

## KNOWLEDGE AND QUALITY OF LIFE AMONG ADULT WITH TYPE II DIABETES MELLITUS

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### Abstract

**Background:** Type II diabetes mellitus (T2DM) is a chronic condition that needs complete self-management, which is severely guided by a patient's understanding of the disease, their everyday health behaviors, and their total well-being. **Aim:** to assess knowledge and quality of life among adults with type II diabetes mellitus. **Design:** A descriptive correlational research design was utilized in this study. **Setting:** The study was conducted at Al Bandar Primary Health Care Center, Yanboa Ebahr, KSA. **Sample:** A purposive sample 124 patients with diabetes type II attended chronic diseases clinic. **Tools:** Data was collected using three tools. 1<sup>st</sup>: demographic and medical data questionnaire, 2<sup>nd</sup>: adult knowledge questionnaire regarding diabetes, and 3<sup>rd</sup>: MDQoL-17 questionnaire for adults regarding diabetes type II. **Results:** The results revealed that (44.5%) had satisfactory level of total knowledge scores and (55.6%) had a better quality of life. **Conclusion:** there were a highly statistically significant differences between males and females' patients with diabetes type II regarding their knowledge and quality of life where mean knowledge for female patients was higher than males while mean quality of life of males' patients were higher than females. **Recommendations:** The health care organizations should develop structured, culturally tailored diabetes education programs.

**Keywords:** Type II Diabetes; Knowledge, Quality of Life; Diabetes Education.

### INTRODUCTION

The World Health Organization reported that Saudi Arabia has the second highest prevalence of diabetes in the Middle East and ranks seventh globally. Approximately 8.5% of the Saudi population is estimated to be living with diabetes, with prevalence rates continuing to increase in recent years. The Type 2 DM (T2DM) affects individuals across all age groups; however, it is gradually prevalent among adolescents and young adults (ages 15–34). Beneficially, T2DM is preventable if risk factors are identified early and enhancing awareness of the risk factors help reduce the burden of T2DM and its complications. (Alqahtani, Elnaggar, Alshehri, Khunti & Alenazi, 2023).

The individual knowledge regarding diabetes served as the foundational keystone for the effective management of Type II Diabetes Mellitus (T2DM), as a patient's thoughtfulness of the disease directly impacts their capacity for informed decision-making. It incorporates a comprehensive grasp of the pathophysiology of insulin resistance, the significance of glycemic values, and the early recognition of both acute and chronic complications. It is not merely the retention of facts but a lively requirement for self-efficacy. Furthermore, a

lack of sufficient knowledge regarding T2DM long-term risks, such as retinopathy and nephropathy, often creates a barrier to proactive commitment to healthcare advice. Consequently, integrating structured diabetes education into primary care is recognized as vital strategy to bridge the gap between clinical references and patient understanding (wang et al.,2024) (American Diabetes Association, 2024)

The quality of life for adults living with T2DM, is a multi-dimensional structure that incorporates physical functioning, psychological well-being, social integration, and environmental satisfaction. The chronic burden of managing a persistent daily regimen, coupled with the fear of future complications and diabetes distress, can substantially destroy a patient's sense of vitality and emotional stability. Comorbidities presence and the psychosocial impact of "treatment fatigue" are major determinants of poor quality of life, often leading to a cycle of decreased motivation and health decline. Conversely, a high quality of life is frequently observed in patients who receive strong social support and successfully integrated diabetes management into their daily routines without significant disruption to their social roles. The adults living with T2DM quality of life is not just as a secondary outcome, but as a primary indicator of the success of the therapeutic relationship and the overall effectiveness of the healthcare intervention (Aliche & Idemudia, 2024)

### **Significance**

Diabetes mellitus is a significant public health concern in Saudi Arabia, with alarming prevalence rates and associated health complications. The ever-increasing prevalence indicated gaps in people awareness, as adequate knowledge of diabetes is associated with better disease attitudes, management, reduced complications, and improved individuals' quality of life outcomes.

The complications associated with type II diabetes mellitus are severe, with study done by Alghamdi et al., 2023 regarding the prevalence of diabetic retinopathy and its association with quality of life among diabetic patients in Saudi Arabia showing that around 30% of individuals with diabetes experience diabetic retinopathy, and 15% suffer from diabetic neuropathy. These complications significantly impair quality of life and increase healthcare costs.

Another study done by Almalki et al., 2023 on Quality of life in diabetic patients in Saudi Arabia: A systematic review indicates that individuals with diabetes in Saudi Arabia report lower quality of life compared to the general population. The study found that the overall QoL scores of diabetic patients were significantly lower, particularly in physical and emotional well-being (Alghamdi et al., 2023) (Almalki et al., 2023)

Also, Kingdom Saudi Arabia study by Flimban, Abduljabbar, Ragab (2025), which about "Knowledge, attitude, and practices (KAP) of patients with diabetes towards diabetes mellitus" it stated that the knowledge level of patients with diabetes was relatively low, indicating a significant concern among participants, and regarding diabetes-related practices, the practice level of patients with diabetes was moderate.

Also, Iraq study by Al-Baghdadi, Hamza, Hassan (2025), which about “Quality of Life Among Type II Diabetes Mellitus Patients” it stated that individuals with T2DM who engaged in lifelong self-care had moderate quality of life in terms of their physical, psychological, social, and environmental well-being.

Understanding the relation between T2DM patients’ knowledge and their daily practices provides essential insights for developing targeted educational programs, potentially leading to improved quality of life outcomes. (Flimban, Abduljabbar & Ragab, 2025) (Al-Baghdadi, Hamza, Hassan, 2025)

### **Aim of the study**

The aim of this study is to assess knowledge and quality of life among adults with type II diabetes mellitus

### **Research question**

Q.1: What is the level of knowledge among adults with type II diabetes mellitus?

Q.2: What is the relation between diabetes knowledge, and overall quality of life of adults with type II diabetes mellitus?

## **SUBJECTS AND METHODS**

### **Research Design**

A descriptive correlational research design was utilized in this study.

### **Study Setting**

The study was conducted in Al Bandar Primary Health Care Center. It was located at Yanboah Ebahr Governorate, Kingdom Saudi Arabia

### **Sampling technique**

A purposive sample of 124 patients with diabetes type II were recruited.

### **Inclusion criteria:**

- Adults (19 -59 years old) diagnosed with diabetes (Type II).
- Adults free from psychiatric or cognitive disorders.

### **Sample size**

Sample size was estimated using NQuery statistical package, version 7.0, Los Angeles, CA.

$$n = N/(1+N(e)^2)$$

Total population 250

Sample size 124

### Data Collection Tools:

Three tools for data collection utilized to conduct the present study included the following:

**The First Tool** (Demographic and medical data structured questionnaire for adults with diabetes type II: It was developed by the investigator: It consisted of two parts:

**1stPart: demographic characteristics of adults with diabetes type II:** It included age, gender, marital status, level of education, place of residence, occupation, number of family members and income.

**2nd Part: Medical data of adults with diabetes type II:** It included family history of diabetes, relative degree with diabetic members in family, relation between parents, other health problems, time of suffering from diabetes, diabetes duration age of onset, last level of blood sugar and type of medication.).

**The Second Tool (Adult Knowledge questionnaire regarding diabetes type II:** It was developed by investigator, guided by the literature (García, Brown, & Hanis, 2023, Roystonn, et al., 2022, Schapira, et al., 2017, Fitzgerald, et al., 2016; & Collins, et al., 2011), to assess adult knowledge questionnaire regarding diabetes type II. It consisted of 24 questions regarding type of disease, definition, types of diabetes, definition of type I and II diabetes, symptoms, treatments for type I and II, complications, symptoms of hypoglycemia, lower blood sugar level, causes of hypoglycemia, treatment of hypoglycemia, prevention of hypoglycemia, symptoms of hyperglycemia, high blood sugar level, causes of hyperglycemia, treatment of hyperglycemia, prevention of hyperglycemia, prevention of diabetes complication and source of knowledge.

**Scoring system** Knowledge was calculated as follows: correct complete answer was scored two, correct incomplete answer was scored one and incorrect will be scored zero. The total score of knowledge was computed by summing the correct responses of all questions (46 scores) excluding the question related source of knowledge. The level of knowledge was classified into three levels as satisfactory knowledge 76 % - 100 % (35-46 scores), unsatisfactory knowledge < 76% (< 35 scores) (Roystonn, AshaRani, Kumar, Wang, Abdin, Sum, et al., 2022).

**The Third tool (MDQoL-17 questionnaire for adults regarding diabetes type II:**

MDQoL-17 questionnaire adopted from Acharya et al. (2014). MDQoL-17 consists of 17 questions that comprise seven domains. physical functioning (3 items), role limitations due to physical health problems (1 item), role limitations due to personal or emotional problems (2 items), emotional well-being (3 items), social functioning (4 items), energy fatigue (1 item), and general health perceptions (3 items).

This was used to assess the QoL in Type II diabetes mellitus patients with and without complications and get a better understanding of the patients' perspective regarding the disease and impact of disease on their QoL. MDQoL questionnaire was translated to different languages by Acharya et al. (2014).

### **Scoring system:**

All the contents were scored so that a high score depicts a more favorable health state. The possible scores were 0-100; 0 being the minimum and 100 being the maximum score. Scores represented the percentage of total possible score achieved. MDQoL-17 was expressed as a percentage of the total QoL Score for ease of comparison and analysis. Those patients with a QoL score of more than 70 had a better QoL, those with a QoL score of 50-70 had a moderate QoL, and those with less than 50 had a poor QoL.

**Validity:** three experts' opinion to a panel of three expert professors in the field of community health nursing from Faculty of Nursing, Cairo University. The investigator asked the experts to link each objective with its respective items; assess the relevancy of the item to the content addressed by objectives and judge if they believe the items on the tool adequately represent the content in the domain of interest.

**Pilot Study:** Prior to the main data collection, a pilot test of the data collection tools was conducted with a small sample of parents to identify any issues with the clarity or relevance of the questions. Feedback was used to refine the tools as necessary.

**Ethical considerations:** Approval was obtained from the Research Ethics Committee at Faculty of Nursing-Cairo University. The investigator obtained approval from patients and inform the patients about the purpose and nature of the study and emphasized that participation in this study is voluntary; each subject has the right to withdraw from the study when he wants. Written informed consent was obtained from each participant. Anonymity and confidentiality were assured through coding the data. Subjects were assured that this data will not be reused in another research without their permission, and the data collected was used for this research only. There is no harm will be felt on the participants in this study.

### **Procedure**

The data collection for the study was conducted in a systematic and ethical manner to ensure the reliability and validity of the findings. The following steps outline the procedures:

- Upon receiving the formal written approval from the Faculty of Nursing Cairo University to conduct the study, an official written permission to collect data was obtained from the director of the selected primary health care centers.
- Also written consent was obtained from every participant who agreed to participate in the study. The investigator visited the outpatient clinic 2 days /week to meet each participant individually and complete the data collection tools that took 30 - 45 minutes.
- Structured interviewing and adult knowledge questionnaire took 15 minutes to be filled out then investigator completed reported practices checklist and MDQoL-17 questionnaire for adults with type II diabetes in 20 minutes.
- The investigator collected data from participants in a separate room. The research investigator met the study participants at the waiting area of these clinics.

### Statistical analysis:

Upon completion of data collection, the data were scored, tabulated and analyzed by computer using the “Statistical package for the social sciences” (SPSS) program version 27. Descriptive statistics analysis was utilized as frequency, mean and standard deviation to analyze data. Level of significance was set at  $p = 0.05$ . P value was the degree of significance. Descriptive as well as inferential statistics were utilized to deal with the collected data as t- test.

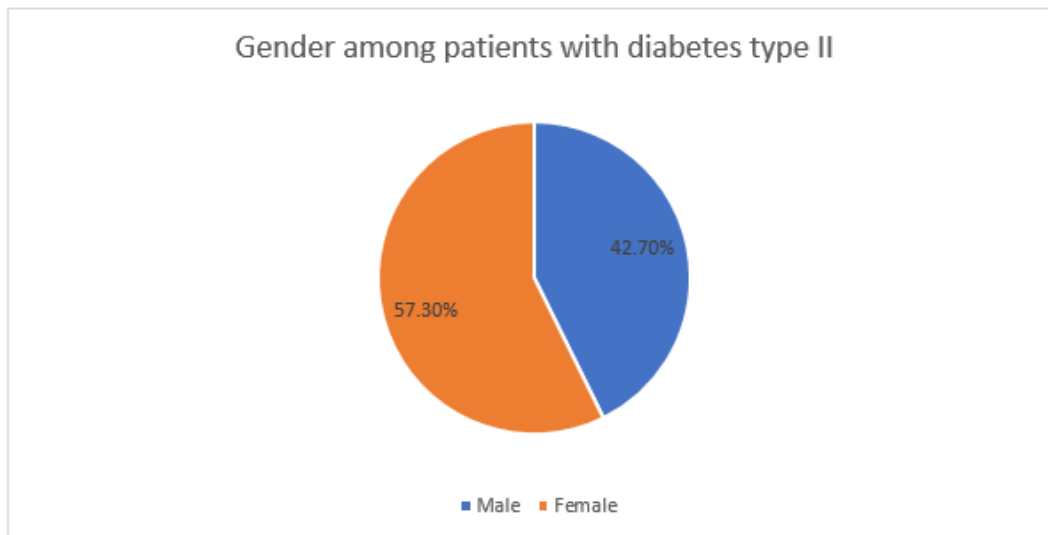
### RESULTS

**Table 1** showed that 32.3% of selected patients with type II diabetes aged from 40 to 49 with mean age equal  $39.7 \pm 10.1$ . Regarding level of education, 56.5% of the selected patients had university education and 97.6% of them lived in urban areas.

**Table 1: Percentage Distribution of Demographic data of the selected patients with diabetes type II (n=124)**

Demographic data	No.	%
<b>Age (in years)</b>		
20<29	23	18.5
30<39	37	29.8
40<49	40	32.3
50-59	24	19.4
Mean $\pm$ SD	$39.7 \pm 10.1$	
<b>Level of Education</b>		
Primary	1	.8
Elementary	10	8.1
Secondary	24	19.4
University	70	56.5
Diploma	3	2.4
Post graduate	16	12.9
<b>Work</b>		
Yes	109	87.9
No	15	12.1
<b>Occupation</b>		
Governmental	109	87.9
House wife	6	4.8
Pension	9	7.3
<b>Enough Income</b>		
Yes	78	62.9
No	46	37.1
<b>Place of Residence</b>		
Rural	3	2.4
Urban	121	97.6

**Figure 1** illustrated that 57.3 % of the patients with diabetes type II were female while 42.7 of them were male



**Figure (1): Gender among patients with diabetes type II**

**Table 2** shows that 55% of patients with type II diabetes did have family history related diabetes while 87.9% of them did not have any health problems except diabetes and 37.15% of selected patients suffered from diabetes from one to 3 years.

**Table (2): Percentage Distribution of Medical History of the Selected Patients with Diabetes Type II (n=124)**

Medical history	No.	%
<b>Family History</b>		
Yes	93	75
No	31	25
<b>Relative degree ( n=55)</b>		
First degree	48	67.5
Second degree	9	7.3
<b>Father mother relation</b>		
Yes	79	63.7
No	45	36.3
<b>Health problems</b>		
Yes	15	12.1
No	109	87.9
<b>Duration of DM</b>		
<1 year	45	36.3
1< 3	46	37.1
3-5	19	15.3
>5	14	11.3

**Table 3** revealed that 76.6% of the selected patients with diabetes type II had complete knowledge regarding definition of diabetes type I and II. 71.8% of them had complete knowledge regarding treatment of diabetes of type II. Regarding prevention, 12.1% of the selected patients didn't know about prevention of diabetes complications.

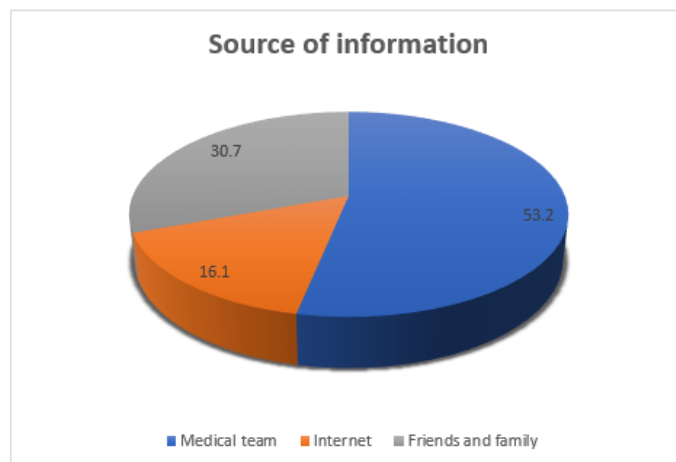
**Table (3): Percentage Distribution related Knowledge regarding Diabetes among Selected Patients with Diabetes Type II (n=124)**

Knowledge related Diabetes	Correct and complete answer		Correct and incomplete answer		Incorrect answer	
	No.	%	No.	%	No.	%
Meaning of diabetes	70	56.5	21	16.9	33	26.6
Definition of diabetes	53	42.7	17	13.7	54	43.5
Types of diabetes	81	65.3	24	19.4	19	15.3
Definition of type I diabetes	95	76.6	27	21.8	2	1.6
Definition of type II diabetes	95	76.6	28	22.6	1	0.8
Symptoms of Diabetes	63	50.8	20	16.1	41	33.1
Diagnosis of Diabetes	65	52.4	20	16.1	39	31.5
Treatment of type I	59	47.6	19	15.3	46	37.1
Treatment of type II	89	71.8	26	21.0	9	7.3
Complications of diabetes	73	58.9	22	17.7	29	23.4
Prevention of diabetes complications	84	67.7	25	20.2	15	12.1

**Table 4** revealed that 40.3% of the selected patients with diabetes type II did not know symptoms of hypoglycemia while 68.5%, 65.3% of them had correct knowledge related complications and prevention of hypoglycemia respectively.

**Table (4): Percentage Distribution related Knowledge regarding hypoglycemia among Selected Patients with Diabetes Type II (n=124)**

Knowledge regarding hypoglycemia	Correct and complete answer		Correct and incomplete answer		Incorrect answer	
	No.	%	No.	%	No.	%
Meaning of low blood sugar level	74	59.7	22	17.6	28	22.6
Symptoms of hypoglycemia	56	45.2	18	14.5	50	40.3
Causes of hypoglycemia	78	62.9	23	18.5	23	18.5
Treatment of low blood sugar (hypoglycemia)	71	57.3	22	17.6	31	25.0
Complications of low blood sugar (hypoglycemia)	85	68.5	25	20.2	14	11.3
Prevention of low blood sugar (hypoglycemia)	81	65.3	24	19.4	19	15.3



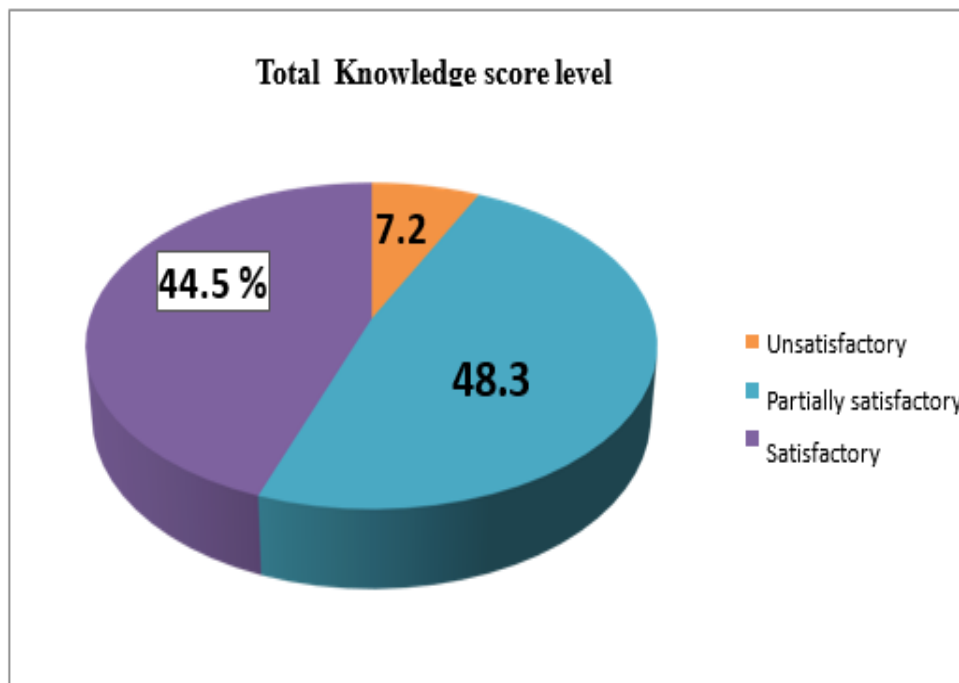
**Figure (2): Percentage Distribution of Source of information among patients with diabetes type II (n= 124)**

**Figure 2** illustrated that 53.2% of the selected patients with diabetes type II had their information related diabetes from medical team.

**Table (5): Percentage Distribution related Knowledge regarding hyperglycemia among Selected Patients with Diabetes Type II (n=124)**

Knowledge related hyperglycemia	Correct and complete answer		Correct and incomplete answer		Incorrect answer	
	No.	%	No.	%	No.	%
Meaning of high blood sugar (hyperglycemia)	84	67.7	25	20.2	15	12.1
Symptoms of high blood sugar	64	51.6	20	16.1	40	32.3
Causes of high blood sugar (hyperglycemia)	61	49.2	19	15.3	44	35.5
Treatment of high blood sugar (hyperglycemia)	67	54.0	21	16.9	36	29.0
Complication of high blood sugar (hyperglycemia)	59	47.6	19	15.3	46	37.1
Prevention of high blood sugar (hyperglycemia)	71	57.3	21	16.9	32	25.8

**Table 5** showed that the shows that 32.3%, 35.5%, 37.1% of the selected patients with diabetes type II had incorrect knowledge regarding symptoms, causes and complication of high blood sugar (hyperglycemia) respectively.



**Figure (3): Percentage Distribution of Total Knowledge score level among patients with Diabetes type II**

**Figure 3** showed that 44.5% of patients with diabetes type II had satisfactory level of total knowledge scores while 7.2% of them had unsatisfactory level of total knowledge scores related to diabetes type II.

**Table 6** appeared that 55.6 % of the selected patients with diabetes type II limited a lot regarding walking for normal daily chores. 74.2% of them limited a little regarding climbing several flights of stairs.

**Table (6): Percentage Distribution of Physical Function as a quality-of-life domain among Patients with Diabetes Type II (n=124)**

Physical Function	No.	%
<b>Walking for Normal daily chores (like going to work or market)</b>		
Yes Limited a Lot	69	55.6
Yes Limited a Little	39	31.5
No Not limited at All	16	12.9
<b>Climbing several flights of stairs</b>		
Yes limited a lot	6	4.8
Yes limited a little	92	74.2
No not limited at all	25	20.2
<b>Climbing one flight of stairs</b>		
Yes limited a lot	8	6.5
Yes limited a little	40	32.3
No not limited at all	69	55.6

**Table 7** that 40.3% of the selected patients with diabetes type II had slightly effect on their work life. Regarding role limitations due to emotional, 60.5%, 90.3% of them felt lost since it restricts the food items they like and did not lose their confidence in their abilities

**Table (7): Percentage Distribution of Role limitations due to physical health and emotional as a quality-of-life domains among Patients with Diabetes Type II (n=124)**

Quality of life domains	No.	%
<b>Role limitations due to physical health</b>		
Diabetes is affecting patients work life		
Not at all	20	16.1
Slightly	50	40.3
Moderately	35	28.2
Quite a bit	13	10.5
Extremely	6	4.8
<b>Role limitations due to emotional</b>		
Diabetes made patients feel lost since it restricts the food items they like		
All of the time	9	7.3
Most of the time	7	5.6
A good bit of time	15	12.1
Some of time	2	1.6
A little of time	75	60.5
None of the time	16	12.9
Making patients lose their confidence in their abilities		
All of the time	0	0.0
Most of the time	1	.8
A good bit of time	0	0.0
Some of time	4	3.2
A little of time	7	5.6
None of the time	112	90.3

**Table 8** showed that 71.0% of the selected patients with diabetes type II felt energetic for a good bit of time. Regarding emotional wellbeing, 46.8%, 67.7%, 45.2 % of them felt downhearted or depressed for a good bit of time, did not affect their peace of mind none of the time, and most of time they Felt scared when they think about living with diabetes respectively.

**Table (8): Percentage Distribution of Energy Fatigue and Emotional Wellbeing as a Quality of Life Domains among Patients with Diabetes Type II (n=124)**

Quality of life domains	No.	%
Energy Fatigue		
Feel Energetic		
All of the time	1	0.8
Most of the time	6	4.8
A good bit of time	88	71.0
Some of time	6	4.8
A little of time	0	0.0
None of the time	23	18.5
Emotional well being		
Feel downhearted or depressed		
All of the time	0	0.0
Most of the time	18	14.5
A good bit of time	58	46.8
Some of time	3	2.4
A little of time	45	36.3
Diabetes affect patients' peace of mind		
All of the time	8	6.5
Most of the time	1	0.8
A good bit of time	4	3.2
Some of time	20	16.1
A little of time	7	5.6
None of the time	84	67.7
Feel scared when patient think about living with diabetes		
All of the time	1	0.8
Most of the time	56	45.2
A good bit of time	8	6.5
Some of time	20	16.1
A little of time	20	16.1
None of the time	19	15.3

**Table (9) Percentage Distribution of Social functioning as a quality-of-life domains among patients with Diabetes Type II (n=124)**

Social Functioning	No.	%
Effect on family life		
Not at all	37	29.8
Slightly	68	54.8
Moderately	3	2.4
Quite a bit	8	6.5
Extremely	8	6.5
Embarrassed managing your diabetes in public		

All of the time	0	0.0
Most of the time	3	2.4
A good bit of time	1	.8
Some of time	9	7.3
A little of time	2	1.6
None of the time	109	87.9
Diabetes is a hindrance when you are planning for any travel		
All of the time	0	0.0
Most of the time	4	3.2
A good bit of time	15	12.1
Some of time	58	46.8
A little of time	0	0.0
None of the time	47	37.9
Diabetes bringing up economic burden		
All of the time	0	0.0
Most of the time	20	16.1
A good bit of time	12	9.7
Some of time	61	49.2
A little of time	0	0.0
None of the time	31	25.0

**Table 9** illustrated that 54.8% of the selected patients with diabetes type II had slightly effect on their life. Regarding managing diabetes, 87.9%, 49.2 % of them did not embarrass in managing diabetes in public and they had economic burden some of time due to Diabetes respectively

**Table (10): Percentage Distribution of General Health as a Quality-of-Life Domains among Patients with Diabetes Type II (n=124)**

General Health	No.	%
Overall health after being diabetic		
Excellent	29	23.4
Very good	66	53.2
Good	12	9.7
Fair	17	13.7
Diabetes has worsened patient quality of life		
Not at all	102	82.3
Slightly	5	4.0
Moderately	7	5.6
Quite a bit	2	1.6
Extremely	8	6.5
Get sick quite often compared to others		
Definitely true	9	7.3
Mostly true	11	8.9
Don't Know	87	70.2
Mostly false	15	12.1
Definitely false	2	1.6

**Table 10** showed that 53.2% of the patients with diabetes type II had very good overall health after being diabetic and 82.3% of them did not have worsened patient quality of life not at all related to diabetes while 70.2% of them did not know about getting sick quite

often compared to others.

**Table (11): Percentage Distribution of Total Quality of Life Level Scores among Patients with Diabetes Type II (n=124)**

Quality of life level score	No.	%
Poor	0	0.0
Moderate	55	44.4
Better	69	55.6

**Table 11** revealed that 55.6% of selected patients with diabetes had a better quality of life while 44.4% of them had moderate quality of life

**Table (12): Correlation between Total Knowledge, and Quality of Life Scores among Patients with Diabetes Type II (n=124)**

Total Scores	Knowledge		Quality of life	
	R	p	r	p
Knowledge	1			
Quality of life	0.09	0.29	1	

\*High statistical significant at p-value < 0.05

**Table 12** showed that there was no statistically significant positive correlation between total knowledge and total quality of life scores among selected patients with type diabetes II

**Table (13): Correlation between Total Knowledge and Demographic Data among Selected Patients with Diabetes Type II (n=124)**

Demographic data	r	p
Age	0.04	0.63
Level of Education	0.29	0.001*
Number of family members	-0.16	0.07
Work	0.14	0.10
Enough Income	0.40	0.00*

\*High statistical significant at p-value < 0.05

**Table 13** revealed that there was a highly significant positive correlation between level of education and enough income among the selected patients with type II diabetes and their total knowledge scores.

**Table 14: Mean Difference between Males and Females Patients with Diabetes Type II Regarding Their Knowledge, and Quality of Life (n=124)**

Variables	Male	Female	Difference	
	Mean ±SD	Mean ±SD	t	p
Knowledge	16.89 ±2.09	19.39 ±3.74	4.3	0.00*
Quality of life	69.17 ±8.79	64.20 ±4.62	4.1	0.00*

\*High statistical significant at p-value < 0.05

**Table 14** showed that there were a highly statistically significant differences between males and females' patients with diabetes type II regarding their knowledge and quality of life where mean knowledge for female patients was higher than males while mean quality of life of males' patients were higher than females.

## DISCUSSION

The result, considering demographic data of the patients with diabetes type II, the present study showed that around one third of T2DM patients were aged 40 to 49 years. From the investigator point of view the. The concentration of T2DM cases among middle-aged, suggested that prevention and management programs should focus on lifestyle modifications, workplace wellness initiatives, and community-based education. The study findings in contrast with (Li et al., 2024) in, China (n= 83,823) which about “Association between age at diabetes diagnosis and subsequent incidence of cancer: a longitudinal population-based cohort. Diabetes care” The study reported that there were ((19.56) %) study sample aged between 40 to 49 years.

Regarding to the level of education, the present study showed that around two thirds of T2DM patients had university education and the majority lived in urban areas. From an investigator’s point of view, the high percentage of university educated patients specifies that the patients had strong desire for educational opportunities. The urban residence of nearly all participants specifically within the urban zone of Yanbu al-Bahr, which is a well-developed coastal city with full community services, modern infrastructure, and significant population density, it is clearly an established urban center, not a rural location.

The study findings are in contrast with (Ferreira, et al., 2024) in USA, (n= 1,200 diabetic patients) which about “Knowledge about type 2 diabetes: its impact for future management” The study reported that there was (84.3%) individuals diagnosed with T2D had a level of education under secondary. Also, the study result in line with (Rweyendera et al.,2024) in Tanzania, (n=150 diabetic patients) Which about “Knowledge, attitude, and quality of life among newly diagnosed type 2 diabetic patients attending diabetic clinics at Bugando Medical Centre” The study reported that there was (123 (82) %) and resided in urban areas.

Regarding to Gender among patients with diabetes type II, the study results illustrated that more than half of the patients with diabetes type II were female. From investigator point of view, the higher prevalence of T2DM among Saudi females compared to males, one probable explanation is that women in Saudi Arabia tend to seek healthcare services more frequently than men, which increases the likelihood of diagnosis and documentation of diabetes cases among females. Additionally, higher obesity rates among Saudi women have been identified as a contributing factor to the increased prevalence of T2DM.

The study findings in agreement with (Birarra et al.,2025) in Northwest Ethiopia, (n=404 patients with type II DM), which about “Knowledge, practices, and predictors of cardiovascular disease prevention among adults with type II diabetes mellitus at the university of Gondar Medical Center, Northwest Ethiopia” the study showed that (55.4 %)

of the respondents being female. Also, the study result in contrast with (Haskas, Suarnianti, & Kadrianti, 2023) in Indonesia, (n=82 patients), which about “Relationship Between Diabetes Distress and Quality of Life Among Patients with Type II Diabetes Mellitus” the study showed that (70%) were female.

Regarding to T2DM family history, the study results showed that majority of patients with type II did had family history related diabetes. From investigator point of view, Family history characterizes one of the most constantly identified and compelling risk factors for developing type 2 diabetes, individuals with affected first-degree relatives face a nearly high risk compared to those without such history. The study result in agreement with (Sahoo, Mohanty, Kundu & Epari, 2022) in Eastern India, (n=331 participants with type II DM), which about “Medication adherence among patients of type II diabetes mellitus and its associated risk factors” the study showed that (52.6) had no family history related to diabetes.

Regarding to Health problems the study showed that more than four fifths did not have any health problems except diabetes. From investigator point of view, this finding presents both opportunities and considerations for clinical management. The quite low comorbidity burden recommends a window for rigorous preventive interventions before complications advance. However, it also requires cautious screening protocols, as the absence of diagnosed comorbidities does not prevent core risk factors and early-stage pathology that may continue without intervention. The study result in line with (Evecy, 2021), in India, (n= 160 people with type II diabetes mellitus), which about “Quality of Life Among People with Type II Diabetes Mellitus. The study showed that 135(84.37%) had no history of co morbid illness

Regarding to Diabetes Mellitus Duration, the study result indicated that more than one third of selected patients suffered from diabetes from one to three years. From investigator point of view, this indicated feasible improve in diabetes screening and diagnosis rates in Saudi Arabia, also the Possibility of the early detection efforts and awareness campaigns leading to more current diagnoses. The study result in contrast with (AbuAlhommos et al., 2022), in Saudi Arabia, (n=321 patients with T2DM), which about “The Health-Related Quality of Life of Patients with Type 2 Diabetes. The study mentioned that (72.9%) were experienced with type 2 diabetes since more than 5 years.

The study result showed that shows that the majority of the selected patients with type II had complete knowledge regarding definition of diabetes type I and II and treatment of diabetes of type II. From an investigator point of view, the study’s findings implied that presented educational efforts are effectively reaching patients, fostering a strong foundation for self-management and informed decision-making. However, it also triggers further investigation into whether the knowledge translated into consistent adherence to treatment plans and lifestyle modifications. In contrast with the study (de Oliveira et al.,2025), in Portugal (n= 356 DM patients) Which about. “Evaluation of diabetes knowledge among people with type 2 diabetes mellitus”. The study presented that those receiving insulin treatment (11.98; SD±2.64) had an average level of diabetes knowledge.

The study result showed that less than half of patients with diabetes type II had satisfactory level of total knowledge scores. The study findings in contrast with (Velázquez López, Muñoz Torres, Medina Bravo, Escobedo de la Peña, 2023) in Mexico, (n= 297 patients) Which about. “Inadequate diabetes knowledge is associated with poor glycemia control in patients with type 2 diabetes” The study reported that (56%) of patients with type 2 diabetes had regular knowledge, while only (7%) of Type 2 diabetes patients had adequate diabetes knowledge.

Also, the study result in agreement with (Aje & Fakeye, 2024), in Nigeria, (n=188 diabetes patients) Which about. “Factors associated with disease knowledge and attitude among ambulatory patients with type 2 diabetes—a multicenter study”. The study found that (48.4%) of Type 2 diabetes patients had good knowledge. The study result is contrasted with (Flimban, Abduljabbar, Ragab, 2025), in Saudi Arabia, (n= 307 diabetes patients) Which about. “Knowledge, attitude, and practices (KAP) of patients with diabetes towards diabetes mellitus. The study demonstrated that only (38%) of Type 2 diabetes patients had adequate diabetes knowledge, with significant gaps in complication awareness.

Regarding Physical Function as a quality-of-life domain among Patients with Diabetes Type II (n=124), the study result showed that more than half of the selected patients had stated limited a lot of walking for Normal daily tasks (like going to work or market). In contrast with (Chisalunda et al., 2023), in Malawi, (n=339 participants), which about “quality of life among type 2 diabetes mellitus patients”. The study found that (34.5%) had moderate physical functioning of walking for Normal daily tasks.

The study result showed that around three quarters of selected patients with diabetes type II had limited a little physical Function regarding climbing several flights of stairs. The study results in line with (Honda, Fukutomi, Igaki, Tanaka, Takaishi & Hayashi, 2023), in Japan, (n=16 participants), which about. “The Chronic Effect of Stair Climbing–Descending Exercises after Meals on Glycemic Control in Individuals with Type 2 Diabetes: A Randomized Controlled Trial”. The study found that (54%) of the participants had no ability to climb the stairs.

#### Role limitations due to physical health and emotional as a quality-of-life domains

The study result showed that the study reflected that less than half of the selected patients with diabetes type II with diabetes had a slight effect on their work life. The study results in line with (Pinto, Mathur, Fathima, George, & Umesh, 2022), in India, (n= 121patients with Type 2 diabetes) which about “Productivity loss and diabetes distress among patients with type 2 diabetes seeking out patient care at a tertiary hospital in Bengaluru. The study indicated that 47.1% of individuals with Type 2 diabetes reported productivity losses and marginal effect on their work life.

Regarding role limitations due to emotional impact of dietary restrictions in Type 2 diabetes patients, the study result indicated that more than half of T2DM patients stated that Diabetes made them feel lost since it restricts the food items they like. The study result in contrast with (Vlahovic, et al., 2025), in Montenegro, (n =151 T2DM patients).

Which about “Enhancing patient-centered care: Evaluating quality of life in type 2 diabetes management”. The study stated that 40.4% were fulfilled for dietary restrictions.

The study findings showed that the majority of patients with T2DM stated that diabetes are not making lose their confidence in their abilities. demonstrates significant psychological resilience. This aligns with (Óry, Kiss, Zsidó, & Teleki, 2024) (n =405), in Hungary which about “Conquering diabetes by overcoming psychological barriers and embracing health” the study found that (57%) of patients had confident and empowered for managing the diabetes.

The study result indicated that the majority of the selected patients with diabetes type II felt energetic for a good bit of time. From investigator point of view, it may reflect effective management of diabetes for many, but the minority who feel energetic "none of the time" is alarming. It may be experiencing uncontrolled blood glucose levels, poor sleep, and comorbid conditions such as depression or thyroid dysfunction. Fatigue in diabetes is multifactorial: metabolic, psychological, and lifestyle related. It should consider assessing these factors holistically, rather than attributing fatigue solely to diabetes itself. The study result in contrast with (Vasilaki, et al., 2023), in Greece, (n= 100 patients with Type 2 Diabetes Mellitus), which about “Fatigue among Patients with Type 2 Diabetes Mellitus: The Impact of Spirituality and Illness Perceptions. The study found that (60%) of Patients with T2DM experienced moderate levels of total perceived fatigue and no energetic.

Regarding emotional wellbeing, the study result indicated that around two thirds reported that diabetes did not affect their peace of mind at all, while less than half of diabetic patients felt scared about living with diabetes most or a good bit of the time. From investigator point of view, Emotional suffering and depression are strongly associated with T2DM, the diabetes distress and depressive symptoms are major predictors of poor QoL. Psychological resilience and self-compassion had identified as facilitators that can improve emotional wellbeing and decrease the effect of diabetes suffering on depression.

The study results in contrast with (Basiri, Seidu & Rudich, 2023), in USA, which about “Exploring the Interrelationships between Diabetes, Nutrition, Anxiety, and Depression: Implications for Treatment and Prevention Strategies”. Research demonstrated a causal relationship between depression, anxiety, and diabetes. It has been shown that depression and anxiety are more prevalent among individuals with diabetes compared to healthy populations (26.3% vs. 11.2%, respectively).

The study results indicated that more than half of the selected patients with diabetes type II had a slight effect on their family life. The study result In line with (Shah, et al., 2023), in United Kingdom, (n=261), which about “Comparison of the impact of type 1 and type 2 diabetes on quality of life of families of patients”. The study found that family members of T2D patients had a lower risk of experiencing a "high family impact" (FROM-16 score >16) compared to families of T1D patients.

Regarding managing diabetes, the majority of patients were not embarrassed about managing diabetes in public. From the investigator’s point of view, there was a positive shift in societal attitudes, patient confidence, and both. The current results may imply that

public awareness campaigns, patient education, and normalization of chronic disease management have had a visible impact. The study result In line with (Tamornpark, et al., 2022), in northern Thailand, (n=967 participants) which about “Quality of life and factors associated with a good quality of life among diabetes mellitus patients”. The study showed that (58.7%) of patients had good social relationships and were not ashamed in diabetes management.

The study results indicated that more than half of the selected patients with diabetes type II had very good overall health after being diabetic. the study results In line with (Mishra, Choudhary, Kumar, Kishor & Kumari, 2024), in India (n= 119 participants), Which about “Assessment of Health-Related Quality of Life and Its Determinants in Type 2 Diabetes Mellitus Patients”. The study showed that 60.5% of the subjects perceived their overall health to be good as indicated by the scores.

And the study findings showed that more than four fifths of the selected patients with diabetes type II did not have worsened quality of life not at all related to diabetes. the study result in line with (Evecy, 2021), in India, (n= 160 people with type II diabetes mellitus), which about “Quality of Life Among People with Type II Diabetes Mellitus. The study findings revealed that (99%) had satisfactory quality of life,

The study results indicated that more than half of the selected patients with diabetes type II had a better quality of life. It suggested that most patients with type 2 diabetes are coping realistically with daily life demands and diabetes-related self-management, but nearly half still experience limitations that keep them from reaching the “better” QoL category. This pattern is reasonable because quality of life in type 2 diabetes is strongly shaped by clinical and psychosocial factors. The study results in contrast with (Al-Baghdadi & Hamza, 2025), (n=167 patients), in Iraq, which about “Quality of Life Among Type II Diabetes Mellitus Patients”. The majority (92.22%) of T2DM patients report a moderate quality of life.

The study results in line with Alsaidan et al. (2025), in Saudi Arabia, (n= 363 T2DM patients) which about “Assessment of Diabetes-Related Knowledge and Dietary Patterns Among Type 2 Diabetes Mellitus Patients. It found a highly statistically significant positive correlation between diabetes-related knowledge and dietary practice patterns (( $p = 0.032$ )) The study concluded that patients with higher knowledge scores were significantly more likely to adhere to healthy dietary practices.

Also, the study result in line with (Chen, Huang & Lee 2025), in Taiwan, (n= 220 patients), Which about “The Relationship Between Diabetes Knowledge and Diabetes Self-Care Behaviors in Relation to Diabetes Distress in Type 2 Diabetes Mellitus” the study revealed a significant positive correlation between diabetes knowledge and diabetes self-care activities ( $r=0.31$ ,  $p<0.001$ ), indicating that better diabetes knowledge is associated with better self-care activities.

The study results reflected that there was a highly statistically significant positive correlation between level of education among the selected patients with diabetes type II and their total knowledge scores. From investigator point of view, Patients with higher

education levels may be more equipped to recognize complex health information, infer medical advice, and take informed decisions about their diabetes care. The study findings in line with (Das, Ghosh, & Ghosh, 2023) in India, (n= 129 subjects) Which about “Assessment of patients’ knowledge, attitude and practice regarding diabetes mellitus in a tertiary care hospital”. The study showed that there were positive associations between patients with diabetes knowledge and educational level.

The study results reflected that there was a highly significant positive correlation between enough income among the selected patients with type II diabetes and their total knowledge scores. The study results in agreement with (Lema, & Gebeyaw, 2025), in Ethiopia, (380 patients diagnosed with T2DM), which about “Diabetes knowledge and glycemic control among type 2 diabetes patients at public hospitals. The study found that poor diabetes knowledge was significantly associated with farming occupations (lower income) and illiteracy. Also, the study result in divergent with (Alsaidan et al. 2025), in Saudi Arabia, (n= 363 T2DM patients) which about “Assessment of Diabetes-Related Knowledge and Dietary Patterns Among Type 2 Diabetes Mellitus Patients. It found income was not highlighted as a primary statistical driver for knowledge scores.

The study results indicated that there were a highly statistically significant differences between males and females’ patients with diabetes type II regarding their knowledge and quality of life where mean knowledge for female patients was higher than males. The study results in agreement with (Al-Baghdadi & Hamza, 2025), (n=167 patients), in Iraq, which about “Quality of Life Among Type II Diabetes Mellitus Patients”. The study found that while women often demonstrated high knowledge than males. Also, in contrast with (Kaur, Mehan & Das Gupta, 2025), in India, (n= 500 T2DM patients), which about “Gender-Based Disparities in Knowledge, Attitudes, and Practices Among Type-II Diabetes Patients”. The study revealed that males had higher proportions of good knowledge regarding Type-II Diabetes than females.

The study results indicated that there were a highly statistically significant differences between males and females’ patients with diabetes type II regarding their knowledge and quality of life where mean quality of life of males’ patients were higher than females. The study result in agreement with (Alharbi, et al. 2024), in Saudi Arabia, (366 participants), which about, “Assessment of quality-of-life among type 2 diabetic population. It showed that better quality-of-life among type 2 diabetic associated with male patients.

## CONCLUSION

The study findings showed that adults with Type 2 Diabetes Mellitus in the context of Saudi Arabia exhibited varying levels of disease-related knowledge, with significant gaps in understanding fundamental aspects of diabetes management. While the patients possessed complete knowledge regarding diabetes definitions and treatment moods, adults with Type 2 Diabetes Mellitus had critical misconceptions, particularly concerning the infectious nature of diabetes, hypoglycemia and hyperglycemia management.

Type 2 Diabetes Mellitus Patient quality of life outcomes appeared relatively favorable overall, while knowledge alone was not significantly related to QoL ( $r=0.09$ ,  $p=0.29$ ). Gender differences were also significant: females had higher mean knowledge, whereas males had higher mean QoL scores ( $p<0.05$ ), emphasizing the need for modified interventions.

### **Recommendation:**

In the light of the findings of the present study, the following recommendations were concluded:

- The health care organizations should develop structured, culturally tailored diabetes education programs focusing on adjusting misconceptions, hypoglycemia, hyperglycemia management and prevention of complications (e.g., foot care, regular eye exams).
- The health care organizations should provide awareness sessions about fostering reliance on medical teams and certified online resources
- Community campaign: Partner with local organizations to raise awareness and provide resources in urban and rural areas.
- Social Support system that creates support groups for patients and families to share experiences and coping strategies.
- Replication of the study on large sample and different setting

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