Assessment of Type II Diabetic Patients Regarding Knowledge, Beliefs and Lifestyle Changes Obstacles

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Abstract:

Background: Diabetes is a serious medical condition that affects people all over the world. Living with a lifelong condition like diabetes causes a patient to confront many obstacles, such as knowledge and, beliefs and lifestyle changes. Its proper management necessitates not only the use of medication but also patient knowledge regarding diabetes in order to implement the required lifestyle modifications. **Aim of the study:** To assess type II diabetic patients regarding knowledge, beliefs, and lifestyle changes obstacles. **Research design:** Descriptive research design was utilized in this study. **Setting:** The study was conducted in the internal medicine departments and diabetic outpatient clinic at Qena South Valley University Hospital. **Sample:** Purposive sample of 100 adult patients diagnosed with type II diabetes. **Tools:** Two tools were developed to collect data: A patient interview assessment sheet and a diabetes obstacles questionnaire. **Results:** 97.0 % of the studied type II diabetic patients had unsatisfactory knowledge about their disease. Also, 98.0% of them had obstacles with knowledge and beliefs, as well as lifestyle changes. **Conclusion:** Diabetic II patients had an unsatisfactory level of knowledge regarding diabetes and faced obstacles regarding knowledge and beliefs, as well as lifestyle changes. **Recommendation:** Educational programs should be designed and included in routine diabetes care in hospitals that help patients overcome their obstacles.

Keywords: Diabetes obstacles, Knowledge and belief obstacle, Lifestyle changes obstacle & Type 2 diabetes knowledge.

Introduction:

The International Diabetes Federation (IDF) identified Egypt as having the ninth-highest diabetes prevalence globally. There are more than 8,850,400 diabetes cases, exhibiting a prevalence of 16.2% in the adult population (14.2% for males and 18.2% for females). It is anticipated to be in the sixth position with 13.1 million patients by 2035 **(Abouzid et al., 2022)**.

Diabetes is increasing in intensity as a medical and general health issue, requiring high care costs for its various complications. That may result from the existence of the factors that increase the risk for insulin resistance diabetes in Egypt. Moreover, it is an expanding international health problem; the percentage of cases with type 2 diabetes has gone up dramatically across the world, regardless of income level. By 2030, the prevalence is expected to rise to 578 million; by 2045, it will reach 700 million. An estimated 4 million fatalities globally were attributed to diabetes in 2017, making it one of the top 10 leading causes of death for adults **(Muz et al., 2021)**.

Diabetes is a lifelong metabolic disease characterized by elevated blood glucose levels affecting the pancreas, which cannot produce sufficient insulin or the body cannot use it. The majority of diabetic patients have type 2 diabetes, which is the most widespread type. It is significantly linked to controllable risk factors like weight gain, sedentary behaviors, and improper eating habits. Although genetics and age are influential, lifestyle habits frequently serve as the primary contributors to its onset and advancement. Accordingly, numerous complications occurred, affecting the blood vessels, eyes, kidneys, heart, and nerves **(Dilworth et al., 2021)**.

Otherwise, living alongside an incurable disease such as diabetes leads the patient to face numerous obstacles to coping and effective management. These obstacles include medication, self-monitoring, knowledge and beliefs, diagnosis, relationships with health care professionals, lifestyle changes, coping and advice and support **(Arslan et al., 2020)**. Ignoring these obstacles can result in poor adherence and complications while addressing them improves health and management efficiency **(Fidan et al., 2020; Mohamud & Jeele, 2022)**.

In fact, providing the essential diabets knowledge and skills helps patients to be able to manage their condition, handle emergencies, and modify their

lifestyles. As a result, the patient becomes independent in doing their self-care responsibilities. Importantly, patient education is essential for better outcomes of diabetes self-management, and it should be a fundamental part of high-quality diabetic care **(Okafor et al., 2023).**

Lifestyle modifications reduce the incidence and complications of type 2 diabetes. It is necessary to managing diabetes through eliminating obstacles against eating healthy meals, exercising frequently, and quitting smoking. These changes result in weight loss and improved blood glucose levels, which slow the progression of the disease and minimize its complications **(Metwally et al., 2021)**.

Moreover, medical professionals, particularly nurses, have a crucial role in determining, reducing, and overcoming the obstacles that patients confront. Hence, nurses should define the patients` obstacles to plan effectively for strategies to overcome them and then evaluate the efficacy of these interventions **(Vicdan & Yapar, 2020)**.

Significance of the study:

According to the clinical observation of the researcher, most diabetic patients attending the diabetic clinics at Qena South Valley University Hospital were obese with low blood glucose control. In addition, various complications they have, like hypertension as well as retinopathy, and the majority of them have poor diet and exercise habits. In rural Egyptian governorates, including Qena, low levels of education and illiteracy of people add more obstacles facing patients, including knowledge and beliefs as well as lifestyle changes obstacles that hinder the effects of any educational program the patients may participate in.

Patients usually face obstacles to effective monitoring, which might hinder optimal illness management. Neglecting those obstacles to self-management may lead patients to unfollow self-care counsels and develop complications. If barriers to controlling their condition are overcome, diabetic patients may experience better health and more efficient management of their condition **(Mohamud & Jeele, 2022)**.

Furthermore, many studies in Egyptian healthcare settings revealed differences in patients` diabetes knowledge, and patients who lived in rural areas had the lowest level of awareness **(Metwally et al., 2021)**. Besides, one of those studies was done at diabetic clinics at Qena University Hospital and found that the diabetic patients attending had poor knowledge and practice levels of lifestyle modifications **(Bayumi & Saleh, 2016)**. Despite the importance of the topic, a limited number of research efforts have been undertaken to investigate the obstacles associated with diabetes.

Aim of the study:
To assess type II diabetic patients regarding knowledge, beliefs and lifestyle changes obstacles.

Objectives:
- Assessment of patients` knowledge regarding type II diabetes.
- Assessment of knowledge and beliefs obstacle.
- Assessment of lifestyle changes obstacle.

Research questions:
Q1. Do type 2 diabetic patients have sufficient knowledge about their condition and its management?
Q2. Do diabetic patients have knowledge and beliefs obstacle?
Q3. Do diabetic patients have lifestyle changes obstacle?

Subjects and Method

Research design: A descriptive research design was followed to gather data for this research.

Setting: The researcher gathered data from the internal medicine and diabetic outpatient clinic at Qena South Valley University Hospital.

Subjects: A purposive sample of (100) adult patients their ages were $20 \leq 60$ years, of both sex who have type 2 diabetes, able to communicate verbally and visited the internal medicine and diabetic outpatient clinics.

Exclusion criteria:
- Patients who had cognitive impairment.
- Patients with auditory problems.

Sample: The sample size is determined by using the following equation:

$$n = \frac{N \times p(1-p)}{\left[\left[N-1\times\left(d^2 \div z^2\right)\right]+p(1-p)\right]}$$

N=total patient population size of 300 who admitted with DM in out-patient internal medicine clinics at Qena South Valley University hospital. During year 2022 by
n=100
Z = confidence levels is 0.95 and is equal to 1.96
D= the error ratio is = 0.05
P= the property availability ratio and neutral = 0.50
(Steven, 2012).

Tools of data collection
Two tools were utilized for data collection for this study.

Tool 1:- **Patient interview assessment sheet:**
The researcher developed this tool after reviewing the relevant literature **(Abd-Ellah, 2021; Belal, 2015; Hassan, 2009)**. It used to assess patients demographic and clinical data, it included three main parts.

Part one: Patient's demographic data:
It included the patient's code, age, sex, marital status, level of education, occupation and residence.

Part two: Patient's clinical data:
This part included smoking habits, how long patients have diabetes mellitus, the presence of additional chronic conditions, type of therapy, exercise regimen, nutritional adherence, and diabetes-related problems.

Part three: Assessment of patient's knowledge:
This part was used to assess the patient's knowledge about diabetes; it consists of 25 questions, including 3 questions about the disease, 3 questions about risk factors, 3 questions about signs and symptoms, 7 questions about complications, and 9 questions about treatment and lifestyle, with "true, false, and I don't know" options for each question. Every correct answer gives one degree, while incorrect or "I don't know " answers give zero. The total degrees were computed, and if the patient's scores were 60% or more, that was considered a "satisfactory level of knowledge"; if it was less than 60%, it was considered an "unsatisfactory level of knowledge" **(Chand et al., 2022).**

Tool 2:- Diabetes Obstacles Questionnaire:
This tool was adapted from **Hearnshaw et al. (2007),** consisting of 8 scales, with several items in each that dealt with one obstacle. The obstacles included medication, self-monitoring, knowledge and beliefs, diagnosis, relationships with health-care professionals, lifestyle changes, coping and advice and support. The following two scales were chosen for study by the researcher because not all scales are relevant and can affect by the future designed educational programs:

Part one: Obstacles related to Knowledge and Beliefs:
It was utilized to evaluate the existence or absence of knowledge and beliefs obstacle related to type 2 diabetes and included 10 questions about: diabetes management knowledge, accessing information, understanding information from the literature, understanding information from health care professionals, consistent of diabetes information, consequences of diabetes, treatment for diabetes, severity of type 2 diabetes compared with type 1, benefits of diabetes treatment and seriousness of type 2 diabetes consequences.

Part two: Obstacles related to Lifestyle changes:
It was utilized to evaluate the existence or absence of lifestyle changes obstacle related to type 2 diabetes and included 13 questions about: diabetic diet spoils social life, post-meal hunger, strains of diabetes on personal relationships, diabetes limits normal life, strains of diabetic diet on family, sticking to diet outside home, resenting dietary changes, fitting exercise in lifestyle, ability to afford exercising,

enjoying exercise, motivation to exercise, weight control and ability to change lifestyle.

Each part of the scale is scored on a 5-point Likert scale: "Strongly Disagree (= -2), Disagree (= -1), Neutral (= 0), Agree (= +1), and Strongly Agree (= +2) ". The values of each item on the scale ranged from -2 to +2; if the patients had negative scores, that meant no difficulties they confronted in this area, but positive scores refer to the existence of an obstacle they confronted **(Kahraman et al., 2016).**

Validity and Reliability:
A committee of five experts from academic medical and nursing disciplines at Assuit and South Valley Universities evaluated the tools to verify their alignment with the study's objectives, assessing that they are complete and its contents are accurate. The tools were translated into Arabic and the reliability values, determined using Cronbach's alpha test, and were 0.83 for Tool I and 0.78 for Tool II.

Methods:
Data were gathered over three months, from the beginning of October 2023 to the end of December 2023. The study was carried out in two phases: preparatory and implementation.

Preparatory phase:
This process concluded the following:
- A review of the recent related literature, such as textbooks, papers, journals, periodicals, and magazines.
- Then, the research tools were developed, and their validity and reliability were tested.
- The tools were translated into Arabic by the researcher.

Pilot study
It was conducted on 10 patients constituting 10% of the whole sample, to evaluate the simplicity and utility of the suggested tools for data collection. Those patients were included in our study because no modifications were needed.

Ethical consideration:
Ethical approval was acquired from the research ethics committee of the Faculty of Nursing at Assuit University in March 2023, under ID approval (1120230594), following the acquisition of official permission from the relevant hospital authorities for beginning the study. Oral consent was acquired from the patients involved in the study, ensuring that participation is voluntary and confidential, with the identity of subjects guaranteed through data coding. The researchers explained the study's objective and the participants' right to decline participation or withdraw at any moment.

Data collection phase:
- The researcher attended during the morning shift, three days a week, in the internal medicine departments and diabetic outpatient clinic.

- Each diabetic patient who fulfilled the inclusion criteria had an interview with the researcher, beginning with introducing self to establish an intimate relationship and foster rapport.
- The researcher interviewed the patients individually, lasting about 20-30 minutes.
- Demographic data, clinical data, and knowledge about the disease were assessed by using tool 1.
- The knowledge and beliefs obstacle was assessed by using tool 2, Part 1.

- The lifestyle changes obstacle was assessed by using tool 2, part 2.

Statistical analysis:

The acquired data were verified, encoded, organized, and subjected to statistical analysis utilizing the Statistical Package for Social Sciences (SPSS). Data were displayed in tables and graphs, including numerical values, percentages, mean values, and standard deviations. The Chi-square test and Pearson correlation test were employed as well. The level of significance was set at less than 0.05.

Results:

Table (1): Frequency distribution of demographic data among the studied patients (n=100).

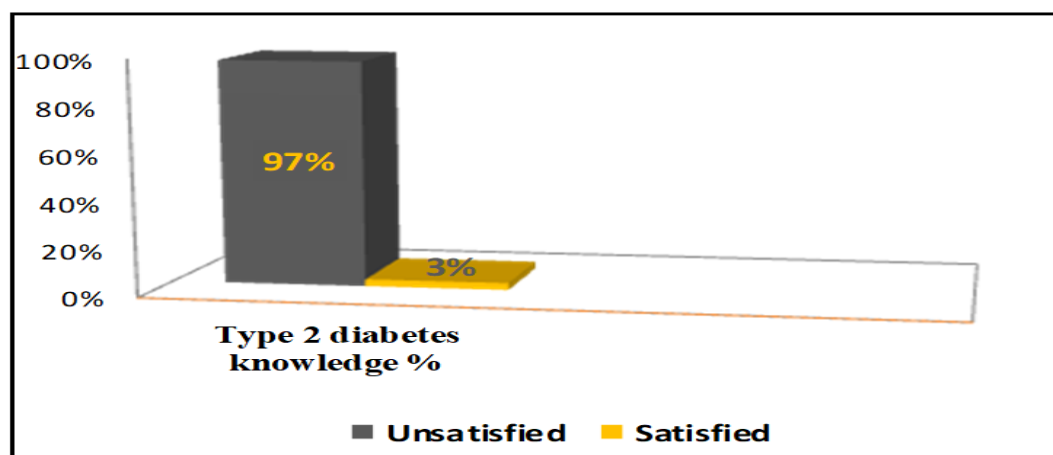| Demographic data	N	%
Age group		
30-39	5	5.0
40-49	32	32.0
50-60	63	63.0
Mean± Std. Deviation	51.45±6.45	
Sex		
Male	40	40.0
Female	60	60.0
Marital status		
Single	10	10.0
Married	72	72.0
Widow	18	18.0
Education level		
Illiterate	23	23.0
Primary	30	30.0
Secondary	27	27.0
High education	20	20.0
Occupation		
Worked	45	45.0
Not worked	9	9.0
Housewife	46	46.0
Residence		
Rural	56	56.0
Urban	44	44.0

Figure (1): Assessment patient level of knowledge about type II diabetes (n=100)

Table (2): Frequency and percentage distribution of the studied type 2 diabetes patients according to knowledge and beliefs obstacle (n=100)

Diabetes Obstacles Questionnaire: Obstacles of Knowledge and Beliefs	Strong disagree		Disagree		Neutral		Agree		Strong agree	
	N	%	N	%	N	%	N	%	N	%
1- I do not know as much as I need to know to manage my diabetes	0	0.0	3	3.0	6	6.0	59	59.0	32	32.0
2- I have difficulty accessing information that is relevant to me personally	0	0.0	14	14.0	19	19.0	47	47.0	20	20.0
3- I have difficulty understanding the information from literature	6	6.0	25	25.0	8	8.0	28	28.0	33	33.0
4- I have difficulty understanding the information from health care professional	2	2.0	24	24.0	25	25.0	37	37.0	12	12.0
5- I think that the information on diabetes is not consistent	4	4.0	32	32.0	28	28.0	29	29.0	7	7.0
6- I do not know as much as I need to know about the consequences of having diabetes	1	1.0	7	7.0	9	9.0	45	45.0	38	38.0
7- I do not know enough about the treatment for diabetes	0	0.0	6	6.0	7	7.0	49	49.0	38	38.0
8- I believe type 2 diabetes is mild compared with type 1	2	2.0	25	25.0	26	26.0	32	32.0	15	15.0
9- I do not know enough about the benefits of diabetes treatment for me personally	1	1.0	15	15.0	16	16.0	50	50.0	18	18.0
10- I don't believe the consequences of type 2 diabetes are serious	4	4.0	24	24.0	30	30.0	21	21.0	21	21.0

Table (3): Frequency and percentage distribution of the studied type 2 diabetes patients according lifestyle changes obstacle (n=100)

| Diabetes Obstacles Questionnaire: Obstacles of lifestyle changes	Strong disagree		Disagree		Neutral		Agree		Strong agree	
	N	%	N	%	N	%	N	%	N	%
1- My diabetic diet spoils my social life	8	8.0	32	32.0	21	21.0	32	32.0	7	7.0
2- I generally still feel hungry after finishing a meal	4	4.0	23	23.0	16	16.0	39	39.0	18	18.0
3- My diabetes has placed a strain on my personal relationships	2	2.0	44	44.0	19	19.0	23	23.0	12	12.0
4- There is little hope of leading a normal life when you have diabetes	3	3.0	41	41.0	15	15.0	29	29.0	12	12.0
5- Changes in my diet have put a strain on my family	1	1.0	39	39.0	20	20.0	28	28.0	12	12.0
6- I have difficulty sticking to my diet when I am away from home	1	1.0	20	20.0	10	10.0	43	43.0	26	26.0
7- I feel resentful that I am obliged to change my eating habits	3	3.0	14	14.0	11	11.0	47	47.0	25	25.0
8- I am unable to fit exercise into my lifestyle	0	0.0	20	20.0	10	10.0	57	57.0	13	13.0
9- I am unable to afford the cost of exercising on a regular basis	0	0.0	17	17.0	15	15.0	48	48.0	20	20.0
10- I haven't found an exercise I enjoy	0	0.0	21	21.0	22	22.0	35	35.0	22	22.0
11- I lack the motivation to exercise	2	2.0	26	26.0	12	12.0	40	40.0	20	20.0
12- Weight control is real problem for me	3	3.0	14	14.0	8	8.0	44	44.0	31	31.0
13- I am not able to change my lifestyle to fit with advice from health care professional	0	0.0	5	5.0	13	13.0	46	46.0	36	36.0
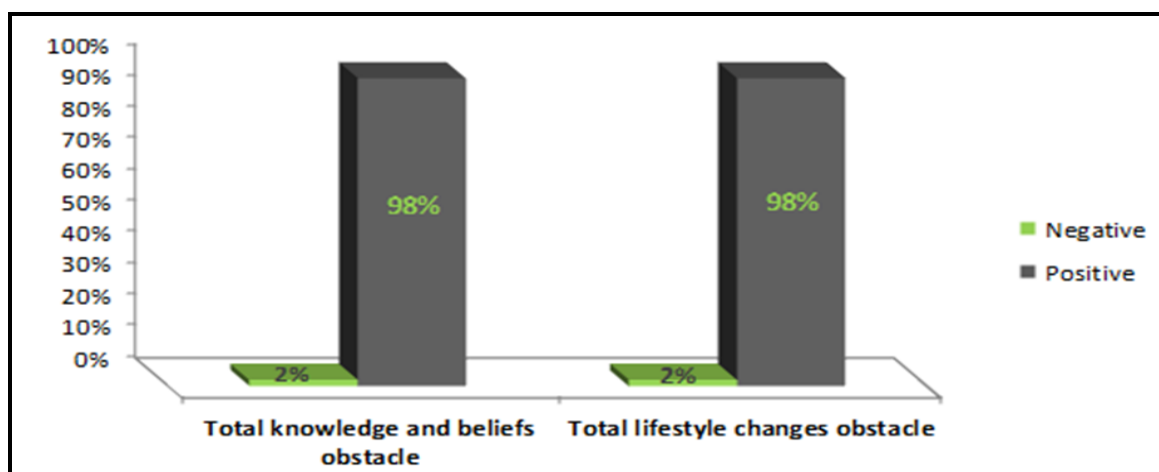
Figure (2): Percentage distribution of studied patients by their total obstacles: knowledge and beliefs as well as lifestyle changes (n=100)

Table (4): Correlation between total: knowledge, knowledge and beliefs obstacle scores and lifestyle changes obstacle scores of studied patients throughout program phases (n=100)

	Knowledge	Knowledge and believes obstacles	Lifestyle changes obstacles
Knowledge		-.572- (.001) **	-.167- (.097)
Knowledge and believes obstacles	-.572- (.001) **		.198 (.048) *
Lifestyle changes Obstacles	-.167- (.097)	.198 (.048) *	

* p≤0.05 (significant)   ***p≤0.01 (highly significant)*   *(Pearson correlation test)*

Table (1): Illustrates that 63% of the studied patients were between 50 and 60 years old, with a mean ± SD of (51.45 ± 6.45) years; 60% were females, 72% were married, 30% were primarily educated, and approximately equal percentages of the studied patients were workers (45%) and housewives (46%), while 56% lived in rural areas.

Figure (1): Illustrates that 97% of the studied patients had an unsatisfactory level of knowledge regarding type 2 diabetes, while only 3% had a satisfactory level.

Table (2): Illustrates that (59.0%, 50.0%, 49.0% & 47.0%) of the studied patients agreed with that they do not know enough to manage diabetes, the benefits of diabetes treatment, the treatment for diabetes and have difficulty accessing information, respectively. Also, 33.0% & 38.0% of the studied patients strongly agreed with that they have difficulty understanding the information from literature and do not know enough about the consequences of having diabetes.

Table (3): Illustrates that (57.0%, 48.0%, 47.0% & 46.0%) of the studied patients agreed with that, they are unable to fit exercise into lifestyle, afford the cost of exercising on a regular basis, feel resentful that they obliged to change eating habits and not able to

change lifestyle to fit with advice from health care professional, respectively.

Figure (2): Illustrates that 98% of studied patients had obstacles related to knowledge and beliefs as well as lifestyle changes, while only 2% did not have those obstacles.

Table (4): Illustrates a significant negative correlation between total knowledge as well as knowledge and beliefs obstacle scores of studied patients. There was also a negative correlation between total knowledge and lifestyle changes obstacle scores of studied patients. The same table showed that knowledge and beliefs obstacle scores had a significant positive correlation with lifestyle changes obstacle scores of investigated patients.

Discussion:

This study was conducted to assess type II diabetic patients regarding knowledge, knowledge and beliefs obstacle and lifestyle changes obstacle. A limited number of research efforts have been undertaken to investigate the obstacles associated with diabetes, and this study focused on the most common obstacles facing type 2 diabetic patients.

The current study indicated that fewer than two-thirds of the examined patients were aged between 50 and 60. This may be attributed to advanced age, which may lead to deficient insulin secretion and increased insulin resistance, which is the main cause of hyperglycemia.

This result was supported by a study by **(Abd-Ellah et al., 2021)**, who reported that more than one-third of the studied patients' ages ranged between 55 to less than 65 years old. Further validation by **(Hashim et al.,2020)** who revealed that more than one-third of the studied patients' ages ranged between 50 to 55 years old.

As regards sex, it was determined that three-fifths of the examined patients were females. That may be related to women seeming to be at higher risk for type 2 diabetes than men, including obesity, psychological stresses, hormone fluctuations, and gestational diabetes.

This result was in accordance with **(Okafor et al., 2023)**, who indicated that over fifty percent of participants were female. Also, the result was supported by **(Üren & Karabulutlu, 2018)** who showed that about three-fifths of the subjects were female. On the contrary, a study carried out in Yemen by **(Bhzeh et al., 2019)** who found that most of the subjects were males.

Regarding marital status, the researcher found that less than three-quarters of the studied patients were married. This may be because most of the studied sample was between 50 and 60 years old, and the majority of people at this age are married.

This result is supported by **(Muz et al., 2021),** who revealed that married persons comprised nearly three-quarters of the patients surveyed. Also, this finding is to some extent, in accordance with **(Taha et al., 2016),** who demonstrated that the marital status of more than three-quarters of the subjects under study were married.

Regarding education, the study illustrated that less than one-third of the studied patients had primary education. This result may be related to schools being located far away in most rural areas and people having poor financial statuses.

This finding is supported by **(Ranjbaran et al., 2022),** who reported that nearly one-third of the study and control groups had primary education. Another validation by **(Arslan et al., 2020)** who demonstrated that about half of the participants were primary school graduates.

However, this result was inconsistent with **(Mohamed et al., 2024)**, who reported that less than one-third of the studied patients had a secondary educational level.

Regarding occupation, housewives comprised fewer than half of the patients surveyed in this study. This result is because women comprise the largest demographic in the sample, and it is often believed in Qena communities` culture that women should remain at home and take care of children.

This result was congruent with **(Mostafa et al., 2018),** who discovered that housewives comprised about two-thirds of the experimental and control groups. It was also supported by **(Pamungkas & Chamroonsawasdi, 2020)**, who demonstrated that nearly two-thirds of the experimental group and two-fifths of the control group were housewives.

On the opposite of this result, **(Mohamud & Jeele, 2022)** reported that nearly three-fifths of patients were employed.

According to the present study's analysis of residence data, illustrated that more than half of the assessed patients resided in rural areas. From the researcher's point of view, this could be related to the rural nature of Qena and its villages.

This finding agreed with **(Azzam et al., 2021)**, who reported that more than two-thirds of patients were from rural areas. On the other hand, the result of a study by **(El-Kebbi et al., 2021)** was in contrast with the current study, which demonstrated that the highest prevalence of type 2 diabetes in Egypt, Tunisia, and Lebanon was found in urban compared to rural areas.

According to patients` knowledge regarding diabetes, the current research revealed that most participating patients had an unsatisfactory knowledge level about diabetes. Regarding the researcher, the reason for the patients' inadequate knowledge was that they were not given any educational programs.

This outcome was aligned with **(El-Sayed et al., 2019)**, who demonstrated that the majority of studied patients' total knowledge was unsatisfactory at the pretest. In addition, that result corresponded to **(Abd-Ellah et al., 2021)**, who reported that three-quarters of the subjects under the study had poor knowledge before implementing the program. Also, the result was consistent with **(Bhagavathula et al., 2018)**, who approved that the majority of the studied subjects with diabetes had poor knowledge about the disease.

As regards the knowledge and beliefs obstacle, the study demonstrated that nearly all patients faced an obstacle with knowledge and beliefs. The existence of knowledge obstacle e.g. (not enough knowledge to manage diabetes, not enough knowledge about the diabetes treatment as well as its benefits and the difficulty of accessing information) may be due to decreased numbers of medical and nursing staff, lack of time due to other duties, absence of teaching skills, and patients' disinterest in diabetes education.

This result was in accordance with **(Abouelala et al., 2022),** who observed that, after assessing the studied type 2 diabetic patients with Diabetes Obstacle Questionnaire (DOQ), they faced an obstacle in

knowledge and beliefs. The result was in harmony with **(Vicdan & Yapar, 2020),** who determined that type 2 diabetic patients faced several obstacles, including knowledge and beliefs obstacle.

However, the findings of the study by **(Arslan et al., 2020)** went against these results, as they indicated negative mean scores for knowledge and beliefs obstacle after assessment of DOQ, which indicated that the patients did not have obstacles in this area.

Regarding the lifestyle changes obstacle, the current study showed that approximately everyone who participated faced the obstacle of lifestyle changes e.g. (unable to fit exercise into lifestyle, afford the cost of exercising on a regular basis, feel resentful that they obliged to change eating habits and not able to change lifestyle to fit with advice from health care professional). From the researcher's perspective, this obstacle may be related to some barriers facing patients, e.g., lack of education, decreased motivation, absence of family support, financial problems, and the patient's overall health.

This result agreed with **(Vicdan & Yapar, 2020; Abouelala et al., 2022),** who used DOQ in assessing type 2 diabetic patients and found that they had more obstacles, including lifestyle change obstacle. The current result is also confirmed by **(FİDAN et al., 2020),** who reported that the subjects experienced coping obstacles with their diabetes disease, including lifestyle modifications.

Another support by **(Mohamud & Jeele, 2022)**, who reported that the majority of participating patients had poor knowledge, attitude, and practice regarding lifestyle modification. In addition, a study was done at Qena University Hospital by **(Bayumi & Saleh, 2016)**, who reported that most type 2 diabetic patients visiting the health care facilities exhibited inadequate knowledge and practices regarding lifestyle modification, although they had a positive attitude toward healthy lifestyle habits.

In contrast, **(Arslan et al., 2020)** stated that the participating patients had negative mean scores of lifestyle changes obstacle at the DOQ assessment, confirming that they did not have an obstacle. Also, this finding disagreed with (**T et al., 2023)**, who said that almost all subjects had no problem regarding lifestyle modifications on the DOQ assessment.

As regards the correlation between total knowledge, knowledge and beliefs obstacle scores, and lifestyle changes obstacle scores of studied patients, research findings demonstrated a significant negative correlation between total knowledge as well as knowledge and beliefs obstacle scores of studied patients. In the researcher's opinion, the absence of knowledge regarding illnesses and health issues, raises patients' fear of their condition and undermines their emotional stability toward treatment, resulting in

less understanding of their condition, and they are not actively involved in enhancing the therapeutic outcome which aggravates the knowledge obstacle.

 Furthermore, a negative correlation existed between total knowledge and lifestyle changes obstacle scores. That may be related to the low educational level, which leads to less awareness of the importance of lifestyle changes to control disease and maintain health. Besides, the patients living in rural areas faced more difficulties and had fewer facilities to help them make lifestyle changes.

While a statistically significant positive correlation was found between the knowledge and beliefs obstacle scores as well as the lifestyle changes obstacle scores of studied patients. This result was related to the presence of obstacle related to knowledge and beliefs, which indicate a lack of patients` awareness of their illness and its management, which in turn acts as an obstacle related to lifestyle changes.

This result was aligned with **(Fidan et al., 2020)**, who revealed that patients with low health literacy experienced more obstacles. Another validation by **(Arslan et al., 2020)** who demonstrated that patients who were not educated about diabetes had an obstacle in the knowledge and belief area. Additionally, **(Metwally et al., 2019)** reported that patients with type 2 diabetes who get information about lifestyle changes can better overcome the main barriers to adopting a healthy lifestyle.

Finally, the results were in the same line with **(Subramaniam et al., 2022)** who demonstrated the relationship between knowledge and a healthy lifestyle, showing that lack of knowledge is a barrier to a healthy lifestyle as it is a facilitator of a healthy lifestyle. That suggests that obstacles of knowledge and beliefs and lifestyle changes are positively correlated.

Conclusion:

Based on the results of the present study, it can be concluded that:

All of the patients experienced inadequate level of knowledge about diabetes; nearly all of the patients faced obstacles with knowledge and beliefs as well as lifestyle changes. Moreover, a significant adverse correlation between total knowledge and obstacles scores of studied patients regarding knowledge & beliefs as well as lifestyle changes. While a significant positive correlation existed between knowledge and beliefs obstacle score as well as lifestyle changes obstacle score.

Recommendations:
- Patients diagnosed with Type 2 diabetes should be provided with a structured educational program from the first decision of diagnosis.
- Education programs must be implemented consistently for diabetic patients and should be involved in routine hospital care.
- Additional research involving an extensive population of type 2 diabetic individuals is necessary to validate the findings and their applicability.
- Further nursing programs should consider the effect of coping obstacles that hinder the efficiency of their educational programs.

Reference:

Abd-Ellah, S.M., Azer, S.Z., Mostafa, N.M., & EZZ Eldeen, M,E. (2021): Effect of Self – Management Training on Knowledge and Glycemic Control for Patient with Diabetic Foot. Assiut Scientific Nursing Journal, Vol. (9), No. (24), PP: (202-212)**.**

Abouelala, F. M., El_Adham, N. A., Mohamed, N. Y., Mohamed, O. H. A., & Eldeeb, A.M.E. (2022): Coping Obstacles among Patients with Type 2 Diabetes: A Cross-Sectional Study. Egyptian Journal of Health Care, Vol. (13), No.(2), PP:1963-1952.

Abouzid, M. R., Ali, K., Elkhawas, I., & Elshafei, S. M. (2022): An Overview of Diabetes Mellitus in Egypt and the Significance of Integrating Preventive Cardiology in Diabetes Management. Cureus, Vol. (14), No.(7), PP: e27066. DOI 10.7759/cureus.27066.

Arslan, B., Duman, O., & Özdelikara, A. (2020): Determining the Obstacles of Type 2 Diabetes Patients. Middle Black Sea Journal of Health Science, Vol. (6), No.(1), PP:37-44.

Azzam, M.M., Ibrahim, A.A., & Abd El-Ghany, M. (2021): Factors affecting glycemic control among Egyptian people with diabetes attending primary health care facilities in Mansoura District. The Egyptian Journal of Internal Medicine, No. 33.

Bayumi, H.A.E., & Saleh, H.A.O., (2016): Knowledge, attitude, and practice of diabetic patients (type II) regarding lifestyle modification at Qena University Hospital in Upper Egypt. Journal of Health, Medicine and Nursing, Vol. (27), PP: 56–62.

Belal A.M.E. (2015): Assessment of type II diabetic patient's knowledge and adherence to the therapeutic regimen at Mansoura University Hospital. Unpublished Master thesis. Faculty of Nursing, Mansoura University.

Bhagavathula, A.S., Gebreyohannes, E.A., Abegaz, T.M., & Abebe, T.B., (2018): Perceived Obstacles Faced by Diabetes Patients Attending University of Gondar Hospital, Northwest Ethiopia. Front. Public Health, Vol. (6), No. (81).

Bhzeh, N.M., Mekkawy, M.M., & Al-ezzy, Y.A., (2019): Khat abusing: Effect of Educational Program about Khat Abusing on Self-Care Adherence for Diabetic Patients in Sana'a, Yemen Republic. Assiut Scientific Nursing Journal, Vol. (7), No. (16), PP: 110–119.

Chand D., Mohammadnezhad M. & Khan S. (2022): Levels and Predictors of Knowledge, Attitude, and Practice Regarding the Health Hazards Associated With Barber's Profession in Fiji. : The Journal of Health Care, Vol. (59), PP: 1–10.

Dilworth, L., Facey, A., & Omoruyi, F., (2021): Diabetes Mellitus and Its Metabolic Complications: The Role of Adipose Tissues. Int J Mol Sci, Vol. (22), No. (14), PP:7644. doi: 10.3390/ijms22147644. PMID: 34299261; PMCID: PMC8305176.

El-Kebbi, I.M., Bidikian, N.H., Hneiny, L., & Nasrallah, M.P., (2021): Epidemiology of type 2 diabetes in the Middle East and North Africa: Challenges and call for action.World Journal of Diabetes WJD, Vol. (12), No.(9), PP: 1401–1425.

El-Sayed, S.M., Taha, N.M., Elkhashab, M.N.M., & Sakr, M.D., (2019): Effect Of An Educational Program On Knowledge, Practice, And Self-Efficacy Of Patients With Type 2 Diabetes Mellitus. Mansoura Nursing Journal (MNJ), Vol. (6), No. (1), PP:23-37.

Fidan, Ö., Takmak, Ş., Zeyrek, A.Ş., & Kartal, A., (2020): Type 2 Diabetes Mellitus: Obstacles in Coping. The Journal of Nursing Research, Vol. (28), No. (4), PP: e105.

Hashim, M.J., Nurulain, S.M., Riaz, M., Tanveer, A., & Iqbal, M., (2020): Diabetes Score questionnaire for lifestyle change in patients with type 2 diabetes. Clinical Diabetology, Vol. (9), No. (6), PP: 379–386.

Hasaan B.G.A. (2009): Factors affecting compliance of diabetic patients toward therapeutic regiment. Unpublished Master thesis. Faculty of Nursing, Zagazig University.

Hearnshaw, H., Wright, K., Dale, J., Sturt, J., Vermeire, E., & Royen, P., (2007): Development and Validation of the Diabetes Obstacles Questionnaire (DOQ) to Assess Obstacles in Living with Type 2 Diabetes. Diabetic Medicine, Vol. (24), No.(8), PP:878-82.

International Diabetes Federation (IDF) (2021): IDF Diabetes Atlas, Middle East and North Africa, 10th edition. Available at:

https://diabetesatlas.org/data/en/region/4/mena.html.

Kahraman, G., Gungor, T.N., Baydur, H., Ozmen, D., & Ozmen, E., (2016): The validity and reliability study of the diabetes obstacles questionnaire scale in type-2 diabetes patients. Anadolu Psychiatry Journal, Vol. (17), No.(1), PP: 33–4.

Mohamud, M.F., & Jeele, M.O.O., (2022): Knowledge, attitude, and practice regarding lifestyle modification among type 2 diabetes patients with cardiovascular disease at a Tertiary Hospital in Somalia. Annals of Medicine and Surgery, Vol. (9), No. (79), PP:103883.

Metwally, A.M., Yousof, H., Elkholy, M.M., Eletreby, L.A., Barakat, A.A., Abd El Dayem, S.M., Abdelrahman, M., & Eldeeb, S.M., (2021): Determinants Influencing Awareness and Healthy Practices among a Sample of Insulin-dependent Diabetic Egyptian Patients: A Rural Community-based Study. Macedonian Journal of Medical Sciences, Vol. (9), No. (E), PP:500-508.

Metwally, A.M., Soliman, M., Abdelmohsen, A.M., Kandeel, W.A., Saber, M., Elmosalami, D.M., Asem, N., & Fathy, A.M., (2019): Effect of Counteracting Lifestyle Barriers through Health Education in Egyptian Type 2 Diabetic Patients. Maced J Med Sci [Internet], Vol. (7), No.(17), PP:2886-94.

Mohamed H.A., El Sayed, S.M., & Mahmoud, D.M., (2024): Effect of Educational Guidelines on Diabetic Patients' Knowledge, Attitude, and Self-Efficacy Regarding Use of Artificial Pancreas. Evidence-Based Nursing Research, Vol. (6), No. (3).

Mostafa, N.M., Ahmed, G.H., & Anwar, W., (2018): Effect of educational nursing program on quality of life for patients with type II diabetes mellitus at Assiut University Hospital. Journal of Nursing Education and Practice, Vol. (8), No.(11), PP:61.

Muz, G., Yüce, G.E., Yıldırım, C., & Dağdelen, M., (2021): Obstacles and Related Factors Faced by Individuals with Type 2 Diabetes in Managing Diabetes. Educ Res Nurs, Vol. (18), No.(4), PP: 389–395.

Okafor, C.N., Onyenekwe, C.C., Okonkwo, U.P., Umunnah, J.O., Okoro, C.C., Mbanuzuru, A.V., Agunwah, U.E., Odira, C.C., Makata, E.N., & Nwankwo, C.M., (2023): Effect of Educational Intervention Program on Self-Efficacy of Individuals with Type 2 Diabetes Mellitus in South-East, Nigeria. Nutrition and Metabolic Insights, Vol. (16), PP: 1–8.

Pamungkas, R.A., & Chamroonsawasdi, k. (2020): Self-management based coaching program to improve diabetes mellitus self-management practice and metabolic markers among uncontrolled type 2 diabetes mellitus in Indonesia: A quasi experimental study. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, Vol. (14), PP: 53-61.

Ranjbaran, S., Shojaeizadeh, D., Dehdari, T., Yaseri, M., & Shakibazadeh, E., (2022): The effectiveness of an intervention designed based on health action process approach on diet and medication adherence among patients with type 2 diabetes: a randomized controlled trial. Diabetology & Metabolic Syndrome, Vol.(14), No.(3).

Steven, K. Th., (2012): Sampling, sample size, 3rd ed., PP:59-60.

Subramaniam, M., Devi, F., AshaRani, P.V., Zhang, Y., Wang, P., Jeyagurunathan, A., Roystonn, K., Vaingankar, J.A., & Chong, S.A., (2022): Barriers and facilitators for adopting a healthy lifestyle in a multi-ethnic population: A qualitative study. PLOS ONE, Vol. (17), No.(11), PP: e0277106.

T, R., R, M.M., Kumar, N., Hegde, K., Unnikrishnan, B., Mithra, P., Holla, R., Suma, B., Rao, A.M., Nikitha, P., Sahama, & M., A.R., (2023): Obstacles for self-management practices among diabetes patients: A facility-based study from Coastal South India. F1000Res, Vol.(1), No.(17). DOI: 10.12688/f1000research.138146.1.

Taha, N.M., Zaton, H.K., & Abd Elaziz, N.A., (2016): Impact of a health educational guidelines on the knowledge, self-management practice and self-efficacy of patients with type-2 diabetes. Journal of Nursing Education and Practice, Vol. (6), No. (9).

Üren, Y., & Karabulutlu, E.Y., (2018): Investigating the Factors that Complicate Diabetes Control in Patients with Type 2 Diabetes. ARAŞTIRMA, Vol.(5), No.(3), PP:376-386.

Vicdan, A.K., & Yapar, Ü.D., (2020): Determination Of The Obstacles To Coping With Diabetes In The Type 2 Diabetic Patients. International Anatolia academic online journal, Vol. (6), No. (1).