
ASSESSMENT OF BARRIERS TO SELF-MANAGEMENT AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS AT SPECIALIZED MEDICAL HOSPITAL IN MANSOURA UNIVERSITY.

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Abstract

Diabetes is a syndrome constituting a general public health problem and it's difficult for diabetic individual, their family to adhere to self-management and person with diabetes may face many barriers to perform optimal diabetes self-management. The aim of the study was to assess barriers to self-management among patients with type 2 diabetes mellitus (T2DM). Materials and method: Descriptive research design was utilized to conduct this study. Sample: convenience sample of 100 adult patients from both sexes diagnosed with T2DM conducted in diabetic unit and clinic at specialized medical hospital in Mansoura University Hospital. Data were collected using two tools; first tool was patient's health relevant information interview and second tool was patient's barriers to self-management. Result: There are many barriers affecting type 2 diabetic patients to participate in self-management and majority of the patients have insufficient or lack of adherence to self-managements and facing many barriers as educational, physical, psychosocial, financial and cultural barriers.

Keywords: Type 2 diabetes mellitus, Self-management, Barriers

Introduction:

Diabetes mellitus (DM) is a syndrome recognized as one of the largest epidemics in the world in either developed or developing nations and classified as a group of diseases categorized by symptoms and signs of chronic hyperglycaemia ⁽¹⁾. T2DM is the most prevalent form of diabetes mellitus and accounts for approximately 70-90% of all cases of diabetes. ⁽²⁾

Internationally, the percentage of T2DM patients was more than doubled during the last two decades ⁽³⁾. Diabetes mellitus is a chronic disease that requires a person with diabetes to make a multitude of every day self-management decisions and carry out complicated care activities ⁽⁴⁾ in relation to controlling blood glucose levels and establishing euglycaemia in diabetes, the probably most vital factor is

patients' self-management of the circumstance. ⁽⁵⁾

Self-management usually need the patient to adopt lifestyle changes, balance their resources, values and preferences with a preventive regimen complete with a healthy diet, regular exercise, self-monitoring of blood glucose and medication adherence. Poorly controlled diabetes is closely linked with poor self-management that has elevated diabetes related complications and treatment cost ⁽⁶⁾. Self-management barriers refer to individuals' estimation of how challenging the obstacles are in achieving or maintaining diabetes specific self-management behaviors ⁽⁷⁾. It's difficult for diabetic individual and their family to adhere to self-management and person with diabetes may face many barriers to perform optimal diabetes self-

management^(8, 9). Identifying barriers to diabetes self-management is critical step toward successful diabetes self-management and achieving optimal health outcomes.⁽¹⁰⁾

Subject and method:

The aim of the Study:

The aim of the Study was:

Assessment of barriers to self-management among patients with diabetes mellitus type 2 at Specialized- Medical Hospital at Mansoura University.

Research questions:

What are the barriers facing diabetic patients in managing diabetes mellitus?

Research design:

A descriptive research design was conducted.

Setting:

The study was conducted in diabetic department in Specialized-Medical Hospital at Mansoura University Hospital.

Subjects:

convenient sample of 100 adult patients diagnosed with T2DM, admitted to hospital and accept to participate as a voluntarily in the study and have the following criteria; adult patients from both sex with different educational levels, able to give consent and able to communicate & verbalize their needs and excluded patients with other chronic disease, and malignant tumor or terminal ill patients.

Tools of Data Collection:

Data was collected by using the following tool:

Two tools were used for data collection

Tool I: Patient's health relevant knowledge interview:

This tool was developed by the researcher after reviewing recent related literature. It was divided into two main parts:

Part(1): Socio-demographic

characteristics: It was used for collection of personal data as: (age, sex, Educational

level-occupation-Residence, health insurance).

Part (2): Health status of diabetic patients, medical history.

This part was used to assess patients' current diagnosis as family history, special habits and diabetic complications.

Tool II: Patient's Barriers to Self-Management Behaviors:

This tool developed in simple Arabic language by the researcher based on thorough literature review and used to assess barriers of diabetic patient's related self-management.

Part(1): Educational barriers: Assess patient regarding diabetic knowledge.

Part (2): physical barriers: This part assess barriers related to physical activity, medication, nutrition, foot care and self-monitoring of blood glucose.

(I) *Exercise:* practice physical exercise; causes of unable to perform exercise.

(II) *Medication:* adherence to take medication.

(III) *Nutrition:* It contains items about Follow healthy meal plan which containing fatty, salty foods at sugars and honey, taking fresh fruits and vegetables regularly, eating snacks and eating basic meals regularly every day.

(IV) *Foot care:* It contains questions about (foot checkup, foot care, shoes)

(V) *Self- monitoring of blood glucose:* question regarding Measuring blood glucose level.

Part (3): psychosocial barriers:

This part include questions about: Patient's feeling after diagnosis with diabetes, family coping with you, psychological stress affects blood glucose level, ability to cope later with disease, fear from inability to control diabetes and diabetes affects social life.

Part (4): Cultural belief barriers: this part contains questions about culture beliefs or conception towards healthy life

style as disease, diet, exercise, relationship between couples.

Method: An official approval for conducting the study was obtained from ethical committee of Faculty of Nursing, Mansoura University.

Tool I and Tool II was constructed and developed by the researcher after reviewing recent related literature and translated by the researcher to simple Arabic language and vice versa.

Validity and reliability of the tools were ascertained by a panel of experts in medical and nursing faculties for clarity, relevance, applicability, comprehensiveness and ease for implementation.

Official approval for conducting the study was obtained from the responsible administrative personnel of specialized medical hospital, based on official letter from faculty of nursing including the title, aim and duration of the study.

Pilot study

It was applied on 10% of total number of patients diagnosed with T2DM to test the simplicity, clarity of the questions and time frame needed for interview. The patients in the pilot study were excluded. Some modifications were done accordingly.

Field work:

Tool I Tool II was completed using patient's medical records and via interviewing the patient individualized. Patients were interviewed during the morning and afternoon shifts. Assessment of patients done at diabetic department (in-patient, out -patient) each sheet was taken 35 - 45 minutes. Data collected during Nov. 2014 to Feb. 2015.

Ethical consideration:

An oral consent was obtained from patients to participate in this study after explaining the study aims. Patients were assured that the information is confidential and used for study purposes only.

- Official permission to use patient's medical record.

Statistical analysis:

The collected data were organized, categorized, tabulated and analyzed with statistical package for social science (SPSS); "version 21.0". Data were presented in tables and charts using actual percentages. The tests used to summarize the data as mean and stander deviation test, t-test to compare mean scores for numerical data, correlation coefficient (r-test) and ANOVA test for non-numerical data.

- Non-significant when the probability of error ($p > 0.05$).
- Significant when the probability of error ($p < 0.05$)

Results

Part I: Socio- demographic characteristics

Figure (1): This figure shows that half of the studied patients (50%) were in age group 50 - 60 years; followed by 39% lies between the ages ranged from 40 to less 50 years.

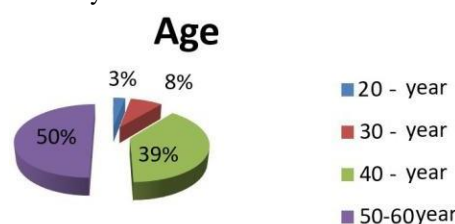


Figure (1): Frequency distribution of patients with type 2 diabetes mellitus according to their age (n=100).

Table (1): Regarding gender, females were more prevailing in the studied patients (67%). Regarding level of education, it was found that illiteracy was prevailing among 51% of the sample and only 11% had completed university education. Concerning patient's occupation, it was observed that (11%, 63%) weren't working (retirement, house wife) respectively. Concerning health insurance, most of studied patients (92%) hasn't health insurance. Regarding residence, the majority of the patients

(77%) were living in rural areas and the rest of the subjects (23%) were living in urban areas.

Table (1): Frequency distribution of patients with type 2 diabetes mellitus according to Socio- demographic characteristics (n=100).

Items	Frequency (no =100)	%
Gender		
Male	33	33.0
Female	67	67.0
Marital status		
Married	93	93.0
Single	0	0
Divorced	2	2.0
Widow	5	5.0
Educational level		
Illiterate	51	51.0
Read and write	27	27.0
Secondary	11	11.0
University education	11	11.0
Job		
Retired	11	11.0
Housewife	63	63.0
Office work	10	10.0
Hand work	16	16.0
Residence		
Urban	23	23.0
Rural	77	77.0
Health insurance		
No	92	92.0

Table (2):Regarding family history more than half (59%) of the studied patients reported a positive family history. Concerning smoking habit, it appears from the table that 20 % of the patients were smokers and 5% were ex -smoker.

Table (2): Frequency distribution of patients with type 2 diabetes mellitus according to their medical history (n=100).

Patient's history	no=100	%
Family history of DM		
Yes	59	59.0
Degree of relativity		
1 st	50	50.0
2 nd	9	9.0
Special habits		
Smoking		
Yes	20	20.0

Table (3):From the table we can see that the mean, standard deviation of total knowledge score of patients with type2 diabetes mellitus is (12.68 ± 3.55). Also the table represents that all of the studied patients (100%) had poor knowledge level. **(Table 3):** Means and standard deviation of total knowledge score of patients with type 2 diabetes mellitus (n=100).

Knowledge	Group (n=100)	
	No	%
Knowledge Score		
Mean ± SD	12.68 ± 3.55	
Min-Max	6-23	
Poor ≤60%	100	100%
Fair 60-70%	0	0
Good >70%	0	0

(Table 4): This table mentioned that most of studied sample (96%) reported that they don't perform any sort of physical exercises. This table illustrates also that most of the patients (96%) hadn't committed to diabetic diet. Concerning food types, the majority of patients (75%, 70%) eating fatty foods and salty diet respectively and %54 of them usually eat simple sugars. The result also revealed that most of patients (88%) can't choose appropriate foods.

(Table 4): Frequency distribution of patients with type 2 diabetes mellitus according to their nutrition, physical exercise (n=100).

Items	Frequency (no=100)			
	Yes		No	
	No	%	No	%
Perform physical exercise as (walk)			96	96.0
Nutrition	Frequency group (no=100)			
	Yes		No	
	No	%	No	%
Committed to diabetic diet	4	4.0	96	96.0
Eating fatty foods such as red meat, whole milk	75	75.0	25	25.0
Eating salty foods	70	70.0	30	30.0
Eating sugars and honey	54	54.0	46	46.0
Taking fresh fruits and vegetables regularly	33	33.0	67	67.0
Choose appropriate food between basic meals.	12	12.0	88	88.0
Eating basic meals regularly every day	28	28.0	72	72.0

Table (5): This table indicates that around half (51%) of the patients were not examine foot every day, 82.4% of them reported that they hadn't know the importance for foot examination.

Table (5): Frequency distribution of patients with type 2 diabetes mellitus according to their foot care (n=100)

Foot care	Study group (no=100)			
	Yes		No	
	No	%	No	%
examine foot every day	49	49	51	51
Don't know importance			42	82.4
Lack of time			9	17.6
Consult a doctor when exposure to wound	16	16.0	84	84.0
Elevated blood glucose level delay the wound healing	90.0	90.0	10	10.0
Select the right, comfortable shoes	14	14.0	86	86.0

Table (6): Concerning aqua check (glucometer) mostly of patients 86% reported that they didn't have aqua check in the home to measure blood glucose level.

Table(6): Frequency distribution of patients with type 2 diabetes mellitus according to their diabetic check (n=100).

Diabetes monitoring	Study group (no=100)			
	Yes		No	
	No	%	no	%
Have aqua check(glucometerin home to measure Blood glucose	14	14.0	86	86.0
Able to use it	10	71.4	4	28.6
Measuring BL.G level				
Daily	4	4.0		
Weekly	3	3.0		
Monthly	32	32.0		
during feel complications	61	61.0		

(Table 7): This table represents that most of patients (99%) reported that they feel exhaustion after diagnosed with diabetes

and 66% of patients reported that their family helps them to cope with the disease.

Table (7): Frequency distribution of patients with type 2 diabetes mellitus according their psychosocial barriers (n=100)

Items	Study group (no=100)			
	Yes		No	
	No	%	No	%
feeling exhaustion after diagnosed with diabetes	99	99.0	1	1.0
family coping with you	66	66.0	34	34.0
Psychological stress Affect B.L.G level	95	95.0	5	5.0
able to cope later with diabetes	22	22.0	78	78.0
fear from inability to control diabetes	82	82.0	18	18.0
diabetes affect social life	81	81.0	19	19.0

Table (8):This table reveals that 57% of the studied samples were believed that they are diabetic patient only when blood glucose levels become high. 64% of patients were believed that they didn't need drug when blood glucose level is normal. Regarding foods free from sugar and industrial sweeteners, the majority of samples (81%) believed that eating foods free from sugar and industrial sweeteners not the solution to prevent diabetes.

Table (8): Frequency distribution of patients with type 2 diabetes mellitus according to their cultural beliefs barriers (n=100).

Items	Frequency group (no=100)			
	Yes		No	
	No	%	No	%
You are diabetic patient when blood glucose only be high	57	57.0	43	43.0
You do not need diabetes drugs if blood glucose level is normal	64	64.0	36	36.0
Have confidence to control diabetes	12	12.0	88	88.0
Diet can prevent diabetes	25	25.0	75	75.0
Foods free from Sugar and industrial sweeteners is the solution to prevent diabetes	19	19.0	81	81.0
Prevent eating and reduce the number of meals lead to blood glucose control	53	53.0	47	47.0
Exercise is normal for the place where you live	49	49.0	51	51.0
Diabetes affects the relationship between couples	80	80.0	20	20.0
Exposure to other diseases than the rest of the people	67	67.0	33	33.0
Follow up prevents diabetic complications	53	53.0	47	47.0

Table (9): This table shows that there were no significant statistical difference between knowledge scores and (age, marital status, and job) where $p = (.287, .355$ and $.709)$ respectively. This table illustrates there was a significant statistical difference between knowledge score and educational level, this table illustrates also that the illiterate patients have lower knowledge score than other categories

where ($p=.016^*$). This table shows significant statistical difference in mean knowledge scores and patient's residence where subject who lived in urban area had a higher knowledge mean score (14.04 ± 4.24) than those lived in rural area (12.27 ± 3.24) ($p=.035^*$)

Table (9): Relation between knowledge score and Socio-demographic data (n=100)

Items	Mean \pm SD of knowledge scores	Test of sig. p-value
Age		
18-29year	10.33 \pm 2.31	F=1.276 p=.287
30-39year	14.50 \pm 2.92	
40-49year	12.84 \pm 4.12	
50-60year	12.40 \pm 3.14	
Educational level		
Illiterate	11.60 \pm 3.11 ^{AB}	F=3.624 p=.016*
Read and write	13.81 \pm 3.63 ^A	
Secondary	14.36 \pm 4.38 ^B	
University education	13.18 \pm 3.18	
Residence		
Urban	14.04 \pm 4.24	t=2.133

*Significant ≤ 0.05

Discussion

Self-management is the basis for T2DM treatment and is critical in the prevention of complications. Nurse-led health education is very essential to maintain better clinical improvement in T2DM that help these patients to support their self-management skills⁽¹¹⁾.

Concerning age and gender. The present study revealed that half of the study patients were in age group 50 to 60 years old and the least within the 20–30 years. The same results were reported in other studies carried out in Abuja, Nigeria by Odume et al. (2015)⁽¹³⁾; other study conducted by Mersal, (2013)⁽¹⁴⁾ and Santhosh et al., (2011)⁽¹⁵⁾ who reported the greatest number of diabetic patients was found in the age range from 51–60 years

and the least within age categories from 21–30.

Regarding gender, the present study revealed that diabetes mellitus type 2 was encountered more among females than males this may be due to some risk factors such as stress, and obesity observed more among females than males. This is supported by Odume et al., (2015)⁽¹³⁾; Al-Shehri, (2014)⁽¹⁶⁾; Lima-Costa et al., (2012)⁽¹⁷⁾ and study also conducted in South Africa by Ikombele, (2011)⁽¹⁸⁾ which reported that diabetes higher among females than males. These findings are inconsistent with study carried out in Egypt by Mohammed, (2014)⁽¹⁹⁾; other studies by Salam & Siddiqui (2013)⁽²⁰⁾ who revealed that the majority of the participants were male.

Concerning educational level, the present study clarified that majority of patients were illiterate while few had a university education. The same findings were reported in other study carried out in Abha, Saudi Arabia by Salam & Siddiqui (2013)⁽²⁰⁾ and this also agree with Adem et al., (2014)⁽²¹⁾ who indicates that most patients have little or without education. This is contrary with Odume et al., (2015)⁽¹³⁾ who reported that subjects with T2DM were found among those with highest educational level.

Regarding occupational status, the present study indicated that three quarter weren't working. This is the same line with Al-Shehri, (2014)⁽¹⁶⁾ who reported almost two thirds were not working (housewife-retirement) and Taha et al., (2011)⁽²¹⁾ also found in their study the majority weren't working.

Regarding residence, the majority of the patients were living in rural areas. It is supported by study conducted in Dakahlia by El-Khawaga & Abdel-Wahab, (2015)⁽²²⁾ and the same result by Taha et al., (2011)⁽²¹⁾ whom reported the majority of the participants were rural resident. This is contrary with Bos et al., (2013)⁽²³⁾ who

found the urban population have higher prevalence of DM compared to the rural population within Egypt.

Regarding family history, more than half of the studied patients have family history, first degree. These findings are in agreement with previous El-Khawaga& Abdel- Wahab, 2015;⁽²²⁾ whom reported that subjects have first class relative with T2DM were more likely to develop T2DM than subjects without positive first class relatives. Concerning smoking habit, the present study find that 20 % of the patients were smokers this agree with Gautam et al., (2015) ⁽²⁴⁾ reported that 9.8 % of smoker's between diabetic individuals.

The present study has revealed that all of the studied patients had poor knowledge level which might be acting as a barrier to perform self-managements and achieve glycemic control. The same finding in agreement with Gautam et al., 2015;⁽²⁴⁾ al. ; ALMaskari et al.,2013⁽²⁵⁾Islam et al 2014⁽²⁶⁾which revealed that majority of people have poor diabetes knowledge. This result disagree with studies conducted by Gul (2010)⁽²⁷⁾; and Saleh et al (2012)⁽²⁸⁾they reported that diabetic patients had good level of diabetes knowledge.

Concerning physical activity ,The present study revealed that the most of studied sample don't perform any sort of physical exercises, this probably due to lack of motivation and inadequate knowledge about importance of regular physical activity, lack of time ,feeling tired due to advanced age , so its consider significant barrier to diabetes treatment ,self-managements and it's important to analysis barriers to PA is before planning any strategy to increase motivation and adherence to the initiation and participation in exercise program to diabetic patients. This is supported by Prabhu et al., (2013)⁽²⁹⁾ who found that commitment with exercise has been shown

to be very poor especially in developing countries., other study conduct in Egypt by Ibrahim et al (2010)⁽³⁰⁾showed that no one reported regular adherence with exercise regimen this finding may be due to lack of knowledge about importance of regular physical activity Malik et al., (2016)⁽³¹⁾who reported deficient knowledge about exercise.

This present study illustrates most of the patients hadn't committed to diabetic diet and only few patients follow diabetic diet ,this finding due to challenging to adhere to their diabetic diet during social visits, weddings, extended travel and working time which make them unable to control food intake and difficult to follow diabetic diet . This considered as a major barriers in controlling blood glucose level, there is a need to increase awareness of patients about importance of adherence to diabetic diet. This agree with study conducted in Egypt by Ibrahim et al (2010) ⁽³⁰⁾who found that only 2.2% of the respondents adhered with dietary regimen and also Ikombele, 2011⁽¹⁷⁾who founds that the most of patients were not following a controlled, planned diet and only 0.9%were following a controlled plan diet. Inconsistent with Malik et al (2016) ⁽³¹⁾who found that lower percentage of participants were not fully adherent to dietary advice.The result also revealed that most of patients can't choose appropriate foods between basic meals ,this finding may be due to lack of knowledge about healthy meal and inadequate income this may significant barriers especially for patient with low income which can't get enough ,appropriate healthy food this supported by Chan et al.(2015)⁽³²⁾;byHolt (2012)⁽³³⁾. The present study revealed that around nearly half of the patients were not examine their feet regularly this finding due to they hadn't know the importance for foot examination andlack of adequate knowledge to specific diabetic foot care

principles which there is a significant barrier to foot care, for diabetes managements. This agrees with study conducted in Saudi Arabia by Dikeukwu et al., 2012⁽³⁴⁾ who revealed that more than half of the diabetics checked their feet regularly, while nearly half didn't check it regularly. This study revealed that two third of patient reported that they Rinse feet well, only less than quarter dry between fingers, always because washing of feet during bath time is a part of most participants daily routine, during ablutions; less than two third of patients wearing shoes always this agrees with study on veterans by Olson et al (2009)⁽³⁵⁾ reported that more than half of respondent know enough in only the following three categories keep feet clean wearing shoes always and check feet regularly.

Regarding aqua check or glucometer the present study reveals that mostly of patients haven't aqua check in the home to measure blood glucose level and the least proportion of the studied patients have aqua check to measure BG level this finding may be due to low income, inability to afford a glucometer at home this is significant barrier to monitor, improve glycemic control and follow up blood glucose value regularly so self-managements for long-term and education are vital to control BG levels, decrease the risk of complications. In the same line near result by Wabe et al, 2011⁽³⁶⁾; Gudina et al, 2011⁽³⁷⁾ found that only (11.6%) had a glucometer and practiced SMBG at home.

The present study represents that most of patients reported that they feel exhaustion after diagnosed with diabetes. This is in the same line with a prevalence study by Jadoonet al., (2012)⁽³⁸⁾ agree also with Kugbey et al., (2015)⁽³⁹⁾.

The present study reveals that above the half of the studied samples were believed that they are diabetic patient only when blood glucose levels become high,

less than two third of patients were believed that they didn't need drug when blood glucose level is normal this supported by Mann et al., (2009)⁽⁴⁰⁾.

Previous research has reported similar findings Mc Cleary-Jones (2011)⁽⁴¹⁾ who demonstrates that the majority of patients weren't able to cope later with diabetes. This finding may be due to lack of knowledge about how to deal with diabetes

Concerning age there were no significant statistical difference between knowledge scores and age. This result was in the same line with Almuallm et al, 2015⁽⁴²⁾ who reports that there was no relation between participants' age and their knowledge regarding diabetes. However, this result disagreed with Hamoudi et al, (2012)⁽⁴³⁾ who founds that there was significant relation between participants' age and their knowledge. In the present there were no significant statistical difference between knowledge scores and gender this is supported by AL Quazaz et al 2011; Ling et al 2015; najid et al 2014^(44,45,46).

The present study reveals that there is a significant statistical difference between knowledge score and educational level, This illustrates also that illiterate patients have lower knowledge score than other categories, its consider barriers to maintain diabetic care, promoting self-managements. Thus, it is vital need to investment on getting rid of illiteracy in order to reduction of diabetic morbidity and mortality. This finding is in agreement with Mohammed et al (2014)⁽¹⁸⁾ who reported a significant positive relationship between the knowledge level and the educational level. This finding is in the same line to other study conducted by Foma et al., (2013)⁽⁴⁷⁾ in Gambia also show that educational level was an important predictor of diabetes awareness; Berhe et al., (2014)⁽⁴⁸⁾ also reported similar result where illiterate patients have poorer

knowledge compared to with university levels patients also with Gautam et al.,(2015)⁽²⁴⁾; Rani et al ,(2008)⁽⁴⁹⁾ indicated illiterate patients had low (diabetes knowledge, self-management behaviors, self-efficacy and continuity of care).

The present study reveals significant statistical difference between knowledge scores and patient's residence where subject who lived in urban area had a higher knowledge score than those lived in rural area. This in line with other studies conducted in Mongolia by Demaio et al., (2013)⁽⁵⁰⁾ and in different regions of India by Deepa et al (2014)⁽⁵¹⁾ shows that inhabitants in urban areas had significantly better knowledge than those in rural areas.

Finally, the findings of the current study pointed out to low level of adherence among T2D patients, with many educational, physical, psychosocial, financial and cultural barriers.

Conclusions:

Diabetes self-management (DSM) refers to the various tasks which patients with T2DM require to carry out and participate in a regular basis as taking medications properly ; SMBG , physical activity, eating a healthy diet, foot examinations regularly , and other self-management activities. the first steps in improving diabetes care and success in diabetes management is identifying and understanding barriers to ensure adherence to diabetes standards of care in the patient's self -management and the clinician interventions .Majority of type 2 diabetic patients have low or lack of adherence to self - managements with many barriers as educational, physical, psychosocial, financial and cultural barriers.

Recommendation

(1) A formal diabetic education program should be established to include self-management education to improve patients' control of diabetes 2)

Comprehensive simple Arabic booklet that includes instructions to improve the knowledge of patients with diabetes to adopting healthy lifestyle and prevent diabetic complication.3)Further researches to different geographical areas and large sample to assess barriers and facilitators to self - managements among type 2 diabetic patients and conducting separate studies about preventive measures of type 2 diabetes is very important.

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