How to Cite:
Madran, D. M., & Jassim, A. H. (2022). Self-efficacy and its relationship to self-care among type II diabetic patients. *International Journal of Health Sciences*, *6*(S2), 15199–15208. https://doi.org/10.53730/ijhs.v6nS2.8851

Self-efficacy and its relationship to self-care among type II diabetic patients

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***Abstract*---**Background: High level of self-efficacy and adherence to self-care activities have a positive impact on the achievement of glycemic goal among diabetic patients. There is a gap in knowledge related to self-efficacy management and its influence on adherence to self-care activities and overall disease control. Therefore, the study aimed to assess the relationship between self-efficacy and self-care among type II DM.Methods: A correlational study was conducted on a sample of 400 patients is selected purposively who are diagnosed with type II DM who attended AL-Zahraa Teaching Hospital in Wasit Province/ Iraq. The reliability of the questionnaire was achieved through a pilot study and then presented to experts to prove its validity. The total number of items included in the questionnaire was 34-items for self-efficacy and 30= items for self-care. The data was collected by using the semi-structured interview and analyzed by the application of descriptive and inferential statistical data analysis approach.Results: Out of 400 patients participated in the study indicated that (72.5%) exhibited a moderate level of self-efficacy and (59.8%) inadequate self-care. There were significant correlation (positive) between self-efficacy and self-care (r=0.126; p=0.012); and Simple linear regression test confirmed that the significant effect of self-efficacy on self-care among type II diabetic patients (p=0.012). Conclusions: The results showed that self-efficacy of respondents was moderate and the self-care was poor. Statistical significance correlation was found between self-efficacy and self-care (positive). The study adds knowledge regarding health education. Further study is needed to explore other factors related to self-efficacy and self-care of type 2 diabetes mellitus to prevent complication.

***Keywords*---**self efficacy, self-care, type II DM.

Introduction

Type 2 diabetes mellitus (T2DM) has become a huge burden on people as well as national and international health-care systems. In 2014, 387 million people worldwide with T2DM, with that number anticipated to climb to 592 million by 2035 (Atlas,200%). Over the last five decades, the prevalence of T2DM in Malaysia has risen rapidly. According to the Malaysian National Health Morbidity Survey (NHMS) 2011, the prevalence of reported T2DM increased about 20-fold from 0.65 percent in 1960 to 15.2 percent in 2011 (Chan ET AL.,2017). Diabetes affects approximately 1.4 million Iraqis. T2DM prevalence in Iraq has been reported to range from 8.5 percent (IDF—age-adjusted) to 13.9 percent. A local survey of almost 5400 people in local of study, Iraq, found a 19.7% age-adjusted prevalence of diabetes in people aged 19 to 94 (Abusaib et al.,2020).

Evidence is accumulating to show that glycemic control could be improved with better self-efficacy and self-care behavior among patients with T2DM (Walker et al.,2014). In Iraq, the only study supporting this was conducted in a university hospital setting ((Sharoni and Wu ,2012) However, characteristics of T2DM patients and healthcare delivery system in primary care may differ from secondary care in terms of patient's education level, health literacy and availability of trained healthcare personnel to deliver self-care support. In view of the lack of evidence in our primary care setting, there was a need to determine the role of self-efficacy and its relationship with self-care behavior and glycemic control among patients with T2DM in primary care. Therefore, thus study aimed assess self-efficacy and its relation to self-care among type II DM.

Method

A correlational study was conducted in Wasit Province on a sample of 400 patients is selected purposively who are diagnosed with type II DM. Study instrument: The questionnaire is one of the means to help collect data that contribute to achieving the results expected by the study, so the researcher designed this questionnaire, which aims to clarify the study objectives and significance by obtaining answers to the study's questions. This questionnaire consists of two for parts which includes the following:

Part I: This section composed of socio-demographic information which include age, gender, economic, marital status, education level, residents, duration of DM and family history.
Part II: This section deals with self-efficacy and self-care designed according to Morisky Medication Adherence Scale, and consist of (34-itemds) measures the measure self-efficacy and (30-items) measures the measure adherence in a variety of patient populations.

Validity was given to an arbitrators were asked to offer their opinions and suggestions on each of the study questionnaire's components in terms of language appropriateness, association with the dimension of study variables to which it was assigned, and suitability for the study population. To assess the questionnaire's reliability, data were collected from nurses, and the test was administered to 40 subjects from the study population who were not part of the

original sample. Cronbach's alpha was discovered to be 0.78. The SPSS-20.0 software application was used. The information was evenly distributed. Pearson's Correlation and Simple liner regression to examine the association between self-efficacy and self-care. For continuous variables, descriptive data is reported as mean standard deviation, and for categorical variables, it is shown as number (percent). Statistical significance was defined as a p 0.05.

The overall responses according to study variables total mean of score which follow:

Statistical Mean= 34-56 refers to Poor Self Efficacy
Statistical Mean= 57-79 refers to Moderate Self Efficacy
Statistical Mean= 80-102 refers to Good Self Efficacy
Statistical Mean= 30-50 refers to Inadequate Self Care
Statistical Mean= 51-70 refers to Fair Self Care
Statistical Mean= 71-90 refers to Adequate Self Care

Result

Finding show participants age, the mean age is 51, the age 50-59 years old were recorded the highest percentage (*n=148*; 37%), followed by those who are aged 40-49 years old (*n=87*; 21.8%), followed by those who are aged 60-69 years old (*n=84*; 21%), followed by those who are aged ≥70 years (*n=32*; 8%), and those who are aged 30-39 years old and <30 years (*n=27*; 6.8%) and (*n=22*; 5.5%) respectively. In regards with gender, the male patients were predominated (*n=293*; 73.3%), as compared with those who are female (*n=107*; 26.8%). In terms of economic, diabetic patients exhibit a sufficient economic (*n=235*; 58.8%), followed by those who are a certain limit enough (*n=125*; 31.3%) and those who are insufficient (*n=40*; 10%). Marital status related findings, the married patients were records the highest percentages (*n=311*; 77.8%), followed by those who are single (*n=48*; 12%) and those who are widower and divorced (*n=25*; 6.3%) and (*n=16*; 4%). Respected to the education level, the read and write were constituted the highest (*n=107*; 26%), followed by those who are college and above graduated (*n=88*; 22%), followed by those who are secondary school graduated (*n=73*; 18.3%), followed by those who are illiterate (*n=68*; 17%) and those who are elementary and intermediate school (*n=46*; 11.5%) and (*n=18*; 4.5%). Occupation related findings, the self-work patients composed the highest (*n=196*; 49%), followed by those who are employment (*n=130*; 32.5%) and those who are unemployment and retired (*n=55*; 13.8%) and (*n=19*; 4.8%) respectively. In regards with residents, more than half of participants were rural residents (*n=223*; 56%) compared with those who are urban (*n=176*; 44%). The duration of disease related T2DM, most of patients exhibit 1-5 years (*n=245*; 61.3%), followed by those who are >5 years (*n=136*; 34%) and those who are <1 year (*n=19*; 4.8%). In regards with family history of DM, more than half of participants expressed no family history (*n=260*; 65%) compared with those who are family history associated DM (*n=140*; 35%).

Table (1): Sample Characteristics

Demographic Variables	Class	n=400	%
Age/years	<30 years old	22	5.5

(*M± SD= 51.76±10.707*)	30-39 years old	27	6.8
	40-49 years old	87	21.8
	50-59 years old	148	37.0
	60-69 years old	84	21.0
	≥70 years old	32	8.0
Gender	Male	293	73.3
	Female	107	26.8
Economic	Sufficient	235	58.8
	Certain limit	125	31.3
	Insufficient	40	10.0
Marital status	Single	48	12.0
	Married	311	77.8
	Divorced	16	4.0
	Widower	25	6.3
Education level	Illiterate	68	17.0
	Read and write	107	26.8
	Elementary school	46	11.5
	Intermediate school	18	4.5
	Secondary school	73	18.3
	College and above	88	22.0
Occupation	Employment	130	32.5
	Self-work	196	49.0
	Unemployment	55	13.8
	Retired	19	4.8
Residents	Rural	224	56.0
	Urban	176	44.0
Duration of DM	< 1 years	19	4.8
	1-5 years	245	61.3
	>5 years	136	34.0
Family history	Yes	140	35.0
	No	260	65.0

Findings demonstrated that the (72.5 %) of type II diabetic patients expressed a moderate level of self-efficacy (M ± SD= 61.35±13.233).

Table (2): Self Efficacy

Self-Efficacy	Freq.	%	M ± SD
Poor (M=34-56)	96	24.0	*61.35±13.233*
Moderate (M=57-79)	290	72.5	
Good (M=80-102)	14	3.5	
Total	400	100.0	

M: Mean for total score, SD=Standard Deviation for total score

Findings in table (2) demonstrated that the (59.8%) of type II diabetic patients expressed an inadequate self-care (M ± SD= 49.03±12.106).

Table (3): Self Care

Self-care	Weighted	Freq.	%	*M ± SD*
Adhere to the Doctor's Instructions	Poor (M=7-11)	248	62.0	*10.18±4.435*
	Moderate (M=12-16)	99	24.8	
	Good (M=17-21)	53	13.3	
Periodic Examination	Poor (M=7-11)	275	68.8	*10.86±3.855*
	Moderate (M=12-16)	68	17.0	
	Good (M=17-21)	57	14.3	
Keep Taking Medication	Poor (M=8-13)	278	69.5	*12.14±4.132*
	Moderate (M=14-18)	99	24.8	
	Good (M=19-24)	23	5.8	
Sports, Food and Diet	Poor (M=8-13)	140	35.0	*14.83±4.111*
	Moderate (M=14-18)	189	47.3	
	Good (M=19-24)	71	17.8	
Total Self Care	Inadequate (M=30-50)	239	59.8	*49.03±12.106*
	Fair (M=51-70)	139	34.8	
	Adequate (M=71-90)	22	5.5	

M: Mean for total score, SD=Standard Deviation for total score

Findings exhibit there were significant correlation (positive) between self-efficacy and self-care (r=0.126; p=0.012).

Table (4).Correlation Between Self-efficacy and Self-care among Type II Diabetic Patients (n=400)

	Self-efficacy		
Self-care	*Pearson's r*	*.126**	Positive Sig.
	Sig. (2-tailed)	*.012*	
	N	*400*	

Simple linear regression test indicates that the significant effect of self-efficacy on self-care among type II diabetic patients (p=0.012).

Table (5):Simple Liner Regression between Self-efficacy and Self-care among Type II Diabetic Patients (n=400)

Self-efficacy *Vs.* Self-care	Unstandardized Coefficients		Standardized Coefficients	t	*Sig.*
	B	Std. Error	Beta		
	.156	.062	.126	2.526	*.012*

Discussion

Diabetes self-efficacy (DSE) which developed to measures the diabetic patient's confidence regarding to diet, exercise and medical treatment. In general, the current study findings found the M ± SD= 61.35±13.23 and according to the study criteria, the type II diabetic patients expressed a moderate level of self-efficacy (table 2). In regards with chronic disease like diabetes mellitus, the

unsatisfactory self-efficacy may due to a patients faced a barrier to diabetes self-management identified by patients with diabetes were categorized into five major themes: inadequate knowledge and behavioral beliefs, shortage of resources, suffering from health problems, negative emotions, and lack of support (Shi et al.,2020). In the study by Gedik and Kocoglu, self-efficacy levels of the patients were found to be at a moderate level(Gedik and Kocoglu, 2018). Another study by Çapık and Gözüm, that was performed regarding the effect of diabetes training on the management of diabetes, self-efficacy levels of study group (67.98 ± 12.74) as well as control group (69.37 ± 9.64) were found to be at a moderate level before the training (Çapık and Gözüm, 2012) .Self-efficacy levels of the patients for diabetes management were at a low level before the intervention (Taha et al.,2016). Another study has found that Korean patients who received specialist care reported higher self-efficacy than those who received generalist care (Lee et al.,2009).

Despite the differences in sampling, the similarities in these scores are striking. Moreover, our result showed that self-efficacy for diabetes management was at a moderate level and should be improved. In fact, it is important that patients should have high self-efficacy levels in order to undertake and control behaviors that are recommended for the treatment of diabetes. Patients who have a low self-efficacy are less prone to new health behaviors or to changing usual behaviors (Pender,1996). In the study by Morrison and Weston on diabetic patients, it was reported that patients who had a high self-efficacy level had a more positive blood glycemic level, overall health, and psychological health; and patients who had a low self-efficacy experienced a high level of stress(Morrison and Weston, 2013). Thus, the participation of self-efficacy levels for diabetes management should be maintained above a moderate level.

Diabetes self-care is important to keep the disease under control, it includes performing activities such as adhere to doctor instruction, periodic examination, keep to take medication, sports, food and diet activities. Findings demonstrated that the (59.8%) of type II diabetic patients expressed an inadequate self-care (M ± SD= 49.03±12.106). In line with study conducted in Iran, the majority of diabetic patients had a poor score of self-care (63.6%) (Alqudah et al.,2019). In similar, Karthik et al., who are observed that the overall prevalence of good self-care practices was very low (5.6%). Moderate self-care practices were prevalent in 42% of the study participants and the majority of the study population had poor self-care practices (52.6%). Emphasized on the need for knowledge and awareness to be provided in rural areas regarding diabetes care management and self-care practices (Karthik et al.,2020).

One of the reasons for poor self-care in patients with type 2 diabetes due to the patients non adherence to the doctor's instructions was (62%) which means poor self-care related to adherence to the doctor’s instruction. Similar findings were reported in studies conducted by Garg et al., the non-adhere to the physician instruction was (72.3%); and Goyal and Gupta, the non-adhere to the physician instruction was (71.4%)(Garg et al.,2017; Goyal and Gupta,2019)A study done by Selvaraj et al., showed that the prevalence of diabetic medication and physician adherence was 95%, which was significantly higher compared to our study. The

regional and rural-urban differences could have been the reason for this difference (Selvaraj et al.,2017).

Second reasons for poor self-care in patients with type 2 diabetes due to the patients expressed (86.8%) was poor to interested to perform periodic examination with average 10.86±3.85. This was come consisting with study conducted in Eastern Sudan who expressed that the periodic examination among patients associated diabetic type 2 were poor due to the patient's lack of commitment (Omar et al.,2018)Third reasons for poor self-care in patients with type 2 diabetes due to the patients expressed (69.5%) was poor keep take medication with average 12.14±4.13 due to patients no acceptance their medication. In those regards, findings from Diabetic Center in Hilla City reveals that the 50% of the participants are responses to never acceptance to their treatment (Qassim et al.,2019).

The not keep to take medication are involved several aspects, as the patient and the doctor is caused by several factors or problems between them, which leads to the absence of a sense of satisfaction by the patient, which is the basis for the success of the process of good adherence to treatment. The most important of which is the lack of attention by the patient and the physician, the treatment by the doctor with the patient as a case, the level of information and understanding from both parties, and the inability to remember information by the patients (Qassim et al.,2019).

These results agree with the study has been assessed the diabetic's patient's satisfaction with their treatment. Their findings indicated treatment satisfaction is lower among diabetic patients, who are insulin treated or have a diabetic complication and is related to difficulties in taking medications and coming to follow-up visits. And concludes that patients-decision makers need to be addressing the specific needs of these patients might be effective in improving their satisfaction, this have a positive influence on other clinical outcomes (Biderman et al,.2009).

Fourth reasons for poor self-care in patients with type 2 diabetes due to the patients expressed (47.3%) was poor care associated sports, food and diet in average 14.83±4.11. This finding is supported by findings from Saudi Arabia, it was found that adherence to self-care activities including diet, exercise, and foot care was relatively poor. The education provided by healthcare providers related to self-management attributes was found to be significant and had positive effects on the overall (Alhaiti et al.,2020). This might be due to a lack of knowledge on the difference between physical activity and daily living activities and lack of access to recreational centers in the area.

The positive correlation means when the low level of self-efficacy is significantly associated with poor self-care. That is, working to raise self-efficacy among patients with type 2 diabetes increases self-care for them, so the self-efficacy variable is very important in self-care. In those regards, the simple linear regression test confirmed that the significant effect of self-efficacy on self-care among type II diabetic patients ($p=0.012$). The higher self-efficacy was correlated with improved self-care behavior and better glycemic control (r 0.538, $P < 0.001$). Findings of this study suggest the importance of including routine use of self-

efficacy measures in the management of type 2 diabetes mellitus in primary care (Tharek et al.,2018).

This is further supported by several other studies showing that high self-efficacy level was associated with better self-care behavior (Wendling and Beadle, 2015; Turner et al.,2015)A review on the role of self-efficacy in diabetes care showed that self-efficacy provides a suitable framework for understanding and predicting commitment towards self-care behaviors and effectiveness of self-management in diabetes treatment (Mohebi et al.,2013).

In Chinese patients with T2DM, the self-efficacy in managing DM positively influenced DM self-care. DM efficacy, as a protective factor, conversely improved the self-management for T2DM (Qiu et al.,2020). Health educators and promoters should help in developing DM self-efficacy and self-care. Self-efficacy level of diabetes management is a factor that affects self-care in type 2 diabetes patients and it should be considered during interventions for improving the well-being of patients (Calli and Kartal, 2021).

The results showed that mean self-efficacy of respondents was 61.35 and the self-care was 49.03. Statistical significance correlation was found between self-efficacy and self-care ($r=0.126$; $p=0.012$). The study adds knowledge regarding health education. Further study is needed to explore other factors related to self-efficacy and self-care of type 2 diabetes mellitus to prevent complication.

Study Limitation

The difficulty of interview with study sample was one of the main difficulties we faced.

Conclusion

The results showed that self-efficacy of respondents was moderate and the self-care was poor. Statistical significance correlation was found between self-efficacy and self-care (positive). The study adds knowledge regarding health education. Further study is needed to explore other factors related to self-efficacy and self-care of type 2 diabetes mellitus to prevent complication.

Financial disclosure
There is no financial disclosure.

Conflict of interest
None to declare.

Ethical Clearance

All experimental protocols were approved by the Wasit Health Directorate in Iraq, and all experiments followed the permitted procedures.

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