



(RESEARCH ARTICLE)



Evaluation of diabetic patients' knowledge about diabetic foot at Baghdad Teaching hospitals

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Abstract

Background: Diabetes mellitus is a metabolic disorder leading to high blood glucose levels, affecting approximately 451 million people globally and causing around 5 million deaths in 2017. Diabetic patients are at an increased risk of developing foot ulcers due to microvascular and neuropathic changes. Neuropathy decreases sensation in the feet, making them more susceptible to injuries, while microvascular issues restrict blood flow, hindering wound healing. Haemoglobin A1c (HbA1c) reflects average blood glucose levels over the past 2 to 3 months. The American Diabetes Association and the International Expert Committee recommend a level of 6.5% or higher for diagnosing diabetes. Moreover, for each 1% increase in HbA1c, the risk of developing peripheral vascular disease increases by 25% to 28%. Patients with diabetes are at risk for serious complications, such as lower extremity amputations, higher healthcare costs, and a diminished quality of life. A systematic review found that the 5-year mortality rate after below-the-knee amputations ranges from 40% to 82%, while it is even higher for above-the-knee amputations, ranging from 40% to 90%. Many of these complications can be prevented by having annual foot exams and ensuring proper foot care by patients [1].

Objective: The purpose of this study is to assess diabetic patients' knowledge at Baghdad's hospital about diabetic foot disease and to design community awareness campaigns focusing on the importance of diabetic foot treatment and prevention.

Methods: A cross-sectional study was conducted to assess the knowledge of diabetes mellitus complications, specifically foot ulceration, among 100 hospitalized patients and nurses at the teaching hospital in Baghdad. The questionnaire consisted of two sections: the first included nine demographic questions (age, gender, residence, marital status, education, employment, economic status, previous therapy history, and sources of knowledge), while the second contained 16 questions evaluating knowledge about diabetes. Data were collected through a self-reported questionnaire, and analyses were performed using SPSS version 24.

Results: The study revealed that 94% of participants had high awareness.

Conclusions: Most patients (94%) possess a moderate understanding of diabetic complications and how to care for diabetic foot.

Keywords: A cross-sectional study; Diabetes mellitus complications; Knowledge about foot ulceration; Baghdad Teaching hospitals

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1. Introduction

Diabetes mellitus gets its name from the Greek word meaning "siphon" and the Latin word for "sweet," a description first used by Apollonius of Memphis around 250-300 BC. This name came about because of the sweet taste of urine associated with the condition. In 1889, researchers Mering and Minkowski discovered the pancreas's role in diabetes. Then, in 1922, Banting, Best, and Collip successfully isolated insulin from cow pancreas, which provided an effective treatment for the disease. Despite significant advancements in our understanding and management of diabetes, it remains a widespread chronic illness, currently ranking as the seventh leading cause of death in the United States [2]. Diabetes mellitus (DM) is a metabolic disease characterized by high blood glucose levels. There are several types of diabetes, the most notable being type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM). T1DM often develops in children and is caused by insufficient insulin secretion. In contrast, T2DM typically affects middle-aged and older adults and is generally associated with poor lifestyle choices, which can lead to problems with insulin action. The causes, symptoms, and treatments for T1DM and T2DM vary significantly. Additionally, other forms of diabetes mellitus include maturity onset diabetes of the young (MODY), gestational diabetes, neonatal diabetes, and diabetes resulting from other medical conditions or medications [3].

At the beginning of the 21st century, diabetic foot problems became a major cause of hospital admissions in Western countries, despite being largely preventable. In 2005, the International Diabetes Federation initiated a global campaign to raise awareness about diabetic foot disease and the associated risk of amputations in diabetic patients, coinciding with World Diabetes Day. Diabetic foot disease includes various conditions that affect the feet of people with diabetes, with foot ulcers being characterized by skin lesions that may penetrate deeper into the tissues. The lifetime risk of a diabetic patient developing a foot ulcer (DFU) is estimated to be 25% [4, 5]. Diabetic foot ulcers (DFUs) have a significant impact on those affected, leading to serious health complications. Patients, particularly those on dialysis, face a high mortality risk, with a two-year mortality rate of 75% for individuals who have undergone amputation. This risk is higher than that associated with many commonly known cancers, underscoring the urgent need for preventive measures. The financial burden of DFUs is substantial as well. In the USA, over \$18 billion is spent annually on DFU care, with an additional \$11.7 billion allocated for amputations. Furthermore, a 2019 estimate from the UK indicated that diabetic foot problems cost the National Health Service over £900 million each year, accounting for approximately 1% of its total budget [6, 7].

1.1. Classification and Pathophysiology of Diabetes Mellitus

Diabetes mellitus (DM) is characterized by a complex interplay of factors that contribute to its development and varied symptoms. As a result, any classification of this disorder is somewhat arbitrary, yet it remains useful. The classification can be influenced by the physiological conditions that are present during the assessment and diagnosis. Currently, the classification of diabetes is based on both its aetiology and pathogenesis, which aids in the clinical assessment and determination of necessary treatments. According to this classification, diabetes is divided into four main types:

- Type 1 diabetes mellitus (T1DM)
- Type 2 diabetes mellitus (T2DM)
- Gestational diabetes mellitus (GDM)
- Diabetes that is caused or associated with specific conditions, pathologies, and disorders (see Figure 1) [8].

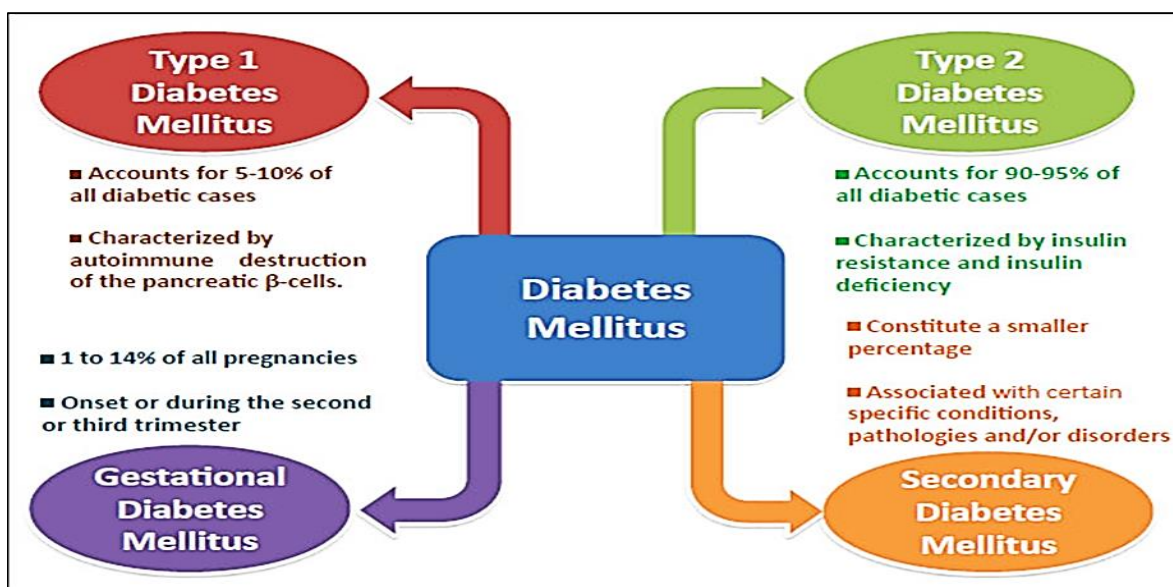


Figure 1 Types of Diabetes Mellitus [8]

1.2. Complications of Diabetes Mellitus

1.2.1. Diabetic Neuropathy

Diabetic peripheral neuropathy (DPN) is a common complication of diabetes. Chronic hyperglycemia negatively impacts the central nervous system and can cause gastroparesis. Researchers are exploring the significance of glycemic variability (GV) in relation to diabetic neuropathy [9].

1.2.2. Diabetic Nephropathy

Diabetic nephropathy (DN) is the primary cause of end-stage renal disease, with its mechanisms not fully understood. Recent studies suggest that epigenetic changes and certain microRNAs may play a role in DN development by affecting gene expression and regulating intracellular pathways [10].

1.2.3. Diabetic Retinopathy

The significance of proper glycemic control in preventing diabetic retinopathy (DR) is now well-established by Wautier JL, Wautier MP., 2020 [11]. However, other factors may also contribute to the development of this diabetes complication. Recent studies have increasingly focused on the associations between DR and various gene polymorphisms, including those in the vascular endothelial growth factor (VEGF) and eNOS genes [12].

1.2.4. Macrovascular Complications

Previous research has suggested that biomarkers of atherosclerosis could be valuable in identifying macrovascular complications in diabetes, such as subclinical carotid disease. The study titled "Relationship between HbA1c and Myocardial Blood Flow Reserve in Patients with Type 2 Diabetes Mellitus" by R. Huang et al. explored the connection between HbA1c levels and myocardial perfusion in patients with Type 2 Diabetes Mellitus (T2DM). The findings indicated that maintaining optimal glycemic control is linked to preserving myocardial blood flow reserve in individuals at risk for coronary artery disease. This study highlights the importance of early and strict glycemic management in preventing macrovascular complications associated with diabetes [13].

1.2.5. Miscellaneous Complications

Diabetic foot is a serious complication of diabetes, often resulting in chronic ulcers that are difficult to heal. These ulcers typically occur due to poor glycemic control, neuropathy, peripheral vascular disease, or inadequate foot care, and they can lead to osteomyelitis and amputations [14]. Commonly infected by *Staphylococcus*, diabetic foot ulcers generally form in areas of repetitive trauma and pressure. Effective management requires an interprofessional approach involving podiatrists, endocrinologists, primary care physicians, vascular surgeons, and infectious disease specialists, as this condition is frequently seen in both outpatient and inpatient settings. Diabetic foot is a serious complication of diabetes, often resulting in chronic ulcers that are difficult to heal. These ulcers typically occur due to poor glycemic

control, neuropathy, peripheral vascular disease, or inadequate foot care, and they can lead to osteomyelitis and amputations. Commonly infected by *Staphylococcus*, diabetic foot ulcers generally form in areas of repetitive trauma and pressure. Effective management requires an interprofessional approach involving podiatrists, endocrinologists, primary care physicians, vascular surgeons, and infectious disease specialists, as this condition is frequently seen in both outpatient and inpatient settings [15]. Patients with diabetes mellitus are at risk for severe atherosclerosis in the small blood vessels of the legs and feet, which can lead to delayed wound healing and potentially result in necrosis and gangrene. Common laboratory tests for evaluating diabetic foot ulcers include fasting blood sugar, glycated hemoglobin, a complete metabolic panel, complete blood count, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP). Recent guidelines indicate that culture results from superficial swabs are less reliable for guiding antimicrobial therapy compared to those obtained from deep tissue sampling [16]. The treatment of diabetic foot ulcers requires a systematic approach to achieve the best outcomes. Key steps include assessing for signs of infection, such as chills, fever, and inflammation indicators like pain, warmth, erythema, or induration [17]. It's important to note that significant infections may show minimal systemic symptoms. A decision must be made about whether to manage the ulcer outpatient or require hospitalization, with considerations including the need for intravenous antibiotics, patient compliance, capacity for wound care, and pressure offloading. Regardless of the care setting, antibiotic treatment is necessary for all patients [18].

Aims of study

The aim of this study is to assess diabetic patients' knowledge about diabetic foot disease at Baghdad's hospital and to design community awareness campaigns emphasizing the importance of diabetic foot treatment and prevention.

2. Materials and Methods

2.1. Design of the study

A descriptive cross-sectional study was carried out in the Baghdad Teaching Hospital/Medical City, affiliated with the Iraqi Ministry of Health, with the Al-Rusafa side of Baghdad, to determine the evaluative knowledge regarding diabetic patients on diabetic feet. The current research was conducted from November 20, 2024, to February 20, 2025.

2.2. Administration Arrangements

Following the study's approval by the General Administration of the Medical City Department of the Iraqi Ministry of Health, the researchers obtained administrative permission to collect data from the Ministry of Health, Baghdad, Medical City, Baghdad Teaching Hospital / Training, and Human Development (Appendix B 1).

2.3. Sample of the Study

A purposive (non-probability) sample was used in this study. The study's total sample number was 100 diabetes patients from Baghdad Teaching Hospital, as shown in Table 1. The number of patients enrolled in the study.

Table 1 Distribution of diabetic patients who took part in the knowledge evaluation

No	Setting	The number of patients who took part
1	Baghdad Teaching Hospital/ Medical City	100
Total		100

2.4. Construction of Questionnaire

The questionnaire is designed and distributed to participants to assess diabetic patients' knowledge of diabetic feet at Baghdad teaching hospitals. The tool is divided into two parts. Each section is further subdivided into domains (Appendix B1).

2.4.1. Part I: Demographic Characteristics

A demographic characteristic sheet consists of (9) items, including age, gender, place of residence, marital status, educational level, job, economic status, the previous history of consulting a therapist in the case of another illness, and the information source.

2.4.2. Part II: Knowledge assessment for a diabetic patient on diabetic foot

This section of the questionnaire focuses on the patient's knowledge of the diabetic illness. This section consists of 16 major sections as questions that contain ideas dealing with the general diabetic patient's concepts about a diabetic foot. **These are as follows:** To avoid complications, diabetes medications must be taken regularly. Daily foot washing is recommended. Filtered water should be used to wash the feet, with a little salt added. Before washing the feet, the water temperature should be checked. After washing, thoroughly dry the feet, especially between the toes, with a clean, soft towel. To keep the areas between the toes dry, apply an antifungal powder. To prevent dry skin on the feet, apply a moisturizing lotion or cream. The lotion should not be applied between the toes. The socks should be changed daily. The type of socks should be cotton or polyester. Toenails should be trimmed every two weeks or less and straight. At least once every day, you should thoroughly inspect your feet, particularly between your toes. Diabetic patients should wear comfortable shoes. Before wearing the shoes, they must be thoroughly inspected from the inside. Patients with diabetes should not walk barefoot. Diabetic patients ought to consult a doctor if their feet have redness, blisters, or wounds.

2.5. Authenticity of the Study

Authenticity: The capacity of a tool to measure through the experts. To determine if the questionnaire and program lectures were enough to accomplish the study's objectives, the questionnaire was created and given to (8) experts with more than 5 years of experience in a certain specialized field. Among the experts were two from the Higher Health Institute in Al-Rusafa, two from the College of Nursing at the University of Baghdad, two from the Baghdad Rusafa Health Office/Diabetes Center, and two from the College of Medicine at Al-Nahrain University. (Appendix B1). The experts provided notes and ideas to best lead the questionnaire, and the researcher changed the questionnaire in response to their explanations and recommendations.

2.6. Pilot Study

Reliability is synonymous with assessing stability, consistency, or dependability. It also refers to accuracy. Measures that are reliable increase the genuine score component, while minimizing error (Polit & Beck, 2012). The purpose of the testing is to examine the dependability of the assessment instruments used to measure nurses' knowledge about diabetic disease, particularly those related to knowledge questions and the time necessary to complete them. A pilot study was conducted to assess the data-gathering technologies. A sample of ten patients was recruited at random from the Baghdad Teaching Hospital/Medical City. It was gathered on February 2nd, 2025.

2.7. The objective of the pilot study

- Evaluating the participants' understanding of the program's questions and substance.
- Checking the questionnaire's validity.
- Calculating the amount of time needed to gather the data: Each patient will need about 15 to 20 minutes to finish the questionnaire.
- Evaluating the questionnaire's content and clarity

2.8. Results of the Pilot Study

The investigator used the alpha-Cronbach equation to measure the stability of the scale items, where the researcher subjected a group of the total sample of the questionnaire numbered (16) to the alpha-Cronbach equation and it should be noted that the researcher extracted the stability values from the degree of the alternative (Yes: 1), (No: 2) while estimated the degree of the alternative (I don't know: 3). And the reliability coefficient was (0.774). The stability is deemed good here, and the findings are shown in the table 2 below:

Table 2 Results of the Pilot Study

N	Cronbach's alpha coefficient	number of questions	The number of the sample	Scale name	place of application
1-	0.774	16	100	Assessment of knowledge for diabetic patient on diabetic	Baghdad Teaching Hospital/ Medical-City

2.9. Assessment Implementation

The study was done at the Internal Medicine Unit of Baghdad Teaching Hospital in the Medical City.

2.10. Data Collection

Nurses at Baghdad Teaching Hospital, associated with Medical City, Al-Rusafa side, provided the data. This era lasted from November 20, 2024, until February 20, 2025. When data was obtained from the patients, an interview was conducted before the self-administration of the questionnaire, which took around 20 minutes to clarify and acquire the study participants' assent. All participants were informed that the study adhered to research ethics guidelines and that all information obtained was kept secret.

2.11. Statistical Analysis

The researchers employed a collection of statistical techniques, which are illustrated by the following, to arrive at the findings of the current study:

- Cronbach's alpha coefficient: The researcher employed Cronbach's alpha coefficient to determine the stability of the scale (evaluation of patient knowledge of diabetic disease), which was applied to a sample of Baghdad Teaching Hospital in the Medical City.
- Arithmetic mean: The researcher used the arithmetic mean to reach the research results in the fourth chapter, and the arithmetic mean played a role in identifying the sample members' responses to the questions placed in the questionnaire, as well as determining the average frequencies for each paragraph of the questionnaire.
- The standard deviation law is used to calculate the variances across paragraphs as well as the variations in the overall sample members' scores.
- Chi-test: The Chi-test assisted in calculating the p-value, which indicates the chance factor and is compared to the error coefficient (0.05) If the P-value is less than (0.05), it is a statistical function; if it is larger than (0.05), it is not statistically significant.

2.12. Study's Limitations

The following restrictions influenced the current study:

- Conduct daily follow-ups with hospital staff members in charge of nurse units on diabetic patients' admissions.
- The statistician's failure to complete the data collection findings on time causes major time waste.

3. Results

The results of this study, part one of Demography data are shown in table 3.

Table 3 The distribution of demographic data at Medical City- Baghdad Teaching Hospital

Demographic data	Category	Frequency	Percentage %
Age range/ Year	20-34	19	19
	35-49	26	26
	50-69*	42	42
	≥ 70	13	13
Gender	Male*	67	67
	Female	33	33
The residence	Urban*	80	80
	Rural	20	20
Marital status	Married*	72	72
	Single	15	15
	Widow	6	6

	Divorced	7	7
Educational level	Bachelor and above*	29	29
	Institute	17	17
	Middle school	12	12
	Elementary School	23	23
	Illiterate	19	19
The job	Employee*	44	44
	Wage earner	36	36
	Without job	20	20
Economic status	Poor	17	17
	Good*	75	75
	Very good	7	7
	Excellent	1	1
The previous history of consulting a therapist in the case of another illness	Yes	Chronic hypertension = 10 Chronic heart disease = 3	14
	No*	Renal failure = 1	86
Informational sources	Media	3	3
	Internet	22	22
	The doctor*	45	45
	The nurse	28	28
	Posters	2	2

* Highly frequency percentage

According to the results in the table 3, the highest frequency percentage according to patient age range (50-69 years) was 42%, the gender was 67% male, the residence was 80% urban, the material status was 72% married, the educational level was 29% bachelor's or higher, and the job status was 44% employee, with an economic level of 75% good. Without a history of chronic disease, 86% of people had previously consulted a therapist for another ailment, and the doctor was the most common source of information (45%).

Table 4 The association between patient demographics and their awareness of diabetic illness

Demographic data	P Value	Significant
Age range of the patient/ Y	0.0003	Significant
Gender	0.00067	Significant
The residence	0.00001	Significant
Marital status	0.00001	Significant
Educational level	0.084	Non-significant
Job	0.011	Significant
Economic status	0.00001	Significant
The previous history of consulting a therapist in the case of another illness	0.00001	Significant
Informational sources	0.00001	Significant

All of the data in Table 4 were significant, except the educational level, which was non-significant (P-value > 0.05).

Table 5 The distribution of the research samples based on their responses to the questions in Part 2

Q	Responses	F	%	Mean Of Score	Standard Deviation	alpha coefficient%
Patients knowledge of diabetic disease						
To avoid complications, diabetes medications must be taken on a regular basis	Yes*	94	94	33.33	52.62	157.8 Good
	No	6	6			
	I don't know	0	0			
Daily foot washing is recommended	Yes*	92	92	33.33	50.89	152.6 Good
	No	7	7			
	I don't know	1	1			
Filtered water should be used to wash the feet, with a little salt added	Yes*	64	64	33.33	28.04	84.12 Good
	No	27	27			
	I don't know	9	9			
Before washing the feet, the water temperature should be checked	Yes*	69	69	33.33	32.03	96.09 Good
	No	24	24			
	I don't know	7	7			
After washing, thoroughly dry the feet, especially between the toes, with a clean, soft towel	Yes*	70	70	33.33	33.00	99.00 Good
	No	24	24			
	I don't know	6	6			
To keep the areas between the toes dry, apply an antifungal powder	Yes*	48	48	33.33	19.65	58.95 Poor or unacceptable
	No	41	41			
	I don't know	11	11			
To prevent dry skin on the feet, apply a moisturizing lotion or cream	Yes*	52	52	33.33	18.50	55.5 Poor or unacceptable
	No	33	33			
	I don't know	15	15			
The lotion should not be applied between the toes	Yes*	52	52	33.33	16.19	48.57 Poor or unacceptable
	No	25	25			
	I don't know	23	23			
The socks should be changed on a daily basis	Yes*	75	75	33.33	36.11	108.34 Good
	No	14	14			
	I don't know	11	11			
The type of socks should be cotton or polyester	Yes*	60	60	33.33	23.18	69.54 Fair or acceptable
	No	18	18			
	I don't know	22	22			
Toenails should be trimmed every two weeks or less and straight	Yes*	79	79	33.33	39.62	118.87 Good
	No	13	13			
	I don't know	8	8			
	Yes*	72	72	33.33	33.85	101.56 Good

At least once every day, you should thoroughly inspect your feet, particularly between your toes	No	19	19			
	I don't know	9	9			
Diabetic patients should wear comfortable shoes	Yes*	83	83	33.33	43.15	129.46 Good
	No	12	12			
	I don't know	5	5			
Before wearing the shoes, they must be thoroughly inspected from the inside	Yes*	72	72	33.33	33.72	101.17 Good
	No	18	18			
	I don't know	10	10			
Patients with diabetes should not walk barefoot	Yes*	80	80	33.33	40.46	121.39 Good
	No	12	12			
	I don't know	8	8			
Diabetic patients ought to consult a doctor if their feet have redness, blisters, or wounds	Yes*	87	87	33.33	46.50	139.51 Good
	No	5	5			
	I don't know	8	8			

The table 5 shows that the mean score of categorical frequency according to the assessment of patients' knowledge about diabetic illness was 33.33 (for 100 samples with the yes-positive response, no-negative response and I don't know response within an alpha coefficient level represented as good, fair or acceptable and poor or unacceptable). The highest frequency percentage response for all 16 questions of the above table concerning the patient's assessment for diabetic foot disease (part two questionnaire) was a (yes) positive response, as a frequency-ratio was 94% to avoid complications, diabetes medications must be taken regularly, and the alpha coefficient level was good at 157.8%, 92% frequency percentage was daily foot washing is recommended within the alpha coefficient level was good at 152.6%, a frequency percentage was 64% within the alpha coefficient level was good at 84.12% filtered water should be used to wash the feet, with a little salt added, the frequency ratio of the water temperature that should be checked before washing the feet was 69% within a good alpha coefficient level of 96.09%.

Table 6 The number of questions, rated as good, fair, acceptable, poor, or unacceptable. Part two questionnaire

Categories	Good	Fair or acceptable	Poor or unacceptable
N = 16	12	1	3
% = 100	75%	6.3%	18.7%

Table 7 Overall evaluation of diabetes illness knowledge among Baghdad Teaching Hospital patients

Variable level	F	%	Mean	Standard Deviation
Low	1	6.3	5.33	5.85
Mid	3	18.7		
High	12	75		
Total	16	100		

According to the alpha coefficient level (Cronbach's alpha coefficient), grades (0-59) are low (poor or unacceptable), grades (60-79) are mid-range (Fair or acceptable), and grades (80-90) are high (good) while grades ≥ 90 are high (excellent).; This study grade was (100.0) which is a good or excellent grade.

According to Table 6, the number (N) of questions that obtained a good grade was 12, representing (75% of the total percentage of questions), whereas the number of questions that received a fair grade was one, representing 6.3%. And just three questions (18.7%), the third in the main paragraph, received a poor mark.

4. Discussion

Tables 3 and 4 present significant Chi-square test results for the demographic distribution of this study, with all data showing high significance except for educational level, which was non-significant. These findings are consistent with prior studies on socio-demographic diabetic patients, the sex differences are largely due to a higher incidence of Type 2 diabetes in men compared to women during middle age, while a greater number of women are affected in older age groups. The early onset of diabetes relative to average life expectancy increases the risk of complications related to the disease [19]. Furthermore, the male-to-female ratio findings indicate that male patients are prominent in diabetes, which is consistent with prior studies [20, 21]. The metabolic syndrome is a group of interrelated cardio-metabolic risk factors that include obesity (especially with central or visceral fat accumulation), hypertension, dyslipidemia, and glucose intolerance. These factors tend to occur together and are associated with an increased risk of type 2 diabetes mellitus (T2DM) and cardiovascular disease (CVD) morbidity and mortality [22]. Ageing elevates the risk of developing T2DM by impairing insulin secretion and increasing insulin resistance due to obesity and sarcopenia [23]. The EPIC-NL study, which analyzed data from 35,174 adults aged 20 to 70 over a median follow-up of 10.2 years, found a positive link between a family history of diabetes (both maternal and paternal) and an increased risk of developing type 2 diabetes mellitus (T2DM) [24]. This association remained significant even after accounting for lifestyle, diet, and body weight factors. Notably, maternal diabetes history was linked to a slightly higher T2DM risk compared to paternal history, primarily due to greater lifestyle influences in maternal cases [24]. Research indicates a connection between low socioeconomic status (SES) and an increased risk of Type 2 Diabetes Mellitus (T2DM). Modifiable factors like obesity, diet, physical activity, and alcohol consumption account for 33% to 50% of this link [25]. Other contributing factors may include psychosocial stress, hopelessness, material deprivation, limited autonomy, and inadequate access to healthy food, exercise facilities, and healthcare services [25, 26]. Table 5 reveals that the mean frequency score based on the assessment of patient knowledge about diabetes was 33.33. All 16 questions in this study about patient assessment of diabetic foot disease (Part II questionnaire) had the highest frequency response rate (yes), which included avoiding complications, taking diabetic medications on a regular basis, and washing feet daily with filtered water with a little salt added. These findings are consistent with earlier research on evaluated diabetic foot self-care practices and knowledge among DM patients at Dessie Referral Hospital, as well as related factors, patients' understanding of diabetic foot and how to care for them [27]. The survey revealed that diabetes patients responded positively and frequently about the importance of caring for their diabetic feet to avoid disease complications. This is accomplished by following medical directions for drying the feet after washing, particularly between the toes, with a soft, clean towel and applying lotion or moisturising cream to prevent dry skin on the feet. It also includes wearing cotton or polyester socks and changing them every day. Trimming toenails every two weeks or less was also encouraged, as was thoroughly inspecting the feet at least once a day, particularly between the toes, wearing comfortable medical shoes, and avoiding walking barefoot. Finally, diabetic individuals ought to consult a doctor if their feet become red, blistered, or sores. These findings are consistent with earlier research indicating that an interdisciplinary approach to addressing diabetic foot and its potential consequences can minimize amputations by up to 85%. Diabetic foot care requires the expertise of endocrinologists, diabetologists, vascular surgeons, podiatrists, orthotics, prosthetics, wound care nurses, and educators. Other specialties that may play a part in diabetic foot care, depending on the medical condition and infection, include infectious disease, nephrology, cardiology, and dermatology, among others. The goals should be to medically optimize comorbidities, avoid pedal difficulties, and treat pedal complications [28]. The study's findings (Table 6) show that the majority of participants were aware of diabetes complications, particularly those related to diabetic foot, as 12 out of the 16 total questions obtained good ratings, or 75% of the entire percentage of questions. These findings concord with previous studies that Diabetic foot ulcer management, appropriate foot self-care, patient education, and preventative measures can significantly reduce, delay, or prevent complications such as infection, gangrene, and amputation. Even though the incidence of diabetic foot ulcers is rising as the prevalence of diabetes mellitus rises globally. People with diabetes can prevent foot ulcers by practicing proper foot self-care [29]. Patients at the Baghdad Teaching Hospital received an overall assessment of their understanding of diabetic illness by 100%, which is considered good or excellent, table 7. Our results support earlier research demonstrating that expert patients can provide their peers with insightful advice on managing diabetes [30].

5. Conclusion

The following had the highest frequency ratios in this observational study, which included diabetes patients, particularly those with diabetic foot, as indicated by a frequency percentage on a questionnaire:

- Of those who took diabetes medication, 94% were aware that frequent use can prevent problems.
- 64 percent of the participants frequently wash their feet, eighty-four per cent use filtered water with a small amount of salt added, and sixty-nine per cent check the water's temperature before using it.

- 70% After washing their feet, use a fresh, soft towel to completely dry them, paying particular attention to the spaces between their toes.
- 52 percent of them use moisturizer, and 48 percent apply antifungals on their feet.
- 75 percent of people change their socks every day, yet 72 percent check their feet before putting on socks.
- 80 percent of participants believed that diabetics should not go barefoot.

Recommendation

The study recommends involving larger population samples from various districts of the capital and Iraqi cities, across genders and age groups, with a focus on the cultural level of the community. Comprehensive health awareness should also be provided to the entire community through health centers affiliated with the Iraqi Ministry of Health, cultural activities, media, and social media, with a focus on diabetes to avoid serious complications and enjoy a healthy life in the long term. Patients and caregivers should also be educated on proper foot care to prevent ulcers and amputation.

Compliance with ethical standards

Acknowledgments

We appreciate the staff of Baghdad Teaching Hospital for the data provided.

Disclosure of conflict of interest

There are no conflicts of interest

Statement of ethical approval

After obtaining the patient's consent to participate in this type of research, samples were gathered at Baghdad Teaching Hospital.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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