GAS Journal of Clinical Medicine and Medical Research (GASJCMMR)

Volume 2, Issue 7, 2025 Journal Homepage: https://gaspublishers.com/gasjcmmr/ ISSN: 3049-1568
Email: gaspublishers@gmail.com

Assessment of Knowledge, Attitude and Practices of Foot Care in Patient Living with Diabetic Mellitus at Saint Francis Referral Hospital: a Cros-Sectional Study 2024

Theresia. A. Karuhanga[1], Bukwimba. S. James[1], Philbert Madoshi[2] Titus Masanya[2], Pemba. K. Senga[2]

[1]Department of Surgery and Trauma, Faculty of Medicine, Saint Francis University College of Health and Allied Sciences, P.O. Box 175, Ifakara Morogoro Tanzania.
[2]Department of Public Health, Faculty of Medicine, Saint Francis University College of Health and Allied Sciences, P.O. Box 175, Ifakara Morogoro Tanzania.

Received: *20.07.2025* | ***Accepted:*** *12.08.2025* | ***Published:*** *14.08.2025*

***Corresponding Author:** *Theresia Andrea Karuhanga*

DOI: *10.5281/zenodo.16871876*

Abstract **Original Research Article**

Introduction: Globally, about 425 million individuals are suffering from diabetes mellitus. In African countries about 24 million adults have diabetes mellitus which is equal to 4.5%. In Tanzania, the prevalence increases with age. This study was done at Saint Francis Referral aiming to assess knowledge, attitude and practice (KAP) of diabetic foot care in outpatient.

Methodology: The prospective cross-sectional study was conducted for 3moths at Saint Francis Referral Hospital aiming to assess Diabetic foot care (DFC) in patients living with DM in limited resourced areas in Tanzania.

Results: total 111 diabetic patients were recruited to participate in this study. There was 54.95% female ad 45.05% male making F:M 1.2:1. The 40-49 age range was the most predominancy 33.3%. Very few of the participants had positive attitude 8.11% and only 7.21% strongly positive attitude on the effectiveness of DFC. Only 36.94% of the participants had moderate DFC practice.

Conclusion: The study shows that there is poor attitude and practice of DFC among the people living with DM, hence, the need for social intervention towards negative attitude on the specific matter among the community. There is also a need of specialized Diabetic foot physician for DFC practice follow up in every clinic in order to reduce DFU prevalence in people living with DM particularly in limited resources including Tanzania.

Keywords: Neuropathy, vascular occlusion, Diabetic foot care, poor attitude, Foot care practice.

INTRODUCTION

Globally, it is estimated that about 425 million individuals suffer from diabetes mellitus (DM)(1), majority of whom live in developing countries. The number is suspected to increase twice by 2045 of which sedentary life style and dietary habit fuels the situation(2,3). In Sub-Saharan African countries about 24 million adults aged 20-79 have diabetes mellitus equal to 4.5%(4,5). In Tanzania, the DM prevalence has been reported to increases with age, ranging from 1% in under 35 to 16% for those aged 65 years and above(6). On the other hand, living with DM with poor controlled hyperglycemia results into peripheral vascular occlusion and peripheral neuropathy which ultimately result into foot ulcers and poor wound healing(5,7). Either, foot ulcer is the result of multifactorial condition including neuropathy and microangiopathy which often result into foot joint deformity(6,8,9). These two factors combination of etiopathology, strengthen the need of multidisciplinary approach for its prevention(1,5,6). Furthermore, early identification of presence of mentioned etiopathology factors for diabetic ulcers is very important towards prevention of diabetic foot ulcer (DFUD) development(6,10,11). Usually, DFUD is preceded by insensible repetitive trauma in the limb with peripheral neuropathy and vascular occlusion(7,12,13). Generally, it has been reported that, peripheral vascular occlusion (PVO) is more prominent in diabetics than in non-diabetics of the similar age groups(6,8,14). Presence of

smoking habit, alcohol, hyperlipidemia and hypertension fuels the probability having PVO among patients with diabetes(1–3,15,16).

The common clinical presentations include claudication, foot pain at resting condition(6,8,14). Sometimes the patient may present with absent or diminished peripheral arterial pulses, dry skin on the leg and foot, or nail thickness(6,8). Foot deformities results from motor neuropathy which leads intrinsic muscle weakness(6,13,14). Joint deformities, commonly known as Charcot's osteoarthropathy is common in DM patients(6). Lack or diminished protective sensation in addition to foot deformities risks the foot to repetitive stress resulting into foot ulceration(1,6,13,17,18). But also, the diabetic foot (DF) is characterized by autonomic neuropathy which is associated with dermal structures denervation leading to diminished sweating and hence skin dryness(6,13,14,19), formation of skin fissures (8) ultimately the fissures are the portal entry for bacterial infection(6,13,16,20). In a nutshell, diabetic neuropathy occurrence in combination with PVO in most cases leads to life disability and premature deaths(3,6).

By knowing the pathophysiology and risk factors of DFUD, we come with the concept of diabetic foot care (DFC)(15,16). Education for DFC may pray a role on DFU prevention among the people living with DM(3,21). Some studies have indicated that majority of diabetic patient do not receive the proper guideline, for foot care, such as routine foot examination(8,11,18). In Tanzania for example, Hellar and Mbembati (2011) reported that 87% of the patient attending outpatient clinic at Muhimbili National Hospital, they never inspected foot while 66% had no interested in knowledge of diabetes foot care(6), this indicate that the knowledge on foot care among people with DM is inadequate(5,22,23). Attitudes towards foot care preventive practices and adherence to are influenced by cultural beliefs, religious norms, social economic factors, lack of counselling services in people with chronic diseases and unavailability of foot care specialized professionals, ultimately, underscoring the successfulness for context(2,5,21,24).

Although there is a significant good number of literatures explaining DFC and the role of foot care in prevention of DFUD yet there is inadequate KAP for foot care among diabetic patients in sub-Saharan Africa including Tanzania. Hence, this study aims at assessing the level of KAP among diabetic patients at St Francis referral hospital Ifakara Tanzania. It is on these grounds that this study was conducted.

METHODOLOGY

Study Setting and Design

The study was conducted at St. Francis referral hospital (SFRH). The hospital is located in Ifakara town council in Kilombero-Morogoro which is southern-west of Tanzania. Ifakara is a rapidly growing town with a mix of semi-urban and rural populations. This becomes an ideal population group for representative setting for assessment of KAP of DFC among the patients living with DM. The hospital catchment area includes town and rural communities, the population served by hospital varies significantly in terms of education, social economic status, cultural background providing a social-cultural diversity. The hospital-based Cross-sectional Survey was conducted to assess the KAP on foot ulcer care in target population. The study was done within 3 months from July to September 2024 including patients living with Diabetes Mellitus attending out-patient clinics at Saint Francis Referral Hospital within the study period.

Sampling

Purposive sampling method was used to recruit desired candidates. People with foot ulcer without DM, those who did not sign informed consent, type 1 DM who were under 18 years and non/semi cognitive patients were excluded.

Data Collection Procedures

Interviewer administered questionnaire- was used for data collection. The questionnaire included participant particulars such as, age, sex, address and occupation. The assessment of degree of KAP of foot care was done based on the set questions during interview through open ended questionnaire. Rating scale method was used which ranged between 1 to 5. The questionnaire was developed in English and then translated into Swahili to simplify communication among the participant and interviewer. Data collection was done by researcher and trained assistant. All diabetic patients attending clinic at SFRH were subjected for recruitment. However, only eligible to participate were included in the study. Data cleaning involved checking for missing values, outliers and inconsistencies. Missing values were addressed through imputation/exclusion depending on their extent. Coding was done to facilitate analysis categorical data were converted into numerical. Data analysis was done by using Scientific Package for Social Science (SPSS) version 26.0.

RESULTS

Socio-demographic Characteristics of Study Participants

The total 111 diabetic patients attending clinic at SFRH were recruited to participate in this study. There was female 54.95% (61) male 45.05% (50) and making F:M; 1.2:1. The 40-49 age range had high prevalence 33.3% (33), followed by 50-59 age group. 27.9% (31). Most of the patients were employed 39.6% (44). In all participants 65.8% (73) were from urban areas. Other demographic parameters are summarized in table1 bellow.

Table 1: Socio-demographic Characteristics of Study Participants

variables	Frequency(N)	Percentage (%)
Age		
18-29	7	6.31
30-39	11	9.91
40-49	33	29.73
50-59	31	27.93
60 and above	25	22.52
sex		
Female	61	54.95
Male	50	45.05
Occupation		
Unemployed	19	17.12
Employed with office jobs	44	39.64
Business	36	32.43
Retired	12	10.81
Disease Duration		
Less than one year	32	28.83
1-5 years	36	32.43
6-10 years	29	26.13
More than 10 years	14	12.61
Geographical location		
Urban	73	65.77
Rural	38	34.23

Knowledge about Foot Care

Out of 111 participants, 77.5% reported to had knowledge on foot care while 22.5% had not. Most of the participants 84.68% reported to be aware on the advantages of DFC. Of all cases, 60.4% reported to be aware on the signs of diabetic foot diseases such as neuropathy and claudication. Awareness summary on the various complications affecting DM patients is shown in table 2 bellow.

Table 2: Awareness of the Common Complication Affecting DM Patients

Variable	Frequency (N)	Percentage (%)
Ulcers	32	28.82
Infections	14	12.61
Amputations	18	16.22
Multiple complications	47	42.34
Total	111	100

Attitude towards Footcare

Most of the participant had negative attitude on DFC whereby 47.75% disagree while 22.52% strongly disagree on the DFC concept. Very few of the participants had positive attitude 8.11% and only 7.21% strongly positive on the effectiveness of DFC.

Table 3: Attitude Scale After Variable Transformation

Attitude	Frequence (N)	Percent (%)
Strongly disagree	25	22.52
disagree	53	47.75
Neutral	16	14.41
agree	9	8.11

Strongly agree	8	7.21

Practices of Foot Care

Only 36.94% of the participants had moderate DFC practice, while strong DFC practice was found in 6.31%. Other DFC practice patterns are summarized in table 4 bellow.

Table 4: Scale for Overall Practices Regarding Foot Care.

Scale	Frequence(N)	Percent (%)
Never practice	8	7.21
Rarely practicing	38	34.23
moderate	41	36.94
Very often	17	15.32
Strongly practice	7	6.31

DISCUSSION

The results of this study provide valuable information of the attitude, knowledge and DFC practice among the DM patients. Most of the affected patients are within 5th and 6th decade accounting for 29.73% and 27.93% respectively. The findings align with what was reported by other studies including Musa et *al (2012)* who reported the mean age of 54.89±10.4(14). However, the age distribution findings are quite lower than what has been reported in previous studies whereby most affected with diabetic food syndromes is above 60s(3,10,14,23), female distribution was slightly higher than that of male where female accounting for 54.95% while male accounted for 45.05% making F:M; 1.2:1. The finding consist with what have been reported previously which shows prominence of female distribution than male(15,23), but also Lazo *et al* and other studies have been reported female predominance than male(9,22,23). This may explain why male living with DM are likely to have DFU than female whereby male account for 64.4% over female 35.6% at the similar institution(3). Male are likely to miss regular clinic visits due to other family and social economic activities. There should be a planned tracing mechanism suitable for this group. For example, mobile phone clinic follow up/consultations can be used to reduce nonadherent for clinic visits. On the other hand, the study findings vary from what has been reported by Chagas *et al* whose study found predominant male than female distribution to be 64.7% and 35.3% respectively(1). Furthermore, the study differ from other studies in the literatures whose findings show male distribution to be prominence than female(14,17,24).

Employed group with office jobs was slightly high by 39.64% followed by business 32.43%, others were unemployed 17.12% and retired people 10.81%. The findings are similar to what was reported by Almaghrabi *et al* in Saud Arabia whose findings; employed accounted for 29.4 % followed by students 23.4 %(15). This study differ from what has reported by Khan *et al* and other researchers who have been reported unemployed to have poor KAP on DFC up to 55.14%(24). Most of the participants were from urban area 65.77%. The findings align with what has been reported by Osunde *et al* in Benini who reported 66.4% cases with KAP on DFC(4). This may explain why rural patients with DM develop also DFU. Patient living in rural remote areas are likely to have less/lack of knowledge on KAP, unaware on DF symptoms, poor control and monitoring of raised/low blood sugar which should be done daily and glycated hemoglobin control to monitor uncontrolled bold glucose. All these needs financial stability. Multiple factors are involved in this barrier, but mostly inadequate financial capability is the major challenge for the most of the patients whereby, this victim group should be travelling regularly to attend their clinics. Hence, finance is required for transport to attended regular clinic visits and other expenses such as to payment of consultation, investigations and drugs. It should be remembered that, most of them have no National health insurance. Mobile phone consultation may be used to solve this challenge as a plan B for easiness of reaching this population group who are at the risk of developing foot/feet disability which can be prevented through foot care practices.

The participants had varying degree of DFC attitude whereby 22.52% strongly disagree, 47.75% disagree and 14.41% had neutral attitude. Apart from high prevalence 77.5% of knowledge on knowledge and awareness, still there is insufficient positive attitude. This may be attributed by cultural and belief factors. One thing to be remembered is that, in most African patients are affected by local and foreign beliefs such that they believe that disease and disease outcome may be treated through miraculous by foresees, men of gods and men of God respectively(3,19).

The study found that, the knowledge on DFC, but 36.94% of the participants had moderate practice, 15.32% satisfied practice and only 6.31% had strongly practice on DFC. On the other hands, there was significant number with varying degree of practicing DFC whereby 34.23% very rarely and 7.21% never. This is very much related by weak result of positive attitude and supporting negative attitude which was found to be predominant in this study. There should be significant input on improving attitude in DFC in patients living with DM.

CONCLUSION

The study shows that there is good knowledge, but poor attitude and practice of DFC among the people living with

DM. Either the study indicates that there is a high need for social intervention to mitigate negative attitude for among the community members toward DFC. For this reason, Cultural and religious believe related to causes of various diseases and management approaches should be addressed to integrated into positive benefit to clear mind poisoning. In addition, there should be policy to control religious and miraculous healing advertisements. Furthermore, be family member involvement particularly in ensuring regular follow up on proper foot care and DM control. There should be specialized Diabetic foot physician who could be making follow up on DFC practice habit in every clinic to reduce the incidence of DFU to occur. Lastly, we recommend that, a similar KAP study be conducted in similar setting to allow generalization result in Tanzania and Sub-Saharan in general.

Study Limitations

The study's findings based on the patient attending at SFRH for regular DM clinic at single institute at the local region.

Ethical Approval

Ethical clearance approval was obtained from SFUCHAS Internal reviewer board. However, all ethical guidelines were effectively followed. At the end of data collection, all data collecting papers were burnt to ashes to prevent mishandling of participant particulars.

Acknowledgment

The authors thank all participants who were involved in this study.

Conflict of Interest

There was no conflict of interest in development of this manuscript.

Funding: None.

Signed Consent

Informed consent was obtained from all the participants

REFERENCES

1. Cardoso HC, Zara ALDSA, Rosa SDSRF, Rocha GA, Rocha JVC, Araújo MCE De, et al. Risk Factors and Diagnosis of Diabetic Foot Ulceration in Users of the Brazilian Public Health System. J Diabetes Res. 2019;2019.
2. Hanley G, Chiou PY, Liu CY, Chen HM, Pfeiffer S. Foot care knowledge, attitudes and practices among patients with diabetic foot and amputation in St. Kitts and Nevis. Int Wound J. 2020;17(5):1142–52.
3. Karuhanga TA, Thomas C. Frequency of Diabetic Foot Ulcer in Patients with Diabetes Mellitus : A Study at Saint Francis Referral Hospital. Achiev Challenges Med Med Sci [Internet]. 2024;8:189–202. Available from: 189-202
4. Osunde RN, Olorunfemi O. Knowledge, practice, and challenges of diabetes foot care among patients at the University of Benin Teaching Hospital, Benin City: A cross-sectional study. AYU (An Int Q J Res Ayurveda). 2023;44(1):1–8.
5. Adeyemi TM, Olatunji TL, Adetunji AE, Rehal S. Knowledge, practice and attitude towards foot ulcers and foot care among adults living with diabetes in tobago: A qualitative study. Int J Environ Res Public Health. 2021;18(15).
6. Hellar AM, Mbembati NAA. The Pattern and Surgical Management of Diabetic Foot at Muhimbili National Hospital, Dar-es-salaam, Tanzania. East Cent African J Surg. 2011;16(1):1–9. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=78072883&site=ehost-live
7. Al-Rubeaan K, Al Derwish M, Ouizi S, Youssef AM, Subhani SN, Ibrahim HM, et al. Diabetic foot complications and their risk factors from a large retrospective cohort study. PLoS One. 2015;10(5):1–17.
8. Miranda C, Da Ros R, Marfella R. Update on prevention of diabetic foot ulcer. Arch Med Sci – Atheroscler Dis. 2021;6(1):123–31.
9. De Los Angeles Lazo M, Bernabé-Ortiz A, Pinto ME, Ticse R, Malaga G, Sacksteder K, et al. Diabetic peripheral neuropathy in ambulatory patients with type 2 diabetes in a general hospital in a middle income country: A cross-sectional study. PLoS One. 2014;9(5):1–5.
10. Jalilian M, Sarbarzeh PA, Oubari S. Factors related to severity of diabetic foot ulcer: A systematic review. Diabetes, Metab Syndr Obes. 2020;13:1835–42.
11. Kshatri JS, Satpathy P, Sharma S, Bhoi T, Mishra SP, Sahoo SS. Health research in the state of Odisha, India: A decadal bibliometric analysis (2011-2020). J Fam Med Prim Care. 2022;6(2):169–70. A 2249-4863;year=2017;volume=6;issue=1;spage=169;epage=170;aulast=Faizi
12. Zhang P, Lu J, Jing Y, Tang S, Zhu D, Bi Y. Global epidemiology of diabetic foot ulceration: a systematic review and meta-analysis†. Ann Med. 2017;49(2):106–16.
13. Ince P, Abbas ZG, Lutale JK, Basit A, Ali SM, Chohan F, et al. Use of the SINBAD classification system and Score in comparing outcome of foot ulcer Management on three continents. Diabetes Care. 2008;31(5):964–7.
14. Gubara Musa H, E. Ahmed M. Associated risk factors and management of chronic diabetic foot ulcers exceeding 6 months' duration. Diabet Foot Ankle. 2012;3(1):18980.
15. Almaghrabi A, Almutairi M, Alharbi T, Qureshey A,

Alkhlaqi H, Alghamdi R, et al. Knowledge, attitude and practice towards foot care in adult diabetic patients in Saudi Arabia. Int J Med Dev Ctries. 2024;8(October 2023):951–60.

16. Albalawi MA, Sheikh WA. Knowledge, Attitude and Practice about Foot Care among Adult Diabetic Patients at Prince Abdul-Aziz bin Majid Diabetes Center in Al Madinah City, Saudi Arabia. Egypt J Hosp Med. 2022;87(1):1864–71.

17. Acelya T, Ezgi SEYHAN A, Ayfer Ö. Research of Knowledge and Attitudes of Patients with Diabetic Foot Ulcer Regarding Foot Care. Int J Diabetes Clin Res. 2021;8(2):1–7.

18. Bus SA, Lavery LA, Monteiro-Soares M, Rasmussen A, Raspovic A, Sacco ICN, et al. Guidelines on the prevention of foot ulcers in persons with diabetes (IWGDF 2019 update). Diabetes Metab Res Rev. 2020;36(S1):1–18.

19. Abbas ZG, Lutale JK, Archibald LK. Diabetic foot ulcers and ethnicity in Tanzania: A contrast between African and Asian populations. Int Wound J. 2009;6(2):124–31.

20. McDermott K, Fang M, Boulton AJM, Selvin E, Hicks CW. Etiology, Epidemiology, and Disparities in the Burden of Diabetic Foot Ulcers. Diabetes Care. 2023;46(1):209–11.

21. Aalaa M, Mehrdad N, Bigdeli S, Dehnad A, Sohrabi Z, Arabshahi KS. Challenges and Expectations of Diabetic Foot Care from the Patients' Point of Views. J Diabetes Metab Disord. 2021;20(2):1111–8. Available from: https://doi.org/10.1007/s40200-021-00825-z

22. Manimozhi K, Lokeshvaran D, Bershani PT, Jayaseelan J, Abinish DG. Knowledge , attitude , and practice assessment in diabetic foot ulcer grading : a prospective cohort observational study. 2025;11(12):4849–54.

23. Yasin FA, Eldooma I. Diabetic Foot Care: Assessing the Knowledge and Practices of Diabetic Patients at Aldaraga Centre, Gezira State, Sudan, 2021. Diabetes, Metab Syndr Obes . 2024;17(June):2495–504.

24. Khan SA, Llah IU, Babu KS, Wali S, Malik A, Mahtab Shabir M, et al. Level of Awareness About Risk Factors Associated with Diabetic Foot in Type 2 Diabetic Patients. Pakistan J Med Heal Sci. 2022;16(1):1252–5.