Impact of Complications on Self-efficacy among Patients with Diabetes Mellitus Type II Who Attend to Diabetic Center in Al-Diwaniyah City

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Abstract
Methodology: A descriptive correlation study design has been carried out to found relationship between complications on self-efficacy among patients with diabetes Mellitus type 2 self-efficacy. The period of the study started from (1st of October, 2020) to (1st of April , 2021), on a non-probability (convenience) sample consisting of (160) clients with type 2 DM.
Results:the majority of patients' self –efficacy is good (92.5%), WhileThe results indicate that there is a high-significant association between the patients' self- efficacy& their DM-associated health problem, at p-value less than 0.01 .
Conclusions: The majority of clients with type 2 DM are good self-efficacy with a mean of score (8.0). There is a high significant association between clientsˈ self-efficacy and the DM-related complications at p-value less than (0.01).
Recommendations:The results of the study can be used as a baseline for future studies in the same environment and educated patient how increase self-efficacy. To decrease complications that result from Diabetes Mellitus Type II, The study can be repeated by using therapeutic modalities to improve patients' self-efficacy.
Keywords: Impact of Complications ,Self-efficacy, Diabetes Mellitus Type II.

Introduction

DM is related with chronic hyperglycemia and decreased carbohydrate, protein, and lipid metabolism due to insulin secretion and/or function deficiency. Insulin-dependent diabetes (T1DM) and non-insulin-dependent diabetes (T2DM) are the 2 major categories of DM . T2DM seems to be the most prevalent form of diabetes, accounting for 90percent to 95percent among all people with diabetes (Wu et al., 2014).

Because diabetic is mostly managed by patient and their families, self-care has become the cornerstone of diabetes management. Self-management is the process of actively engaging in self-care activities with the aim of improving one's behaviors and overall well-being. Self-management involves diet planning, daily physical activity, blood glucose monitoring, diabetes drug distribution, and the prevention of illness, as well as cycles of lowest and highest blood sugar. The American Diabetes Association (ADA),2015, states that self-management recovery programs are created independently in conjunction with a range of health care providers such as physicians, nurses, nutritionists, and pharmacists.
The prevalence of diabetes (DM) is constantly increasing worldwide at an alarming rate. According to the International Diabetes Federation in 2015, an estimated 415 million people globally were suffering from this condition [1]. Complications of DM account for increased morbidity, disability, and mortality and represent a threat for the economies of all countries, especially the developing ones)(2016, Papatheodorou).

Preserving tight glycemic regulation by self-management will help to avoid diabetes-related complication. Fortunately, diabetic self-management and strict glycemic regulation are difficult to do, and problems with adherence to care schedules will make it much more

difficult. The majority of diabetes literature has discovered that a large percentage of patients do not partake in adequate self-management. In diabetes patients, poor self-management is well known as having a negative impact on outcome (Carpenter et al., 2019).

Diabetes complications are common among patients with type 1 or type 2 diabetes but, at the same time, are responsible for significant morbidity and mortality. The chronic complications of diabetes are broadly divided into micro vascular and macro vascular, with the former having much higher prevalence than the latter . Micro vascular complications include neuropathy, nephropathy, and retinopathy, while macro vascular complications consist of cardiovascular disease, stroke, and peripheral artery disease (PAD)(2016, Papatheodorou).

Self-efficacy has a high status in all areas of life and wellbeing today, and it plays a major role in related to mental health concerns and also coping with depression and stress. Self-efficacy is a good indicator of mental wellbeing since it contributes to relaxation. (Zamani-Alavijeh et al., 2018).

People with diabetes need self-care to prevent complications and improve their quality of life. Diabetes self-care behaviors refer to activities such as following a healthy diet, doing physical activity regularly, adhering to medications, and controlling blood glucose. Another factor known to be associated with diabetes self-care is self-efficacy (SE). SE is vital construct in diabetes care, supporting improvements in quality of life and reducing complications.(Xu et al., 2018).

Methodology

The Study Design
A descriptive correlation study design has been carried out to assess the clients with diabetes type 2 self-efficacy. The period of the study started from (1st of October, 2020) to (1st of April , 2021).

Administrative Arrangements
After getting the approval of the Council of the Nursing College/ University of Baghdad and Ethical Researches Committee for the study (Appendix A1), the researcher submitted a detailed description of the study including the objectives and methodology (questionnaire) of the study to the Ministry of Planning (Central Statistical Organization) (Appendices A2, A3), and to Al-Diwaniya Health Directorate in order to obtain official permission to carry out the study. Then, the permission was sent to Al-Diwaniya Teaching Hospital/ diabetic and endocrinology center in order to ensure the agreement and cooperation .The researcher obtained written informed approval from each patient

The Setting and Sampling of the Study:
The study was conducted in Al-Diwaniya Teaching Hospital at the diabetic and endocrinology centerAl-Diwaniya city, Iraq. A non-probability (convenience) sample of (160) clients with type 2 diabetes who visits the diabetic and endocrinology center was selected. In inconvenience sampling using.

Instrument Form
1. Demographic Data Form:
This part is concerned with the collection of demographic data obtained from the clients with diabetic type 2 and it consists of (six) items including age, gender,who is responsible for your Care?,living,work / occupation and monthly income.

2. Clinical Information Form:
This part is involved with the collection of clinical information gained from the clients with diabetic type 2 and it including body mass index (BMI).

3. Self-Efficacy Assessment Scale for Managing T2DM:
Data Collection
The data were collected and by means of self-report and interview with each client who are included in the present study. The researcher met the clients with diabetic type 2 at a hall in the center of diabetes and endocrinology to get their agreement to participate in the study and to clarify the study questionnaire. The data collection process started from (6th January, 2021 to, 21th February 2021) in order to achieve the objectives of the study.
Statistical Analysis of Data
The data was evaluated by Statistical Package for Social Sciences (SPSS) version 25 application of statistical analysis system. The following statistical data analysis approaches were used for analyzing and evaluating the results of the study.

Results and Discussions
Discussion of the Participants' Socio-Demographic Characteristics of the Study Sample,as shown in Table (1):-
   Concerning patient' age the study result revealed that the most of study sample were between (50-69) years.. They mentioned that most participants were aged 51-65 years. Also, these findings agreed with that obtained by Gabish& Mohammed (2018) in their study about effectiveness of Health Education Program for Type 2 Diabetes Mellitus Patient's Self-efficacy toward Managing Feet, where it was conducted on 40 participants. They mentioned that most participants were aged 51-60 year (N= 22; 55%).
   Regarding patients' gender, the study findings demonstrated that more half of the participants in study sample were males, While was less than quarters are females. Also, this findings consistent with that of a study conducted in Italia by Messina et al., (2018) in their study about assessing self-efficacy in type 2 diabetes management, where it was conducted on 165 participants. The study found that most participants were males (n= 110; 66.7%).
   Concerning the residency, the study findings indicate that most of the study sample lives in urban areas. These findings agreed with study of Manjula and Premkumar, (2015), in their study about self-efficacy and self-care behavior among Patients with Type 2 Diabetes Mellitus, where it was conducted on 150 participants. The study found that subjects are mostly residing in urban areas.
   Relative to the occupation status, the study findings displayed that most of the participants in study sample were housewives. These findings agreed with r study was done in Iran by Mohammadi et al., (2018) about the impact of self-efficacy education based on the health belief model in Iranian patients with type 2 diabetes. It stated that the most of the subjects in the study sample were housewives.
   With regard to monthly income, the results of the study indicated that most of the study sample participants have sufficient monthly income. These findings agreed with a study Chen et al., (2014) supported these results by demonstrating that most of study sample have good monthly income.
   With regard to patient care, the results of the study showed that more than half of the study sample participants are responsible for taking care of themselves. These results are supported by Amer et al., (2018) in their study about influence of self-efficacy management on adherence to self-care activities and treatment outcome among diabetes mellitus type 2. They stated that more than half of the study sample participants are responsible for providing care for themselves.

The researcher confirmed that self-care for a diabetic is an essential component of medical care. It includes teaching the patient and educating him about the method of taking treatment, changing lifestyle and dietary habits, and measuring sugar at home so that he can regulate blood sugar levels to avoid complications of diabetes and be able to deal with severe complications that may occur.

Figure (1) : Concerning the body mass index (BMI) the present study revealed that more a half of study sample were normal weight. These findings agreed with a study Fattahi et al., (2014) who conducted a study on 320 participants and stated that more of half of the study sample were normal weight to overweight.

Discussion of the most common complications that related with DM as shown in Tables (2):-

Concerning the complications DM, the study findings indicate that the Hypertension, Body lipid disturbance, retinopathy, neuropathy, and CVDs are common DM-associated health problems. These results are supported by Dehghan et al., (2017) in their study about general self-efficacy and diabetes management self-efficacy of diabetic patients referred to diabetes clinic of AqQala, North of Iran. They stated that most common complications of diabetes of the study sample are retinopathy and neuropathy.

Moreover, these findings agreed with that obtained by Messina et al., (2018) in their study about assessing self-efficacy in type 2 diabetes management. They mentioned that hypertension is a common DM-associated health problem. Another study was done in Sudan by Amer et al., (2018) about influence of self-efficacy management on adherence to self-care activities and treatment outcome among diabetes mellitus type 2. It stated that the health problems associated with diabetes for the most of study sample were hypertension and dyslipidemia.

Overall assessment of Self-efficacy among patients (3):-
The study findings revealed that the patients' self-efficacy is good at all studied items except at the item number (8) their self-efficacy was fair. These results are supported by Walker et al., (2014) in their study about effect of diabetes self-efficacy on glycemic control, medication adherence, self-care behaviors, and quality of life in a predominantly low-income, minority population. They stated that patient with T2DM with good self-efficacy have a high quality of living paralleled to T2DM with poor efficacy which also has a low quality of living.

Discussion of Statistical Association between Overall Assessment of the Patients' Self-Efficacy and the DM–related complications as shown in Table (4):-
The study findings revealed a high-significant association between patients' self-efficacy and the DM-related complications as shown in table (4.9). These findings agreed with a study conducted by Amer et al., (2018) about influence of self-efficacy management on adherence to self-care activities and treatment outcome among diabetes mellitus type 2. This research showed a significant association between patients' self-efficacy and the diabetes mellitus related complications at p-value less than 0.05.

Moreover, these findings disagree with that obtained by Kong and Cho, (2020) in their study about Factors Related to Self-care in Patient with T2DM. They stated a non-significant difference between patients' self-efficacy and the Diabetes mellitus related complications (P=0.387).
Conclusions and Recommendations: The majority of clients with type 2 DM are good self-efficacy with a mean of score (8.0). There is a high significant association between clients' self-efficacy and the DM-related complications at p-value less than (0.01).The results of the

study can be used as a baseline for future studies in the same environment and educated patient how increase self-efficacy. To decrease complications that result from Diabetes Mellitus Type II, The study can be repeated by using therapeutic modalities to improve patients' self-efficacy.

Table (1) Study Sample Demographic Data

Demographic Data	Rating And Intervals	Frequency	Percent
Age / Years	20-29	29	18.1
	30 – 39	23	14.4
	40 – 49	27	16.9
	50 – 59	32	20.0
	60 – 69	32	20.0
	70+	17	10.6
	Mean +DS	48	16.05
Gender	Male	83	51.9
	Female	77	48.1
Living	Rural	43	26.9
	Urban	117	73.1
Work / occupation	Student	13	8.1
	Free job	35	21.9
	Employee	32	20.0
	Housewife	57	35.6
	Retired	23	14.4
Monthly income	Sufficient	60	37.4
	Sufficient to some extent	54	33.8
	Insufficient	46	28.8
Who is responsible for your Care?	Self-care	89	55.6
	Family	71	44.4
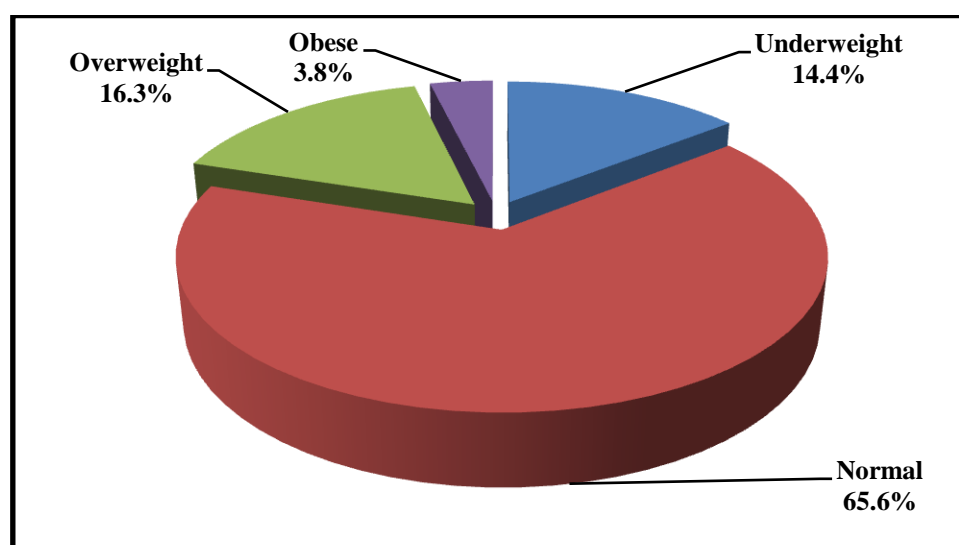
Figure (1) Distribution of the Study Sample According to Their Levels of BMI

Table (2) Assessment of Diabetes Mellitus – Related Complications

DM related Complication	Frequency	Percent
No Complications	58	36.3
Retinopathy	4	2.5
Retinopathy , Nephropathy , Stroke, CVD	1	.6
Retinopathy , Nephropathy , Stroke, CVD, Neuropathy	1	.6
Retinopathy , Nephropathy , Diabetic Foot	1	.6
Retinopathy , Nephropathy , Diabetic Foot, CVD, Neuropathy	1	.6
Retinopathy , Nephropathy , CVD	4	2.5
Retinopathy , Nephropathy , Neuropathy	1	.6
Retinopathy , Stroke, Diabetic Foot	1	.6
Retinopathy , Stroke, Diabetic Foot, CVD	1	.6
Retinopathy , Stroke, Diabetic Foot, CVD, Neuropathy	1	.6
Retinopathy , Diabetic Foot	1	.6
Retinopathy , Diabetic Foot, CVD	1	.6
Retinopathy , Diabetic Foot, CVD, Neuropathy	3	1.9
Retinopathy , Diabetic Foot, Neuropathy	4	2.5
Retinopathy , CVD	7	4.4
Retinopathy , CVD, Neuropathy	13	8.1
Retinopathy , Neuropathy	14	8.8
Nephropathy , Diabetic Foot	1	.6
Nephropathy , CVD	2	1.3
Stroke, CVD	1	.6
Stroke, Neuropathy	1	.6
Diabetic Foot	1	.6
Diabetic Foot, CVD	5	3.1
Diabetic Foot, CVD, Neuropathy	3	1.9
CVD	13	8.1
CVD, Neuropathy	10	6.3
Neuropathy	6	3.8
Total	160	100.0

Table (3) Overall assessment of the Patients' Self-Efficacy

Main Studied Domain	Levels	Frequency	Percent	Mean	Assessment
Overall Patients' Self-Efficacy	Low	0	0.0	8.0	Good
	Fair	12	7.5		
	Good	148	92.5		
	Total	160	100.0		

Good (mean 6.78-10), fair (mean 3.34-6.67), low (mean 0-3.33)

Table (4) Statistical Association between Overall assessment of the Patients' Self-Efficacy and the DM –related complications

DM related Complication	Self-Efficacy Levels		Total	Chisquare value *	d.f.	p-value
	Fair	Good				

No Complications	**3**	**55**	**58**			
Retinopathy	**0**	**4**	**4**			
Retinopathy , Nephropathy , Stroke, CVD	**0**	**1**	**1**			
Retinopathy , Nephropathy , Stroke, CVD, Neuropathy	**1**	**0**	**1**			
Retinopathy , Nephropathy , Diabetic Foot	**1**	**0**	**1**			
Retinopathy , Nephropathy , Diabetic Foot, CVD, Neuropathy	**0**	**1**	**1**			
Retinopathy , Nephropathy , CVD	**0**	**4**	**4**			
Retinopathy , Nephropathy , Neuropathy	**0**	**1**	**1**			
Retinopathy , Stroke, Diabetic Foot	**1**	**0**	**1**			
Retinopathy , Stroke, Diabetic Foot, CVD	**0**	**1**	**1**			
Retinopathy , Stroke, Diabetic Foot, CVD, Neuropathy	**0**	**1**	**1**			
Retinopathy , Diabetic Foot	**0**	**1**	**1**	**38.411**	**27**	**.004 HS**
Retinopathy , Diabetic Foot, CVD	**0**	**1**	**1**			
Retinopathy , Diabetic Foot, CVD, Neuropathy	**1**	**2**	**3**			
Retinopathy , Diabetic Foot, Neuropathy	**0**	**4**	**4**			
Retinopathy , CVD	**0**	**7**	**7**			
Retinopathy , CVD, Neuropathy	**1**	**12**	**13**			
Retinopathy , Neuropathy	**2**	**12**	**14**			
Nephropathy , Diabetic Foot	**0**	**1**	**1**			
Nephropathy , CVD	**1**	**1**	**2**			
Stroke, CVD	**0**	**1**	**1**			
Stroke, Neuropathy	**0**	**1**	**1**			
Diabetic Foot	**0**	**1**	**1**			
Diabetic Foot, CVD	**0**	**5**	**5**			
Diabetic Foot, CVD, Neuropathy	**0**	**3**	**3**			
CVD	**1**	**12**	**13**			
CVD, Neuropathy	**0**	**10**	**10**			
Neuropathy	**0**	**6**	**6**			
Total	**12**	**148**	**160**			

* **The statistical value is corrected by Fisher Exact value because there are many cells have expected count less than 5.**

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