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Original research article

NURSES' KNOWLEDGE AND ATTITUDES TOWARDS DIETARY MANAGEMENT OF PATIENTS WITH DIABETES MELLITUS

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Abstract: *Proper dietary management is crucial for patients with diabetes mellitus, and nurses play a key role in educating and managing these patients. Understanding nurses' knowledge and attitudes towards dietary management can help improve patient care.* ***Objective:*** *To assess the knowledge and attitudes of nurses towards dietary management of patients with diabetes mellitus.* ***Methods:*** *A cross-sectional study was conducted in the Nursing Department of Lahore General Hospital, Multan, from June 2023 to June 2024. A total of 150 nurses from medical and surgical wards were selected through convenience sampling. Data were collected using a self-administered questionnaire, which was anonymous and took 15-20 minutes to complete. The questionnaire was divided into three sections: demographic, social, and professional information; a modified version of the 20-item Nutritional Management of Diabetes Knowledge Test; and a 14-item Nurses' Attitudes about Nutritional Management of Diabetes Questionnaire. Descriptive statistics were used to summarize the data, and Pearson's correlation analysis was employed to explore the relationship between knowledge and attitudes.* ***Results:*** *The mean knowledge score among the nurses was 11.20 ± 1.90, with scores ranging from 5 to 17. After standardization, 90 nurses (60%) exhibited moderate knowledge of nutritional management for diabetes. The mean attitude score was 59.71 ± 5.98, with 129 participants (86%) demonstrating a favorable attitude. Pearson's correlation analysis showed no statistically significant association between knowledge and attitude (r= -0.070, p= 0.419).* ***Conclusion:*** *The study found that nurses generally had moderate knowledge and a favorable attitude toward the dietary management of diabetic patients. These findings suggest a need for targeted educational interventions to enhance nurses' knowledge in this area, potentially improving patient outcomes.*

Keywords: Attitude of Health Personnel, Cross-Sectional Studies, Diabetes Mellitus, Dietary Management, Nurse's Role, Nutritional Knowledge.

Introduction

Diabetes has a high incidence and morbidity globally, with around 537 million adults suffering from it, impacting their quality of life. (1). This incidence has been predicted to increase by another 100 million by 2030. As diabetes is incurable, it can be managed by nutritional and pharmacological therapy, exercise, and blood-sugar monitoring. Maintaining a dietary balance can keep glycemia under control and improve the patient's quality of life and well-being. (2). Nurses are essential in the nutritional assessment and maintenance of diabetics and help them make necessary lifestyle changes.

Due to the excessive involvement of nurses in patient care, they must be well aware of the symptoms, adverse outcomes, and complications of the disease. However, an assessment of nurses' knowledge and attitudes about diabetes in previous studies showed unsatisfactory results, which can be alarming. (3, 4). Poor management of diabetics due to insufficient knowledge can increase the risk of complications due to failure to achieve glycemic control. In Pakistan, due to a lack of resources and quality of education, nurses are not well-trained in the management of patients. (5, 6). However, since diabetes is a common condition in the country, healthcare staff are expected to be knowledgeable about it. Diabetes assessment is included in the initial examination of patients, so nurses must have adequate knowledge and favorable attitudes to guide patients toward therapeutic management and nutritional guidelines to improve their condition.

This study was conducted to assess nurses' knowledge and attitudes toward the dietary management of patients with diabetes mellitus.

Methodology

A cross-sectional study was conducted in the Nursing Department of Lahore General Hospital, Multan, from June 2023 to June 2024. A total of 150 nurses from medical and surgical wards were selected for the study by convenience sampling. Nurses working on a temporary rotation and those without a bachelor's degree were excluded. All participants provided their informed consent to become a part of the study. The hospital's ethical committee approved the study. A self-administered questionnaire was used to collect data. It was anonymous and took 15-20 minutes to complete. It was divided into three parts; the first section was about demographic, social, and professional information of nurses. The second section was designed to assess knowledge through a modified version of the 20-item Nutritional Management of Diabetes Knowledge Test, with a high score indicating more knowledge. The minimum score was obtained from 0, and the maximum score was 20, standardized on a 0-100 scale and categorized into high, moderate, and poor knowledge. The third section assessed

nurses' attitudes with a 14-item Nurses' Attitudes about Nutritional Management of Diabetes Questionnaire, which could be answered on a Likert scale from 1 to 5, with one being strongly disagree and five being strongly agree. The minimum score obtained was 14, and the maximum score was 70, standardized from 0-100 and categorized into favorable, moderate, and unfavorable attitudes.

The questionnaire was pre-tested for reliability and validity with a content validity ratio of 0.99 and a content validity index 1.0. The Cronbach's alpha was 0.63 for the Nutritional Management of Diabetes Knowledge Test and 0.85 for the Attitudes questionnaire.

All data was analyzed using SPSS version 24. Descriptive analysis was done to present participants' characteristics in mean ± SD for continuous parameters and percentages for categorical parameters. Pearson's correlation was used to assess the association between knowledge and attitude. Multiple regression analyses evaluated the association between factors influencing expertise and attitudes. A p-value less than 0.05 was taken as significant.

Results

A total of 150 nurses' responses were included for analysis. The average age of participants was 29.28 ± 5.26 years. 86% of participants were women, and 96% had a bachelors. Only 22% of nurses considered their nutrition education satisfactory, and only 10% received training in diabetes management (Table I).

The mean knowledge score was 11.20 ± 1.90, with the lowest score of 5 and the highest score of 17. After standardizing the score, 90 (60%) nurses showed a moderate knowledge of nutrient management for diabetes. The responses of nurses to knowledge questions are shown in Table II. The mean attitude score was 59.71 ± 5.98, and 129 participants (86%) had a favorable attitude when standardized. The responses of nurses to attitude questions are shown in Table III. Pearson's correlation analysis revealed a statistically insignificant association between knowledge and attitude (r= -0.070, p= 0.419).

Table IV shows that gender and preferred learning mode significantly influenced knowledge scores. Male nurses (B=-7.61, p=0.010) and those who preferred a hybrid learning mode (B=7.30, p=0.030) had a high knowledge score. Nurses educating diabetic patients about nutritional management had a favorable attitude score (r= -6.61, p=0.020) (Table V)

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Table I: Socio-demographics of Participants

Variables	N (%)
Age	
Younger than 25	27 (18%)
26-30	81 (54%)
31-40	30 (20%)
41 or older	12 (8%)
Gender	
Male	21 (14%)
Female	129 (86%)
Marital status	
Single	60 (40%)
Married	90 (60%)
Qualification	
Bachelors	144 (96%)
Masters	6 (4%)
Department	
Medical	66 (44%)
Surgical	84 (56%)
Years of service	
Two years or less	36 (24%)
3-5 years	51 (34%)
6-10	27 (18%)
More than ten years	36 (24%)
Received nutrition education	
Satisfactory	33 (22%)
Unsatisfactory	54 (36%)
Very satisfactory	15 (10%)
Received diabetic management training	15 (10%)
Aware of national diabetes guidelines	24 (16%)
Preferred learning mode	
Self-study	12 (8%)
In-person	75 (50%)
Online	36 (24%)
Hybrid	27 (18%)
People with diabetes managed per month.	
Five or less	42 (28%)
6-10	60 (40%)

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11-15	24 (16%)
16 or more	24 (16%)
Responsible for providing diabetes education to patients	147 (98%)
Self-perceived competence in nutritional management	
Competent	15 (10%)
Somewhat competent	84 (56%)
Incompetent	9 (6%)
Somewhat incompetent	42 (28%)

Table II: Assessment of Nurses' Knowledge

Items	Correct responses
People with diabetes should include every nutrient in their diet	93 (62%)
People with diabetes should calculate their diet based on fats, carbohydrates, and proteins	81 (54%)
LDL cholesterol increases by consumption of trans fatty acids	99 (66%)
The amount of carbohydrates per serving should be determined by the total carbohydrates stated on the labels	30 (20%)
Which ingredients in this breakfast will disrupt glycemic control	117 (78%)
The amount of carbohydrates consumed is more important than the carbohydrate type	81 (54%)
Fasting plasma glucose of ≥ 126 mg/dl indicates diabetes	99 (66%)
3-4 cubes of sugar can treat symptomatic hypoglycemia	117 (78%)
Non-fat or low-fat milk has lower calorie and fat counts than whole milk	60 (40%)
Carbohydrates should constitute 50-60% of daily diabetic diet	42 (28%)
People with diabetes should consume fruits	144 (96%)
Only carbohydrates should be limited in a diabetic diet	114 (76%)
Diabetics should consume limited animal fat	51 (34%)
Diabetes can be managed and prevented by exercise	147 (98%)
High sugar intake can cause diabetes	81 (54%)
Diabetes is closely associated with obesity	144 (96%)
Diabetes is associated with hypertension	114 (76%)
People with diabetes should eat a balanced diet	135 (90%)
Protein should constitute 10-15% of daily diabetic diet	21 (14%)
A limited amount of 300 mg of cholesterol should be consumed by diabetic	66 (44%)

Table III: Assessment of Nurses' Attitudes

Items	Agree/ Strongly agree N (%)
Diet plays an integral part in maintaining glycemic control	144 (96%)
It is not necessary to carry out an initial nutritional assessment of diabetic patients	114 (76%)
Nurses are responsible for carrying out the initial nutritional assessment	111 (74%)
The BMI of diabetics must be calculated on admission	120 (80%)
Obese patients are at high risk of diabetic complications	141 (94%)
Patients should be aware of their particular diet	138 (92%)
Nutritionists must take care of the nutritional diet of admitted diabetics	69 (46%)
People with diabetes should manage their sugar levels by making changes in lifestyle choices	138 (92%)
Diabetes can be controlled by balanced nutrition, diet, exercise and weight control	138 (92%)
Nurses should be knowledgeable about the nutritional therapy of diabetics	105 (70%)
Nurses play an essential role in explaining nutritional therapy to diabetics	136 (90%)
Nurses are responsible for educating patients and families about nutritional therapy	120 (80%)
Nurses play an essential role in helping patients and families understand nutritional therapy	120 (80%)

Nurses should monitor the efficacy of nutritional therapy	105 (70%)

Table IV: Association Between Knowledge Scores and Socio-Demographic Parameters

Variables	β (95% CI)	P
Age		
Younger than 25	5.70 (-9.18 – 19.61)	0.448
26-30	9.17 (-3.65 – 21.10)	0.157
31-40	7.62 (-2.22 – 16.28)	0.130
41 or older	Reference	
Gender		
Male	Reference	
Female	-7.60 (-12.20 – 1.89)	0.010
Marital status		
Single	-4.32 (-10.0 – 1.52)	0.139
Married	Reference	0.560
Years of service		
Two years or less	-7.62 (-18.33 – 9.21)	0.210
3-5 years	-5.88 (-16.30 – 4.40)	0.299
6-10	-2.70 (-11.46 – 6.23)	0.588
More than ten years	Reference	
Received nutrition education		
Satisfactory	Reference	
Unsatisfactory	5.33 (-1.32 – 10.77)	0.109
Very unsatisfactory	5.68 (-2.69 – 14.18)	0.227
Aware of national diabetes guidelines	6.31 (-5.71 – 6.16)	0.939
Preferred learning mode		
Self-study	7.81 (-1.61 – 17.20)	0.138
In-person	7.31 (0.80 – 12.77)	0.030
Online	5.60 (-1.66 – 11.77)	0.128
Hybrid	Reference	
Responsible for providing diabetes education to patients	-7.20 (-1.9 – 6.0)	0.276

Table V: Association Between Attitude Scores and Socio-Demographic Parameters

Variables	β (95% CI)	P
Aware of national diabetes guidelines	5.0 (-1.21 – 10.21)	0.109
People with diabetes managed per month.		
Five or less	-4.88 (-12.61 – 2.80)	0.258
6-10	1.49 (-6.48 – 9.10)	0.737
11-15	-2.10 (-11.59 – 7.41)	0.690
16 or more	Reference	
Responsible for providing diabetes education to patients	-6.61 (-12.78 – -1.41)	0.020
Self-perceived competence in nutritional management		
Competent	Reference	
Somewhat competent	-0.458 (-8.18 – 7.31)	0.920
Incompetant	0.750 (-10.10 – 11.49)	0.899
Somewhat incompetent	1.89 (-6.09 – 11.0)	0.669

Discussion

This study assessed nurses' knowledge and attitudes towards the nutritional management of patients with diabetes mellitus. The results showed moderate knowledge and favorable attitudes of nurses. Gender and preferred mode of learning significantly influenced knowledge scores. Nurses who educated diabetic patients about nutritional management had a favorable attitude score.

According to the literature, knowledge gaps regarding diabetes have been reported in nurses worldwide. Our knowledge score (60%) was significantly higher than that of Farzaei et al. and Naz et al., who reported 44% and 50% knowledge scores, respectively. (7, 8). Badshah et al. and Oyewole et al. also reported poor knowledge about diabetic meal planning among most nurses. (9, 10). Poor knowledge about nutritional care management among nurses could lead to misguidance of patients, increase risks of complications, and worsen quality of life.

A moderate knowledge score in our study may be related to the fact that only 10% of nurses attended training regarding

diabetes after education, and no position of diabetes educator is present in Pakistan. (11). Additionally, only 20-30 credit hours are designated to teach about diabetes management during the nursing degree. Elmahdy et al. also reported that only 4% of nurses in their study were certified to be diabetes educators. (12). In Saudia Arabia, only 22% of nurses received training regarding diabetes at work. (13). With the growing prevalence of diabetes, nurses must be better educated and trained in nutritional management to prevent and manage this condition effectively.

86% of the nurses had a promising attitude in our study. Oliveira and Zanetti also reported a positive attitude in Brazilian nurses towards tending to the nutritional management of diabetics and were keen to become diabetic educators. (14). However, the results of Busili et al. contrast with our study, where 49% of Nigerian nurses had an unfavorable attitude toward the dietary needs of diabetes patients. (15). Attitude scores were related to involvement in patient education; nurses responsible for educating the patient during their shifts had a favorable attitude. Similar results were noted in previous studies. (16).

No significant association between knowledge and attitude scores was reported in our study. However, knowledge scores were significantly better in male nurses and nurses who preferred hybrid learning. Busili also showed a higher knowledge score among male nurses. (17).

Our study has some limitations. We assess nurses' knowledge and attitudes regarding hospitalized patients. However, a large portion of diabetics are not hospitalized, limiting our results' applicability.

Conclusion

A moderate knowledge level and favorable attitude were recorded in nurses toward dietary management in diabetic patients.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
Approved by the department concerned. (IRB-LGHMU-094/23)
Consent for publication
Approved
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Not applicable

Conflict of interest

The authors declared an absence of conflict of interest.

Authors Contribution

RASHIDA GHULAM Muhammad (Head Nurse)
Final Approval of version
NADIA SAFDAR (Head Nurse)
Revisiting Critically & Data Analysis
TAHIRA SHAHEEN (Principal)
Drafting & Concept & Design of Study

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