the depths of my soul.

To

My mother, Sisters, and brothers who were my other hope for life. My beautiful family, who always push me towards success.

To

Everyone who implanted in me the power to get up again, especially to (childhood friends).

TO

My sweetheart (Marwa) and her beautiful family, who embraced me on this difficult journey, and gave me all the love and attention.

Saja kareem

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Abstract

Background: Diabetes mellitus is a metabolic disorder result in high blood glucose levels. About 95% of diabetes patients have T2DM, which is resulting in more dangerous complications that affect the quality of life of patients, then lead to an increased mortality rate of patients.

Objectives: Evaluating the effectiveness of a coping style program on the self-care of patients with type II diabetes mellitus. And finding out the association between coping style on the self-care of patients with type II diabetes mellitus and socio-demographic characteristics such as (age, gender, level of education, marital status, and income).

Methodology: A descriptive analytic (Quasi–experimental) design. Sample composed of (60) patients were divided into two groups study and control groups, (30) patients in each one. The self-report questionnaire was contain three parts which are: **part I** consists of demographic data, **part II** consists of clinical data, and **part III** consists of three axis (1) Michigan Diabetes Knowledge Questionnaire True/ False, (2) Summary of Diabetes Self-Care Activities Scale Expanded Version, and (3) Diabetes Coping Measure Scale. The researcher evaluate effectiveness of program by applying pre-test and post-test, the instructional program consist of three sessions was given. After that applying the post-test. The data were analyzed by using two statistical approaches: Descriptive and Inferential statistics.

Results: The study findings showed that participants age group at a level (46-65 years) were (67.7%) of the study group, and (56.7%) of the control group. (56.7%) of the study group were males, while (53.3%) of the control groups were females.

The study also confirms that the effectiveness of a Coping style related instructional program on self-care of Patients with diabetes mellitus type II at endocrinology and diabetes center in Basra city**.**

Conclusion: The study concludes that a coping style-related instructional program is effective to enhance diabetes patients self-care activities, knowledge, and coping style with T2DM. This conclusion is based on the result of our study that reveals significant differences between pre-intervention and post-intervention.

Recommendations: Improving knowledge and self-care activities of patients with T2DM, by using our study guidelines. Besides, encouraging the health care provider to improve diabetic patients self-care activities and focusing on all domain of self-care.

Keywords: Coping Style, Self-Care of Patients, Diabetes Mellitus Type II.

List of Contents

	Subjects	Page. No
1	Acknowledgements	I
2	Abstract	II-III
3	List of Contents	IV –VI
4	List of Tables	VII-VIII
5	List of Figures	VIII
6	List of Appendices	IX
7	List of Abbreviations	IX-XI
	Chapter One (Introduction)	1-9
1.1	Introduction	1-3
1.2	Importance of the Study	3-5
1.3	Problem Statement	5-6
1.4	Objectives of the Study	6-7
1.5	Research Question and Hypothesis	7
1.6	Definition of Terms	7-9
	Chapter Two (Review of the Literatures)	10-37
2.1	Historical Overview	10
2.2	Theoretical Framework	11-12
2.3	Anatomy and Physiology of Pancreas Gland	12-14
2.4	Epidemiology of Diabetes Mellitus Type II	14-15

2.5	Risk Factors for Diabetes Mellitus Type II	15-16
2.6	Pathophysiology of Diabetes Mellitus Type II	16
2.7	Signs and Symptoms of Diabetes Mellitus Type II	16-17
2.8	Complications of Diabetes Mellitus Type II	17
2.9	Investigations of Diabetes Mellitus Type II	18-19
2.10	Diagnosis of T2DM in Symptomatic Patients	19
2.11	Diabetes Management	20-22
2.12	Self-Care Activities	22-28
2.13	Coping and Diabetes	29-34
2.14	Previous Studies	34-37
	Chapter Three (Methodology)	38-53
3.1	Design of the Study	38
3.2	Administrative Arrangements	38
3.3	Ethical Consideration	39
3.4	Setting of the Study	39
3.5	Population of the Study	39-40
3.6	Sample of the Study	40
3.7	Steps of the Study	41-44
3.8	Study Instrument	45-48

3.9	**Validity of the Instrument**	**48**
3.10	**Reliability of the Instrument and Pilot Study**	**48-50**
3.11	**Data Collection**	**50-51**
3.12	**Statistical Analysis**	**51-53**
3.13	**Limitations of the Study**	**53**
	Chapter Four (Results of the Study)	**54-67**
	Chapter Five (Discussion of the Results)	**68-79**
	Chapter Six (Conclusions and Recommendations)	**80**
	References	**81-96**
	Appendices	

List of Tables

No	Subjects	Page. No
(2-1)	Summary of Pharmacokinetics of Insulin	22
(3-1)	Test-Retest Reliability for the Study Instrument	49-50
(4-1)	Participants Socio-Demographic Characteristics	54
(4-2)	Clinical Informations of the Study and Control Groups	56-57
(4-3) A	Evaluation of Diabetes Knowledge of Study and Control Groups Before and After Implementing the Instructional Program	58-59
(4-3) B	Knowledge Score Before and After Instructional program in Study and Control Groups	59
(4-3) C	Knowledge in Graded Pattern in Study and Control Groups Before and After the Instructional Program	60
(4-4)	Diabetes Self-Care Activities of Study and Control Groups Pre and Post Instructional Program	61
(4-5)	Diabetes Coping Measure Pre-Program and post-program of Both Study and Control Groups	62
(4-6)	Association between Coping and Socio-Demographic Characteristics of Study Participants Pre and post Instructional program	62-63
(4-7)	Association of Socio-Demographic Characteristics and Self-Care Activities among Patients with Diabetes Mellitus Type II	63-64
(4-8) A	Correlation of Coping to Self-Care Activities in	64-65

	the Study Group Pre-Program	
(4-8) B	Correlation of Coping to Self-Care Activities in the Control Group Pre-Program	65
(4-8) C	Correlation of Coping to Self-Care Activities in the Control Group Post-Program	66
(4-8) D	Correlation of Coping to Self-Care Activities in the Study Group Post-Program	67

List of Figures

NO	Figure	Page No
2-1	Anatomy of the pancreas	12
2-2	Blood sugar insulin cycle graphic	14
2-3	Arab world countries and prevalence of T2DM	15
4-1	Age categories in study and control groups	55
4-2	Gender in the study and control groups	56
4-3	Duration of diabetes in study and control groups	58
4-4	Score of knowledge change in study and control groups	60

List of Appendices

Appendix	Title
A1,A2,A3,A4	Administrative Arrangement
B1,B2	Initial Assessment Need
C	Instructional Program
D1	Questionnaire of the Study-Arabic
D2	Questionnaire of the Study-English
E1,E2,E3	Scale Approval
F	Panel of Experts
G	Statistical Expert Approval
H	Linguistic Certification
I	Documentation Images

List of Abbreviations

Abbreviations	Word
DM	Diabetes Mellitus
T2DM	Type 2 Diabetes Mellitus
Et.al	Et alia (and other)
NIDDM	Non-Insulin Dependent Diabetes Mellitus
T1DM	Type 1 Diabetes Mellitus

IDDM	**Insulin-Dependent Diabetes Mellitus**
ADA	**American Diabetes Association**
IDF	**International Diabetes Federation**
RBS	**Random Blood Sugar**
DPP-4	**DipePtidyl Peptidase-4**
FPG	**Fasting Plasma Glucose**
OGTT	**Oral Glucose Tolerance Test**
HbA1c	**Hemoglobin A1c**
MENA	**Middle East and North Africa**
PCC	**Patient-Centered Care**
PWD	**Patients With Diabetes**
SMBG	**Self-Monitored Blood Glucose**
B.C	**Before Christ**
AADE	**American Association of Diabetes Educators**
SGLT2	**Co-Transporter-2 Inhibitors of Sodium-Glucose**
ECG	**Elecetro-CardioGraphy**
QOL	**Quality Of Life**
A.D	**Anno Domini**
FFA	**Free Fatty Acids**
α	**Alpha**
β	**Beta**
δ	**Delta**

F	**Frequent**
≤	**Less than or Equal**
≥	**More than or Equal**
%	**Percentage**
e.g.	**Example**
SPSS	**Statistical Package of Social Sciences**
SDSCA	**Summary of Diabetes Self-Care Activities**
WHO	**Word Health Organization**
DCM	**Diabetes Coping Measure**
DKT	**Diabetes Knwoledge Test**
ORI	**Oregon Research Institute**
DCM	**Diabetes Control Measurement**
MDRC	**Michigan Diabetes Research Center**
N	**Number of Cases**
IQD	**Iraq Dinar**

Chapter One

Introduction

Chapter One

1.1. Introduction

Diabetes Mellitus (DM) is the most common chronic metabolic disease that results in impairment of carbohydrate, fat, and protein metabolism. It is caused by the absence or deficiency of active insulin that is produced from beta cells of islets Langerhans, that's lead to raise blood glucose for a prolonged period (Petrović et al., 2019).

(T2DM), also known as (Non-Insulin Dependent Diabetes Mellitus NIDDM) is considered a major type of diabetes around the world in which ineffective use of insulin, also can occur due to slow progressive loss of pancreatic beta cells (β-cells). Over the past two decades, T2DM is highly diagnosed in adults (Baynest, 2015).

(T1DM) known as Insulin-Dependent Diabetes Mellitus (IDDM) result from immune-mediated or idiopathic. Diabetes may also be associated with gestation, genetic defects, other infections, and certain drugs (Chen et al., 2017). The risk factors for DM include genetic, environmental, high blood pressure (Hypertension), tobacco use, alcohol consumption, physical inactivity, poor dietary patterns, and overweight (Wabe et al., 2011). Many cases of T2DM can be prevented with lifestyle modifications (Sumamo Schellenberg et al., 2013).

Criteria for diagnosis of diabetes mellitus according to the American Diabetes Association (ADA) as the following: A fasting plasma glucose (FPG) ≥126 mg/dL (7.0 mmol/L), *or* after a 2-hour plasma glucose level of ≥ 200 mg/dl (11.1 mmol/L), during a 75-g oral glucose tolerance test (OGTT), *or* a random plasma glucose ≥ 200 mg/dL (11.1 mmol/L) in a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, or

A hemoglobin A1c (HbA1c) level ≥ 6.5% (48 mmol/mol) (American Diabetes Association, 2019). Complications of diabetes can be divided into vascular and non-vascular complications that can be further divided into micro-vascular (Retinopathy, Nephropathy and Neuropathy) and macro-vascular (coronary heart disease, cerebrovascular disease, peripheral vascular disease). Besides, there is a strong association between diabetes and obesity, hypertension and dyslipidemia (Nandan & Obulesu, 2017).

Metabolic disorders triggered by DM may have a detrimental effect on an individual's cognitive and mood functions. The level of stress affects metabolic regulation. Diabetes and its complications increase the stress levels of glucose and HbA1c in DM patients as their stress increases. Therefore stress is an issue that is a significant cause and effect of the disease in diabetic patients (Bakan & Inci, 2020).

Complications of DM are modifiable through self-management such as blood glucose control, food constraints, daily foot care, and ophthalmic tests that have been shown to substantially decrease DM problems and their occurrence and development. More than 77% of morbidity and 88% of mortality due to DM occur in low and middle income countries.

Poor glycemic control of DM can cause micro-vascular and macro-vascular complications. Reducing ranges of (HbA1c) by maintain glycemic near normal limit control lead to prevent of complications of micro-vascular. For instance, dropping HbA1c from 9.1–7.3% reduces the risk of macro-vascular disease by 41%, retinopathy by 63%, and neuropathy by 60%, and nephropathy by 54%.

Up to 18% of cardiovascular cases and 30% of micro-vascular cases rate increase due to raise in HbA1 for ling duration (Mideksa et al., 2018). Global prevalence of T2DM is expected to increase from 425 million in

2017 to 629 million in 2045 (Aladhab & Alabbood, 2019). In Iraq, the prevalence of diabetes has increased drastically over the last 4 decades to around 20% (Khasal et al., 2020). Around 1.4 million Iraqis have diabetes. A local study including more than 5400 people in Basra city, Southern Iraq, reported a 19.7% age-adjusted prevalence of diabetes in subjects aged 19 to 94 years (Mansour et al., 2014).

1.2. Importance of the Study

Diabetes Mellitus (DM) is the most worldwide health problem, with incessantly raise occurrence in both of its major two components:Type1 Diabetes Mellitus (T1DM) and Type 2 Diabetes Mellitus (T2DM) (Ogurtsova et al., 2017).

Diabetes can affect all body systems such as renal failure, nervous system disorders, Blindness, amputations, periodontal disease, heart disease, and stroke. Uncontrolled hyperglycemia increased the risk of death in patients with diabetes mellitus in most developing countries particularly in Iraq. In 2017, the diabetes mortality rates in adult patients (20-79 years) reached 10.7%.

Also diabetes is the second-highest level in patients under the age of 60 in the MENA region (Middle East and North Africa), and an estimated 51.8 percent of deaths in those under 60 years of age.The estimated T2DM prevalence in Iraq ranges from 8.5 to 1.9% (Mikhael et al., 2019). The International Diabetes Federation (IDF) predicted that by 2040 diabetes mellitus is rising to 642 million and that the greatest growth is coming from the low-income regions to the medium-income regions.

The reasons behind the increasing epidemic of diabetes mellitus include demographic aging, economic growth, urban development, unhealthy eating, and sedentary lifestyles.

T2DM accounts for over 90% of diabetes mellitus. In 2010, diabetes mellitus was reported to have caused 3.96 million deaths in adults aged between 20 and 79 years (6.8% global). There is one death every six seconds, which has risen to 5.0 million due to diabetes mellitus and its complications (Zheng et al., 2018). Diabetes self-care is mainly the responsibility of the patient.

Adherence to diabetes self-care regimens can be difficult. Diet and lifestyle changes considered important self-care behaviors for diabetic patients, these changes are called coping strategies (Collins et al., 2009).

Many healthcare systems in recent years have put a stronger focus on delivering Patient-Centered Care (PCC). PCC is a compassionate and preferential treatment that aligns with patients personal beliefs of decision making. Patients today are involved in providing clinical records, working as allies, and functioning as collaborators in their care strategy, which allows clinicians to understand their patients expectations and viewpoints, and consider their previous expertise, abilities, and experiences (Williams et al., 2016).

The chronic disease burden of diabetes is considered to be a stressor with which the patient with diabetes is expected to cope daily, Coping with diabetes reduce and modifies stressful conditions. Adherence to routines healthy diet, physical activity, taking medications, affected by physical and psychological health status, some patients can perform all these demands if they are well coping strategies, while other patients are failed to adhere to these demands, due to they are having difficulty to accept their disease and have poor coping style, result in improper self-care that effect on metabolic control and impact on the quality of life (Ramkisson et al., 2017).

Coping with diabetes treatment has received considerable attention in the last 5 decades. Many approaches demonstrate Positive outcomes.

Effectiveness comparison analysis of the different methods and how intervention barriers can be overcome is needed in various populations Dispersal and deployment (Thorpe et al., 2013).

1.3. Problem Statement

According to World Health Organization (WHO), diabetes mellitus is a metabolic disorder that makes patient complain from chronic hyperglycemia with impaired of carbohydrate, fat and protein metabolism caused by defects in insulin secretion, insulin action, or both. Diabetic patients have a two-three-time high risk of heart attacks and strokes (Jomin et al., 2015). In conjunction with diminished blood supply, neuropathies (neuropathy) in the foot raise the risk of foot ulcers, inflammation, and potential limb amputation. Because of long-term damage to the tiny blood vessels of the eye, diabetic retinopathy is the primary cause of blindness. 2.6% of global blindness is caused by diabetes (Bourne et al., 2013).

Worldwide, 382 million people are diagnosed with diabetes, which is predicted to rise to more than 430 million by 2030. Preventable risk factors such as obesity and a sedentary way of life, combined with irreversible aging factors, seeming to be the main cause of the predicted increase in the risk of disease in developing countries (Krishnadath et al., 2016). Diabetes prevalence is very high in Basra city, Iraq, with one in five people affected.

The financial resources of the health systems will be strained by this epidemic of diabetes (Mansour et al., 2014). The prevalence of age-standardized death is growing for people with diabetes in developing countries where the risk of diabetes is twice as high as for people without diabetes (Al-Rubeaan et al., 2016).

The coping ability affects glycemic control of the patient for the long term through possible risks, this affects self-management adherence.The psychosocial improvement achieved through coping strategies leads to in-

creased quality of life and adherence in diabetic patients, while decreased coping ability leads to greater denial, noncompliance with medications, depression, and psychological distress (Yu & Sherman, 2015).

Diabetes self-care control is primarily the patient's responsibility. Adherence to diabetes self-care regimens can be challenging with a greater focus on complication avoidance. The patient has to make several changes in his diet and lifestyle by taking diabetes self-control. These improvements are called " coping mechanisms". Coping is a response that decreases the physical, emotional, and psychological pressure related to a difficult life and everyday issues (Collins et al., 2009).

A study conducted in Iraq, Mosul, recommended that there are needs for more studies to clarify how patients cope with diabetes, and show needed for further research on how certain factors such as (age, gender, residency, and patient period of DM) affects diabetes coping strategies (Salem AL-Khafaf, 2017).

1.4. Objectives of the Study

The study aims at:

1- Constructing an instructional program for Patients with type II diabetes mellitus about coping style.

2- Evaluating the effectiveness of coping style program on the self-care of patients with type II diabetes mellitus through:

a) Assessing self-care activities pre and post-program.

b) Assessing Diabetes knowledge pre and post-program.

c) Assessing Coping style pre and post-program.

3- Finding out the association between coping style on the self-care of patients with type II diabetes mellitus and socio-demographic characteristics

such as (age, gender, level of education, monthly family income, and marital status).

1.5. Research Question and Hypothesis

What is the relationship between instructional program-related coping style and self-care among patients with type II diabetes mellitus?

H1: The Coping related instructional program has a positive effect on the self-care of patients with type II diabetes mellitus.

1.6. Definition of Terms

1. Effectiveness:

a. Theoretical definition:

Effectiveness is the ability to obtain the desired outcome and based on measurements. Such assessments are focused on the experience and understanding of a person in a particular context (Wilson et al., 2018).

b. Operational Definition:

It is the degree to which coping style-related instructional program which is implemented for patients with type II diabetes mellitus will improve their self-care behavior.

2. Instructional Program:

a. Theoretical Definition:

The Instructional program is the activity that is conducted and applied to complete an instructional goal, more definitive it indicates to attained change or changes in a selected group of individuals (Hornby, 2010).

b. Operational definition:

An organized lectures that contain a topic related to coping style and its importance in self-care constructed to obtain the appropriate outcome for patients with type II diabetes mellitus to improve self-care.

4- Patients:

a. Theoretical Definition:

A person who is diagnosed by approved practitioners with a specific illness or disorder to receive medication and need specific care (Doniach, 2014).

b. Operational Definition:

Including any person who complains of T2DM, and who needs to perform an instructional program about coping style to improve self-care.

4. Type II Diabetes Mellitus:

a. Theoretical Definition:

Type 2 Mellitus diabetes (T2DM) is a disorder of body metabolism. Caused by a gradual insulin secretory deficit due to the resistance to insulin, which raises the body's need for insulin to keep the homeostasis of glucose. If the pancreatic beta cells do not differentiate insulin enough to counter increased demand for insulin, blood glucose is increased (Del Prato, 2009).

b. Operational definition:

It is a long-term elevated blood glucose level among adults.

5. Self-Care Activities:

a. Theoretical Definition:

A mechanism in which individuals are responsible for understanding how to promote their wellbeing and what could harm it. In daily living, individuals undertake this health development process to sustain life, health, and stability through the practice of healthy behaviors. It refers to the desire to resolve health needs, priorities, and challenges to boost functioning, independence, and happiness, and to avoid dysfunction, impairment, and pain (Riegel et al., 2012).

b. Operational Definition:

It is a sum of practices by which adults with diabetes mellitus type II could perform to enhance their quality of life and avoid complications.

6. Coping Style

a. Theoretical Definition:

Coping strategies are characterized as active, direct, and target-oriented solutions that either reduce stressor impacts or affect emotional response or improvement efforts (Yu & Sherman, 2015)**.**

b. Operational Definition:

The way by which patients with type II diabetes mellitus dealing with stress caused by diabetes.

Chapter Two

Review of the Literatures

Chapter Two

Review of the Literatures

This chapter reviews the related and relevant evidence on the subject of the study as available in the literature. Such a review is organized systematically and presented as follows:

2.1. Historical Overview

The term 'diabetes' is a Greek word means a "siphon", due to the liquids use the human body as a canal to exit by it (Tattersall, 2010).

George Ebers found diabetes back in 1500 B.C. in the ancient Egyptian papyrus. It was the first identification of what was known as diabetes (Nwaneri, 2015).

In 1798, John Rollo is British general practitioner, found that the Latin term "Mellitus" (mean sweet as honey) of this type of diabetes differed from another type of diabetes (insipidus) thought to be urinary without flavor. Two types of diabetes later referred to as type I and type II describes by Sushruta, who is an old Indian doctor, and Charaka, a surgeon back in (400–500 A.D.) (Lakhtakia, 2013).

Indians have established the association between diabetes and heredity, overweight, sedentary life, and diet. Diabetes treatment was suggested for cereals, benzoate-containing bituminous preparations, and silica In Indian literature of the 5th-6th century, Sushrant first identified the interaction of polyuria with sweetening-tasting materials (Ahmed, 2002).

French chemist Michel Chevreul found that sugar in diabetic urine was glucose, leading to a transition in testing techniques for diabetes, from urine tasting to glucose analysis. Ivar Christian Bang, a surgeon, described a method of glucose calculation that contributed to the invention of the glucose tolerance test between 1913 and 1915 (Standl et al., 2019).

In collaboration with two other researchers, the discovery of insulin by Frederick Banting & Charles Best in 1921 was a significant landmark in

the treatment of diabetes. Diabetes was a troubling disease, and aspirations for the future were unimportant until Insulin was discovered in 1921 (Clothier, 2019).

2.2. Theoretical Framework

1. Orem's Self-Care Theory

Self-care refers to the practices of people involved to ensure stable functioning, ongoing personal growth, and well-being. Self-care is further characterized to include regular evaluation of symptoms and commitment to medication. that promotes the use of self-care and treatment assessment. The theory of self-care is the basis for three other hypotheses, including self-care theory, self-care deficit theory, and nursing systems theory (Orem, 2002).

Dorothea Orem's theory is widely used in the healthcare setting and lets nurses improve the health condition of patients by making them independent. The nurse will aid in the speedy rehabilitation of the patient by integrating scientific principles into the procedure. It is especially seen in recovery and primary health care environments where patients are allowed to be as independent as possible (Universitas Udayana, 2017).

2. Orem's Theory of Self-Care Deficit

Dorothea Orem's self-care and self-care deficit ideas have been used as the analytical basis for this research. Orem's theory is based on the idea that humans have an inherent ability, right, and duty to take care of themselves. Orem argues that a general paradigm or theory for applied science, such as: Nursing includes not only what and why, but also who and how (Universitas Udayana, 2017).

This theory represents the fact that every adult has multiple or fewer full abilities to promote their health condition and manage their self in unhealthy and disordered condition (National encyklopedin, 2010).

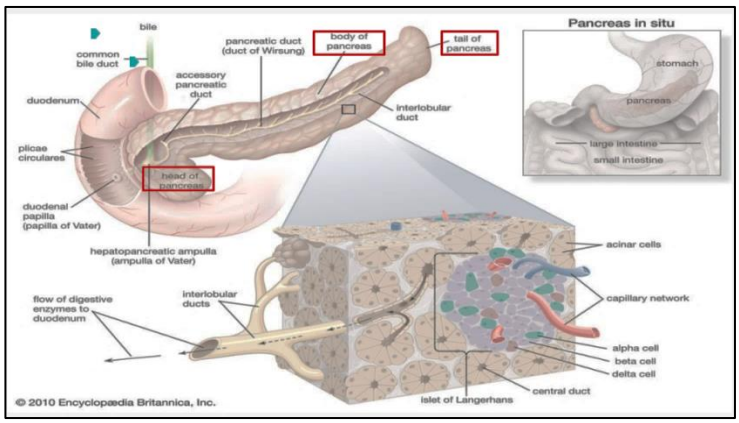
The individual's ability differs in knowledge, education, age, life experience, economy, culture, and health. The patient needs mental and functional skills, as well as encouragement, to be able to organize and practice self-care. These skills can be develope through education from health care professionals and also spontaneous by practicing self-care (Al-Buderi, 2019).

Nursing aims at encouraging the patients to be independent in their self-care. Based on Dorothea's theory, nursing care is needed when the patient is affected by disabilities that affect their practice and self-care needs. Diabetes mellitus is an example of these disabilities, the self-care should be handled in a manner that the client or his family will get support as much as possible to recover the patient‘s self-care capacity.

This analytical approach was used to examine whether the patients could regulate their diabetes and preserve their wellbeing (Al-Buderi, 2019).

2.3. Anatomy and Physiology of Pancreas Gland

The human pancreas gland lies in the upper abdomen (at the second lumbar vertebral level), extends from the duodenum to the spleen behind the stomach (Frantz et al., 2012). The pancreas is part of a gastrointestinal system that creates and secretes digestive enzymes in the bowel called the **Exocrine pancreas** and also an **Endocrine organ** that produces and secretes hormones into the blood to control the body's energy metabolism and body-wide storage (Longnecker, 2014).



(**Figure 2-1) Anatomy of the pancreas**

1. Cells and Secretions of the Pancreatic Islets

In 1969, Paul Langerhans described the pancreatic cells and called them (Islets of Langerhans), these cells consist of mixed of endocrine cells are founded in the pancreas parenchyma (Borden et al., 2013).

The human pancreas islets have a total number of between 3.2 and 14.8 million, with a total islet volume of 0.5 to 2.0 cm3 (Ionescu-tirgoviste et al., 2015).

The islets contain many cells: **alpha (α), beta (β), and delta (δ) cells;**

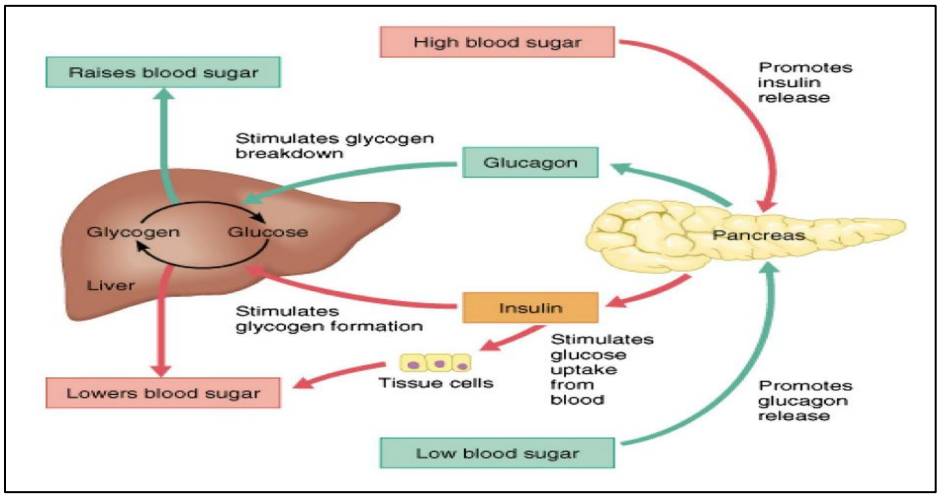
- The alpha cells secrete glucagon hormone (increase blood glucose).
- The beta cells secrete insulin (decrease blood glucose and inhibits glucagon secretion).
- The delta cells, secrete Somatostatin (regulates/stops α and β cells; inhibits the secretion of both insulin and glucagon).
- The gamma cells, secrete pancreatic juice (Qaid & Abdelrahman, 2016).

2. Regulation of Blood Glucose Levels by Insulin and Glucagon

Initially, Glucagon was extracted as a hyperglycemic drug. When immunoassays became available, glucagon secretion was discovered to be regulated inversely by plasma glucose levels, supporting its role as a major glucose-regulating hormone (Holst et al., 2017).

Insulin and glucagon pathways arise in metabolism from the elevated amount of glucose, for instance after feeding, insulin is released from the bloodstream by β cells to minimize the glucose level of glycolysis by increasing the bloodstream's absorption of glucose from much of the body cells. In the same manner, glucagon produced by α cells, as in exercise, encourages glucose levels, by increasing the breakdown of glycogen and the release of glucose throughout the liver (Figure 2-2). Insulin stimulates β cells and inhibits α cells, while glucagon activates α cells. Glucagon promotes and translates amino acids into glucose by processing blood from the liver. Increased levels of blood glucose inhibit glucose by negative feed-

back.Therefore, insulin and glucagon combine to sustain glucose hemostasis. Insulin is less secreted in appetite or fasting and glucagon is increased to activate the catabolic processes and to mobilize glucose and free fatty acids (FFA) (Qaid & Abdelrahman, 2016).



(Figure 2-2) Blood sugar insulin cycle graphic

(Qaid & Abdelrahman, 2016).

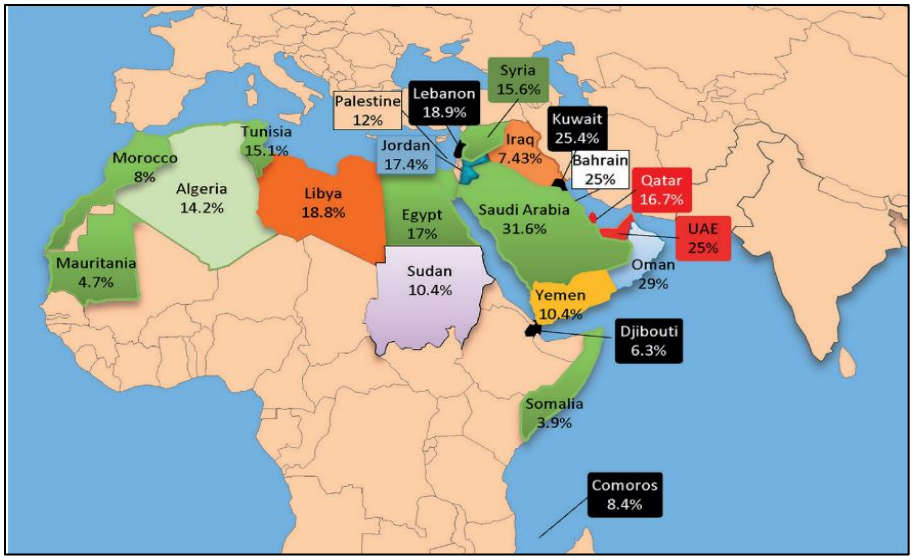
2.4. Epidemiology of Diabetes Mellitus Type II

In the last three decades, the number of individuals with DM quadrupled, around 1 out of 11 adults worldwide have diabetes, of which 90% are T2DM (Zheng et al., 2018).

Nearly 20.5 million people live with diabetes in the 20 Arab States for which data are available. T2DM was approximately 15% in Iraq and the highest in Basra City was recorded (19.7%). In comparison with developing nations, of which most people with diabetes are above the age of retirement, almost three quarters (73.4%) of diabetics in Arab countries are under 60 years of age and thus in their most active years, thus raising the burden of impairment due to diabetes (Mansour et al., 2014).

The International Diabetes Federation (IDF) estimates that the population of the Middle East and North Africa will almost double in the next 20 years, hitting 51.7 million by 2030 (Mansour & Douri, 2015). In every

country, 80 % of the population with a low and medium-income are living with a T2DM (Baynest, 2015).



(Figure 2-3) Arab world countries and prevalence of T2DM

(Meo et al., 2017)

2.5. Risk Factors for Diabetes Mellitus Type II

1- Modifiable risk factors:

a) **Diet**: Dietary content plays an important role in diabetes progression independently of Body Mass Index (BMI) and a variety of other risk factors. Elevated glycemic diet and trans-fat intake are associated with increased diabetes risk, whereas increased cereal and poly-in saturated fat consumption are associated with reduced risk.

b) **Smoking and Alcohol consumption**: Active smoking had an elevated chance of type 2 diabetes. Present smokers have a 45 percent elevated chance of diabetes relative to non-smokers (Bi et al., 2012).

c) Overweight and Obesity.

d) Physical inactivity.

e) High blood pressure (Hypertension).

f) Abnormal cholesterol levels (American Diabetes Association, 2015).

2- Non-Modifiable risk factors:

a) Genetics: For example, the Family history, history of pre-diabetes, and history of gestational diabetes.

b) Age: Elderly people are more likely than other younger adults to have metabolic disorders such as T2DM (Lyssenko, & Laakso, 2013).

c) Gender: As a woman, weaker glycemic regulation in T2DM patients is involved.The elevated weight and subsequent unable to lose this weight continues to lead to higher adiposity and prevalence in T2DM than males in women with children (Stadlmayr et al., 2015).

d) Ethnicity: Plays an important role in the danger of T2DM growth relative to other ethnic groups (Bhargava et al., 2014).

2.6. Pathophysiology of Diabetes Mellitus Type II

Pathogenesis of T2DM, occurs by two main pathological defects are beta cell dysfunction result in impaired insulin secretion, and impaired insulin action through insulin resistance. In cases where insulin resistance prevails, the mass of β-cells undergoes a transition to maximize the supply of insulin and to balance the unnecessary and anomalous demand.

The concentration of plasma insulin (both quickness and meal stimulation) is normally increased, but the concentration of plasma insulin is not adequate to retain natural glucose homeostasis "related" to the intensity of its insulin resistance.

Considering the intimate connection between insulin secretion and hormonal sensitivity in the complicated regulation of glucose homeostasis, the contribution of each to the pathogenesis of T2DM is virtually impossible to distinguish. Insulin and hyper-insulinemia inevitably result in decreased resistance to glucose (Baynest, 2015).

2.7. Signs and Symptoms of Diabetes Mellitus Type II

Symptoms of type 2 diabetes can be sluggish (years or decades) and absentee or subtle. Untreated diabetes classical signs include:

1- Weight loss.

2- Polydipsia (increased thirst).

3- Polyphagia (increased hunger).

4- Polyuria (increased urination).

Other signs and symptoms are:

1- Vision obscured.

2- Delay wound healing.

3- Exhaustion and tiredness.

4- Multiple skin rashes in diabetes are known as diabetic dermadromes.

5- Headache (Awuchi et al., 2020).

2.8. Complications of Diabetes Mellitus Type II

Complications of diabetes can affect different parts of the body for various individuals. The risk of multiple severe health conditions is raised by diabetes.

In males, erectile dysfunction, low testosterone levels, and mental causes such as depression, anxiety, or stress are responsible, which can impair sexual feelings.

Diabetes can be extremely problematic for women. Pregnancy carries a chance of gestational diabetes even though you have no diabetes. The American Diabetes Association figures show that coronary disease is the leading cause of death of diabetes females. Furthermore, women with diabetes suffer from depression, are at risk for their sexual wellbeing (Skiadopoulos, 2013).

The most severe symptoms of T2DM include heart failure or storks, blurred vision and blindness (Retinopathy), diminished blood (Peripheral artery disease), foot and amputation issues, problems with nerves (Neuropathy), kidney dysfunction (Nephropathy).

Healthy blood glucose regulation and continuous preventive therapy delay can aim to avoid long-term issues (World diabetes foundation, 2013).

2.9. Investigations of Diabetes Mellitus Type II

1- Random Blood Sugar (RBS): The shortest test does not involve fasting until the test takes place. If the blood glucose is 200 mg/dl or more, it can suggest diabetes but must be reconfirmed.

2- Fasting Blood Sugar (FBS): Eight hours should be fasting before this test is performed. A diagnosis of diabetes confirms blood glucose of over 126 mg/dl on two or three separate days (Gillett, 2009).

3- Oral Glucose Tolerance Test (OGTT): This procedure is administered as a random plasma glucose test 160-200 mg/dl is performed, with a swift plasma test being 110-125 mg/dl. This blood test assesses the body's glucose reaction. This test takes at least 8 hours but not more than 16 hours to fast.

It decides the fast glucose level and then provides 75 gm. For pregnant mothers, glucose, 100 gm. The blood is checked for two to three hours every 30 minutes. If the amount of glucose is less than 140 at 2 hours, this is normal. Fasting 126 mg per dl or higher and glucose 2 hours or higher confirm a diagnosis of diabetes (Gillett, 2009).

4- Glycated Hemoglobin: Hemoglobin in vivo lasts between 90 and 120 days. The ketamine compound produced by the combination of hemoglobin A and glucose during these cycles was formed from glycated hemoglobin A. Several glycated hemoglobin sub-fractions were isolated. In both, the most important glycemic hemoglobin fraction of HbA1c is a retrospective proxy for the normal concentration of glucose. As a vital measure of blood glucose regulation control, HbA1c is recommended. The blood HbA1c diametrically amounts to 6.5% (Selvin et al., 2010).

5- Fructose-Amine Test: Albumin is the major plasma protein portion. Since albumin comprises free amino groups, a glucose-based non-enzymatic reaction occurs. Glycated albumin thus can also act as a marker for blood glucose control. Glycated albumin is typically taken to retrospectively calcu-

late the total blood glucose levels over 1-3 weeks. Interval of reference: 205-285 micromole/L (Baynest, 2015).

2.10. Diagnosis of T2DM in Symptomatic Patients

1- Necessary investigations:

- Fasting Blood Glucose Level (FBG).
- Postprandial glucose.
- Renal function test.

2- Indications for performing Oral Glucose Tolerance Test (OGTT):

- Impaired Glucose Tolerance (IGT).
- FBG (100-125 mg/dL) (5.5-6.93 mmol/L).
- Two-hour postprandial glucose ([140-199] mg/dL [7.7-11 mmol/L]).

3- OGTT cut-off values: Oral Glucose Tolerance Test (OGTT): ⩾ 200 mg/dL (11.1 mmol/L) this test should be done in the morning after at least 8 hours overnight fasting after 2 hours of taking 75 g oral glucose load

4- HbA1c cut-off values: ⩾ 6.5% (48 mmol/mol) (Abusaib et al., 2020).

2.11. Diabetes Management

Management begins with weight in most patients with T2DM. Weight reduction is achieved by food and exercise. The diet is similar to the diet that eliminates bad fats and prevents the chance of heart disease. Many individuals with T2DM can first regulate their blood sugar with tablets for several years. Insulin suddenly might require overtime (Johns Hopkins Medicine, 2012).

Learning about the condition and engaging effectively in the therapy is vital because complications are often less serious and less likely in patients who have their blood sugar levels well regulated. The therapy aims to maintain HbA1C at a ratio (7-8 %).

These medical problems could be accelerated, including smoking, increased blood pressure, lack of exercise, and metabolism. Specialty soccer

is widely used to mitigate the possibility of an ulcer on risky diabetic foot, although its efficiency remains unequivocal. In certain developing countries many untrained traditionalists have thought that such bitter plant chemicals are beneficial for diabetes (Awuchi et al., 2020).

1. Pharmacological Treatment

a- Mono-Therapy: If the glycemic goal is not accomplished as the full dosage is for mono-therapy recommended for 3 to 6 months, recommend double-based therapy when HBA1c < 9.0 % ,Metformin or others, depending on the patient situation.

b- Dual-Therapy: If HbA1c is as low as 9.0%, Metformin in comparison to others, consider alternate concurrent treatment or triple therapy if the glycemic target is not achieved with a maximal dosage of 3-6 months. If the patient has no alternative therapy.

c- Triple-Therapy: Initiated in tandem with others where HbA1c is ~9.0% Metformin If glycemia is not achieved when 3-6 months are maximized, suggest alternate concurrent medication and triple therapy (Abusaib et al., 2020).

A) Classes of medications that work in different ways to lower your blood glucose. These include:

1- Standard-Release Metformin: As the initial drug treatment for adults with T2DM, if Metformin is contraindicated or not tolerated, consider initial drug treatment with a dipeptidyl peptidase-4 (DPP-4) inhibitor or pioglitazone or a sulfonylurea. Be aware that, repaglinide is both clinically effective and cost-effective in adults with type 2 diabetes (Martyn, 2016).

2- Insulin Shots Substitute: Replace the body's loss or poor insulin levels. In the gut, the insulin can't be taken as tablets. Rather, the injections should be considered. There are various kinds of insulin shots, and they differ according to how easily and how long they continue to function. Insulin is

usually delivered as a basal-bolus to emulate the pancreas function (Vancampfort et al., 2016).

(Table 2-1) Summary of Pharmacokinetics of Insulin (Tschanz et al., 2017).

Insulin	Onset	Peak	Duration	Half-life	Comments
Prandial (bolus) Insulin					
Rapid-Acting					
Insulin aspart	NovoLog: 0.2 to 0.3 hr NovoLog Mix 70/30: 10 to 20 mins	NovoLog: 1 to 3 hrs NovoLog Mix 70/30: 1 to 4 hrs	NovoLog: 3 to 5 hrs NovoLog Mix 70/30: 18 to 24 hrs	Subcutaneous: 81 min (NovoLog); ≈ 8 to 9 hrs (NovoLog Mix 70/30)	Appearance: clear; covers insulin needs at the time of the injection
Insulin lispro	Subcutaneous: 0.25 to 0.5 hr	Subcutaneous: 0.5 to 2.5 hrs	Subcutaneous: ≤5 hrs	Subcutaneous: ≈ 1 hr, IV: 51 to 55 mins	
Insulin glulisine	5 to 15 mins	1.6 to 2.8 hr	<5 hrs	IV: 13 mins, Subcutaneous: 42 mins	
Short-Acting					
Regular insulin	Subcutaneous: ≈ 0.5 hr, IV: 10 to 15 mins	Subcutaneous: 3 hrs	U 100: 4 to 12 hrs; U 500: up to 24 hrs	IV: 17 mins, Subcutaneous: 86 to 141 mins	Appearance: clear; covers insulin needs for meals eaten within 30-60 mins
Basal Insulin					
Intermediate-Acting					
Insulin isophane (NPH)	1 to 1.5 hrs	4 to 12 hrs	14.5 hrs	≈ 4.4 hrs	Appearance: cloudy; covers insulin needs for about half the day or overnight. Often combined with rapid- or short-acting insulin
Long-Acting (Not be mixed with other insulins)					
Insulin detemir	3 to 4 hrs	None	Up to 24 hrs	5 to 7 hrs	Appearance: clear; covers insulin needs for about 1 full day. Often used as needed, or with rapid- or short-acting insulin
Insulin glargine	Lantus: 3 to 4 hrs Toujeo: 6 hrs	None	Lantus: Up to 24 hrs Toujeo: ≥24 hrs		
Insulin degludec	1 hr	9 hrs	At least 42 hrs	25 hrs	

1- Basal insulin: It imitates the pancreas low levels of insulin release all day long. It is taken 1-2 times a day. Intermediate action, long-running or very long-running insulin

2- Bolus insulin: It regulates blood high sugar, it is normally taken before meals or when high-sugar correction is required.

3- Rapid Action or Mixed insulin: Involves the combination of fast insulin and long-acting or intermediate insulin is usually offered for a limited time (Vancampfort et al., 2016).

2.12. Self-Care Activities

Self-Care is characterized as behavior taken within the community by individuals to take proper care of themselves. Many complications and unchecked T2DM death also impose a substantial burden on individuals, families, and the community T2DM people need lifetime self-care to prevent or delay short-term and long-term complications in their lives and improve quality of life (Lu et al., 2016).

American Association of Diabetes Educators in patients with diabetes (PWD), guidance seven main self-care habits and practices strengthen glycemic regulation, reduce the risks associated with diabetes and help improve the overall quality of living, including a healthy diet, physical exercise, daily blood sugar testing, medication adherence, successful approach to problem-solving, good coping ability and reducing risk (Delgado et al., 2020).

1) Healthy Eating

DM is closely related to sugar, lipid, and protein metabolism. It is popular. Thus, diet care is an important aspect of diabetes management and self-management preparation. Medicinal dietary therapy was created to prescribe and illustrate a holistic, proven solution to dietary diabetes. Breakfast, lunch, dinner, and snacks are served on a traditional menu. Can also have snacks for midday and midnight. A meal program may be required for sick days, maternity and travel times. In a healthy meal plan, there is a range of foods (grains, fruits, vegetables, legumes, milk products, meat and fats) (Udogadi et al., 2019).

A meal plan may also accomplish another health goal, including:

- Reducing fat to a decent degree.
- Keep the blood pressure normal.

• Keep body weight stable (Need et al., 2010).

World Health Organization Eating Guidelines for Diabetes

Eat equal or more than 400 gram (not count cassava, potare, candy and other starchy root cultures) of fruit and vegetables daily. There are also legumes (e.g., beans, lens, whole grains and nuts in the balanced diet).

1- Fat consumption. Fat should be less than 30% of the total calories. Saturated fats should favor unsaturated Fats. Shun trans fats.

2- Restrict single sugars to less than 10% of calorie ingestion (below 25 grams or below 5% of calories per day may even be better).

3- Limit salt and sodium from all springs and ensure the salt is iodinated. The risk of cardiovascular diseases has been shown to decrease (below 5 gram of salt per day).

4- Keep your weight safe by eating around the same amount of calories that your body uses (Lee et al., 2019).

2) Physical Activity

Exercise increases physical health, and strength of the cardiovascular and reduces blood pressure and lipids and has a significant beneficial impact on diabetes through increased insulin sensitivity, lower glucose levels, and a decrease in long-term morbidity. Exercise helps decrease fat weight, increasing muscle mass, and leads to improved sensitivity to insulin in patients with T2DM in particular (Kollipara & Warren-Boulton, 2014).

For people with diabetes exercising, hypoglycemia is the main risk. It can cause a loss of awareness and a life-threatening diabetic coma (Diabetology, 2018).

A) Types of Physical Activity

1- **Aerobic exercise.** Is a constant rhythmic movement of larger muscle groups, usually at least 10 minutes at a time, such as walking, cycling, swimming, or jogging. Aerobic activity is easy, although it often includes

anaerobic metabolism if done at a very high intensity such as with high-intensity interval exercise.

2- **Resistance training.** Requires brief repetitive workouts with weights, weight machines, strength ranges, or the body's weight (e.g. push-up).

3- **Flexibility exercises.** Help to improve the ability to travel around more complete motion areas, for example, the lower back or a hamstring stretch. Some workout styles, such as yoga, may provide resistance as well as flexibility (Sigal et al., 2018).

B) Exercise Considerations for People with Diabetes

1- Before and after exercise, check the feet for blisters and ulcers. If issues with the previous foot or nerve.

2- Prevent the stressing of foot wounds using weight-bearing exercise.

3- Track the glucose several hours before and after exercise to meet the pattern when initiating or changing an exercise program.

4- Take other drugs into account: (Diuretics e.g. beta-blockers) attending cardiovascular response; can mask palpitation/racing heart-related hypoglycaemic symptoms (Diabetology, 2018).

5- Before breakfast, one of the best workout periods with the smallest shift in glucose response.

6- Retinopathy persons should avoid aerobic activities and resistance exercises of higher intensity (with significant rises in systolic blood pressure). All of this raises the risk of bleeding.

7- Appropriate fluid intake to reduce dehydration and thermal stress risk are important. When glucose levels are high, increased fluid intake is necessary (Turner et al., 2019).

3) Self-Monitored Blood Glucose (SMBG)

SMBG is a short-term glucose control system, the simplest and most common in the world. Is the finger stick glucose test with a glucometer. These

care points have revolutionized the home-based glucose surveillance concept (Khadilkar et al., 2013).

One can now use a glucometer or glue stick to test one's blood sugar in the workroom, pick up one's finger, using a needle, and get a drop of blood. It takes two minutes to complete the process.

Frequent blood glucose measurement is vital for diabetes management (World Diabetes Foundation, 2013).

A) Guidelines for SMBG

For those with diabetes, SMBG medical recommendations at various frequencies, based on diabetes type, anti-hyperglycemic care, and glycemic control adequacy suggest. The frequency and period of SMBG should be tailored to the individual requirements and objectives (DiMeglio et al., 2018). In insulin-treated people, a daily SMBG is important for monitoring treatment progress and for preventing hypoglycemia.

The American Diabetes Association (ADA), suggests SMBG for people with intense insulin regimen before food and snacks at bedtime, sometimes after drinking, before drug exercise, suspected low-blusher glucose, after low blood glucose treatment, and before vital activities including driving (Smigoc Schweiger & Battelino, 2020).

Every day, Test blood sugar. This is an integral aspect of diabetes management. This is valid regardless of which medications are using. Taking a little bit of blood using a small needle called a "lancet". The fingertip is the position used. The test meter shows how much blood sugar contains.

The normal range of blood sugar before consuming food (90-120 mg/dl), and after eating (120-180 mg/dl) (Johns Hopkins Medicine, 2012).

B) If your reading doesn’t seem right

Sometimes when you check your blood glucose level, you may be shocked by the reading. Check the following if you don't think it is righ.

- Did you wash and dry your hands well before testing?

- Is the strip have come out?
- Is the strip the right meter strip?
- Is the strip enough blood?
- Have you correctly put the strip in the meter?
- Is the strip affected by temperature or heat?
- Is the meter smooth?
- Is the meter too cold or too warm?
- Is the battery low? (Cunningham, 2016).

C) Timing of Self-Monitoring of Blood Glucose

1- Before dinner and snacks during the day.

2- Assess sufficient doses of meal insulin and indicate levels of blood glucose in response to insulin action profiles on other occasions (e.g. 2 to 3 hours after food intake) (at anticipated peaks and troughs of insulin action).

3- To make improvements in glycemic control in conjunction with vigorous practice (before, during, and several hours after).

4- At bedtime, nighttime, and waking, detecting and avoiding nocturnal hypoglycemia and hyperglycemia and maximizing simple insulin.

5- To drive a vehicle or to handle dangerous equipment.

6- Confirm and track recovery for hypoglycemia.

7- For the prevention of hyperglycemia crises during current disease (DiMeglio et al., 2018).

4) Taking Regular Medications

Drugs are recommended for diabetes and complications avoided, patients should search for full awareness of all the drug effects and potential side effects.

1- Take drugs according to the doctor's prescription.

2- Take drugs every day at the same time.

3- Don't miss or take any additional drug dose yourself.

4- Do not take two doses concurrently if missed dose.

5- Do not interrupt your own medicine.

6- If any drug side effect suspects, check with a doctor before quit.

A- Don't take more medications without asking the doctor. do not take any diabetes drugs based on anything, depend only on doctor's advice (Vancampfort et al., 2016).

B- Recommendations for Insulin Injection

1- Ensure that the insulin is using and do not substitute one insulin for another without the permission of the doctor.

2- Injects insulin into the chest, upper arms, or thigh under the skin (subcutaneously).

3- Administer insulin shot every time (preferably in the abdomen) in the same general region to enhance the control of blood glucose since it enters the bloodstream at the approximately same pace each time.

4- Injecting insulin at the same location should not be used. This can make fatty deposits less reliable.

5- Take the next injection 2 cm away and rotate the sites accordingly, from the previous injection site. Stay five cm away from the belly button if you take the injection into the abdomen.

6- It is crucial to use the right angle because an injection that is too deep will lead to insulin being absorbed into the muscle and too rapidly. On the other side, too shallow injections are more painful and cannot easily be absorbed.

7- Not to rub the site after an injection of insulin.

8- Remember that exercise will increase the absorption rate of insulin.

9- Continue to keep insulin bottles/pens in the cooler container (not the freezer) (Vancampfort et al., 2016).

5) Diabetes Foot Care

For patients with DM, maintain foot care much more important. Diabetes mellitus is one of the leading causes worldwide for non-traumatic lower-

limb amputations. Prevention is better than treatment, to avoid foot problems associated with diabetes must take special caution (Michael, 2020).

To minimize foot (sores) and gangrene, with the associated human suffering and the loss of economic capital, suggest early screening for foot loss sensation (peripheral neuropathy) along with careful foot treatment and better blood sugar regulation (Clothier, 2019).

A- Daily foot care Dos and Don'ts

1- Wear shoes which are fitting well. Shoes should have low (fewer than 5 cm) heels and not rub or pinch.

2- During rest Pick up feet. This helps blood circulate in feet and decreases the effects of some blood vessel disease.

3- Wiggle and rotate ankles a few minutes a day to improve blood flow to the legs and feet.

4- Train regularly. It will help to increase circulation and reduce the number of tight leg pains.

5- Test feet every day and feel variations between feet in skin temperature.

6- Don't wear high heels, shoes with pointed toes, sandals or worn-out shoes (open or open-heel).

7- Avoid wearing tight things, like tight sticks or knee-highs.

8- And indoors don't go barefoot. Consider purchasing a pair of fitting shoes for indoors only.

9- Don't put on feet bottles of hot water or heating pads. For long periods, don't cross legs.

10- Do not smoke. Tobacco limits circulation and healing and increases amputation risks dramatically.

11- Don't get non-healthcare providers pedicures (Clothier, 2019).

2.13. Coping and Diabetes

A diabetes diagnosis is also related to a sense of shock. Persons are diagnosed with depression and can have a feeling of grief so they can share in some of the most beloved things in life (Kalra et al., 2018).

Good coping has been described by the American Association of Diabetes Educators (AADE) as an important AADE7 self-care behavior, for the successful self-management of diabetes. Many psychosocial causes have been shown to decrease an individual's ability to retain metabolic function, most likely because of diminished medication adherence.

These are inadequate coping, pressure of family, stress and anxiety effects, improper or low social support, and low family income (Kent et al., 2010). Most researchers believe coping is a dynamic process in which the individual needs to cope with a stressor and coping leads to an outcome. In diabetes, the stressor is generally considered to be the chronic requirement of diabetes, and coping contributes to some metabolic and psychosocial outcomes. Coping with different metabolism or disease effects, as calculated by glycosylated hemoglobin, functionality status, the seriousness of the symptom, body mass index, or bodyweight, has been identified in several studies. Addressing can also influence psychosocial effects, such as psychological adaptation, depression, and life quality (Grey, 2000)

The willingness of patients to prepare for and stick to diet, activities, and medication schedules, regardless of conflicting life requirements, life stressors, or temporary laughter, depends on their psychological and physical health. Some patients have been able to incorporate these requirements into their everyday life; however, it's hard for some patients to embrace the illness, which means they are incapable of dealing with it. This can result in decreased patient self-treatment, drug adherence, and an adverse effect on metabolic control (Ramkisson et al., 2017).

Coping was described by Lazarus and Folkman as " changing of cognitive behavioral continuously, resulted in specific external and internal outcome that lead to make person condition better or worse " It is important to make the handling efficient and adaptable to the conditions in the context of the case is considered. All activities a person performs in stressful situations can be described as " coping". The practices are systematic and dynamic to improve the difficult situation. They form the sequence of acts known as techniques that involve numerous special tasks in the stress management process (Patrycja & Czeslaw, 2015).

Coping functions in three ways as a protecting function 1) by withdrawing or altering stressful circumstances.2) through the interpretation of the stressor sense. 3)- by restricting the emotional implications (Grey, 2000). To avoid diabetes complications, annual surveillance has been completed via various lipid profile checks, kidney functional tests, eye tests, ECGs, and foot exams. This is also included in the minimum requirements for care (Arutselvi, 2018).

1- Importance of Healthy Coping with Diabetes Mellitus Type II

2- Good management requires constructive approaches and care.

3- Positive relations with others.

3- High quality of life perceived about health (QOL).

4- Good coping goes deeper than merely preventing mental disease to involve high levels of psychosocial functioning and a positive perspective on the disease and QOL overall (Thorpe et al., 2013).

5- Safe coping is crucial because anxiety caused by diabetes will prevent self-care

6- Live with pre-diabetes and diabetes well and have the right quality of life with the correct advice (Medications, 2020).

1- Types of Coping Strategies

1- Problem-focused.

2- Adaptive emotion-focused.

3- Maladaptive emotion-focused coping strategies (Murakami et al., 2020).

2- Skills, attitudes, and behaviors that reflect healthy coping

1- Accomplishing commitments on healthcare (eg, keeps appointments, takes medication).

2- Emotional speech.

3- Search for assistance.

4- Quest for responses.

5- Proof of fundamental problem-solving competencies

6- Overcoming obstacles

7- A constructive approach.

8- To incorporate into one's life a physical activity.

9- Evidence of self-effectiveness.

10- Adaptive style of coping

11- The reason for being

12- Being hopeful (Kent et al., 2010).

3- Factors that Determine the Coping Style

1- Age and gender.

2- Class in society.

3- Maturity of emotion.

4- Optimism attributes.

5- Religion.

6- Regulation site, neurotic and extraversion site (Awasthi & Mishra, 2007)

4- Ways of Coping

Ways to cope are always discovered when facing our unique life challenges. Many people can deal with this by denying, dismissing, or laying aside a complicated fact. Others may prefer a constructive approach, although the situation is challenging. Others like to concentrate on practical

matters and illustrate that they manage well. It is crucial to not disregard how you feel, regardless of your approach (Diabetes UK, 2014).

Lazarus and Folkman, divided coping styles into two main groups based on the focal point: problem-oriented coping and emotional coping. Problems are directed to changes in stressful circumstances and the avoidance or reduction of their effect. Individuals use problem-oriented methods when they think they should do something to cope with unpleasant circumstances. Emotional coping is designed to regulate the emotional outcomes of stressors.

Emotional efforts likewise concentrate on modifying emotional reactions to stressors, in other words, to regulate emotional responses and physiological excitement to minimize stress (Moasheri et al., 2017).

5- Tips to Cope with Diabetes Mellitus

Center for Disease Control and Prevention (CDC), 2015. There are 10 tips to cope with diabetes and manage stress.

1. Look out for sensations. From time to time almost everyone feels irritated, depressed, or anxious due to diabetes. Talk with health care providers about feelings.
2. Know how to feel about the doctor, nurse, education for diabetes, counselor, or social worker. patients can help solve diabetes problems quickly. You may also consider talking to other healthcare providers for assistance.
3. Speak about negative responses other people might have to your diabetes with your health care providers. Your health care team will help you to handle other people's feelings that suffer from diabetes. It is crucial not to feel diabetes needs to be concealed from others.
4. Inquire if support for the costs of medication and supplies for diabetes is available. Chat with pharmacists and other health care practitioners about the cost of medications. May have awareness of government or other services

that can benefit expensive citizens. Also see if they are aware of services that help them get insulin, diabetes, and supplies through community health centers (test trips, syringes, etc.).

5. Speak to friends and family. Be frank about the diabetes issues you are facing. It helps to reduce tension by asking people how you feel. The people around you, however, will often increase your tension. Let them know if they need them and when they need them.

6. Remember to take your medications, monitor blood sugar, maintain a healthy diet, learn more about DM, maintain doctor follow-up, Request assistance of loved ones.

7. Discuss with other diabetes people. Some diabetes people understand some of what you are doing. Tell them how and what works for them on their diabetes.

8. Create a list of all the things have to do to cope with diabetes anxiety every day, do one thing on one occasion. It can be daunting when think of all diabetes-management activities. Try to focus on each assignment one by one.

9. Take it slowly as focus on priorities, such as increasing physical activity. Don't immediately have to accomplish goals. Individuals may want 10 minutes to walk, every day of the week three times a day, but can begin by walking twice a day, or every other day.

10. Take time to do what you like. Set aside time in the afternoon to do something to enjoy, call a friend, play a game, or work on a fun project with children.

6- **Ways to Reduce Stress**

There is no safe way to avoid tension. However, there are ways to a less stressful life.

1- Ask for assistance. Find friends and family to call for assistance.

2- Be smart. Keep in order things.

3- Get enough sleep. At least eight hours of sleep a night.

4- Take the time to do anything that wants. Go for a walk with a friend, read a book, or watch a film.

5- Learn how you can say no to something that you either don't want to or need to do.

6- Know yourself. Know which circumstances are stressing you. Plan how they will cope.

7- Create a to-do list for that reason. Place on the top the key material.

8- Remind yourself for remedial purposes. Using notes, schedules, timers something that works for you.

9- Repair little, realistic targets. Divide major targets into smaller chunks (like weight loss).

10- Resolve issues. Try solving it quickly when you have a problem. This way, your life won't be a source of stress.

11- Take care for body and spirit. This way is important to cope with challenging circumstances (States & Program, 2010).

2.14. Previous Studies

First Study:

(Aljohani, 2011)." **Factors Affecting the Self-Management Practices of People with Type 2 Diabetes in Al-Madinah, Saudi Arabia".**

The study aim was to identify factors that affect self-management practices of adults with T2DM. Design of study was cross-sectional, including 210 adults with T2DM, who selected from three primary health-care centers.

Findings of Self-care activities showed that the least self-care activities in blood glucose testing (85%) less than four days per week, exercise (47%) less than two days per week, while the highest self-care activities were for the medication (75%) 7days per week, diet (71%) more than three days per week, and foot-care (56%) more than three days per week.

Second study:

(Smalls et al., 2012). **"Associations between coping, diabetes knowledge, medication adherence and self-care behaviors in adults with type 2 diabetes".**

In this study, the authors explore the correlation of emotional coping and diabetes knowledge, medication adherence, and self-care activities of individuals adult with T2DM. Two primary health care centers are used to collect data, in the South-East United States, 378 participants included with T2DM. The study findings showed significant relationship between emotional coping and self-care behaviors.

Third Study:

(Jackson et al., 2014). **" Knowledge of self-care among type 2 diabetes patients in two states of Nigeria".**

The study aims at assessing diabetes patients' knowledge of self-care activities. The study used a descriptive, cross-sectional design. 303 Participant included.

Findings showed that the majority of the study sample (79.5%) had a 70% or more overall knowledge level about self-care. Also there were significant association between diabetes Self- care knowledge with educational status, monthly income, and duration of diabetes.

Fourth study:

(Kassahun et al., 2016). **"Diabetes-related knowledge, self-care behaviors and adherence to medications among diabetic patients in Southwest Ethiopia: a cross-sectional survey ".**

The cross-sectional research design includes 325 individuals who complain of T2DM. Only 309 participants were included in the study. The study results showed that the majority of sample had high knowledge (44.9 %), moderate knowledge (20.1 %), and low knowledge (34.9%). While diabetes duration was less than 5 years. Good self-care behavior among patients

with T2DM, was less likely to have low knowledge. 157(50.8 %) of participants had poor self-care behavior.

Fifth study:

(Salem AL-Khafaf, 2017)**. "Knowledge and Coping Strategies among Diabetic Patients in AL-Wafa'a Centre in Mosul City Eman".**

The study's purpose was to assess the diabetes patients' knowledge and coping strategies. The study was used a descriptive cross-sectional study. Data collected from AL-Wafa'a Centre for Diabetes Mellitus.

Sample composed of 100 patients with T2DM.

Findings showed that most of the sample was female (66%), age group (46-65), representing (29 % and 36 %) of the total sample. The respondents have good knowledge about diabetes, but fewer coping strategies. Diabetes Self-care activities are low that reflect difficulty coping with diabetes mellitus.

Sixth study:

(Brown, 2017). "**Assessing for Awareness and Knowledge Regarding Diabetes in Pre-Diabetes Obese Patients**".

Pretest posttest research design used. Sample composed of 30 patients. The study results was showed that a significant improvement in the patients' knowledge and awareness about diabetes after the program. Indicate that program was effective in improving the patients' diabetes knowledge and awareness. There was a significant statistical difference ($p < 0.000$) between the patients' pretest and posttest knowledge scores. Therefore, the NDPP program was effective in improving the patients' knowledge of diabetes.

Seventh study:

(Najjar et al., 2020). **" Knowledge and Coping Strategies Among Patients Diagnosed With Type 2 Diabetes Mellitus**"

The study aims were to examine knowledge and coping strategies and the association between them among adults with T2DM.

The research design is descriptive Cross-sectional. In which 222 adults with T2DM were selected randomly.

Findings of data analysis showed that knowledge of means score was high 7.9 (56.9%), medium (5.9%), low (34.2% and 59.9%). Generally, the knowledge test score was low.

The mean scores of diabetes coping subscale were as the followings tackling spirit is highest of 68.11 (SD=17.15), diabetes integration coping of 57.64 (SD=21.82), but lowest mean score avoidance coping strategies of 42.21(SD= 22.67). And lowest score passive resignation of38.63 (SD=21.35).

There was a significant positive correlation between knowledge and tackling spirit coping and diabetes integration.There is poor Knowledge among individuals with T2DM. The study recommends focus efforts to enhance diabetes patients and also focusing on patients coping with diabetes.

Eighth study:

(Salahen et al., 2020). " **Effect of Instructional Educational Program on Diabetic Patients ' Awareness Regarding Diabetes and Diabetic Retinopathy**"

The study's purpose was to examine the effect of the educational program on patients with diabetes.

The research design pre-test and post-test used at Al-Rebat Center and Soba Diabetic Clinic. The sample consists of 47 patients with diabetes. Findings were showed that females respondents were highest (63.8%). Major of them were age group 40-50 years (53.19%). 63.8% and 39.13 among the sample were Housewives. While the duration of having diabetes was 3-5 years in 44% of patients, diabetes complications occur in 90% of the patients. The family history of having diabetes was 66.6% Diabetes patient's knowledge improved after two weeks of educational program (P-_value 0.00) and diabetic retinopathy (P-value 0.00).

Chapter Three

Methodology

Chapter Three
Methodology

In this chapter, the researcher describes the methods of the study, which include the design of the study, administrative arrangements, ethical considerations, setting of the study, a sample of the study, program construction, study instrument, pilot study, data collection, data analysis, and limitations of the study.

3.1. Design of the Study

Quasi-experimental design, using a pretest-posttest approach, is carried throughout the present study to determine (Effectiveness of A Coping Style-related instructional program on Self-Care of Patients with Diabetes Mellitus Type II at Endocrinology and Diabetes Center in Basra City) from the period of 17th November, 2020 to 3rd April, 2021.

3.2. Administrative Arrangements

When the Council of Nursing College, University of Baghdad had taken the approval about the study protocol, the researcher presented a detailed description of the study protocol including a statement of the problem, goals, and a questionnaire to the Ministry of Planning (Central Organization Statistics) and the same protocol submitted to the Basra Health Directorate (Human Development and Training Center), (Appendix A1, A2, A3, A4) to obtain official permission to conduct the study. Subsequently, a diabetic and endocrine center was approached with approval to obtain an arrangement and cooperation to implement the study in the Specialized Endocrine and Diabetes Center in Basra city.

3.3. Ethical Consideration

Before data collection, the researcher met with patients by face-to-face interview, taking in mind the precautions to maintain the social distance, wearing a mask, and gloves due to the time of the covid-19 pandemic. The researcher discussed the aims of the study with patients before participating and obtained oral consent from every patient before data collection.

The patients informed that the study would elevate their level of knowledge, enhance self-care, and improve their coping with diabetes. They also informed them, that the study did not cause any actual or potential harm to them.

3.4. Setting of the Study

The study was done in the Specialized Endocrine and Diabetes Center in Basra city, southern Iraq. This Center was established in 2010 and its staff consists of 8 doctors and 10 nurses. It includes a lab, pharmacy, and statistical units. The Center provides services for diabetes patients such as treatment (tablets and insulin) and also teaches diabetic patients how to maintain a healthy lifestyle.

The researcher has chosen this center due to the collaboration of staff, availability of objective show, and availability of appropriate classroom for program introduction, chairs, table, computer, board, and light during showing the contents of the instructional program.

3.5. Population of the Study

Overall study sample composed of (80) patients who visit specialized diabetes and endocrinology center in Basra city.

The participants met the study criteria and were included in the study. (10) patients selected for preliminary assessing needs to be excluded from the study. (10) patients selected for the pilot study to be excluded from the study. The rest of the patients divided into two groups: (30) to the study group and (30) were assigned to the control group.

3.6. Sample of the Study

The sample was a purposive, non-probability, includes (60) patients with T2DM, who were attained to the Specialized Endocrine and Diabetes Center in Basra. The Participants were composed of (31) males and (29) females and they were divided into two groups (30) patients considered as a study group, while (30) patients considered as a control group.

1. Inclusion Criteria

- The study includes patients:

- They were diagnosed with type T2DM before the time of the study.
- 18 years of age or older.
- From both sex (Male and female).
- They're able to participate and adhere to the schedule of the program.

2. Exclusion Criteria

- The study excludes patients:

- Newly diagnosed patients with type I diabetes mellitus.
- Newly diagnosed with Type II diabetes Mellitus.
- They are refusing to participate and adhere to the schedule of the program.
- Those suffering from any psychological illness or unable to care for themselves.

3.7. Steps of the Study

To evaluate the Effectiveness of A Coping Style-related Instructional Program on Self-Care for Patients with Diabetes Mellitus Type II at the Endocrinology and Diabetes Center in Basra City, the researcher conducted the following steps:

1. Assessing the Needs of Patients Concerning Self-Care Activities

Before starting the instructional program, the initial assessment was conducted, which aims to assess patients self-care activities and their knowledge. The questionnaire of the initial assessment prepared by the researcher based on the review of relevant literature and experiences of the researcher. The researcher used a close-ended questionnaire format (Yes /No).

The sample consists of (10) patients who were admitted to the Specialized Endocrine and Diabetes Center in Basra, during the period from the 17 th to 18 th November, 2020. The questionnaire of the initial assessment is composed of (13) items concerning knowledge and diabetes self-care. Each patient requires (5-10) minutes to answer the questions.

The results of the initial assessment revealed that the majority of the patients had a knowledge deficit. The results were (30%) for (Yes) and (73%) for (No%) (Appendix B1, B2). This outcome has clarified the need to develop an instructional program for diabetic patients to enhance their knowledge and self-care about T2DM.

2. Construction of a Coping Style-Related Instructional Program

The study program was prepared and conducted depending on the assessment of the patients knowledge and self-care activities among patients

with T2DM, and on information gained from reviewing the relevant scientific literature and previous studies.

After completing all sessions of the study instructional program, the researcher offered the program to a group of experts for assessing its scientific content, and experts have marked their notes on some points to make it better as possible to meet the needs of the participants and the aims of the study.

The instructional program was designed to provide the patients knowledge, improve self-care, and enhancing coping. Including information about pancreas (location and function), diabetes mellitus type II (definition, signs and symptoms, causes, risk factors, complications, and diagnosis), medication adherence, and a healthy lifestyle for patients with T2DM (Appendix C).

2.1 Sessions of the Instructional Program

The first session:

Topic: Introduction about pancreas and diabetes mellitus type II.

Objectives: The session aims to increase the knowledge of patients with T2DM about diabetes.

Contents:

- Definition of Pancreas and important hormones.
- Definition of diabetes mellitus.
- Types of diabetes mellitus.
- Type II diabetes mellitus risk factor.
- Signs and symptoms of type II diabetes mellitus.
- Diagnosis of type II diabetes mellitus.
- Complications of type II diabetes mellitus.
- Management of diabetes mellitus.

Place of lecture: At classroom in the Specialized Endocrine and Diabetes Center in Basra, southern Iraq.

Time of lecture: 10:00 A.M to 10:45 A.M.

Learning devices that used in all sessions are:

A. Lecture with discussion.

B. Computer and data show.

C. Booklet at the finish of the program.

1- The second session:

Topic: Principles of self-care.

Objectives: The session aims to increase self care activities knowledge and practice.

Contents:

- Diabetes self-care.
- Dietary planning.
- Physical activity.
- Medication.
- Self-monitoring blood glucose.
- Foot Care.

Place of lecture: At classroom in the Specialized Endocrine and Diabetes Center in Basra, southern Iraq.

Time of lecture: 10:00 A.M to 10:45 A.M.

Learning devices that used in all sessions are:

A. Lecture with discussion.

B. Computer and data show.

C. Booklet at the finish of the program.

2- The third session:

Topic: Coping style.

Objectives: The session aims to improve diabetic patients coping with T2DM.

Contents:

- The relationship among emotions, self-management, diabetes, and health.
- Factors affect the coping style.
- Healthy ways to cope with diabetes.
- Coping with stress.
- Signs of Stress.
- Stress management.
- Problem-solving.

Place of lecture: At classroom in the Specialized Diabetes and Endocrine Center in Basra, southern Iraq.

Time of lecture: 10:00 A.M to 10:45 A.M.

Learning devices that used in all sessions are:

A. Lecture with discussion.

B. Computer and data show.

C. Booklet at the finish of the program.

2.2. Implementation of the Instructional Program

The instructional program was implemented to the study sample at the classroom in the Specialized Endocrine and Diabetes center in Basra City, in Al-Mawane Teaching Hospital for the period from 18^{th} to 20^{th} of January, 2021. throughout three lectures.

Each lecture takes approximately (45) minutes. The presentation was used through introducing discussion, plasma-LCD, and the laptop is used for showing lecture pictures, and video shows as educational methods for participants (Appendix I).

2.3. Evaluation of the Instructional Program

The final phase of the study was to evaluate the effectiveness of a coping style-related instructional program on self-care by performing a post-test for both the study and control group after three weeks from the implementation of the instructional program.

3.8. Study Instrument

To achieve the study goals. The study instrument consists of three parts (Appendix D) including:

Part I: Patients Socio-Demographic Characteristic

This part is concerned with the collection of demographic data obtained from the patients by interview questionnaire sheet and consists of (7) items including (age, gender, level of education, marital status, monthly income of the family, Profession, residence).

Part II: Clinical Characteristic of Patients with T2DM

This part is concerned with the collection of clinical characteristics obtained from the patients by face to face interview, including (patients past medical history, family's medical history, medical diagnosis, duration of illness).

Part III: This part is composed of three tools that were used in the study, after getting the approval of the authors who had conducted it (Appendix E1, E2, E3).

1. First Axis: Assessing Patients Knowledge.

Diabetes patients knowledge was measured by using the **(Michigan Diabetes Knowledge Test (DKT) true/false (Revised Diabetes Knowledge Scale).** The Michigan Diabetes Research Center is a research unit of multi-

disciplinary team sponsored by the National Institute of Diabetes and Digestive and Renal Diseases and the National Institute of Health. The (DKT) contains (20) true/false questions, with 18 general questions about diabetes knowledge, 2 questions for those who use insulin. 20 items included food, comorbidity, glycemic regulation, exercise, medication, and complications. Some of these questions were false and some of them were true. The patients were supposed to choose true or false. The true answer was 1 score. For the wrong answer was scored with zero. Total values were between 0 and 20.

DKT is a reliable and valid way to test the knowledge of diabetic patients (Najjar et al., 2020). DKT was developed and tested by Michigan University scientists for its reliability and validity and DKT provides a brief questionnaire on knowledge of diabetes and favorable psychometric characteristics (Kassahun et al., 2016). The test was completed in about (5-10) minutes.

2. Second Axis: Assessing Patients Self-Care Activities

The patients self-care activities were measured by using the Expanded version of the Summary of Diabetes Self-Care Activities (SDSCA).This tool is a validated questionnaire that is used to determine home care performance.

The Oregon Research Institute (ORI) has developed the General Description of Self-Care Activities (SDSCA) questionnaire by key researchers (Ph.Dr. Deborah Toobert, Dr. Sarah Hampson, and Dr. Russell E.), Glasgow at the University of Colorado, which provides a self-report and fast-track diabetes evaluation that is highly needed for researchers and doctors.

The scale consists of 15 items measured by self-report. It ranks in 5 subscales, each of which measures the frequency of self-care in the last 7 days

for the following aspects of the diabetes regimen. Five items for general diet, two items for exercise, two items for blood glucose self-control, five items for foot care, and one item for medication intake.

3. Third Axis: Assessing Coping with Diabetes

To evaluate a coping style among patients T2DM, the researcher used the Scale of Diabetes Coping Measures **(DCM)**, this scale performed by (Dr. Garry Welch), scientist of senior research. DCM is a specific instrument for diabetes that includes four sub-scales: Tackling Spirit (5 items), avoidance (5 items), passive resignation (5 items), and diabetes integration (6 items) (Elisabeth et al., 2009). Higher ratings indicate better use of coping strategies.

The questions are scored using a five-point Likert scale, from "agree strongly" to "disagree strongly". All questions are reverse scored, except items 1, 4, 9, 12, and 20. Sub-Scales are scored from 0 to 100, and the highest scores indicate a better use of coping strategies (Elisabeth et al., 2009). The test was completed in about (5-15 minutes).

Translation and Cultural Adaptation Process of Study Tools

After choosing the appropriate tools for the study, and the approval to use them was taken, these tools are translated to the Arabic language to be understandable to the participants when responding to it. The tools were **Diabetes Knowledge Test (DKT)** conducted by Michigan Diabetes Research Center (MDRC), **Expanded version of the Summary of Diabetes Self-Care Activities (SDSCA)** conducted by senior researchers (Ph.Dr. Deborah Toobert), and the third tool **Diabetes Coping Measure (DCM),**conducted by (Ph.D. Garry Welch), Senior Research Scientist.

The translation process occurs by two experts, the first expert was a faculty member at the Basra University College of Education, Department of

English with a doctorate in the English language, and the second expert faculty member at Baghdad University, College of Nursing with a doctorate in Nursing.

The tools were first translated to Arabic by the first expert. Then the Arabic version was translated back to English by the second expert. The two versions were compared to produce the most reliable version in the Arabic language.

3.9. Validity of the Instrument

Content validity of the study instrument is obtained through a panel of (10) experts (Appendix F). These experts are (7) faculty members at the College of Nursing in University of Baghdad, (1) faculty member at the College of Nursing in University of Kufa, (1) faculty member at the College of Nursing in University of Jordon, (1) endocrinologist from a Specialized Diabetes and Endocrinology Center in Basra.

The researcher introduce, a copy of the instructional program and the study instrument to those experts and asked them to evaluate content clarity and adequacy. Their responses suggested that the instructional program and the study instrument are clear and adequate, but need some changes to be more accurate to examine what needs to be tested.

3.10. Reliability of the Instrument and Pilot Study

To assess the effectiveness of the instructional program and study instrument, a pilot study was conducted on (10) patients who were divided randomly into two groups (study and control), five patients in each one. Participants of the pilot study had the same characteristics as the study sample. A purposive, non-probability sample, collected from the Specialized Endocrine and Diabetes Center in Basra city. This preliminary study was conducted for the period from 23rd December 2020, to 13th January 2021.

The reliability of the research instrument had been evaluated through the Statistical Package for the social science (SPSS) program version 24, by applying Cronbach's alpha for each axis of the third part of study instrument. Cronbach's alpha is computed on responses of (10) patients with T2DM for such purpose using the following formula reliability analysis Cronbach's alpha.

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum V_i}{V_t}\right)$$

Table (3-1) shows the reliability of the pilot study (test and retest) which recorded adequate reliability coefficient in the pilot study. The pre-test had been conducting for each group of participants (study and control) while the study group was only exposed to the instructional program. Finally, a post-test was introduced to both groups. The sample of the pilot study is excluded from the original study sample.

1. Pilot Study Conclusions

The pilot study concludes:

- The research instrument items have been clear and recognized.
- The instructional program was transparent and applicable for the research.
- Each patients test time ranged from (20-35) minutes for each patient.

Table (3-1) Test-Retest Reliability for the Study Instrument

Cronbach's Alpha. Analysis				
Parts of Questionnaire	Cranach's value	Items	N	Sig.
Michigan Diabetes Knowledge Test	**0.712**	20	5	Significant
Summary of Diabetes Self-Care Activates expanded	**0.833**	15	5	Significant

Diabetes Coping Measure Scale	**0.788**	21	5	Significant

Table (3-1) Shows that each study instrument is acceptable and sufficient to evaluate the sample depend on Cronbach's alpha value, Michigan Diabetes Knowledge Test (0.712), Summary of Diabetes Self-Care Activities Expanded (0.83), and Diabetes Coping Measure scale (0.79). Therefore, the three instruments are reliable to test research phenomenon.

3.11. Data Collection

Data collection was performed through the use of the questionnaire and the application of the instructional program. The implementation was carried out in the Specialized Endocrine and Diabetes Center in Basra, from the period of 18th January to 15th February 2021.

The study and control groups are demographically similar and the participants answers were obtained by the following techniques:

1- The researcher was interviewed with all participants and explained the purpose of the study for them.

2- Conducting a pre-test on all patients in the study to determine their expertise. The test lasted about (25-30 minutes).

3- All patients at the diabetes center completed the answers of the study questions.

4- Only (30) patients of a study group were exposed to the instructional program.

5- Patients were called to come in the same classroom sessions at 10:00 A.M. to participate in the instructional program. Approximately 45 minutes per day had to be allocated for each session.

6- The program in the diabetic center lasted 3 days. In classroom sessions, the curriculum program is introduced.

7- After three weeks of the program, all patients in the study and control groups were subjected to the post-test.

8- All patients in the control group were exposed to all the steps above, except for the instructional program.

3.12. Statistical Analysis

1. Descriptive Data Analysis:

a- Tables (frequencies, percentages, and mean of scores).

b- Statistical figures.

c- Alpha Cronach to determine the reliability of the study instrument.

2. Inferential Data Analysis:

This approach is employed to determine the effectiveness of a coping style-related instructional program among patients with diabetes mellitus type II.

a- Chi-Squared Test: To determine the significant statistical difference in other variables between the study and control groups, and knowledge in graded pattern in study and control before and after the program.

b- Paired T-Test: To determine the knowledge score pre and post instructional program in study and control groups.

c- T-Test: To identify diabetes self-care activities of study and control groups pre and post instructional program, and diabetes coping measure before program and post-program of both study and control groups.

d- ANOVA Test or Student's T-Test: To determine the association between coping and socio-demographic characteristics of study participants, and determine association of socio-demographic characteristics and self-care activities among patients with T2DM.

e- Spearman Correlation: To determine the correlation of coping to self-care activities in the study and control groups before and after the instructional program.

3. Rating and Scoring:

A. Michigan Diabetes Knowledge Test

The instrument items have been rating and scoring according to the following:

(1) for the correct answer and (0) for the incorrect answer.

Total scores ranged from 0 to 20. Knowledge score was also categorized into three groups:

- Poor knowledge for scores ≤ 9 points.
- Moderate (average) knowledge 9-14 points.
- Good knowledge ≥ 15 points.

B. Diabetes Self-Care Activities

The potential scores range from 0 to 7.

0 = "not at all".

7 = is "daily".

A higher mean score indicates higher self-care activities.

The findings were described in terms of the average number of days in each self-care behavior, determined by the number of days of self-care divided by the total number of patients.

$$\textbf{Total Mean Score} = \frac{\textbf{summing the average score of five subscale}}{\textbf{the sum of questions on each scale.}}$$

C. Diabetes Coping Measure

- Using 5 points Likert scale consisting of (20) items was scored from 1-5.
- Greater use of coping style identified by higher scores.
- There are 4 DCM sub-scales:
- **Sub-scales scoring calculated by:**

$$\textbf{Sub-scale score} = \left(\frac{\textbf{Subscale mean} - 1}{4}\right) * 100$$

* sub-scale mean (Raw score) ranging from 1 to 5.

* (1) minimum item score.

* (4) result from [maximum item score (5) - minimum item score(1)].

3.14. Limitations of the Study

The limitations that the researcher was encountered were during choosing the setting of the study, one of these diabetes centers refused to give consent to the researcher to perform the study and interview the patients. That leads to the study constricted to one center only. Also, the generalization of the finding of the study is limited due to use of a small sample size.

A larger sample is needed in future research. Additionally, another limitation that the study sample was restricted to one center of diabetes only, which might make the sample not truly representative of the overall general ambulatory diabetic patient population whose health care is mainly conducted in outpatient clinics without being hospitalized.

Recruiting samples from inpatient and outpatient clinics will enhance the generalizability of the findings of future studies.

Chapter Four

Results of the Study

Chapter Four

Results of the Study

Table (4-1): Participants Socio-Demographic Characteristics

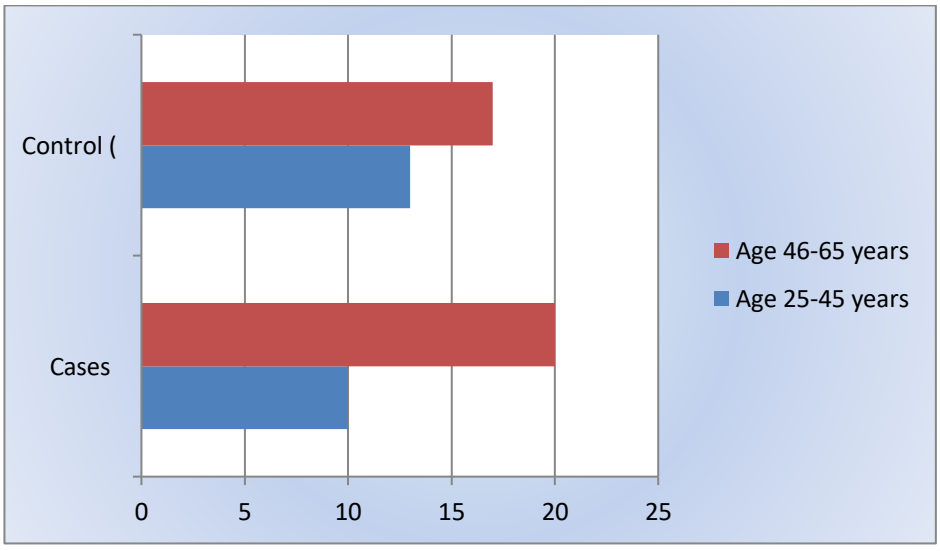
Socio-Demographic Characteristics	Rating And Intervals	Grouping		P-Value*
		Study (N%)	Control (N%)	
Age	25-45 years	10 (33.3%)	13(43.3%)	0.426
	46-65 years	**20 (67.7%)**	**17 (56.7%)**	
Gender	Male	17 **(56.7%)**	14 (46.7%)	0.438
	Female	13 (43.3%)	**16 (53.3%)**	
Level of Education	Illiterate	6 (20.0%)	5 (16.7%)	0.176
	Elementary	5 (16.7%)	**9 (30.0%)**	
	Intermediate	6 (20.0%)	6 (20.0%)	
	Preparatory	6 (20.0%)	**9 (30.0%)**	
	Institute	**7 (23.3%)**	1 (3.3%)	
Marital status	Single	2 (6.7%)	0 (0.0%)	0.052
	Married	**21 (70.0%)**	**25 (83.3%)**	
	Separated	1 (3.3%)	4 (13.3%)	
	Widowed	6 (20.0%)	1 (3.3%)	
Monthly Income of the Family (in Iraqi Dinar)	150-300	**19 (63.3%)**	**16 (53.3%)**	0.037*
	300-600	6 (20.0%)	14 (46.7%)	
	600-900	3 (10.0%)	0 (0.0%)	
	More than 900	2 (6.7%)	0 (0.0%)	
Profession	Employee	7 (23.3%)	8 (26.7%)	0.854
	Freelancer	10 (33.3%)	**12 (40.0%)**	
	Housewife	**11 (36.7%)**	9 (30.0%)	
	Retired	2 (6.7%)	1 (3.3%)	
Residence	Urban	**24 (80.0%)**	4 (13.3%)	**0.0001***
	Rural	6 (20.0%)	**26 (86.7%)**	

*Chi-squared test

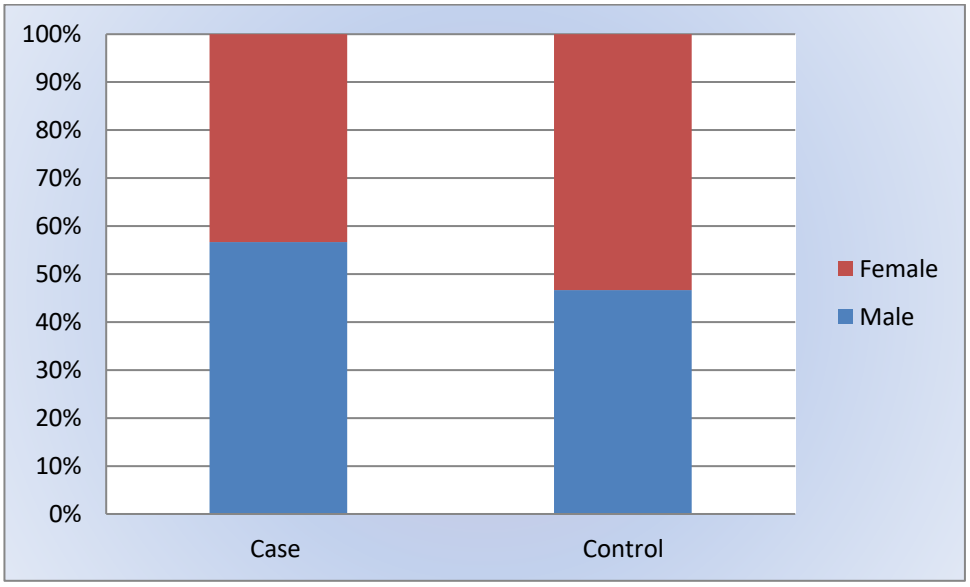
Table (4-1) shows that participants age group at a level (46-65 years) for both study and control groups were (67.7% and 56.7%) respectively. According to the gender (56.7%) of the study group were males, while (53.3%) of the control group were females. According to the level of education (23.3%) of the study group have institute education, while (30.0%) of the control group have a preparatory and elementary education.

Relative to marital status participants of both the study and control groups were married (70.0% and 83.3%) respectively. The monthly income is about (150,000-300,000 IQD) for the patients in the study and control groups (63.3% and 53.3%) respectively. According to the profession (36.7%) of the study group were housewives, and (40.0%) of the control group are freelancers. The residence shows that the urban is the dominant residential for a study group while rural is a dominant residential for control group at a percentage (80.0% and 86.7%) respectively.

A part from residence and income, there was no significant statistical difference in other variables between the study and control groups (P-values > 0.05).



(Figure 4-1): Age categories in study and control groups



(Figure 4-2): Gender in the study and control groups

Table (4-2): Clinical Informations of the Study and Control Groups

Clinical Informations	Rating and Interval	Grouping		Value*
		Study (N%)	Control (N%)	
Duration of diabetes	1-5 years	**18 (60%)**	6 (20%)	0.005
	6-10 years	9 (30%)	**15 (50%)**	
	>10 years	3 (10%)	9 (30%)	
Medication	Insulin	7 (23.3%)	**24 (80%)**	0.0001
	Pills	**23 (76.7%)**	6 (20%)	
Years with insulin	Without insulin	**23 (76.7%)**	6 (20%)	0.0001
	1-5 years	6 (20%)	**16 (53.3%)**	
	>5 years	1 (3.3%)	8 (26.7%)	
Years with Pills	1-5 years	**26 (86.7%)**	**30 (100%)**	0.038
	>5 years	4 (13.3%)	0	
Complications	No	0	0	0.001
	Renal failure	8 (26.7%)	5 (16.7%)	
	Retinopathy	9 (30%)	**21 (70%)**	
	Peripheral neuropathy	**11 (36.7%)**	1 (3.3%)	
	Diabetic foot	2 (6.7%)	3 (10%)	

Chronic diseases	No	9 (30%)	11 (36.7%)	0.010
	MI	5 (16.7%)	0	
	Angina	1 (3.3%)	8 (26.7%)	
	Hypertension	**15 (50%)**	**11 (36.7%)**	
Family history	No	7 (23.3%)	8 (26.7%)	0.033
	Father	7 (23.3%)	**9 (30%)**	
	Mother	**11 (36.7%)**	4 (13.3%)	
	Grandfather	0	3 (10%)	
	Grandmother	1 (3.3%)	6 (20%)	
	Siblings	4 (13.3%)	0	

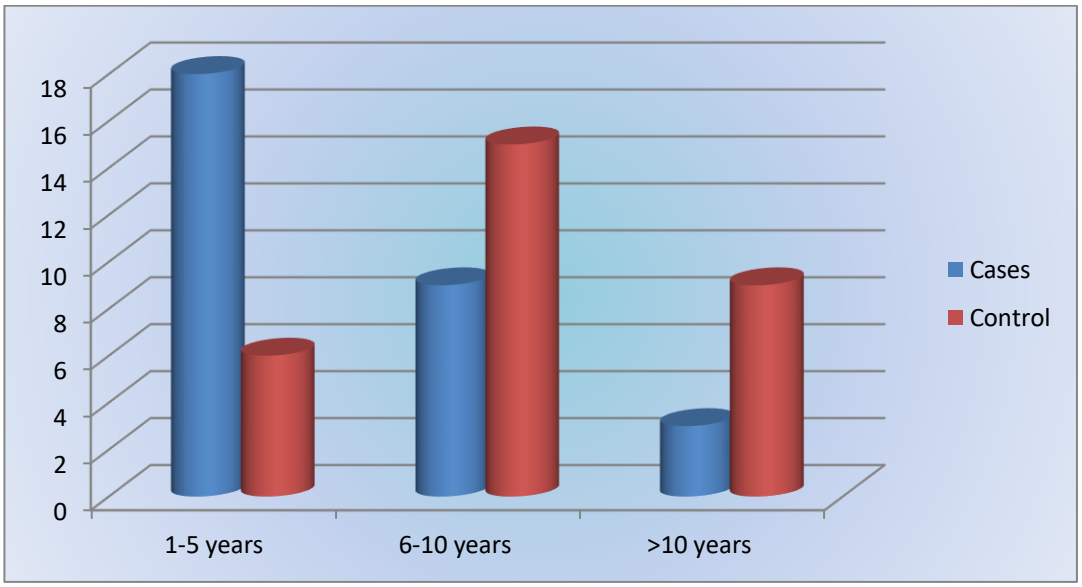
*Chi-squared test

Table (4-2) shows that the duration of diabetes varied considerably between the study and control groups. A larger proportion (60%) of the study group had their diabetes shorter than 5 years and 50% of control group was in the area of 6-10 years. The majority of the study group (76%) reported the use of pills rather than insulin contrary to the control group (80%) that was using pills. Duration of insulin use was also significantly different with those who used insulin shorter than 5 years were more in the control group (53%) All (100%) of control group who used pills were using them for shorter than 5 years.

According to diabetes complications, the majority of the study group had Peripheral neuropathy (36.7%), while the majority of the control group (70%) had retinopathy. The distribution of complications significantly differs in the study and control groups (P-value < 0.05).

Hypertension was more frequently reported chronic diseases in the study and control groups (50% and 36%) respectively. However, angina was more frequent in control group (26%). The distribution of chronic diseases was significantly different in the study and control groups (P-value < 0.05).

According to the family history of DM, Both study and control groups had a family history of diabetes (36.7% and 30%) respectively. And the distribution of family history was significantly different between the study and control groups (P-value < 0.05).



(Figure 4-3): Duration of diabetes in study and control groups

Table (4-3) A: Evaluation of Diabetes Knowledge of Study and Control Groups Before and After Implementing the Instructional Program

Items	Pre-Program		P-Value*	Post-Program		P-Value*
	Study group	Control group		Study group	Control group	
1	13 (43.3%)	**19(63.3%)**	0.121	**26(86.6%)**	**19 (63.3%)**	0.038
2	8 (26.7%)	4 (13.3%)	0.197	20 (66.7%)	11 (36.6%)	0.020
3	14 (46.6%)	8 (26.7%)	0.0001	22 (73.3%)	8 (26.7%)	0.0001
4	16 (53.3%)	4 (13.3%)	0.001	21 (70%)	11 (36.6%)	0.010
5	14 (46.6%)	5 (16.7%)	0.012	18 (60.0%)	11 (36.6%)	0.071
6	16 (53.3%)	9 (30%)	0.067	20 (66.7%)	9 (30%)	0.004
7	15 (50%)	6 (20%)	0.015	20 (66.7%)	6 (20%)	0.0001
8	15 (50%)	6 (20%)	0.015	18 (60.0%)	6 (20%)	0.002

9	16 (53.3%)	7 (23.3%)	0.017	21 (70%)	4 (13.3%)	0.0001
10	18 (60%)	4 (13.3%)	0.020	23 (76.6%)	6 (20%)	0.0001
11	16 (53.3%)	5 (16.7%)	0.003	23 (76.6%)	6 (20%)	0.0001
12	12 (40%)	9 (30%)	0.417	19 (63.3%)	9 (30%)	0.010
13	18 (60%)	6 (20%)	0.002	23 (76.6%)	6 (20%)	0.0001
14	14 (46.6%)	6 (20%)	0.028	19 (63.3%)	6 (20%)	0.001
15	11 (36.6%)	5 (16.7%)	0.080	18 (60.0%)	5 (16.7%)	0.001
16	13 (43.3%)	10 (33.3%)	0.426	19 (63.3%)	10 (33.3%)	0.020
17	**2 (6.6%)**	8 (26.7%)	0.589	**6 (20%)**	8 (26.7%)	0.014
18	3 (10%)	3 (10%)	0.082	6 (20%)	**3 (10%)**	0.0001
19	**19 (63.3%)**	8 (26.7%)	0.004	25 (83.3%)	8 (26.7%)	0.0001
20	11 (36.6%)	6 (20%)	0.152	25 (83.3%)	6 (20%)	0.0001

*Chi-squared test

Table (4-3) A: Shows that pre-implementing the program, the study group reported higher rates of correct answers for questions (2-16) and (19-20). However, this distribution was significant in questions (3-5), (7-11), (13-14), and question (19) (P-values < 0.05).

After the program, the study group reported higher rates of correct answers in questions 2-16 and 18-20 with a significant statistical difference for all questions (P-values < 0.05).

Table (4-3) B: Knowledge Score Before and After Instructional program in Study and Control Groups

	Pre-Program		**P-Value***	**Post-Program**		**P-Value***
	Study group	**Control group**		**Study group**	**Control group**	
Average score of knowledge	8.8	5.3	0.0001	13.0	6.4	0.0001

*Paired t-test

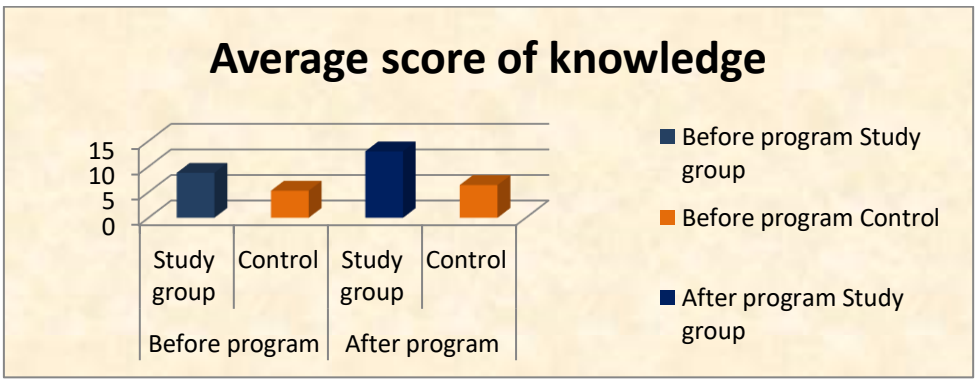
Table (4-3) B: Shows the average knowledge score before implementing an instructional program for the study and control groups (8.8 and 5.3) respectively, while after implementing the program average score of knowledge were (13.0 and 6.4) respectively. There are significant statistical differences (P -values < 0.05).

Table (4-3) C: Knowledge in Graded Pattern in Study and Control Groups Before and After the Instructional Program

Knowledge grades	Before program		P-Value*	After program		P-Value*
	Study group	Control group		Study group	Control group	
Low	**19 (63.3%)**	**26 (86.7%)**	0.037	2 (6.7%)	**25 (83.3%)**	0.0001
moderat	11 (36.7%)	4 (13.3%)		**22 (73.3%)**	5 (16.7%)	
High	0	0		6 (20.0%)	0	

*Chi-squared test

Table (4-3) C: Shows that before implementing an instructional program the majority of study and control groups knowledge were low (63.3% and 86.7%) respectively, after the instructional program the majority of the study group have moderate knowledge (73.3%), and (20%) have high knowledge. While (83.3%) of the control group have low knowledge, the p-value show post-test program significant statistical differences (P-value <0.0001).



(Figure 4-4): Scores of knowledge change in study and control groups

Table (4-4): Diabetes Self-Care Activities of Study and Control Groups Pre and Post Instructional Program

Diabetes Self-Care Activitie	Pre-Program (Average score)		P-value*	Post-Program (Average score)		-value*
	Study Group	Control Group		Study Group	Control Group	
Diet	2.8	2.5	0.026	3.3	2.9	0.025
Exercise	0.7	0.4	0.044	3.7	0.4	0.0001
Blood glucos test	1.0	0.9	0.454	4.7	1.3	0.0001
Foot care	2.1	2.3	0.053	2.8	6.1	0.0001
Medication	5.9	6.0	0.910	7.0	6.0	0.0001

*T-test

Table (4-4): Shows that pre-program diabetes self-care activities among diabetes patients for the study group were diet (2.8), exercise (0.7), blood glucose test (1.0), foot care (2.3), medication (5.9).

While the control group diet (2.5), exercise (0.4), blood glucose test (0.9), foot care (2.1), medication(6.0).P-value doesn't show statistical significance (p-value >0.05).

Post-implementation instructional program self-care activities of the study group were improved diet (3.3), exercise (3.7), blood glucose test (4.7), foot care (6.1), medication (7.0). But control group don't exhibit obvious improvemen were diet (2.9), exercise (0.4), blood glucose test (1.3), foot care (2.8), medication (6.0).

Average agreement on self-care activities for all of the items included in this section including diet, exercise, blood glucose test, foot care, and medication adherence was significantly better in study group post the program (P-

values < 0.05). This indicates that our study program is effective and can make a benefit for the intervention group.

Table (4-5): Diabetes Coping Measure Pre-Program and post-program of Both Study and Control Groups

Pre-Program		P-Value*	Post-Program		P-Value*
Study group	Control group		tudy group	Control group	
2.6 ±0.3	2.1 ±0.2	0.0001	3.6 ± 0.2	2.2 ± 0.5	0.0001

*T-test

Table (4-5): Shows that coping were significantly better in the study group after implementation of the instructional program. P-value show statistical significance (P-value < 0.05).

Table (4-6): Association between Coping and Socio-demographic Characteristics of Study Participants Pre and post Instructional program

Socio-demographic Characteristics		Pre-program	P-value	Post-Program	P-value
Age	25-45 years	2.3 ± 0.2	0.344*	2.6 ± 0.6	0.169*
	46-65 years	2.4 ± 0.4		2.8 ± 0.6	
Gender	Male	2.4 ± 0.4	0.631*	2.6 ± 0.5	0.835*
	Female	2.4 ± 0.4		2.8 ± 0.6	
Level of Education	Illiterate	2.5± 0.4	0.567**	2.8 ± 0.6	0.554**
	Elementary	2.3 ± 0.3		2.6 ± 0.6	
	Intermediate	2.4 ± 0.4		2.7 ± 0.7	
	Preparatory	2.3 ± 0.4		2.7 ± 0.5	
	Institute	2.5 ± 0.3		3.0 ± 0.6	
Marital Status	Single	2.7 ± 0.2	0.249**	3.3 ± 0.1	0.387**
	Married	2.4 ± 0.4		2.7 ± 0.7	
	Separated	2.1 ± 0.2		2.4 ± 0.6	
	Widowed	2.4 ± 0.3		2.9 ± 0.4	

Monthly Income of the Family in Iraqi (Dinar)	150-300	2.4 ± 0.4	0.075**	2.8 ± 0.6	0.068**
	300-600	2.2 ± 0.3		2.4 ± 0.7	
	600-900	2.7 ± 0.3		3.2 ± 0.3	
	> 900	2.2 ± 0.3		3.1 ± 0.4	
Profession	Employee	2.3 ± 0.4	0.471**	2.7 ± 0.7	0.974**
	Freelancer	2.3 ± 0.3		2.7 ± 0.6	
	Housewife	2.5 ± 0.3		2.7 ± 0.6	
	Retired	2.4 ± 0.5		2.9 ± 0.7	
Residence	Urban	2.5± 0.4	0.0001*	3.0 ± 0.4	0.0001*
	Rural	2.2 ± 0.3		2.4 ± 0.6	

*Student's t-test , **ANOVA test

Table (4-6): Shows that study basic characteristics of participants who were exposed to the program (including age, gender, level of education, marital status, monthly income of the family, and profession) do not seem to significantly influence coping (P-values > 0.05). However, the residence of these characteristics showed a significant statistical difference (P-value < 0.05).

Table (4-7): Association of Socio-Demographic Characteristics and Self-Care Activities among Patients with Diabetes Mellitus Type II

Socio-Demographic Characteristics		Pre-program	P-Value*	Post-Program	P-Value*
Age	25-45 years	2.4 ± 0.3	0.117	3.1 ± 0.2	0.157
	46-65 years	2.6 ± 0.3		3.2 ± 0.2	
Gender	Male	2.5 ± 0.3	0.157	3.1 ± 0.2	0.690
	Female	2.7 ± 0.3		3.2 ± 0.2	
Level of Education	Illiterate	2.6 ± 0.4	0.903	3.2 ± 0.2	0.588
	Elementary	2.5 ± 0.3		3.1 ± 0.1	
	Intermediate	2.6 ± 0.2		3.3 ± 0.2	
	Preparatory	2.6 ± 0.2		3.1 ± 0.2	
	Institute	2.5 ± 0.3		3.1 ± 0.3	
Marital	Single	2.7 ± 0.2	0.240	3.2 ± 0.2	0.187

Status	Married	2.6 ± 0.2		3.2 ± 0.1	
	Separated	2.3		3.3	
	Widowed	2.4 ± 0.3		3.1 ± 0.1	
Monthly Income of the Family (In Iraqi Dinar)	150-300	2.6 ± 0.2	0.079	3.2 ± 0.2	0.048
	300-600	2.5 ± 0.3		3.2 ± 0.3	
	600-900	2.6 ± 0.3		3.2 ± 0.2	
	> 900	2.1 ± 0.3		3.0 ± 0.4	
Profession	Employee	2.5 ± 0.4	0.893	3.1 ± 0.3	0.905
	Freelancer	2.5 ± 0.2		3.2 ± 0.1	
	Housewife	2.6 ± 0.2		3.2 ± 0.2	
	Retired	2.5 ± 0.3		3.2 ± 0.3	
Residence	Urban	2.6 ± 0.3	0.363	3.2 ± 0.2	0.357
	Rural	2.4 ± 0.3		3.1 ± 0.2	

*ANOVA or Student's T-test

Table (4-7) shows the association of diabetes self-care activities and socio-demographic characteristics of study participants, pre and post program, did not seem to influence self-care activities (P-values > 0.05).

Table (4-8) A: Correlation of Coping to Self-Care Activities in the Study Group Pre-Program

		Diet	**Exercise**	**Blood glucose test**	**Foot care**	**Medication**
Coping	Correlation Coefficient*	0.342	-0.438	0.067	0.271	0.213
	P- value	0.064	0.015	0.725	0.148	0.258
Diet	Correlation Coefficient*		-0.244	0.031	0.083	-0.217
	P-value		0.194	0.872	0.663	0.249
Exercise	Correlation Coefficient*			-0.165	-0.229	-0.140
	P-value			0.385	0.223	0.461
Blood glucose test	Correlation Coefficient*				0.019	-0.365
	P-value				0.920	0.047

Foot Care	Correlation Coefficient*					0.179
	P-value					0.344

*Spearman correlation

Table (4-8) A: Shows dspite a significant statistical correlation between coping and exercise on one hand and blood glucose test and medication in-take on the other hand (P-values < 0.05), the correlation coefficient was not large enough to consider strong correlations (R < 0.5). All other parameters were not correlated.

Table (4-8) B: Correlation of Coping to Self-Care Activities in the Control Group Pre-Program

		Diet	**Exercise**	**ood glucos test**	**Foot care**	**Medication**
Coping	Correlation Coefficient*	-.0318	-0.096	-0.245	0.272	-0.159
	P-value	0.086	0.614	0.191	0.146	0.401
Diet	Correlation Coefficient*		-0.149	0.508	0.069	-0.027
	P-value		0.431	.004	0.716	0.886
Exercise	Correlation Coefficient*			0.541	0.093	0.015
	P-value			0.002	0.625	0.935
Blood glucose test	Correlation Coefficient*				-0.160	0.101
	P-value				0.398	0.595
Foot Care	Correlation Coefficient*					-0.106
	P-value					0.578

*Spearman correlation

Table (4-8) B: Shows that the control group revealed a significant correlation between blood glucose test and each diet and exercise (P-value < 0.05 and R > 0.5). Other variables were not correlated.

Table (4-8) C: Correlation of Coping to Self-Care Activities in the Control Group Post-Program

		Diet	Exercise	ood glucos test	Foot care	Medication
Coping	Correlation Coefficient*	-0.025	0.003	-0.140	-0.026	-0.159
	P-value	0.896	0.987	0.460	0.893	0.401
Foot care	Correlation Coefficient*		0.043	-0.252	-0.298	-0.108
	P-value		0.822	0.179	0.110	0.569
Exercise	Correlation Coefficient*			0.137	0.128	-0.197
	P-value			0.471	0.499	0.296
Blood glucose test	Correlation Coefficient*				-0.175	-0.181
	P-value				0.356	0.338
Diet	Correlation Coefficient*					-0.221
	P-value					0.241

*Spearman correlation

Table (4-8) C: Shows no specific correlation was identified between the variables Post the program in the control group.

Table (4-8) D: Correlation of Coping to Self-Care Activities in the Study Group Post-Program

		Diet	Exercise	Blood glu-cose test	Foot care	Medication
Coping	Correlation Coefficient*	-0.103	-0.023	-0.132	-0.160	
	P-value	0.587	0.902	0.488	0.398	
Foot care	Correlation Coefficient*		-0.214	-0.233	-0.022	
	P-value		0.256	0.215	0.910	
Exercise	Correlation Coefficient*			0.628	0.583	
	P-value			0.0001	0.001	
Blood glucose test	Correlation Coefficient*				0.616	
	P-value				0.0001	
Diet	Correlation Coefficient*					
	P-value					

*Spearman correlation

Table (4-8) D: Shows a strong correlation with a significant statistical level was observed between exercise and blood test as well as exercise and diet (R > 0.5 and P-value < 0.05). Blood glucose test and diet exhibited a similar correlation pattern. However, other variables did not show a sizeable correlation to the level of significance (R < 5 and P-value <0.05).

Regarding medications, because all of the cases reported the highest level of adherence after the program, the correlation was not calculated.

Chapter Five

Discussion of the Results

Chapter Five

Discussion of the Results

This chapter highlights the main points raised in chapter four (Results). Findings were interpreted in a systematic and organized manner with a reasonable discussion that is supported by most related previous studies.

Part I: Discussion of Participants Socio-Demographic Characteristics (Table 4-1)

Age

Regarding the patients socio-demographic characteristics, the majority of both the study and control groups at an old age ranging between (46-65 years) at a percentage (67.7% and 56.7%) respectively. This result agrees with a study conducted by **Smalls et al., (2012**) was indicated that T2DM occurs at an advanced age at a percentage (54%). Also **Salahen et al., (2020**) found that the majority of the participants were between the ages of (40-50 years) at a percentage (53.19%).

The researcher explains that the reason behind this finding was due to the study target sample were individuals with T2DM, which commonly occurs at an old age rather than a young age group.

Gender and Level of Education

Regarding participants gender, the majority (56.7%) of the study group were males, while (53.3%) of the control groups were females.

The majority of the study group (23.3%) had an institute educational level, while the majority of the control group (30.0%) had a preparatory educational level.

This result was supported by the study of **Mohammed-Ali and Hamza, (2016)** about "Assessment of Self-Care Activities for Patients with Diabetes Mellitus Type II". Conducted at Najaf City, Iraq showed that the

majority of participants (52.5%) were males, but disagrees with our finding in it the majority of respondents (33%) were illiterate.

While **Gabish and Mohammed, (2018**) conducted a study about " Effectiveness of Health Education Program for Type 2 Diabetes Mellitus Patient's Self-efficacy toward Managing Feet at Endocrinology and Diabetes Center in Al-Rusafa Sector". Supports our finding in which the majority of the study group were males (60%), while the majority of the control group were females (50%). But the majority of study groups (25.0%) had high school education and elementary school graduates, while the majority of control groups (30.0%) had high school education.

According to the researcher's opinion, this outcome may be due to the method of random sampling leading to this result occurring by chance.

Marital Status

Married participants are dominant in both study and control groups at a percentage (70.0% and 83.3%) respectively. This outcome is similar to the study by **Mohammed-Ali and Hamza, (2016)** who showed that most of the participants were married (84.5%). Another similar study was conducted by **Al Mansour, (2020)** about "The Prevalence and Risk Factors of Type 2 Diabetes Mellitus (T2DM) in a Semi-Urban Saudi Population". The majority of the sample was married (36.3%). Marriage affects the way of life, couples must increase their food intake and become less active after marriage, which increases their body's weight and risk of getting the disease.

The researcher believes that this outcome is consistent with the traditional ideals of the Iraqi culture, which promotes young people to marry and to form a family.

Profession and Monthly Income of the Family

The higher percentage level in both the study and control groups had an of low income ranging between (150,000-300,000 IQ), at a percentage of (63.3% and 53.3%), respectively, while most study group (36.7%) were

housewives, and most control group (40.0%) were freelancers. This result resembles the finding of **Mohammed-Ali and Hamza, (2016)** which revealed (86%) of the participants were present without adequate monthly income. While the majority of participants profession (43.5%) were housewives, and (30%) were freelancers.

Also, **Al Mansour, (2020)** study showed that the majority of respondents (42,2%) had a low income. While regarding participants profession, this study stands out that the majority of them are businesses or private people (38.5%). Fewer housewives (10.3%). Good income may play a significant role in improving self-care ability.

The researcher points of view that this result due to most samples were housewives and freelancers this leads to low family monthly income dominant.

Residence

According to the residence of the study and control group, our study results reveal that the majority of them were from urban areas (80.0% and 86.7%) respectively. This result agreed with **Mohammed-Ali and Hamza, (2016)** who reveal that most of the participants were from urban areas (78%). Also study conducted by (Asa`ad et al., 2019) attempt to "assess the quality of life of patients with type 2 diabetes in the city of Erbil". It shows that the majority of patients were from urban areas (81.9%).

This may indicate that diabetes nearly occurs among those living in urban areas and not among those living in rural areas due to the nature of the lifestyle and other risk factors. Apart from residence and income, there was no significant statistical difference in other variables between the study and control group (P-values > 0.05).

Part II: Discussion of the Patients' Clinical Informations(Table 4-2)

Duration of Diabetes

Regarding the duration of having diabetes, the majority (60%) of the study group have diabetes for (1-5 years), while (50%) of the control group were diagnosed with diabetes mellitus for (6-10 years). This study is not similar to the study conducted by (Ajibade Olapeju & Salawu Rasidi, 2020) who have shown that higher percentages of the study sample were diagnosed with T2DM for (0-5 years), of both the study and control groups (65% and 48.1%) respectively. While another study agrees with our finding that is conducted by **Gabish and Mohammed, (2018**) who showed that most study groups (40%) were diagnosed with diabetes no more than 5 years, while most control groups (70%) were diagnosed with diabetes no more than 10 years.

The researcher's view reveals that the study group had fewer experiences with the disease than the control group.

Family History and Diabetic Complications

The majority of the study and control groups have a family history of diabetes (36.7% and 30%) respectively. According to diabetes complications, our study shows that peripheral neuropathy is dominant in (36.7%) of the study group, (70%) of the control group complain of retinopathy.

This is supported by **Clothier's, (2019)** study which is similar to our findings about "Living With Diabetes In Nigeria The Care, Cure, And Prevention Inaugural Lecture Series". who showed that the majority of

participants (52.3%) had a family history of DM. While (59.2%) complain from peripheral neuropathy was a dominant diabetic complication among patients. but (35.5%) of them complain of retinopathy.

Also the study conducted by **Salahen et al., (2020**) supported our finding that most respondents (66.76%) have a family history of diabetes mellitus. Also it is found family history of diabetes is a tool for detecting suggested to assess the risk of diabetes, since it means an individual's genetic susceptibility, particularly first-grade levels. While this study disagrees with our finding in which diabetes complications were neuropathy percentage (31.91%).

According to the researcher's information family history is an important risk factor in patients with T2DM. While complications such as retinopathy and neuropathy are most occur in patients with diabetes mellitus due to it is causes damage to the small blood vessels and needs accurate attention.

Type of Medication Intake

The majority (76.7%) of the study group use pills (80%) of the control groups uses insulin injections. Both study and control groups use diabetic pills for 1-5 years (86.7% and 100%) respectively. The study supported our finding was conducted by **Petrović et al., (2019)** about "Evaluation of Emotional Distress in People with Diabetes Mellitus", performed in the Centre of Family Medicine in Banja Luka. Thy show that the majority of participants used oral antidiabetic drugs (OAD) at a percentage (61.1%). (23.9%) injected the insulin, and (15%) used both (OAD and insulin).

Another study agrees with our finding that is conducted byby **Aladhab and Alabbood, (2019)**, in which a higher percentage of participants used oral antidiabetic drugs (49.8%), but fewer of them used insulin (15.2%), and others used both (OAD + insulin) (32.9%).

The researcher's points of view is this result because the majority of the study group was diagnosed with diabetes within the last 5 years, implying that

newly diagnosed patients with T2DM use insulin less than those who have diabetes for a longer period.

Chronic Diseases

Hypertension is dominant among other chronic diseases in both of study and control groups at a percentage (50% and 36.7%) respectively. This outcome was similar to what was reported by **Berraho et al, (2012)**, about "Hypertension and Type 2 Diabetes: A cross-sectional study in Morocco (EPIDIAM Study)". Revealed that high blood pressure is a common problem for people with diabetes. A high prevalence rate of hypertension (70.4%) was reported in this study.

Also the study agrees with our finding that is conducted by **Elhendi, (2015**) about "Assessment of Type 2 Diabetes management practice", performed in Sudan showed that the majority of participants had hypertension.

The researcher's point of view is this finding is the most acceptable with literature evidence that showed hypertension is one of the risk factors of diabetes, (there was a strong association between diabetes mellitus and hypertension).

Part III: First Domain

Discussion of Knowledge Among Diabetes Patients (4-3 A, B, C)

According to the average knowledge score before implementing an instructional program for the study and control groups (8.8 and 5.3) respectively, while after implementing the instructional program were (13.0 and 6.4).

The P-value reveals a significant statistical difference ($p < 0.0001$) between pre and post-test knowledge scores. Before the implementation of an instructional program for the study and control groups, the majority of study

and control groups knowledge was low (63.3% and 86.7%) respectively, but after the instructional program the majority of the study groups had moderate knowledge (73.3%) and (20%) had high knowledge. (83.3%) of the control groups have low knowledge, the P-value shows post-test program significant statistical differences (P-value < 0.0001).

This indicates that participants' knowledge was enhanced due to the effect of the program that was reflected on their answers to a post-test. The researcher explains that before the instructional program, patients of the target sample do not have adequate sessions despite the staff of diabetes center educate the patients how to deal with their disease (diabetes) but this is may be do not include all patients.

This result is supported the studyby **Khunti et al., (2012**) in which an improvement in patients knowledge in the post-test compared with the pre-test scores among the study group in comparison with the control group. In addition to a study conducted by **Brown, (2017)** which had shown a significant improvement in patients knowledge and diabetes awareness during the educational program. Which was successful at improving the education and awareness of patients. The results of the pre-test indicated that (96.7%) of the participants had poor knowledge of diabetes, while (3.3%) had average knowledge of diabetes. However, none of the respondents had high levels of knowledge about diabetes.

After the educational program, none of the respondents indicated poor knowledge of diabetes based on the post-test (63.3%) demonstrated average knowledge of diabetes, while (36.7%) high knowledge of diabetes. There was a significant statistical difference (p-value < 0.0001) between the patients pre and post-tes knowledge scores.

Second Domain:

Discussion of Self-Care Activities Among Patients with Diabetes (Table 4-4)

In terms of diabetes self-care activities, study findings revealed that the preprogram majority of study and control group participants had the highest mean medication scores (5.9 and 6.0) respectively. But the lowest mean scores for exercise were (0.7 and 0.4) respectively. The P-value doesn't show a significant statistical difference (P-value > 0.05).

While post instructional program self-care activities of the study group were improved in all four domains, diet (3.3), Exercise (3.7), Blood glucose test (4.7), foot care (6.1), and Medication (7.0). While the control group does not exhibit changes in their self-care activities. P-value reveals significant statistical differences (P-value < 0.0001).

The researcher's opinion was: This result indicated that in our study, the instructional program was effective and can be of benefit for the intervention group that leads to enhancing all domains of self-care activities. This can aim to reduce complications of diabetes and enhance the quality of life of diabetic patients.

This finding is supported by the study made by (Konstantinos, 2018), which agrees with our findings, and it showed diabetes self-care activities of the intervention group score showed an improved difference between pre and post-program, exercise (3.10 to 3.23) which could be attributed to the intervention group very high pretest mean, implying that the participants in the group were already at a very high level of medication compliance. Diet (4.2 to 4.6), foot care (2.18 to 2.33), medication (6.8 to 7.0), and blood glucose test (6.53 to 6.8) are the most important factors, while the control group remains at the same level without effective changes.

While the study by **Abubakr et al., (2020)** supported our study; there were inadequate self-care activities performed by the patients before the awareness but improved after that. The researchers thought that this awareness was working as a red alarm for those patients. Data from this study re-enforce the continuing need for more diabetic-related education that is intended to improve self-care activities among diabetics.

Third domain

Discussion of coping style among diabetes patients (Table 4-5)

Concerning the study group coping style, the coping activities were significantly better in the study group after the implementation of the instructional program, whereas the control group remained unchanged with no obvious changes.

The researcher explained this result was due to the effect of sessions related to coping with the disease, most participants were less coping preprogram.

A study by **Loft, (2015)** does not agree with our study findings. Attempt to identify "Stress and Coping in Adults with Type 2 Diabetes Who Initiate Insulin Therapy". The study result shows that scorings of the preprogram and post-program suggested that fewer coping processes were used after the program. However, this outcome was not statistically significant.

While (Salem AL-Khafaf, 2017) made a study that supported our study finding in which study participants have fewer coping strategies. Diabetes Self-care activities are low that reflect difficulty coping with diabetes mellitus.

Discussion of the association between Coping and socio-demographic characteristics of study participants (Table 4-6).

According to the relationship of socio-demographic characteristics of the participants and coping style including (age, gender, education, marital status, income, and profession) do not appear to influence coping significantly (P-values > 0.05). However, the residence of these characteristics showed a significant statistical difference (P-value < 0.05).

The researcher can not generalize this finding due to the study sample size were small and respondents' characteristics were nearly not reflected a high association. Is means that basic characteristics do not affect coping only in the study instructional program.

The study supports our finding conducted by **Dyke et al., (2013)** was conducted in Alabama, Florida, and North Carolina about " The Relationship Between Coping Styles in Response to Unfair Treatment and Understanding of Diabetes Self-Care". It showed that no significant association between gender and coping style.

While another study performed by **Tuncay et al., (2008)** about "The relationship between anxiety, coping strategies, and characteristics of diabetic patients". Data collection from 161 Turkish adults, disagrees with our findings, it shows that such demographic variables are gender, educational status, and monthly income, has a positive relationship with coping.

Discussion Association of self-Care and Socio-Demographic data (4-7)

Concerning the association of diabetes self-care activities and socio-demographic characteristics of study participants, before and after the program, did not seem to influence self-care activities (P values > 0.05).

The researcher's point of view, there is no factor that has effect on diabetes self-care activities except the program, these results are due to insignificancy of the sample, for example, social contact of male more than female which

can enhance their self-care activities, also self-care activities can enhance awareness of patients self-care activities rather than those with lowe educational level.

This result is not similar to a study conducted by **Bhatti et al., (2018)** about "Impact of Socio-demographic Factors on Self-care Practices Among Patients with Type 2 Diabetes in Lahore, Pakistan". Reveals that socio-demographic characteristics of sex, age, educational level, marital status, and monthly household income, were associated with the performance of recommended self-care. Sex was the most important socio-demographic indicator of self-care among patients with diabetes.

While there is a study nearly similar to our finding applied by **Mohammed-Ali and Hamza, (2016)** it showed a highly significant relationship between patients' self-care activities education level of patients, while there is a non-significant relationship with other demographic and clinical data.

Discussion of Association between coping style and diabetes self-care activities (4-8 A, B, C, D)

Our study reveals that before implementing the instructional program, despite the significant statistical correlation between coping and exercise on one hand and blood glucose tests and medications intake on the other hand (p values < 0.05), the correlation coefficient was not large enough to consider strong correlations ($R < 0.5$). All other parameters were not correlated. The control group showed a significant correlation between blood glucose tests and each diet and exercise (P-value < 0.05 and $R > 0.5$). Other variables were not correlated.

No specific correlation was identified between the variables after the program in the control group. A strong correlation with a significant statistical level was observed between exercise and blood tests as well as exercise and diet ($R > 0.5$ and P-value < 0.05). Blood tests and diets exhibited a similar correlation pattern. However, other variables did not show a sizeable correlation to the level of significance ($R < 5$ and p-value < 0.05). Regarding medications, because all of the cases reported the highest level of adherence after the program, the correlation was not calculated.

According to the researcher opinion, effect of a coping style program reflected on patients dealing with their condition lead to enhance their daily activities. This outcome agrees with the study performed by **Collins et al., (2009**) who showed that patients perceptions of their self-care varied on a spectrum, displaying differences in self-care responsibilities such as competence with dietary planning, testing blood sugar, and regular exercise. Also they found that coping style is affected by different self-care activities.

Chapter Six

Conclusions and Recommendations

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Conclusions and Recommendations

This chapter addresses the outcome of the research, focusing on discussion and a detailed analysis of the study results and suggestions relating to these findings.

6. 1. Conclusions:

1. The study concludes that a coping style-related instructional program is effective to enhance diabetes patients self-care activities, knowledge, and coping style among patients with T2DM. This conclusion is based on the result of our study that reveals significant differences between pre-intervention and post-intervention.
2. There is a significant correlation between self-care activities and coping style.

6. 2. Recommendations:

1. Improving knowledge and self-care activities of patients with T2DM, by using our study guidelines.
2. The Ministry of Health should get attention to the availability of active sessions to educate diabetes patients on how to cope with their disease and improve patients awareness about the method of healthy coping.
3. Encouraging the health care provider to improve diabetic patients self-care activities and focusing on all domain aspects of self-care.
4. A larger sample is needed in future research will enhance the generalization of the findings of future studies.

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Appendices

Administrative Arrangement

Appendix (A1)

Ministry of Higher Education & Scientific Research
University of Baghdad
College of Nursing
Registrar Office
Ref:
Date:

بسم الله الرحمن الرحيم
جمهورية العراق

وزارة التعليم العالي والبحث العلمي
جامعة بغداد
كلية التمريض
الدراسات العليا
العدد:
التاريخ:

الى / الجهاز المركزي للاحصاء وتكنلوجيا المعلومات / وزارة التخطيط
م/ تسهيل مهمة

تحية طيبة ...

يرجى التفضل بالموافقة على تسهيل مهمة طالبة الماجستير (سجى كريم جاسم) لغرض جمع العينات المتعلقة ببحثها الموسوم (فاعلية البرنامج الارشادي المتعلق بنمط التكيف في الرعاية الذاتية لمرضى السكري من النوع الثاني في مركز امراض الغدد الصم والسكري في مدينة البصرة).

مع التقدير...

ا.م.د. رسم جبار قاسم
معاون العميد والشؤون العلمية
الدراسات العليا

نسخه منه إلى//
التسجيل / الدراسات العليا
الصادرة

College of nursing/University of Baghdad Bab Al Mua'adham-Baghdad-Iraq
P.O. Box: (14164)

E. Mail:
nursing@conursing.uobaghdad.edu.iq
www.conursing .uobaghdad.edu.iq

كلية التمريض/جامعة بغداد
العراق-بغداد- باب المعظم
ص.ب: (١٤١٦٤)

Administrative Arrangement

Appendix (A2)

REPUBLIC OF IRAQ
MINISTRY OF PLANNING
CENTRAL STATISTICAL
ORGANIZATION

جمهورية العراق
وزارة التخطيط
الجهاز المركزي للإحصاء

العدد: ٤١٤٣/٨/١/٢/١
التاريخ: ٧ / ١٢ / ٢٠٢٠

الدائرة: الادارية والمالية
المديرية: النشر والعلاقات

الى / جامعة بغداد / كلية التمريض

م / تسهيل مهمة

تحية طيبة...

اشارة الى كتابكم المرقم 2884 بتاريخ 2020/11/26 .

تمت الموافقة على اجراء الاستبيان المقدم من طالبة الماجستير (سجى كريم جاسم) والمتعلق ببحثها الموسوم (فاعلية البرنامج الارشادي المتعلق بنمط التكيف في الرعاية الذاتية لمرضى السكري من النوع الثاني في مركز امراض الغدد الصم والسكري في مدينة البصرة) .

للتفضل بالاطلاع واتخاذ ما يلزم بضوء ذلك على ان تؤخذ الملاحظات المدرجة ادناه .

مع التقدير ...

الملاحظات :-

- يفضل ان يكون المقياس في المحور الثالث من الاستبيان كما يلي :
(اوافق بشدة ، اوافق قليلاً ، لا اوافق ، ارفض قليلاً ، ارفض بشدة) .
- يتم استبدال كلمة (ثانوية بكلمة اعدادية) .

لقاء حسين عبد الله
رئيس لجنة الاستبيانات
2020 /12 / 6

نسخة منه الى :-

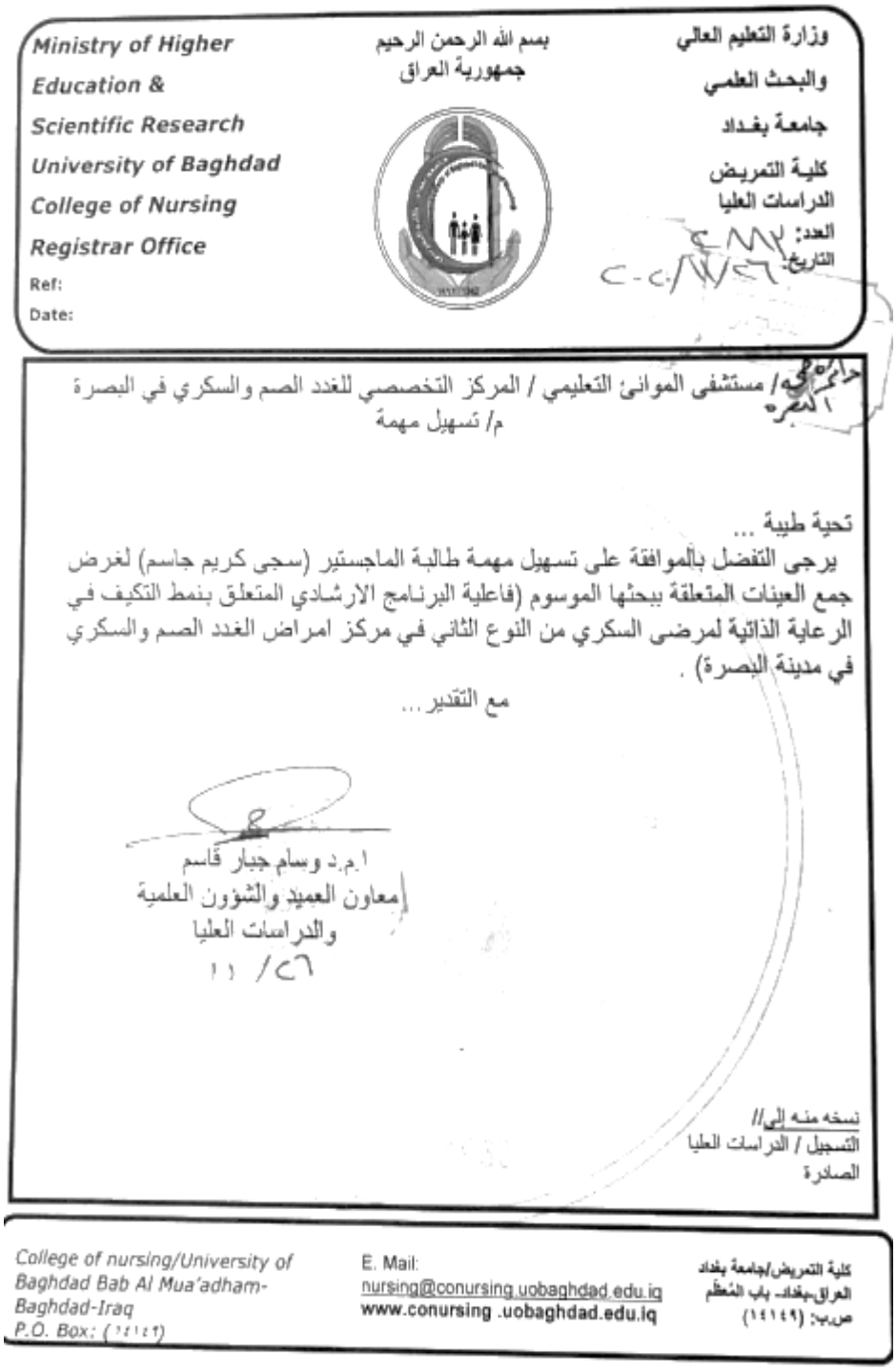
- مكتب السيد مدير العام للشؤون الادارية والمالية / للتفضل بالاطلاع .. مع التقدير
- مديرية النشر والعلاقات للمتابعة والحفظ

بغداد / كرادة مريم / قرب جسر الجمهورية

www.cosit.gov.iq

Administrative Arrangement

Appendix (A3)



Ministry of Higher Education & Scientific Research
University of Baghdad
College of Nursing
Registrar Office
Ref:
Date:

بسم الله الرحمن الرحيم
جمهورية العراق

وزارة التعليم العالي والبحث العلمي
جامعة بغداد
كلية التمريض
الدراسات العليا
العدد:
التاريخ:

/ مستشفى الموانئ التعليمي / المركز التخصصي للغدد الصم والسكري في البصرة
م/ تسهيل مهمة

تحية طيبة ...
يرجى التفضل بالموافقة على تسهيل مهمة طالبة الماجستير (سجى كريم جاسم) لغرض جمع العينات المتعلقة ببحثها الموسوم (فاعلية البرنامج الارشادي المتعلق بنمط التكيف في الرعاية الذاتية لمرضى السكري من النوع الثاني في مركز امراض الغدد الصم والسكري في مدينة البصرة) .

مع التقدير...

ا.م.د وسام جبار قاسم
معاون العميد والشؤون العلمية
والدراسات العليا

نسخه منه إلى//
التسجيل / الدراسات العليا
الصادرة

College of nursing/University of Baghdad Bab Al Mua'adham-Baghdad-Iraq
P.O. Box: (14149)

E. Mail:
nursing@conursing.uobaghdad.edu.iq
www.conursing .uobaghdad.edu.iq

كلية التمريض/جامعة بغداد
العراق-بغداد- باب المعظم
ص.ب: (١٤١٤٩)

Administrative Arrangement

Appendix (A4)

وزارة الصحة
دائرة صحة البصرة
مكتب المدير العام
مركز التدريب والتنمية البشرية
شعبة ادارة المعرفة/البحوث

العدد : ٩٨٧
التاريخ : ٢٠٢٠/١٢/٢٧

إلى/ م. الموانئ /المركز التخصصي للغدد الصم والسكري

م/ تسهيل مهمة

تحية طيبة...

عقدت لجنة البحوث المركزية اجتماعها يوم الاثنين ٢٠٢٠/١٢/٢١ المرقمة (٢٩١) وذلك لدراسة البحث الموسوم(فاعلية البرنامج الارشادي المتعلق بنمط التكيف في الرعاية الذاتية لمرضى السكري من النوع الثاني في مركز امراض الغدد الصم والسكري في مدينة البصرة) للباحثة (سجى كريم جاسم) طالبة ماجستير – كلية التمريض – جامعة البصرة . وقد تم الموافقة على مشروع البحث على ان تلتزم الباحثة بجميع الضوابط العلمية والاخلاقية اثناء اجراء البحث والالتزام بتنفيذ توصيات المؤسسة الصحية التي سوف يجرى بها البحث على ان تتحمل المصروفات والمستلزمات كافة لأجراء بحثها.

مع التقدير ....

الطبيبة الاختصاص
د. رجاء احمد محمود
مديرة مركز التدريب والتنمية البشرية
٢٠٢٠/١٢/٢٧

نسخة منه الى/
مركز التدريب والتنمية البشرية /مع الاوليات.

ثناء

Appendix (B1)

بسم الله الرحمن الرحيم

استمارة التقييم الاولي

(Initial Assessment Need)

بسم الله الرحمن الرحيم

عزيزتي المريضة/ عزيزي المريض

بين يديك استمارة استبيان فـي أدناها مجموعة من الفقرات الخاصة بالبحث الموسوم

(فاعلية البرنامج الارشادي المتعلق بنمط التكيف في الرعاية الذاتية لمرضى السكري

من النوع الثاني في مركز امراض الغدد الصم والسكري في مدينة البصرة)

بكل حب واحترام أقدر مشاركتك بالإجابة على هذه الاستبانة والتي من المؤمل أن يعود نفعها وفائدتها بعد الحصول على النتائج الدقيقة إن شاء الله على كافة المرضى المصابين بالسكري, علماً أن هذه الاستبانة تستخدم لأغراض البحث العلمي فقط خدمة لصالح مرضى السكري والمجتمع.

سائلين الله أن يوفقنا وإياكم لخدمة صحة المرضى ...

طالبة الماجستير سجى كريم جاسم

اشراف ا.م.د. رجاء ابراهيم عبد

Initial Assessment Need

Appendix (B1)

تقييم اولي لاحتياجات معرفه المرضى, والرعاية الذاتية

الاجابة عن طريق اختيار (نعم) للجملة الصحيحة او اختيار (لا) للجملة الخاطئة

ت	الفقرات	صح %	خطأ %
1	هل تمارس التمارين الرياضية يوميا او على الاقل ثلاث مرات في الاسبوع		
2	هل تأكل واحد او اكثر من الأطعمة التي تحتوي دهون او سكريات		
3	هل تعرف كيف تعتني بقدميك بطريقة صحيحه		
4	هل تعتقد ان الالتزام بأخذ العلاج يمنحك الحرية في تناول اي طعام تفضله		
5	هل تناول المضادات الحيوية يزيد من فعالية ادوية السكري		
6	هل تعتقد ان افضل وقت لممارسة الرياضة هو ليلا بعد الاكل		
7	هل تعتقد ان سبب مرض السكري من النوع الثاني يحدث بسبب عدم افراز البنكرياس لهرمون الانسولين نهائيا		
8	هل تعتقد انه يجب على مريض السكري التقليل من تناول الوجبات الغذائية(وجبتين يوميا)		
9	عندما تكون نسبة السكر قبل حالة الصيام 150ملغ/ديسيلتر فهذا مؤشر ارتفاع حاد لسكر الدم		
10	هل تعتقد ان اهمال السكري وعدم الاهتمام بالحالة يمكن ان يساهم في انخفاض السكري لديك		
11	هل تعتقد ان العناية بالقدم يجنبك نهائيا من الإصابة بالقدم السكري		
12	هل تعتقد ان تناول الأدوية افضل من ممارسه التمارين الرياضية		
13	هل تعتقد ان الرجفة هي بسبب ارتفاع السكري		

Initial Assessment Need, Appendix (B2)

نتائج الدراسة الأولية (تقييم اولي لاحتياجات المرضى)

ت	الفقرات	يعرف	%	لا يعرف	%
1	هل تمارس التمارين الرياضية يوميا او على الاقل ثلاث مرات في الاسبوع	2	20%	8	80%
2	هل تأكل واحد او اكثر من الأطعمة التي تحتوي دهون او سكريات	3	30%	7	70%
3	هل تعرف كيف تعتني بقدميك بطريقة صحيحه	1	10%	9	90%
4	هل تعتقد ان الالتزام بأخذ العلاج يمنحك الحرية في تناول اي طعام تفضله	2	20%	8	80%
5	هل تناول المضادات الحيوية يزيد من فعالية ادوية السكري	4	40%	6	60%
6	هل تعتقد ان افضل وقت لممارسة الرياضة هو ليلا بعد الاكل	4	40%	6	60%
7	هل تعتقد ان سبب مرض السكري من النوع الثاني يحدث بسبب عدم افراز البنكرياس لهرمون الانسولين نهائيا	1	10%	9	90%
8	هل تعتقد انه يجب على مريض السكري التقليل من تناول الوجبات الغذائية(وجبتين يوميا)	2	20%	8	80%
9	عندما تكون نسبة السكر قبل حالة الصيام 150ملغ/ديسيلتر فهذا مؤشر ارتفاع حاد لسكر الدم	4	40%	6	60%
10	هل تعتقد ان اهمال السكري وعدم الاهتمام بالحالة يمكن ان يساهم في انخفاض السكري لديك	3	30%	7	70%
11	هل تعتقد ان العناية بالقدم يجنبك نهائيا من الإصابة بالقدم السكري	2	20%	8	80%
12	هل تعتقد ان تناول الأدوية افضل من ممارسه التمارين الرياضية	4	40%	6	60%
13	هل تعتقد ان الرجفة هي بسبب ارتفاع السكري	3	30%	7	70%
	المجموع		350		950
			26.92 %		73.07 %

Appendix(C)
Instructional Program
البرنامج الارشادي

فاعلية البرنامج الارشادي المتعلق بنمط التكيف في الرعاية الذاتية للمرضى الذين يعانون من مرض السكري من النوع الثاني في مركز الغدد الصماء والسكري في مدينة البصرة".

2020-2021

اعداد- طالبة الماجستير

سجى كريم جاسم

اشراف

أ.م.د. رجاء إبراهيم عبد

أهداف البرنامج

الهدف العام:

الهدف العام لهذا البرنامج هو لتحسين معارف مرضى السكري وزيادة تكيفهم مع المرض.

الهدف الخاص:

في نهاية هذا البرنامج:

1- يعرف المشاركون غدة البنكرياس ووظيفتها، وتنظيم نسبة السكر في الدم.
2- يعرف المشاركون سبب مرض السكري، وأنواعه.
3- يعرف المشاركون عوامل الخطر من مرض السكري السكري من النوع الثاني., واعراضه وعلاماته.
4- يعرف المشاركون طرق تشخيص وعلاج مرض السكري.
5- يعرف المشاركون مضاعفات السكري.
6- يعرف المشاركون طرق الرعاية الذاتية لمرض السكري.
7- يعرف المشاركون معنى أسلوب التكيف.
8- يعرف المشاركون أهمية أسلوب التكيف في مرض السكري.
9- يعرف المشاركون طرق التكيف مع مرض السكري.

جامعة بغداد

كلية التمريض

قسم تمريض البالغين

المحاضرة الأولى

عنوان المحاضرة	مقدمة عن مرض السكري من النوع الثاني.
المحتويات	1- تعريف البنكرياس واهم وظائفه
	2 - ما هو مرض السكري؟
	3- انواع مرض السكري.
	4 - اعراض وعلامات السكري.
	5-عوامل الخطورة من مرض السكري (النوع الثاني).
	6- معايير تشخيص داء السكري من النوع الثاني.
	7- مضاعفات السكري.
	8 - السيطره على مرض السكري.
مكان المحاضرة	• المركز التخصصي للغدد الصم والسكري • في البصرة
وقت المحاضرة	• 45 دقيقة
الوسائل التعليمية	• محاضرة مطبوعة على الورق • جهاز الحاسبة • السبورة • كتيب مطبوع نهاية البرنامج

جامعة بغداد

كلية التمريض

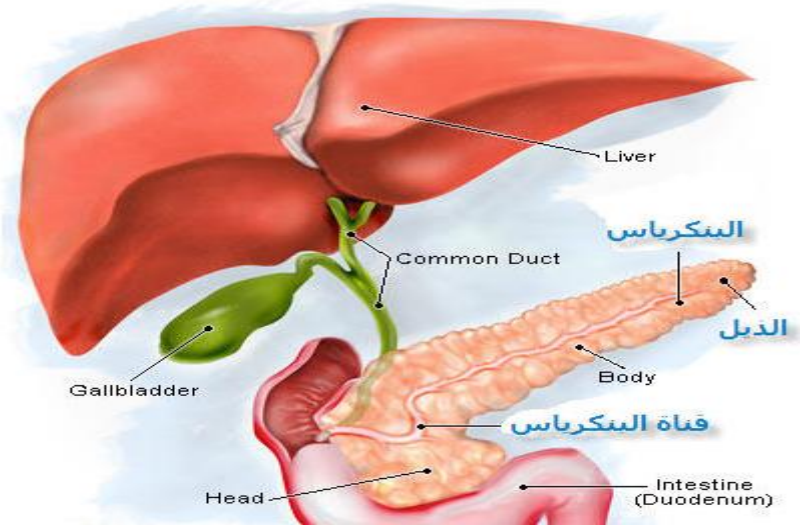
قسم تمريض البالغين

المحاضرة الأولى

مقدمة عن السكري من النوع الثاني

1- البنكرياس.

البنكرياس هو عضو طوله (6 إلى 8 بوصات), يمتد أفقيا عبر البطن. يقع خلف المعدة.



شكل (1) يوضح موقع البنكرياس

(https://www.3rbdr.net)

الوظائف الرئيسية للبنكرياس:

1- إنتاج الإنزيمات الهامة لعملية الهضم (لهضم الكربوهيدرات؛ ولتكسير الدهون
2- خلايا لانكرهانس التي تكون وتحرر الهرمونات الهامة مباشرة في مجرى الدم:

- الأنسولين: يعمل على خفض نسبة السكر في الدم.
- الجلوكاجون، الذي يعمل على رفع نسبة السكر في الدم.

** الحفاظ على مستويات السكر في الدم السليم أمر بالغ الأهمية لعمل الأجهزة الرئيسية بما في ذلك الدماغ والكبد والكلى (Center, Department of.Surgery, 2020

ما هي وظائف الأنسولين؟

1- في الكبد، يعزز الأنسولين تحلل الجلوكوز وتخزينه كغليكوجين وكذلك تحويل الجلوكوز إلى الدهون الثلاثية.
2- في العضلات, يعزز الأنسولين امتصاص الجلوكوز, وتخزينه كغليكوجين.

3-في الأنسجة الدهنية، يعزز الأنسولين امتصاص الجلوكوز وتحويله إلى الدهون الثلاثية للتخزين(Capurso G, and etal,2019, O'Toole TJ, and etal, 2020).

ما هو الجلوكوز؟

- الكلوكوز هو السكر بسيط في الدم ومصدر رئيسي للطاقة.
- يأتي في المقام الأول من الكربوهيدرات في العديد من الأطعمة التي تتناولها التي تحتوي على

○ Renal Failure ○ Retinopathy

○ Peripheral neuropathy ○ Diabetic Foot

5-3 Chronic diseases?

○ Myocardial Infarction ○ Angina

○ High blood pressure ○ Cerebro-vasscular accident

<u>Family History of the patient to diabetes</u>:

1.2 is there another family who has diabetes?

○ Father ○ Mother

○ Grandfather ○ Grandmother ○ Siblings

Part II: The first axis: Assessing Self-Care of Patients with T2DM

Please read each statement and then indicate whether you think it is true, false by putting a circle round either TRUE or FALSE

No	Questions	True	False
1	The diabetes diet is a healthy diet for most people*		
2	Glycosylated hemoglobin (HbA1c) is a test that Measures your average blood glucose level in the past week.		
3	A Killo of chicken has more carbohydrate in it than a killo of potatoes		
4	Orange juice has more fat in it than low fat milk.		
5	Urine testing and blood testing are both equally as good for testing the level of blood glucose.		
6	Unsweetened fruit juice raises blood glucose levels*.		
7	A can of diet soft drink can be used for treating low blood glucose levels.		
8	Using olive oil in cooking can help prevent raised cholesterol in the blood. *		
9	Exercising regularly can help reduce high blood pressure*.		

10	For a person in good control exercising has no effect on blood sugar levels.		
11	Infection is likely to cause an increase in blood sugar levels. *		
12	Wearing shoes a size bigger than usual helps prevent foot ulcers.		
13	Eating foods lower in fat decreases your risk for heart disease. *		
14	Numbness and tingling may be symptoms of nerve disease. *		
15	Lung problems are usually associated with having diabetes.		
16	When you are sick with the flu you should test for glucose more often. *		
SKIP TO QUESTION 19 IF YOU DON'T TAKE INSULIN			
17	High blood glucose levels may be caused by too much insulin.		
18	If you take your morning insulin but skip breakfast your blood glucose level will usually decrease. *		
19	Having regular check-ups with your doctor can help spot the early signs of diabetes complications. *		
20	Attending your diabetes appointments stops you getting diabetes complications.		

The second axis: Self- care of Diabetic patients:

The questions below ask you about your diabetes self-care activities during the past 7 days. If you were sick during the past 7 days, please think back to the 7 days that you were not sick.

1-Diet	Number of days							
Questions	0	1	2	3	4		6	7
1- How many of the last SEVEN DAYS have you followed a healthful eating plan?								
2- On average, over the past month, how many DAYS PER WEEK have you followed your eating plan?								
3- On how many of the last SEVEN DAYS did you eat five or more servings of fruits and vegetables?								
4- On how many of the last SEVEN DAYS did you eat high fat foods such as red meat or full-fat dairy products?								
5- On how many of the last SEVEN DAYS did you space carbohydrates evenly through the day?								
2-Exercise	**Number of days**							
Questions	0	1	2	3	4	5	6	7
6- On how many of the last SEVEN DAYS did you participate in at least 30 minutes of physical activity? (Total minute of continuous activity: including walking).								
7- how many of the last SEVEN DAYS did you participate in a specific exercise session (such as swimming. walking, biking) other than what you do around the house or as part of your work?								
3-Blood Sugar Testing	**Number of days**							
Questions	0	1	2	3	4	5	6	7
8- On how many of the last SEVEN DAYS did you test your blood sugar?								
9- how many of the last SEVEN DAYS did you test your blood sugar the number of times recommended by your health care provider								

4-Foot Care	**Nubmer of days**							
Questions	0	1	2	3	4	5	6	7
10- On how many of the last SEVEN DAYS did you check your feet?								
11- On how many of the last SEVEN DAYS did you inspect the inside of your shoes?								
12- On how many of the last SEVEN DAYS did you wash your feet?								
13- On how many of the last SEVEN DAYS did you soak your feet?								
14- On how many of the last SEVEN DAYS did you dry between your toes after washing?								

5-Medications	**Number of days**							
Questions	0	1	2	3	4	5	6	7
15- On how many of the last SEVEN DAYS did you take your recommended diabetes medication?								

Part III: Assessing coping among patients with T2DM

The questions below focus on your thoughts and feelings about diabetes and its influence on your life. There is no "right" or "wrong" answers to these questions. Please place a check √ next to the answer that is best for you and be sure to complete all questions.

no	Questions	Agree Strongly	Agree A little	Don't Know	Disagree A little	Disagree Strongly
1	Most people would be a lot healthier if they followed a diabetic diet.					
2	I am reluctant to visit my doctor for my regular diabetes checkup when I know I am in poor blood glucose control.					
3	I dislike reading about diabetes because it only makes me worry more.					
4	Because of my own experience, I can help educate other people about diabetes					
5	When my blood sugars are high I don't bother monitoring them as much.					
6	It's difficult to fit regular blood glucose monitoring into my busy lifestyle.					
7	Whatever I do, diabetes complications will continue to run in my health.					
8	I am uncomfortable talking to people about my diabetes.					
9	I believe that research will discover a cure for diabetes before long.					
10	I feel like just giving in to my diabetes.					
11	There is little I can do to control my blood glucose well.					

12	Clinical research is continually improving the treatments available for diabetes.					
13	Because of my illness. I cannot plan realistically for the future					
14	I always seem to have poor blood sugars no matter what I do.					
15	Diabetes makes me feel different from everyone					
16	I dislike being referred to as a "diabetic".					
17	Diabetes is the worst thing that has ever happened to me.					
18	Most people would find it difficult to adjust to diabetes.					
19	My diabetes has caused me to think about life in a more positive way.					
20	I think it is unfair that I should have diabetes when other people are so healthy.					

Appendix(E1)

Scale approval

Diabetes Coping Measure

Diabetes Coping Measure - research version
(رسالتان) ٢

Garry Welch <garry.welch@silverfernhealthcare.com> الأربعاء، ١١ نوفمبر ٢٠٢٠ في ٥:٣٨ ص
إلى: Saja.kareem1202a@conursing.uobaghdad.edu.iq <Saja.kareem1202a@conursing.uobaghdad.edu.iq>

Hi Saja:

Please find attached a copy of the DCM and an explanatory note attached. We use a digital version of this original paper based version in our current type 2 diabetes Behavior Diagnostic. So, I am digging up old files for this !

The questionnaire creates a profile for each patient in 4 coping dimensions each scored from 0-100.

If you get stuck creating the scoring system and are not sure how to score the questions to create the 4 subscales then email me and I can help you.

Garry

Garry Welch
Chief Scientific Officer

Silver Fern Healthcare
20 Church Street, Hartford, CT 06103

978-201-1227 | garry.welch@silverfernhealthcare.com

www.silverfernhealthcare.com

SilverFern

سجى كريم جاسم جثير <saja.kareem1202a@conursing.uobaghdad.edu.iq> الأربعاء، ١١ نوفمبر ٢٠٢٠ في ١١:٢٩ ص
إلى: Garry Welch <garry.welch@silverfernhealthcare.com>

Appendix (E2)

Scale approval

Summary of diabetes self-care activities approval

Permission to use the Summary of Diabetes Self Care Activities Questionnaire in your thesis

١ رسالة

Deborah Toobert <Deborah@ori.org> الاثنين، ١٩ أكتوبر ٢٠٢٠ في ١:١٢ ص

إلى: سجى كريم جاسم جثير <saja.kareem1202a@conursing.uobaghdad.edu.iq>

Dear Saja,

You have our permission to use the Summary of Diabetes Self-Care Activities Questionnaire in your thesis project. We are waiving your fee. Please refrain from asking me questions because of the time it takes me to answer. It is the reason we charge for permission to use the instrument.

I wish you every success with your research,

Deborah

Deborah J. Toobert, PhD

Senior Scientist Emerita
Oregon Research Institute
1776 Millrace Drive
Eugene, Oregon 97403

http://www.ori.org/

mobile: 541 953-3702
email: deborah@ori.org

Appendix(E3)

Scale approval

Diabetes Knowledge Test appproval

Ask permission of michigan diabetes knowledge scale _ true /false version...
١ رسالة

Campbell, Pam <pamcamp@med.umich.edu> الأحد، ١٨ أكتوبر ٢٠٢٠ في ٤:٣٠ م
إلى: سجى كريم جاسم جثير <saja.kareem1202a@conursing.uobaghdad.edu.iq>

Dear Saja,

Please feel free to use out DKT survey instrument. We just ask that you please cite our Center as follows: The project described was supported by Grant Number P30DK020572 (MDRC) from the National Institute of Diabetes and Digestive and Kidney Diseases.

Thank you,

Pam Campbell

Michigan Diabetes Research Center

Michigan Center for Diabetes Translational Research

University of Michigan Medical School

1000 Wall Street

RM# 6100 Brehm Tower

Ann Arbor, Michigan 48105

Tel: 734-763-5730

Fax: 734-647-2307

Remember to cite the Michigan Diabetes Research Center (MDRC) and/or the Michigan Center for Diabetes Translational Research (MCDTR) in publications:

"The project described was supported by Grant Number P30DK020572 (MDRC) from the National Institute of Diabetes and Digestive and Kidney Diseases" OR the project described was supported by Grant Number P30DK092926 (MCDTR) from the National Institute of Diabetes and Digestive and Kidney Diseases."

Appendix (F)

Panel of Experts

خبراء الاستبانة والبرنامج

	اسم الخبير	اللقب العلمي	مكان العمل	ختصاص الدقيق	سنوات الخبرة
1	د. هدى باقر حسن	استاذ	جامعة بغداد/ كلية التمريض	تمريض بالغين	33 سنة
2	د. صباح عباس احمد	استاذ	جامعة بغداد/ كلية التمريض	تمريض بالغين	34 سنة
3	د. حسين هادي عطية	استاذ	جامعة بغداد/ كلية التمريض	تمريض بالغين	18 سنة
4	د. خالدة محمد خضر	استاذ	جامعة بغداد/ كلية التمريض	تمريض بالغين	19 سنة
5	د. مؤيد مصطفى احمد	استاذ	جامعة الاردن/ كلية التمريض	تمريض بالغين	20 سنة
6	محمد عبد الكريم مصطفى	استاذ	جامعة الكوفة/ كلية التمريض	تمريض بالغين	13 سنة
7	صادق عبد الحسين حسن	استاذ مساعد	جامعة بغداد/ كلية التمريض	تمريض بالغين	10 سنة
8	د. جمعة جبرغبد الرضا	استاذ مساعد	جامعة بغداد/ كلية التمريض	تمريض بالغين	18 سنة
9	د. سعاد جاسم محمد	استاذ مساعد	جامعة بغداد/ كلية التمريض	تمريض بالغين	40 سنة
10	د. ماجد حميد جاسم	طبيب استشاي	مدير مركز الغدد الصم والسكري/ م.الموانئ التعليمي.	غدد صم وسكري	17 سنة

Appendix (G)

Statistical Expert Approval

وزارة التعليم العالي والبحث العلمي
جامعة بغداد
كلية التمريض
الدراسات العليا

Ministry of Higher Education
And Scientific Research
University of Baghdad
College of Nursing

القرار الخبير الاحصائي

اشهد بان الرسالة / الاطروحة الموسومة
(فاعلية البرنامج الارشادي المتقلد بنمط التكيف مع الرعاية الذاتية طرز السكري من النوع الثاني في مركز امراض الغدد الصم والسكري في مدينة البصرة).

قد تم الاطلاع على اسلوب الاحصاء المتبع في تحليل البيانات واظهار النتائج الاحصائية وفق مضمون الدراسة ولأجله وقعت

الخبير الاحصائي: م
الاسم واللقب العلمي: م.د. وفاء حسنين
مكان العمل: الجامعة المستنصرية / كلية العلوم
التاريخ: ٢٠٢١/٤/٢٧

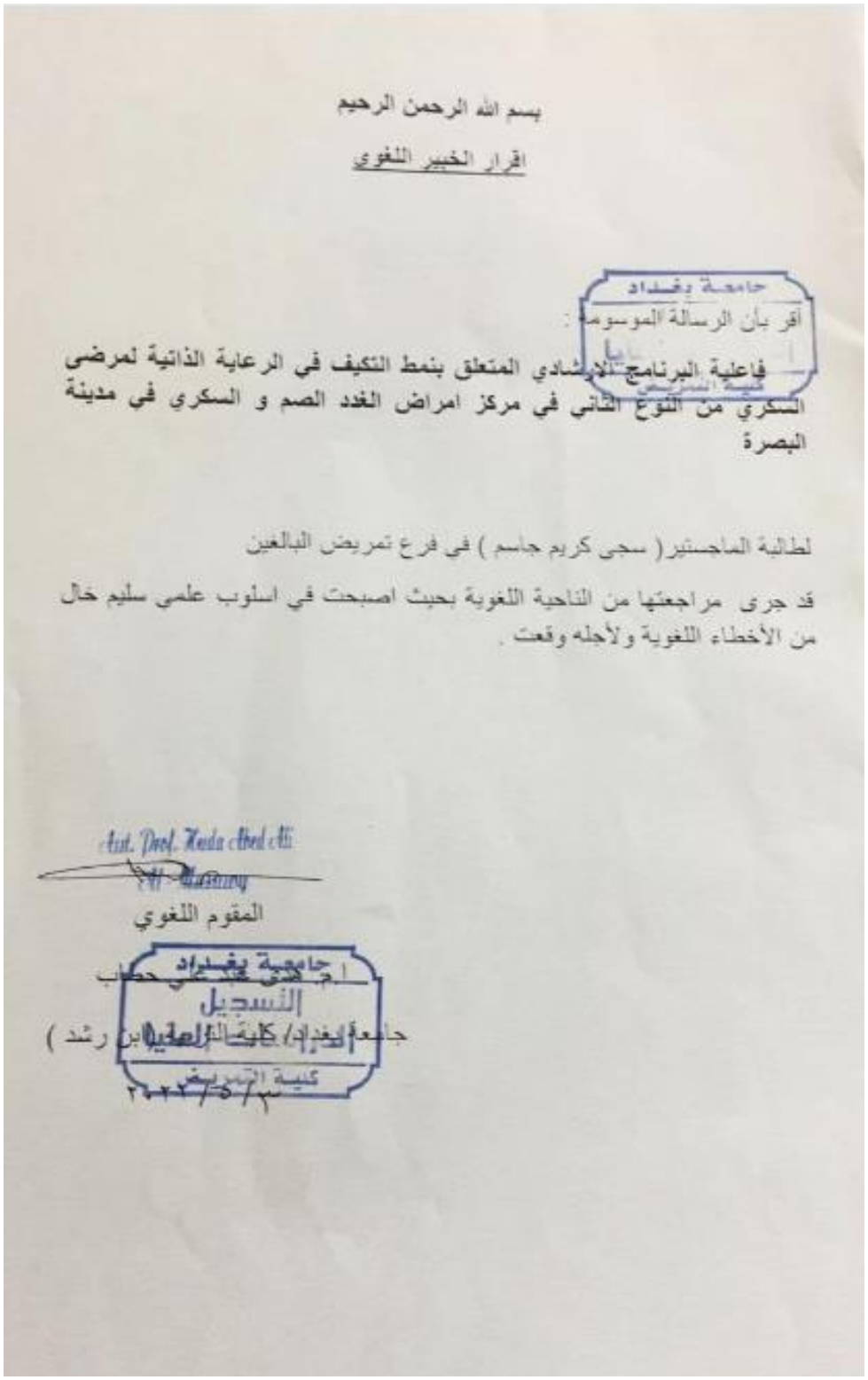
College of Nursing/ University of Baghdad Bab Al Mua'adham-Baghdad- iraq
P.O. Box: (14149)

E. Mail:
nursing@conursing.uobaghdad.edu.iq
www.conursing.uobaghdad.edu.iq

كلية التمريض-جامعة بغداد
بغداد- باب المعظم
ص.ب: ١٤١٤٩

Appendix (H)

Linguistic Crtification



بسم الله الرحمن الرحيم

اقرار الخبير اللغوي

اقر بأن الرسالة الموسومة :

فاعلية البرنامج الارشادي المتعلق بنمط التكيف في الرعاية الذاتية لمرضى السكري من النوع الثاني في مركز امراض الغدد الصم و السكري في مدينة البصرة

لطالبة الماجستير(سجى كريم جاسم) في فرع تمريض البالغين

قد جرى مراجعتها من الناحية اللغوية بحيث اصبحت في اسلوب علمي سليم خال من الأخطاء اللغوية ولأجله وقعت .

Asst. Prof. Huda Abed Ali

المقوم اللغوي

جامعة بغداد
التسجيل
جامعة بغداد/ كلية التمريض
٢٠٢٣/٥/٣

Appendix(I)

Documentation Images


SMBG

الخلاصة

الخلفية: إن داء السكري هو اضطراب في الأيض ينتج عنه ارتفاع مستويات الجلوكوز في الدم. حوالي 95% من مرضى السكري لديهم النوع الثاني من داء السكري ، مما يؤدي إلى مضاعفات أكثر خطورة التي تؤثر على نوعية حياة المرضى ، ثم يؤدي إلى زيادة معدل وفيات المرضى.

الأهداف: تقييم فاعلية برنامج نمط التكيف في الرعاية الذاتية للمرضى المصابين بالنوع الثاني من داء السكري. ومعرفة العلاقة بين نمط التكيف مع الرعاية الذاتية للمرضى المصابين بالنوع الثاني من داء السكري والخصائص الاجتماعية الديموغرافية مثل (العمر ، والجنس ، ومستوى التعليم ، والحالة الاجتماعية ، والدخل الشهري للأسرة).

المنهجية: تصميم تحليلي وصفي (شبه تجريبي). كانت العينة المكونة من (60) مريضاً مقسمة إلى مجموعتين من مجموعات الدراسة والتحكم ، (30) مريضاً في كل مجموعة. كان الاستبيان الخاص بالتقرير الذاتي يحتوي على ثلاثة أجزاء: **الجزء الأول** يتألف من البيانات الديموغرافية ، والجزء الثاني يتألف من البيانات السريرية ، والجزء الثالث يتألف من ثلاثة محاور (1) استبيان المعرفة بالسكري في ميشيغان صح/خطأ/، (2) ملخص للنسخة الموسعة من أنشطة الرعاية الذاتية للسكري. و (3) مقياس التكيف مع مرض السكري. ويقوم الباحث بتقييم فعالية البرنامج بتطبيق ما قبل الاختبار وما بعده ، ويتألف البرنامج الارشادي من ثلاث محاضرات. بعد ذلك تطبيق ما بعد الاختبار. تم تحليل البيانات باستخدام نهجيين إحصائيين: الإحصاءات الوصفية والإحصائية.

النتائج: تظهر نتائج الدراسة أن الفئة العمرية للمشاركين على مستوى (46-65 عاماً) كانت (67.7%) من مجموعة الدراسة ، و (56.7%) من مجموعة التحكم. (56.7 %) من مجموعة الدراسة من الذكور، بينما (53.3 %) من مجموعات التحكم من الإناث.

وتؤكد الدراسة أيضا أن فعالية برنامج تعليمي متصل بأسلوب التكيف حول الرعاية الذاتية للمرضى المصابين بالسكري من النوع الثاني في مركز الغدد الصماء والسكري في مدينة البصرة.

الاستنتاج: تخلص الدراسة إلى أن البرنامج الارشادي المتصل بنمط التكيف مع مرض السكري فعال لتعزيز أنشطة الرعاية الذاتية والمعرفة وأسلوب التكيف بين المرضى المصابين بالنوع الثاني من داء السكري. ويستند هذا الاستنتاج إلى نتيجة دراستنا التي تكشف عن اختلافات كبيرة

بين التدخل المسبق وما بعد التدخل.

التوصيات: تحسين المعرفة وأنشطة الرعاية الذاتية للمرضى المصابين بالنوع الثاني من داء السكري ، من خلال استخدام المبادئ التوجيهية لدراستنا. تشجيع مقدمي الرعاية الصحية على تحسين أنشطة الرعاية الذاتية لمرضى السكري والتركيز على جميع جوانب الرعاية الذاتية.

الكلمات الرئيسية: نمط التكيف ، الرعاية الذاتية للمرضى ، مرض السكري من النوع الثاني

جامعة بغداد

كلية التمريض

(فاعلية البرنامج الارشادي المتعلق بنمط التكيف في الرعاية الذاتية لمرضى السكري من النوع الثاني في مركز امراض الغدد الصم والسكري في مدينة البصرة)

رسالة تقدمت بها

سجى كريم جاسم

إلى فرع تمريض البالغين

كلية التمريض/ جامعة بغداد

كجزء من متطلبات نيل شهادة الماجستير في علوم التمريض

إشراف

أ.م.د. رجاء ابراهيم عبد

رمضان/ 1442 هجرية نيسان /2021 ميلادية