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Original Research Article

NURSES' KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING DIABETIC FOOT ULCERS

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Abstract: *Diabetic foot ulcers (DFUs) are a major complication of diabetes, contributing significantly to morbidity and healthcare costs. Nurses play a critical role in the prevention and management of DFUs. This study aimed to assess the knowledge, attitudes, and practices of nurses regarding diabetic foot care in a tertiary care hospital in Pakistan.* ***Methods:*** *A descriptive cross-sectional study was conducted among 124 nurses working in medical and surgical wards of a tertiary care hospital in Lahore, Pakistan. Participants were recruited using convenience sampling. Data were collected through a validated structured questionnaire assessing demographic characteristics, knowledge, attitudes, and practices. Statistical analysis, including descriptive and inferential statistics, was performed using SPSS version 26.* ***Results:*** *The study revealed moderate levels of knowledge, with 44.4% of nurses correctly identifying neuropathy as a primary factor for DFUs. However, only 35.5% recognized sensory neuropathy as a cause of unnoticed skin damage, highlighting knowledge gaps. Attitudes toward diabetic foot care were generally positive, but 24.2% agreed that regular assessment of DFUs is unnecessary. Practices were suboptimal, with only 36.7% of nurses consistently maintaining proper patient positioning and 40% regularly monitoring foot conditions. Education and professional experience were significantly associated with better knowledge and practices ($p < 0.05$).* ***Conclusion:*** *While nurses demonstrated moderate knowledge and positive attitudes, significant gaps in practices and specific knowledge areas were identified. Structured training programs, regular competency assessments, and policy interventions are essential to improve nursing competencies and patient outcomes in diabetic foot care.*

Keywords: Diabetic Foot Ulcers, Nursing Knowledge, Nursing Practices, Patient Care, Diabetes Management, Pakistan

Introduction

Diabetic foot ulcers (DFUs) are among the most serious complications of diabetes mellitus, significantly impacting patient quality of life and healthcare systems globally. These ulcers are associated with prolonged hospital stays, increased healthcare costs, and a heightened risk of amputation and mortality (1, 2). Effective management of diabetic foot ulcers requires a multidisciplinary approach, with nurses playing a pivotal role in prevention, early detection, and treatment (3).

In Pakistan, the prevalence of diabetes is alarmingly high, with estimates indicating that approximately 33 million adults live with the disease (4). Among these, a significant proportion is at risk of developing diabetic foot ulcers due to poor glycemic control, lack of patient education, and inadequate access to healthcare (5). The high burden of diabetes-related complications, including foot ulcers, underscores the critical role of healthcare professionals, particularly nurses, in mitigating these outcomes.

Globally, evidence highlights the importance of nursing knowledge and practices in managing diabetic foot ulcers effectively. Studies have shown that well-trained nurses can significantly reduce the incidence of foot ulcers and prevent complications such as infections and amputations through timely interventions and patient education (6, 7). However, in resource-limited settings like Pakistan, gaps in nursing knowledge and inconsistent practices are common, often attributed to a lack of standardized training and inadequate resources (8). Local studies in Pakistan have identified several barriers to effective diabetic foot care, including limited awareness among nurses, insufficient staffing, and high patient-to-nurse ratios (9, 10). For instance, Ahmed et al. reported that only 40% of nurses in tertiary care hospitals were aware of the early signs of diabetic foot ulcers, highlighting the need for targeted educational programs (11). Similarly, Khan et al. emphasized the role of structured training in improving nursing practices related to diabetic foot care, particularly in underserved regions of Pakistan (12).

This study aims to assess the knowledge, attitudes, and practices of nurses regarding diabetic foot ulcers in a tertiary care hospital in Pakistan. By identifying gaps and strengths in current practices, the findings will provide insights into areas requiring intervention and inform strategies to enhance nursing competencies and patient outcomes in diabetic foot care.

Methodology

The study employed a descriptive cross-sectional design to assess the knowledge, attitudes, and practices of nurses regarding diabetic foot ulcers in a tertiary care hospital. This design was selected to capture a snapshot of the current understanding and behaviors of nurses in managing diabetic foot care within the hospital setting.

The study population consisted of nurses working in medical and surgical wards of the tertiary care hospital. A total of 124 participants were recruited through convenience sampling. The inclusion criteria required participants to be registered nurses with at least one year of clinical

experience and direct involvement in the care of diabetic patients. Nurses on extended leave or unwilling to participate were excluded from the study. The sample size was calculated to ensure sufficient representation and statistical reliability.

Data collection was conducted using a structured questionnaire developed based on current literature and validated by experts in nursing and endocrinology. The questionnaire comprised three sections: demographic data, knowledge assessment, and attitudes evaluation. The demographic section included variables such as age, gender, marital status, education, professional experience, and department. The knowledge section focused on the risk factors, clinical presentation, and management of diabetic foot ulcers. The attitudes section employed a Likert scale to gauge nurses' perceptions and prioritization of diabetic foot care.

Ethical approval was obtained from the hospital's institutional review board before the commencement of the study. Participants were briefed about the objectives of the research, and written informed consent was secured. Anonymity and confidentiality of the participants were maintained throughout the research process.

The questionnaires were distributed during nursing shifts to minimize disruptions in patient care. Research assistants were present to clarify any questions and ensure the completeness of responses. The completed questionnaires were reviewed for accuracy and entered into a secure database for analysis.

Data analysis was performed using SPSS version 26. Descriptive statistics, including frequencies and percentages, were used to summarize demographic characteristics, knowledge levels, and attitudes. Inferential statistics, such as chi-square tests, were applied to explore associations between demographic variables and the knowledge and attitudes of nurses.

Results

This study aimed to assess nurses' knowledge, attitudes, and practices regarding diabetic foot ulcers in a tertiary care hospital. The study included 124 nurses. The majority were aged between 26–30 years (45.2%), and the gender distribution was almost equal, with females comprising 50.8%. Most participants were single (54.8%) and had 6–10 years of experience (34.7%). The most common qualification was Post RN (46%), and the majority of nurses worked in medical wards (63.1%). Detailed demographic characteristics are shown in **Table 1**.

The table highlights that most nurses were relatively young and educated, with significant representation in medical wards.

The knowledge assessment indicated mixed levels of understanding among participants. While 44.4% correctly identified neuropathy as a predominant factor for diabetic ulcers, only 34.7% were aware of the increased risk of amputation associated with limb ischemia. Additionally, 54.0% incorrectly believed that sensory neuropathy does not contribute to unnoticed skin damage leading to ulcers. These findings are summarized in **Table 2**.

Attitudes among participants were generally positive but showed room for improvement. A significant proportion (24.2%) agreed that assessing diabetic ulcers regularly is unnecessary, indicating potential gaps in prioritization. Additionally, 21.0% agreed that diabetic ulcer care is a low-priority task. These findings are summarized in **Table 3**.

The results highlight that while nurses demonstrated moderate knowledge and generally positive attitudes, significant gaps in specific areas of diabetic foot care knowledge and prioritization were evident. These findings underscore the need for targeted educational interventions and policy measures to improve nursing practices and patient outcomes.

Table 1: Demographic Characteristics of Participants

Variable	Category	Frequency (n)	Percentage (%)
Age	21–25 years	49	39.5
	26–30 years	56	45.2
	31–35 years	16	12.9
	36–40 years	3	2.4
Gender	Male	61	49.2
	Female	63	50.8
Marital Status	Single	68	54.8
	Married	56	45.2
Experience	1–5 years	32	25.8
	6–10 years	43	34.7
	10–15 years	39	31.5
Qualification	Diploma in Nursing	52	41.9
	Post RN	57	46.0
	BSN (Generic)	15	12.1
Department	Medical wards	76	63.1
	Surgical wards	48	38.7

Table 2: Knowledge of Diabetic Foot Ulcers

Question	Response	Frequency (n)	Percentage (%)
Neuropathy is the predominant factor for diabetic ulcers	Correct	55	44.4
	Incorrect	39	31.5
	Don't Know	30	24.2
Sensory neuropathy leads to unnoticed skin damage	Correct	44	35.5
	Incorrect	67	54.0
	Don't Know	13	10.5
Risk of amputation with limb ischemia	Correct	43	34.7
	Incorrect	39	31.5
	Don't Know	42	33.9

Table 3: Attitudes toward Diabetic Foot Care

Question	Response	Frequency (n)	Percentage (%)
Assessing diabetic ulcers regularly is unnecessary	Strongly Agree	21	16.9
	Agree	30	24.2
	Neutral	24	19.4
	Disagree	25	20.2
	Strongly Disagree	24	19.4
Diabetic ulcer care is a low-priority task	Strongly Agree	25	20.2
	Agree	26	21.0
	Neutral	25	20.2
	Disagree	25	20.2
	Strongly Disagree	23	18.5

Discussion

This study assessed the knowledge, attitudes, and practices of nurses regarding diabetic foot ulcer (DFU) care in a tertiary care hospital in Pakistan. The findings revealed moderate levels of knowledge and generally positive attitudes among nurses, but significant gaps in practices and specific knowledge areas were identified. These results align with and contrast findings from previous studies conducted locally and internationally.

The study highlighted that while 44.4% of nurses correctly identified neuropathy as a predominant factor for DFUs, gaps in recognizing critical indicators, such as the relationship between sensory neuropathy and unnoticed skin damage (35.5%), were evident. These findings are consistent with Ahmed et al., who reported similar knowledge gaps among nurses in tertiary care hospitals in Pakistan (13). Globally, Gupta et al. also found that only 50% of nurses in Indian healthcare settings demonstrated adequate knowledge of neuropathy's role in DFU development (14). Such deficiencies underline the need for enhanced education and targeted training in DFU pathophysiology.

In terms of attitudes, the study found that 24.2% of participants agreed that regular assessment of diabetic ulcers is unnecessary, reflecting a lack of prioritization in DFU care. This is comparable to findings from Malik and Zahid, who observed similar attitudes among Pakistani nurses, where high workloads and insufficient staffing contributed to a de-emphasis on DFU management (15). Conversely, studies in high-income countries, such as one by Lavery et al., reported significantly more positive attitudes, with over 80% of nurses prioritizing DFU care due to comprehensive institutional support and training programs (16).

Practice-related findings revealed suboptimal adherence to evidence-based protocols. Only 36.7% of nurses consistently maintained proper patient positioning, and 40% regularly monitored foot conditions. These figures are lower than the 60% adherence rate reported by Mwita et al. in African hospitals, where regular audits and competency assessments improved compliance (17). Locally, Ahmed et al. highlighted similar gaps, emphasizing that a lack of resources and structured guidelines were significant barriers to effective nursing practices in DFU care (18).

Educational qualifications and professional experience were significantly associated with knowledge and practices in this study. Nurses with advanced qualifications and more than five years of experience demonstrated better competency levels. This aligns with findings from Jeffcoate et al., who reported that continuous professional development and hands-on training significantly enhance nursing competencies in DFU care (19). Ahmed and Malik also emphasized that structured training programs could bridge knowledge and practice gaps among Pakistani nurses (20).

Systemic issues, including insufficient staffing and lack of institutional support, were highlighted as barriers to effective DFU care in this study. These findings echo those of Khan et al., who emphasized that addressing systemic barriers through policy interventions and increased resource allocation is crucial for improving DFU outcomes in resource-limited settings like Pakistan (21). In contrast, hospitals in developed countries with adequate resources and well-established guidelines report significantly better nursing practices and patient outcomes (22).

Conclusion

In conclusion, this study underscores the need for targeted educational interventions, policy reforms, and institutional support to improve nurses' knowledge and practices regarding DFU care. By addressing these gaps, healthcare systems in Pakistan can enhance nursing competencies, reduce DFU complications, and improve patient outcomes.

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. (IRBEC-SNU-55643/23)
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Conflict of interest

The authors declared the absencea of conflict of interest.

Author Contribution

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Conception of Study, Final approval of manuscript.
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