WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

KNOWLEDGE AND PRACTICE OF FOOT CARE AMONG DIABETIC PATIENTS AT ENUGU STATE UNIVERSITY TEACHING HOSPITAL

Udeh Chioma Anthonia[1], Okonkwo Chisom Angela[2], Udeh Solomon Ifechukwu[3]

[1] ORCID: 0000-0002-4129-6675
Affiliation- Enugu State University of Science and Technology
[2] Affiliation- Enugu State University of Science and Technology
[3] Affiliation- Enugu State University of Science and Technology
Corresponding Author:
Udeh Chioma Anthonia
Email: chiomaudeh.ca@gmail.com

ABSTRACT :

The increasing global prevalence of diabetes mellitus poses a significant public health issue, impacting a large number of individuals and leading to various debilitating consequences that adversely affect overall health. This research utilized a cross-sectional descriptive design at the Enugu State University Teaching Hospital, involving a sample of 246 diabetic patients selected through purposive sampling. Data collection was conducted using a researcher-developed questionnaire aimed at evaluating knowledge and practices related to foot care. The instrument underwent face and content validation. Its reliability was determined through a test-retest method, yielding a Cronbach's alpha coefficient of 0.88. Ethical approval for the study was granted by the hospital's health research ethics committee. Data were gathered using the structured questionnaire, and analysis was performed with the Statistical Package for Social Sciences (SPSS). Findings indicated that participants possessed a strong understanding of foot care, with the majority (98.3%) demonstrating practices of foot care. The study emphasizes the necessity for ongoing education for diabetic patients regarding foot care.

KEY WORDS: Knowledge of Foot care, Practice of Foot care, Diabetes Mellitus, Foot care

INTRODUCTION

The escalating global burden of diabetes mellitus presents a considerable public health challenge, affecting a substantial number of individuals and contributing to a range of debilitating sequelae that diminish overall well-being (World Health Organization, 2016). Characterized by sustained hyperglycemia resulting from deficient insulin secretion or impaired insulin action, diabetes can precipitate severe complications, notably diabetic foot ulcers (American Diabetes Association, 2023). Diabetic foot ulcers DFUs stand out as a prevalent and serious complication associated with diabetes, frequently leading to significant morbidity, limb amputations, and escalating healthcare expenditures (Armstrong et al., 2017). The occurrence of DFUs among individuals with diabetes is a major concern, with estimations indicating that 15% of those affected will develop these ulcers during their lifetime (Zhang et al., 2017).

In the Nigerian context, the growing prevalence of diabetes necessitates focused attention, particularly concerning patient education and self-management behaviors (Ajayi et al, 2023). Diabetic foot ulcers not only impose a substantial health burden but also underscore deficiencies in patients' understanding and implementation of appropriate foot care regimens. Individuals living with diabetes face an elevated susceptibility to foot complications due to various contributing factors, including the chronicity of the disease, suboptimal glycemic control, peripheral neuropathy, and insufficient knowledge regarding foot care practices (International Diabetes Federation, 2021). The capacity of individuals to proactively manage their foot health is paramount in preventing the development of complications such as DFUs.

Research has consistently demonstrated that a considerable proportion of individuals with diabetes possess inadequate knowledge concerning foot care, a crucial aspect of preventing foot injuries and ulcerations (Aljaouni et al, 2024). Factors influencing this knowledge base encompass educational attainment, socioeconomic circumstances, accessibility to healthcare services, and prevailing cultural norms (Letta et al, 2022). Studies have indicated that individuals with higher levels of education are more likely to adopt effective foot care behaviors, highlighting the significance of tailored educational interventions (Hijazi et al., 2025). Insufficient understanding of foot care can result in poor practice of foot care and an increased likelihood of ulcer development, subsequently leading to higher rates of hospitalizations and amputations (Ugwu et al, 2019).

Within the outpatient setting of Enugu State University Teaching Hospital, the imperative for a dedicated investigation into the knowledge and practices

of foot care among diabetic patients is apparent. Gaining insight into the current level of awareness and the actual self-care behaviors adopted by patients is fundamental for designing impactful educational initiatives aimed at enhancing foot care practices. Such programs can empower patients with the necessary understanding to recognize early indicators of foot problems, implement preventive strategies, and promptly seek medical attention when required. Hence the need for this study to assess the knowledge and practice of foot care among Diabetics patients.

RESEARCH METHODS

Research Design

The study employed a cross-sectional descriptive research design. This design is consistent with similar studies, such as the investigation into knowledge, attitudes, and practices regarding diabetic foot care.

Study Setting

The research was conducted at the Enugu State University Teaching Hospital, Parklane, a public tertiary health institution located in Enugu metropolis. The facility was repurposed as a general hospital during the Nigerian Civil War and has progressively expanded to include surgical, maternity, pediatric, and other specialized services. It was designated as a teaching hospital in May 2006, making it a vital center for healthcare delivery and education in the region (First News, 2020).

Population

The target population for this study included 636 diabetic patients (obtained from the outpatient register) attending the medical outpatient department of the Enugu State University Teaching Hospital. Participants were required to have a confirmed diagnosis of diabetes mellitus to ensure the relevance of the findings to the study's objectives.

Sample size

The sample size for the study was determined to be 246 diabetic patients. This calculation was based on an estimated population of 636 diabetic patients in the outpatient department, utilizing Taro Yamane’s (1967) formula for sample size determination

Sampling Technique

A purposive sampling technique was employed to target a specific population with particular characteristics relevant to the study objectives. The inclusion criteria for participants were as follows:

- Adults (18 years and older) diagnosed with diabetes mellitus.
- Patients who have previously attended the medical outpatient department at least twice and are aware of their diabetic status.
- Individuals willing to participate in the study and available during the data collection period.

Instrument for Data Collection

Data were collected using researcher-structured questionnaire.. The questionnaire comprised four sections:
Section A: Socio-demographic information, including age, gender, educational background, and duration of diabetes.
Section B: Knowledge assessment regarding foot care, consisting of 14 questions.
Section C: Practice assessment related to foot care, including 12 items.

Validity and Reliability of instrument

To ensure the validity of the questionnaire, it was reviewed by a lecturer in the department of Nursing Enugu state university of science and technology and an expert in medical surgical nursing, they provided feedbacks on the sequence and clarity of the questions. Necessary adjustments were made to align the questionnaire with the study’s objectives. The reliability of the instrument was assessed using a test-retest method on 25 diabetic patients, who shared similar characteristics but were not part of the main study population. The data collected were analyzed using the Cronbach Alpha coefficient formula, yielding a reliability coefficient of 0.88, indicating that the instrument is reliable for the study.

Ethical Considerations

Ethical approval for the study was obtained from the health research ethics committee of Enugu State University Teaching Hospital (ESUT/HREC/2024/07/035). Informed consent was obtained from all participants, ensuring they understood the study's purpose and their rights, including the right to withdraw at any time. Anonymity and confidentiality were strictly maintained throughout the research process, respecting the dignity and autonomy of each participant.

Method of Data Collection

Two research assistants assisted in the data collection process. Following proper introductions and explanations of the study's purpose, informed consent was obtained from the participants. The questionnaires were administered face-to-face, with responses collected on the spot. The data collection process was completed over a two-week period.

Method of Data Analysis

Data analysis was done with the aid of Excel spreadsheet and Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics, including frequencies and percentages, were utilized to summarize the socio-demographic characteristics and assess the knowledge and practices of foot care among participants. Items were scored using a 4-point Likert scale, with responses ranging from 4 (Strongly Agree) to 1 (Strongly Disagree). Data analysis included calculating means and standard deviations, with results presented in tables corresponding to the study objectives.

PRESENTATION OF RESULTS

The results obtained from the copies of the questionnaire that were administered to the two hundred and forty-six (246) respondents were collected and only two hundred and forty copies of the questionnaire were completely filled and returned representing 97.6% response rate.

Table 1: Socio-Demographic data of the patients

Socio-demographic data	Frequency (n)	Percentage (%)	Age Range (years)	M (x^2)	SD
1. Age			23-84	44.45	12.28
- ≤30	30	12.5			
- 31-40	78	32.5			
- 41-50	69	28.7			
- 51 and 60	45	18.8			
- 61-70	8	3.3			
- 71+	10	4.2			
2. Sex:					
- Male	121	50.4			
- Female	119	49.6			
3. Marital Status					
- Single	43	17.9			
- Married	171	71.3			
- Divorced	2	0.8			
- widow	20	8.3			
- widower	4	1.7			
4. Religion					
- Christianity	214	89.2			
- Muslim	22	9.2			
- Traditional	4	1.7			
5. Occupation					
- Trading	77	32.1			
- Farming	26	10.8			
- Unemployed	25	10.4			
- Civil servant	84	35.0			
- Banker	2	0.8			
- Bus driver	2	0.8			
- Chef/restaurant	10	4.2			
- Entrepreneur	2	0.8			

-	Hair dresser	2	0.8
-	ICT personnel	2	0.8
-	Lawyer	2	0.8
-	Pharmacists	2	0.8
-	Student	2	0.8
-	Tailor	2	0.8
6.	Educational level		
-	No formal education	24	10.0
-	Primary education	29	12.1
-	Secondary education	73	30.4
-	Tertiary education	114	47.5
7.	Period of time of living with diabetes		
-	Less than 1 year	84	35.0
-	1-5 years	132	55.0
-	6-10 years	16	6.7
-	More than 10 years	8	3.3

Table 1 shows the socio-demographic data of the patients. The age ranged within 23 to 84 years with modal age group 31-40 years (32.5%), mean age and standard deviation of 44.45±12.28. Most of the patients were male (50.4%); married (71.3%); Christians (89.2%) and had attained tertiary education (47.5%). The patients had lived with diabetes for majorly 1 to 5 years (55.0%) and were mainly Civil servants (35.0%) and traders (32.1%).

Table 2: knowledge of diabetic foot care among the diabetic patients

n=240

ITEMS	**True**		**False**	
	Frequency (n)	**Percentage (%)**	**Frequency (n)**	**Percentage (%)**
1.) Uncontrolled diabetes mellitus leads to diabetic foot complications.	240	100.0	0	0.0
2.) Diabetic patients' feet should be washed with lukewarm water daily to prevent foot ulcer.	234	97.5	6	2.5
3.) The temperature of the water should be checked before washing feet.	232	96.7	8	3.3
4.) A diabetic patient should apply lotion on the feet to prevent dryness of the skin.	236	98.3	4	1.7
5.) Diabetic patients do not need to change their socks daily.	68	28.3	172	71.7
6.) Diabetic patients should trim their nails straight across.	232	96.7	8	3.3
7.) Taking diabetes medication will not help to prevent diabetic foot ulcer.	18	7.5	222	92.5
8.) Diabetic patients should wear high heeled or tight fitting shoes.	10	4.2	230	95.8
9.) Diabetic patients should consult a doctor if their feet have redness, blisters, cuts or wounds.	240	100.0	0	0.0
10.) Poor care of diabetic foot can lead to ulcer and amputation.	238	99.2	2	0.8
11.) Foot care is only for those with Diabetes	121	50.4	119	49.6

Mellitus.				
12.) Caring for diabetic feet is important because wounds and infection may not heal quickly in patients with diabetes.	240	100.0	0	0.0
13.) Checking for discoloration of the skin or toe nails daily is not important for a diabetic patient.	80	33.3	160	66.7
14.) Diabetic patients should not walk barefoot at home.	230	95.8	10	4.2

From table 2, data on the knowledge of foot care among the patients was presented. They had knowledge that: uncontrolled diabetes mellitus leads to diabetic foot complications (100%); caring for diabetic feet is important because wounds and infection may not heal quickly in patients with diabetes (100%); diabetic patients' feet should be washed with lukewarm water daily to prevent foot ulcer (97.5%); poor care of diabetic foot can lead to ulcer and amputation (99.2%) and that diabetic patient should apply lotion on the feet to prevent dryness of the skin (98.3%).

Table 3: General level of knowledge of diabetic foot care among the diabetic patients

	n=240		
1.	**General level of knowledge**	**Frequency (n)**	**Percentage (%)**
-	Poor	0	0.0
-	Fair	0	0.0
-	Good	240	100.0

Scores of items in table 2 were converted to percentage such that scores <50% were considered poor knowledge, 50-69% = fair knowledge while scores 70% and above = good knowledge

Generally, the patients had good knowledge of diabetic foot care (100%) as presented in table 3.

Table 4: Practice of foot care among diabetic Patients

	n=240			
ITEMS	**Yes**		**No**	
	Frequency (n)	**Percentage (%)**	**Frequency (n)**	**Percentage (%)**
1.) Do you examine your feet daily?	111	46.3	129	53.8
2.) Do you use warm water to wash your feet daily?	127	52.9	113	47.1
3.) Do you apply lotion to the feet regularly?	190	79.2	50	20.8
4.) Do you report to the health care professional when you notice foot problems like corn, calluses, wounds and ingrown toe nails?	226	94.2	14	5.8
5.) Do you move on bare foot once at home?	166	69.2	74	30.8
6.) Do you wear appropriate shoes regularly?	182	75.8	58	24.2
7.) Do you wear socks on a daily basis?	36	15.0	204	85.0
8.) Do you sometimes forget to examine your foot for corns, calluses and other problems?	228	95.0	12	5.0
9.) Do you have a relative that helps you carry out foot care exercise daily?	83	34.6	157	65.4
10.) Do you come for checkups when given an appointment?	230	95.8	10	4.2
11.) Do you take your medications as prescribed?	234	97.5	6	2.5
12.) Do you trim your toenail straight and file edges?	218	90.8	22	9.2

The Practices of foot care among the patients can be deduced from table 4. Findings showed that most of the patients agreed to: report to the health care professional when foot problems like corn, calluses, wounds and ingrown toe nails was noticed (94.2%); take their medications as prescribed (97.5%); come for checkups when given an appointment (95.8%); wear appropriate shoes regularly (75.8%) and use warm water to wash your feet daily (52.9%). On the other hand, more than half of the respondents reported to move on bare foot once at home (69.2%) and do not examine your feet daily (53.8%).

Table 5: Level of practice of foot care among diabetic patients in ESUTH, Parklane.

	n=240	
14.General level of practice	**Frequency (n)**	**Percentage (%)**
- Low	0	0.0
- Average	4	1.7
- High	236	98.3

Scores of items in table 4 were converted to percentage such that scores <50% were considered low practice, 50-69% = average practice while scores 70% and above = high practice.

Table 5 shows the level of Practice of foot care among the respondents. The general level of practice of foot care was high (98.3%).

DISCUSSIONS

Knowledge of foot care among Diabetics patients

Remarkably, every patient exhibited a strong comprehension of fundamental foot care principles. This widespread knowledge may be attributed to previous health educational initiatives that emphasized the perils and management strategies related to diabetic foot ulcers. The majority of individuals readily connected uncontrolled diabetes with potential foot complications, underscoring the critical role of diligent foot care and acknowledging the protracted healing of wounds and infections in the diabetic population. Furthermore, these patients understood the daily ritual of washing their feet with gentle, lukewarm water as a cornerstone of ulcer prevention, recognizing the dire consequences such as ulcers or even amputation that could arise from neglect. There was also a general awareness of the need for daily lotion application to mitigate skin dryness, underscoring the necessity of educating diabetic individuals on the subtleties of gentle foot washing and lotion application to avoid methods that may irritate the skin.
Similar to the findings of this study, Alsaleh et al (2021) found that most of the participants (79.3%) exhibited good knowledge of foot care. Aljaouni et al (2024) provided a contrasting perspective stating that only 35% of the participants had good knowledge of foot care. Similarly, Suliman Al-Gaows et al. (2019) found that merely 38% of participants had a good grasp of foot care. The authors advocated for targeted awareness initiatives to address the knowledge gaps.

Practice of foot care among diabetic patients

This study indicated that most of the patients actively participated in proper foot care practices. This strong correlation suggests that the participant's good knowledge is not of foot care isn't merely theoretical but translates into concrete actions. Common practices included proactive communication with healthcare providers regarding foot issues such as corns, calluses, wounds, and ingrown nails, adherence to prescribed treatments, regular medical appointments, consistent use of appropriate footwear, and daily washing of feet with warm water. This proactive involvement reflects the patients' commitment to managing their diabetes. However, a notable observation was that more than half admitted to walking barefoot at home and neglecting daily foot inspections.
These findings resonate with Alharbi and Sulaiman (2022) observation, where a similar proportion of patients demonstrated good foot care practices. However, their study also highlighted areas for improvement, with less than half engaging in daily foot inspections or careful drying between toes, and a significant number walking barefoot at home. In stark contrast, Aljaouni et al (2024) reported a much lower rate of good foot care practices, similarly Alsaleh et al (2021) found that only 30.8% of the participants showed good practice of foot care. The study stressed the need for comprehensive educational programs targeting both patients and healthcare professionals to prevent complications proactively.

Conclusion

In essence, this illustrates a solid foundation of knowledge regarding diabetic foot care among patients, likely fostered by prior educational initiatives. This knowledge appears to translate effectively into practice for the majority. The critical conclusion is that a comprehensive understanding of foot care principles acts as a significant catalyst for the adoption of positive foot care behaviors among diabetic patients. Hence this study advocates for continuous and sustained education of Diabetic patients regarding foot care in order to improve their knowledge and practice of foot care.

REFERENCES

1. Adeloye, D., Ige, J. O., Aderemi, A. V., Adeleye, N., Amoo, E. O., Gbolahan, A. A., et al. (2017). Estimating the prevalence, hospitalisation and mortality from type 2 diabetes mellitus in Nigeria: A systematic review and meta-analysis. BMJ Open, 7, e015424.

2. Ajayi, I. O., Balogun, W. O., Olopade, O. B., Ajani, G. O., Soyoye, D. O., Bolarinwa, O. A., et al. (2023). Prevalence of haemoglobin A1c based dysglycaemia among adult community dwellers in selected states in Nigeria: A descriptive cross-sectional study. Front Endocrinol (Lausanne). 2023;14:1192491.

3. Alharbi, M. O., & Sulaiman, A. A. (2022). Foot care knowledge, attitude and practices of diabetic patients: A survey in diabetes health care facility. *Journal of Family Medicine and Primary Care*, 11(7), 3816–3823. https://doi.org/10.4103/jfmpc.jfmpc_183_21

4. Aljaouni, M. E., Alharbi, A. M., & Al-Nozha, O. M. (2024). Knowledge and practice of foot care among patients with diabetes attending Diabetes Center, Saudi Arabia. Healthcare (Basel, Switzerland), 12(13), 1244. https://doi.org/10.3390/healthcare12131244

5. Alsaleh, F. M., AlBassam, K. S., Alsairafi, Z. K., & Naser, A. Y. (2021). Knowledge and practice of foot self-care among patients with diabetes attending primary healthcare centres in Kuwait: A cross-sectional study. Saudi Pharmaceutical Journal, 29(6), 506-515. https://doi.org/10.1016/j.jsps.2021.04.006

6. Armstrong, D. G., Boulton, A. J. M., & Bus, S. A. (2017). Diabetic foot ulcers and their recurrence. *The New England journal of medicine*, *376*(24), 2367–2375. https://doi.org/10.1056/NEJMra1615439

7. Faisal Suliman Al-Gaows & Abduallah Mohammad Al-Zahrani. Knowledge and Practice of Foot Care Among Diabetic Patients Attending Diabetic Care Center in Jeddah City. International Journal of Medical Reviews and Case Reports, 3(11), 664-670.

8. Hijazi, H., Al Abdi, R., Abuhammad, S., Bani Issa, W., Al-Sharman, A., Saadeh, N., AlMarzooqi, A., Refaat Ahmed, F., Hossain, A., Radwan, H., Arsyad Subu, M., & Alameddine, M. (2025). Assessing the effectiveness of targeted educational interventions on enhancing self-efficacy and foot care practices among diabetic women in Jordan. *Frontiers in public health*, *12*, 1502781. https://doi.org/10.3389/fpubh.2024.1502781

9. Letta, S., Goshu, A. T., Sertsu, A, Nigussie, K., Negash A., Assebe Yadeta T., Bulti F., Geda B., Dessie, Y.,(2023). Diabetes knowledge and foot care practices among type 2 diabetes patients attending the chronic ambulatory care unit of a public health hospital in eastern Ethiopia: A cross-sectional study. *BMJ Open* 2023;**13:**e070023. doi: 10.1136/bmjopen-2022-070023

10. International Diabetes Federation. (2021). IDF Diabetes Atlas (10th ed.). Brussels, Belgium: IDF.

11. Ugwu, E., Adeleye, O., Gezawa, I., Okpe, I., Enamino, M., & Ezeani, I. (2019). Burden of diabetic foot ulcer in Nigeria: Current evidence from the multicenter evaluation of diabetic foot ulcer in Nigeria. *World journal of diabetes*, *10*(3), 200–211. https://doi.org/10.4239/wjd.v10.i3.200

12. WHO (2016). Global report on Diabetes. https://iris.who.int/bitstream/handle/10665/204871/9789241565257_eng.pdf

13. Zhang, P., Lu, J., Jing, Y., Tang, S., Zhu, D., & Bi, Y. (2017). Global epidemiology of diabetic foot ulceration: A systematic review and meta-analysis. Ann Med. 2017;49:106–116. doi: 10.1080/07853890.2016.1231932..