



Knowledge and Self-care Practices among a Sample of Type II Diabetes in Duhok City: A Cross-Sectional Study

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Abstract

Background and objectives: Diabetes is a significant chronic disease with a high prevalence worldwide. The number of diabetic patients is rising, necessitating improvements in both care and treatment. A baseline evaluation of patients' knowledge and self-care habits is required. The study's objectives were to find out diabetic patients' understanding of the condition and its complications and adherence to self-care routines related to type 2 diabetes mellitus.

Methods: This cross-sectional study involved 300 diabetic patients with type two diabetes who were 18 years and older, having the condition for at least three months, and was conducted in Azadi general teaching hospital in Duhok city from April 2022 to September 2022. Patient selection was taken by systematic random method. A questionnaire which was interviewer-administered was used for collecting data.

Results: Patients' age ranged between 31 to 70 years; the majority of them (48.67%) were between the ages of 51 and 60 years. The participants were males (44.67%) and females (55.33%). Concerning knowledge about risk factors of diabetes 224 patients (74.67 %) knew that family history is a risk, while 254 (84.67 %) were unaware of low physical activity is a risk factor. Among the self-care practices, foot care was the most neglected area.

Conclusion: Patients with diabetes mellitus did not demonstrate sufficient levels of knowledge and practice. Carefully targeted interventions are required. Another issue that has to be addressed is the diabetes patients' documented low adherence to physical activity.

Keywords: Knowledge, Self-care practices, Type 2 diabetes.

Introduction

A prevalent non-infectious disease worldwide is diabetes mellitus. Low and moderate-income nations bear most of the cost, which has become a substantial public health issue.¹ For the past 20 years, type 2 diabetes mellitus has increased globally,

especially in young people, accounting for 75-90 % of diagnosed cases.² Most likely as a result of an alarming increase in obesity, diabetes has become a world wide epidemic. Two elements that could be utilized to explain why this disease is spreading more widely are changes in longevity and a lack of progress in healthcare.¹

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Diabetes is a chronic condition that requires a comprehensive management strategy, with the patient playing a crucial part.³ They must maintain a particular level of physical activity, follow a healthy diet, take care of their feet every day, follow their treatment plan, and manage problems including hypoglycemia episodes.⁴ The risk of complications associated with diabetes, such as hypertension, amputation, kidney disease, neuropathy, eye disease, cardiovascular disease, sexual dysfunction, and skin diseases, must be reduced by effective self-management of type 2 diabetes.⁵ Following dietary and nutritional guidelines, getting enough exercise, taking prescribed medications, and managing stress and weight are all instances of self-management techniques. There is evidence that diabetes sufferers around the world don't exercise good self-care practices.⁶ According to multiple research findings, how people with type two diabetes perceive their illness substantially impacts their self-care techniques, psychological distress, and other health outcomes.⁷ Complex decision-making is required when patients engage in self-care practices; this relationship between illness perception and health outcomes may be explained by the patients' representation of their illness in terms of controllable, understandable, curable, cyclical, and severity of illness.⁸ It has been demonstrated that educating patients on diabetes and its complications will enhance treatment compliance and reduce complications.⁹ People with poor health literacy and limited awareness about diabetes complications are more likely to have inadequate glycemic control and a higher risk of complications because they frequently struggle to understand and adhere to medical advice.¹⁰ Understanding diabetes complications are essential for the early identification of warning signs and symptoms, which is required to create and implement adequate preventive interventions to avoid or delay problems.¹¹ This knowledge is crucial for helping healthcare decision-makers and

policymakers develop and implement appropriate clinical and promotional strategies for public health for disease control and prevention. This study aimed to evaluate patients with type two diabetes about knowledge and self-care practices, besides the association of knowledge score with sociodemographic information characteristics, was examined in this study.

Patients and methods

Patients with type 2 diabetes mellitus were enrolled in this cross-sectional study in Duhok city's endocrine clinic at Azadi Teaching Hospital. A pretested, semi-structured close-ended questionnaire was completed for each participant to collect sociodemographic details, diabetes-specific information, and self-care practices that were followed by them. Knowledge about treatment and complications has been asked as well. The following were checked; smoking habits, inspecting feet daily and inspecting inside of the footwear, monitoring blood sugars as directed by a health care provider, regular drug intake, regular exercise, adhering to a healthy diet, etc. In this study, 300 people with type two diabetes who were 18 years of age or older and had the condition for at least three months or more were enrolled from April 2022 to September 2022. Those with type 1 diabetes, or whose age is less than 18 years were excluded from this study. By using a systematic random method, the patients were selected. The patient's personal information was protected throughout the study steps and written consent was obtained from them. A questionnaire which was interviewer-administered was used for collecting data. The type of program used was JMP Pro14.3.0 for descriptive analysis. The P-value from the Pearson chi-squared test was used to express the parameters. A P-value of less than or equal to 0.05 was considered statistically significant. To achieve the aim of this study; an agreement from the ethical committee of the Kurdistan Higher Council of Medical Specialties was obtained.



Results

Our patients ranged in age from 31 to 70 years; the majority of them (146 patients) were between the ages of 51 and 60 (48.67 %). Of all patients, 166 were female (55.33 %). Approximately 106 of them were

illiterate, 132 had not completed high school (44 %), and only 21 (7%) had graduated from an institute or a college. Only (87.67 %) had diabetes in their families. The majority of them (55.33%) had a history of diabetes from 1-5 years, as shown in Table (1).

Table (1): General information of patients with type 2 diabetes mellitus.

| Characteristics (n=300) | Statistics | |
|---|------------|-------|
| | No. | % |
| Age (38-70 years) mean (SD) | 51.90 | 5.27 |
| Age category | | |
| 31-40 | 6 | 2.00 |
| 41-50 | 132 | 44.00 |
| 51-60 | 146 | 48.67 |
| 61-70 | 16 | 5.33 |
| Gender | | |
| Male | 134 | 44.67 |
| Female | 166 | 55.33 |
| Education | | |
| Illiterate | 106 | 35.33 |
| Under high school | 132 | 44.00 |
| High school graduate | 41 | 13.67 |
| Institute and college graduate | 21 | 7.00 |
| Smoking | | |
| No | 229 | 76.33 |
| Yes | 71 | 23.67 |
| FH of diabetes | | |
| No | 37 | 12.33 |
| Yes | 263 | 87.67 |
| Disease duration (1-20 years) mean (SD) | 4.90 | 2.17 |
| Disease duration | | |
| 1-5 years | 166 | 55.33 |
| 6-10 years | 105 | 35.00 |
| 11-15 years | 22 | 7.33 |
| 16-20 years | 7 | 2.33 |

Of all patients, 277 patients (92.33 %) were aware that increased thirst and dry mouth are symptoms, and 253 patients (84.33 %) were not aware that blurred vision is a symptom. Recurrent infections are one of the problems of diabetes mellitus, which about 292 patients (97.33 %) did not know, and 291 patients (97.00 %) did not know

that headache is a sign of diabetes mellitus. Regarding knowledge of diabetes risk factors, 224 patients (74.67 %) were aware that family history is a risk, however, 255 of them (84.6 %) were not aware that inadequate physical activity is a risk factor. Table (2).



Table (2): Patients' awareness of symptoms and risk factors.

| Knowledge items (n=300) | Statistics no (%) | |
|----------------------------------|-------------------|-------------|
| | No | Yes |
| Hereditary | 45 (15.00) | 255 (85.00) |
| Signs and symptoms | | |
| Increased thirst and a dry mouth | 23 (7.67) | 277 (92.33) |
| Needing to urinate frequently | 24 (8.00) | 276 (92.00) |
| Tiredness | 245 (81.67) | 55 (18.33) |
| Blurred vision | 253 (84.33) | 47 (15.67) |
| Weight loss | 210 (70.00) | 90 (30.00) |
| Recurrent infections | 292 (97.33) | 8 (2.67) |
| Risk factors | | |
| Aging | 97 (32.33) | 203 (67.67) |
| Obesity | 124 (41.33) | 176 (58.67) |
| Family history | 76 (25.33) | 224 (74.67) |
| Low physical activity | 254 (84.67) | 46 (15.33) |
| High cholesterol | 288 (96.00) | 12 (4.00) |

Regarding patients' level of self-care, (64 %) of patients did not have regular exercise, only (18%) did not check their blood sugar

level regularly and (71 %), (78%) respectively did not check their feet and inspect inside their shoes daily. Table (3).

Table (3): Patients with type 2 diabetes mellitus are evaluated for their level of self-care

| Self-care assessment (n=300) | Statistics | |
|---------------------------------|------------|-------|
| | No | % |
| Special diet | | |
| No | 127 | 42.33 |
| Yes | 173 | 57.67 |
| Exercise/week | | |
| No | 192 | 64.00 |
| 1- 3 hours | 74 | 24.67 |
| > 3 hours | 34 | 11.33 |
| Check blood sugar | | |
| Not checking | 89 | 29.67 |
| Recommended by your doctor | 211 | 70.33 |
| Check feet daily | | |
| No | 213 | 71.0 |
| Yes | 87 | 29.0 |
| Inspect inside shoes/foot daily | | |
| No | | |
| Yes | 234 | 78.0 |
| | 66 | 22.0 |



Regarding assessment of treatment and complications among the patients, 243 patients (81 %) did not know the side effects of their medications, and only 31 patients (10.33 %) did not take their

medication as recommended by doctors. Of all patients, (95 %) were not aware that diabetes can cause skin problems. Table (4).

Table (4): Evaluation of type 2 diabetes mellitus patients' treatment and complications.

| Treatment and complications (n=300) | Statistics no (%) | |
|-------------------------------------|-------------------|-------------|
| | No | Yes |
| Side effects of medications | 243 (81.00) | 57 (19.00) |
| Adherence to medications | 31 (10.33) | 269 (89.67) |
| Eye problems | 127 (42.33) | 173 (57.67) |
| Heart /Artery problems | 116 (38.67) | 184 (61.33) |
| Nerve problems | 209 (69.67) | 91 (30.33) |
| Foot/leg problems | 106 (35.33) | 194 (64.67) |
| Skin problems | 285 (95.00) | 15 (5.00) |
| Gastrointestinal problems | 293 (97.67) | 7 (2.33) |
| Kidney problems | 53 (17.67) | 247 (82.33) |
| Frequent infections | 267 (89.00) | 33 (11.00) |

Regarding knowledge about treatment and disease complications of patients with type 2 diabetes with different characteristics, there were significant differences among different age groups and different

educational levels regarding the side effects of medications, but the differences were statistically not significant among different genders. Table (5).

Table (5): Knowledge about treatment and disease complications of patients with type 2 diabetes with different characteristics.

| Characteristics (n=300) | Management and complications no (%) | | p-value (two-sided) |
|--------------------------|-------------------------------------|------------|---------------------|
| | Side effects of medications | | |
| | No (n=243) | Yes (n=57) | |
| Education in age groups: | | | |
| 31-40 | 5 (83.33) | 1 (16.67) | 0.0018 |
| 41-50 | 94 (71.21) | 38 (28.79) | |
| 51-60 | 129 (88.36) | 17 (11.64) | |
| 61-70 | 15 (93.75) | 1 (6.25) | |
| Gender | | | |
| Male | 104 (77.61) | 30 (22.39) | 0.1790 |
| Female | 139 (83.73) | 27 (16.27) | |
| Education | | | |
| Illiterate | 100 (94.34) | 6 (5.66) | |



| | | | |
|--|----------------------------------|------------|---------------------|
| Under high school | 112 (84.85) | 20 (15.15) | <0.001 |
| High school graduate | 23 (56.10) | 18 (43.90) | |
| Institute and college graduate | 8 (38.10) | 13 (61.90) | |
| | Skin problems no (%) | | p-value (two-sided) |
| | No (n=285) | Yes (n=15) | |
| Age category | | | 0.4158 |
| 31-40 | 5 (83.33) | 1 (16.67) | |
| 41-50 | 124 (93.94) | 8 (6.06) | |
| 51-60 | 141 (96.58) | 5 (3.42) | |
| 61-70 | 15 (93.75) | 1 (6.25) | |
| Gender | | | 0.2204 |
| Male | 125 (93.28) | 9 (6.72) | |
| Female | 160 (96.39) | 6 (3.61) | |
| Education | | | <0.001 |
| Illiterate | 104 (98.11) | 2 (1.89) | |
| Under high school | 127 (96.21) | 5 (3.79) | |
| High school graduate | 40 (97.56) | 1 (2.44) | |
| Institute and college graduate | 14 (66.67) | 7 (33.33) | |
| | Gastrointestinal problems no (%) | | p-value (two-sided) |
| | No (n=293) | Yes (n=7) | |
| Age groups | | | 0.2420 |
| 31-40 | 6 (100) | 0 (0.00) | |
| 41-50 | 127 (96.21) | 5 (3.79) | |
| 51-60 | 145 (99.32) | 1 (0.68) | |
| 61-70 | 15 (93.75) | 1 (6.25) | |
| Gender | | | 0.7042 |
| Male | 130 (97.01) | 4 (2.99) | |
| Female | 163 (98.19) | 3 (1.81) | |
| Education | | | 0.1546 |
| Illiterate | 104 (98.11) | 2 (1.89) | |
| Under high school | 130 (98.48) | 2 (1.52) | |
| High school graduate | 40 (97.56) | 1 (2.44) | |
| Institute and college graduate | 19 (90.48) | 2 (9.52) | |
| Pearson chi-squared tests and Fisher's Exact test were performed for statistical analyses. | | | |

There was a significant correlation between the knowledge about different signs and symptoms and various patient characteristics. Awareness about tiredness was significantly associated with age,

gender, and education level. Similarly, the awareness about both blurred vision and recurrent infections was significantly associated with gender and education level. Table (6).

Table (6): Awareness of symptoms and signs among type 2 diabetes mellitus patients with various characteristics.

| Characteristics (n=300) | Signs and symptoms no (%) | | p-value (two-sided) |
|-------------------------|---------------------------|------------|---------------------|
| | Tiredness | | |
| | No (n=245) | Yes (n=55) | |
| Age category | | | 0.0232 |
| 31-40 | 4 (66.67) | 2 (33.33) | |
| 41-50 | 103 (78.03) | 29 (21.97) | |
| 51-60 | 128 (87.67) | 18 (12.33) | |
| 61-70 | 10 (62.50) | 6 (37.50) | |
| Gender | | | 0.0257 |
| Male | 102 (76.12) | 32 (23.88) | |
| Female | 143 (86.14) | 23 (13.86) | |



| | | | |
|--------------------------------|-----------------------------|------------|---------------------|
| Education | | | |
| Illiterate | 93 (87.74) | 13 (12.26) | <0.001 |
| Under high school | 112 (84.85) | 20 (15.15) | |
| High school graduate | 31 (75.61) | 10 (24.39) | |
| Institute and college graduate | 9 (42.86) | 12 (57.14) | |
| | Blurred vision no (%) | | p-value (two-sided) |
| | No (n=253) | Yes (n=47) | |
| Gender | | | 0.008 |
| 31-40 | 3 (50.00) | 3 (50.00) | |
| 41-50 | 105 (79.55) | 27 (20.45) | |
| 51-60 | 134 (91.78) | 12 (8.22) | |
| 61-70 | 11 (68.75) | 5 (31.25) | |
| Gender | | | 0.5214 |
| Male | 111 (82.84) | 23 (17.16) | |
| Female | 142 (85.54) | 24 (14.46) | |
| Education | | | 0.004 |
| Illiterate | 94 (88.68) | 12 (11.32) | |
| Under high school | 114 (86.36) | 18 (13.64) | |
| High school graduate | 34 (82.93) | 7 (17.07) | |
| Institute and college graduate | 11 (52.38) | 10 (47.62) | |
| | Recurrent infections no (%) | | p-value (two-sided) |
| | No (n=292) | Yes (n=8) | |
| Age groups | | | 0.0296 |
| 31-40 | 5 (83.33) | 1 (16.67) | |
| 41-50 | 126 (95.45) | 6 (4.55) | |
| 51-60 | 145 (99.32) | 1 (0.68) | |
| 61-70 | 16 (100) | 0 (0.00) | |
| Gender | | | 0.7355 |
| Male | 131 (97.76) | 3 (2.24) | |
| Female | 161 (96.99) | 5 (3.01) | |
| Education | | | <0.001 |
| Illiterate | 106 (100) | 0 (0.00) | |
| Under high school | 132 (100) | 0 (0.00) | |
| High school graduate | 38 (92.68) | 3 (7.32) | |
| Institute and college graduate | 16 (76.19) | 5 (23.81) | |

Pearson chi-squared tests and Fisher's Exact test were performed for statistical analyses.

Discussion

The majority of the study's participants were between the ages of 51 and 60 years, slightly higher than in the study done by Dinesh.¹ But similar to that seen in a study done in the by Shah.¹² In this study, most participants had diabetes for 1 to 5 years.¹ Among the participants, 35.33 % of them were found to be illiterate, which is higher than in the study by Dinesh who found only 9.5 % of participants to be illiterate, but lower than that found by Shah which found 36.64 % of participants to be illiterate.¹² Patient's level of education has a significant impact on self-care scores and glycemic control, as seen in the study done by Shareef.¹³ Only a few % of the patients who participated in the study had a strong understanding of diabetes, which is a

significant finding in the current study. A major barrier to leading a healthy lifestyle may be a patient's lack of understanding about their health state and disease, which is concerning given the high prevalence of diabetes mellitus in Iraq. The findings of our study regarding the participants' knowledge are worse than those of a study conducted by Danesh.¹ The participants' knowledge of the present study was similar to the Chennai Urban Rural Epidemiology Study (CURES-9) study.¹⁴ Little is known about the complications of diabetes in this study, only 57.67 % knew about eye problems. while 30 % of the participants knew about this complication in the study done in Shareef.¹ Their understanding that diabetes can lead to recurring infections was far worse. The results of our



investigation were substantially different from those of the study done by Mehta regarding the understanding of complications.¹⁵ In which 82 % of participants knew about the disease and its complications. It was observed in this study that the mean composite knowledge score was better in the age group 41-50. This finding is dissimilar to the study done by Danesh¹ They found that the 30-49 age group had a higher mean composite knowledge score. This lack of information suggests that the majority of them have not received adequate education about their illness from primary care doctors and other field-level healthcare professionals. The fact that field workers themselves are unaware of it or unmotivated to educate the public could be one of the causes of the absence of education provisions. A physician's failure in this area could be brought on by the large number of patients they encounter daily and the consequent lack of time for education. In the present study, around 70% of the study participants checked their blood sugar regularly. While 65 % monitored their blood sugar regularly compared to a study done in by Danesh.¹ Nearly the same results were observed in other research.¹⁶⁻¹⁸ Checking blood glucose should receive special attention because this is an important way to determine whether the patient's treatment plan is working sufficiently. Regarding foot care, Patients who regularly checked their feet and the inside of their shoes included 29% of the total. However, in the study conducted by Daniesh,¹ Only 0.5 % of them checked it, and fewer than 9 % and 12 %, respectively, checked their feet and the inside of their shoes daily, according to research done by Raithatha.³

Conclusion

Patients with diabetes mellitus did not demonstrate sufficient levels of knowledge and practice. The participants were very poor with regards to the daily checking of feet and inside of footwear and also in adherence to exercise. Raising awareness of diabetes complications among patients and

the general public will assist to lessen complications and ease the strain on the healthcare system. Diabetes is a disease that affects both individuals and society as a whole. The family should be involved in such patients' treatment in coordination with the primary healthcare providers, and the primary care physician's role is crucial to enhancing self-care at home.

Conflict of interest

There were no conflicts of interest.

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