

Original article

Diabetic Patients' Practices Towards Prevention of Diabetic Foot Ulcers in Ribat University Hospital

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Abstract

Diabetic foot ulcers are among the most common side effects of diabetes mellitus and are associated with a high morbidity and death rate in diabetic patients. If diabetes is not treated and managed properly, diabetic foot ulcers can result in disability and even death. To prevent this condition, the patient should be knowledgeable about diabetic foot self-care and have enough practice with it. A descriptive study aimed to assess the practices of adult diabetic patients regarding the prevention of diabetic foot ulcers at Ribat University Hospital's follow-up clinic. The sample consisted of 80 diabetic patients who constituted all available patients during February 2023. Data was gathered through structured interview questionnaires and inputted and analyzed with the Statistical Package for Social Sciences (SPSS). In this research, a total of 80 patients participated, 45% were males. 50% of patients with a disease duration of 1-10 years. According to the results of this study, the overall mean of practice was 45.75%, which means patients had a low level of practice towards the prevention of diabetic foot ulcers. The overall mean of practices concerning the prevention of diabetic foot ulcers was inadequate. Increasing patient awareness with education on appropriate foot self-care is very important.

Keywords. Diabetic, Foot Ulcer, Patients' Practices, Prevention

Introduction

Diabetes mellitus (DM) is a global public health concern. It is a group of long-term metabolic disorders characterized by elevated blood glucose levels that are associated with significant morbidity, mortality, and increased healthcare costs [1]. Even though most diabetic patients come from developing countries, diabetes mellitus is a worldwide issue [2]. In 2019, there were around 463 million instances of the disease among individuals aged 20 to 79 globally. It was estimated that the number of cases would rise to 578 million by 2030 and could reach as high as 700 million by 2045 [3], driven by inactive lifestyles and changes in eating habits [4]. Long-term hyperglycemia increases the incidence of infections, slows wound healing, causes peripheral vascular diseases, peripheral neuropathy, foot ulcers, and amputations, among other complications associated with diabetes mellitus. Diabetic neuropathy frequently contributes to the formation of foot ulcers, making diabetic foot disease the most prevalent complication of diabetes [5]. Studies indicate that 25% of individuals with diabetes will experience a foot ulcer at some point in their lives [6]. Research, both qualitative and quantitative, said that foot ulcers in patients with diabetes mellitus have detrimental effects on their lives, leading to a decline in physical functioning, and psychological and social interactions [7], which also disrupt their daily activities [8].

The key approaches for preventing and treating diabetic foot ulcers include identifying at-risk feet, conducting regular foot examinations, educating patients, families, and healthcare providers, selecting appropriate shoes, and treating early signs of foot ulcers [9]. Studies indicate that 50-80% of all foot issues related to diabetes can be avoided through proper interventions. This can be accomplished through a mix of effective foot care and suitable education for individuals with diabetes as well as healthcare providers [10]. Proper self-care for the feet can help avoid the development of foot ulcers. To enhance foot self-care among individuals with diabetes, healthcare professionals need to recognize and appreciate how diabetes impacts their patients' health [11].

Knowing the extent of self-care practices among diabetic patients is crucial for effectively managing diabetes and its associated complications [6]. Research indicates that if the right steps are taken, 50-80% of all diabetic foot-related issues can be avoided. It may be accomplished by combining proper foot care with the right kind of education for healthcare providers and diabetics alike [10]. Foot ulcers can be avoided by practicing proper foot self-care. Health practitioners should be aware of how diabetes affects patients' health in order to promote diabetic foot self-care [11]. Planning for improved management of diabetes and its consequences requires an understanding of the degree of practice among individuals with the disease [6], and improved management of diabetes and its side effects [6]. This study aimed to assess diabetic patients' practices towards the prevention of diabetic foot ulcers at Ribat University Hospital.

Methods

Study design and setting

A descriptive study was conducted at Ribat University Hospital's follow-up clinic Khartoum city, Sudan.

Population

A total of 80 diabetic patients visited the clinic for a follow-up in February 2023.

Eligibility criteria

All diabetic patients above 18 years old who visited the clinic for follow-up during the duration of the study and agreed to participate in the study were included. Any diabetic patients who have been diagnosed recently (within the last month) and those in critical condition, as well as individuals who refused to participate were excluded.

Data collection

The data were gathered through a structured questionnaire that was modified from a previous similar study (13). The data were collected by the researchers using face-to-face interviews after clarification of research objectives and written consent. The questionnaire contains 14 questions to assess patients' practices toward the prevention of diabetic foot care. The questionnaire was prepared initially in English and then translated to Arabic to meet the patient's understanding and the data was inputted and analyzed with the Statistical Package for Social Sciences (SPSS). Frequency and mean represented categorical variables.

Results

Table 1 shows that 45% of study participants their aged 61 years and above, 90% of them were married, and 65% were male.

Table 1. The demographic data

Age	Frequencies	Percentages
(30-40) yrs	8	10%
(41-50) yrs	12	15%
(51-60) yrs	24	30%
61 and more	36	45%
Gender		
Male	52	65%
Female	28	35%
Marital status		
Single	8	10%
Married	72	90%
Duration of DM		
(1-10) yrs.	40	50%
(11-20) yrs	36	45%
21 yrs and above	4	5%
Total	80	100%

Table 2 shows % all patients who clean their feet daily; 75% of them don't use diabetic shoes. 90% walk barefoot inside the home. Just 28.75%, 25%, and 37.5% of patients inspect their feet every day and check for any new developments, use diabetic shoes, and visit a specialist to examine their feet annually, respectively.

Table 2. Assessment of Diabetic patients' practices (N=80)

Questions	Yes		No	
	Number	%	Number	%
Do you visit your doctor for follow up regularly?	46	57.5%	34	42.5%
Do you know the complications of diabetes on the feet?	44	55%	36	45%
Do you have information on taking care of your feet?	50	62.5	30	37.5%
Do you receive information on foot care from healthcare workers in hospitals?	38	47.5%	42	52.5%
Do you have any previous complaints from diabetic foot injury?.	40	50%	40	50%
Do you inspect your feet every day and check for any new developments?	23	28.75%	57	71.25%
Do you cleanse your feet on a daily basis?	80	100%	-	-

Do you wash between the fingers?	42	52.5%	38	47.5%
Do you dry your feet and between your toes after washing?	31	38.75%	49	61.25%
Do you use cream or lotion for your feet?	32	40%	48	60%
Do you walk barefoot inside home?	8	10%	72	90%
Do you receive guidance from your doctor describing diabetic shoes?	42	52.5%	38	47.5%
Do you use diabetic shoes?	20	25%	60	75%
Do you cut your toenail straight with a curled edge?	23	28.75%	57	71.25%
Do you visit your specialist to examine your feet annually?	30	37.5%	50	62.5%
Over-all mean		45.75%		54.25%

Weak knowledge = less 35% - Low knowledge = (36-49%) - Moderate = (50-59%) - Good = (60-75%) - Very good = (76-90%) - Excellent = (91-100%)

Discussion

This is a hospital-based study conducted on 80 patients in Ribat University Hospital to assess the diabetic patient's practices towards the prevention of diabetic foot ulcers. In the current study the majority (45%) of the diabetic patients their age above 61 years followed by 30%, 15% and 10% in the age group (51-60) years, (41-50) years and (30-40) respectively years that is similar to [6] study how stated that the majority 37% of the respondents their age above 61 years. The results show that 50% of patients a duration of diabetes range was 1-10 years. Most of the patients, 65%, were male. 42.5% of patients did not come for follow-up regularly. Healthcare providers play a crucial role in enhancing awareness and practices related to foot care. In this study, more than half (52.1%) of patients didn't receive information about foot care from the healthcare workers. This result aligned with earlier research conducted in Saudi Arabia, stating that the majority of patients didn't receive proper advice about foot self-care. This may indicate a lack of education on diabetic foot care, highlighting the necessity for ongoing workshops [12]. Approximately 39.2% of the participants received guidance on foot care from their doctors [13].

The results showed 29.1% of patients examined their feet every day, while 70.1% did not. This was similar to a previous study that found that only 26.8% of patients examined their feet every day, while 43.3% of patients had never examined their feet [12], and a lower percentage than a previous study found that 41.5% of patients checked their feet every day [13]. This study showed 100% of the patients cleaned their feet, which makes sense considering that the Islamic religion mandates that individuals cleanse their feet five times daily before performing prayers.

In our research, 39.3% of the patients dried their feet and the spaces between their toes following washing. This finding was lower than that of earlier studies, which indicated that 41.9% of patients took care to dry between their toes after washing [13]. This study revealed that 40% of patients use cream or lotion for their feet, 10.3% walk barefoot inside the home, which could be risky for them, and 28.2% cut their toenails straight with curled edges. These findings were lower than the previous study [13] revealed that 67.3%, 40.8%, and 47.3% of participants used moisturizing cream on their feet, walked barefoot inside the home, and trimmed toenails straight and filed edges, respectively [13].

Also, this study revealed that just 25% of patients use diabetic shoes, which is not comparable with previous studies [13]. The American Diabetic Association recommends that annual foot assessments for diabetics should be conducted by a specialist. In our study, 37.5% of patients were assessed and examined their feet by a specialist (podiatrist) as recommended [14]. Only 22.3% of our participants underwent this examination, which is less than the 34.2% indicated in a study from Riyadh, Saudi Arabia [14]. In a research study conducted in Dar es Salaam, Tanzania, 27.5% of the participants mentioned that their doctors had examined their feet at least once since their initial diagnosis [15].

According to the results of this study, the overall mean of practices was 45.75%, which means patients had a low level of knowledge. Similar findings from previous studies showed that 43.2% had good practices [16], and (34.3-45.1%) of diabetic patients practices the foot self-care effectively [11]. It is the duty of healthcare professionals, including doctors and nurses, to enhance diabetic patients' practices related to foot self-care. A similar finding was reported by Hawassa Comprehensive Specialized Hospital only 43.2% of the study sample demonstrated good diabetic foot self-care practices [16]. A study conducted with 124 diabetic patients in North India found that the participants had lower scores in their practices related to diabetes [17]. Diverse findings have been found in previous research conducted throughout the globe to evaluate diabetic foot care knowledge and practice. While certain nations exhibit a lack of patient awareness of the fundamentals of foot care [18].

Conclusion

This study concluded that the overall mean of practices regarding diabetic foot care was unsatisfactory. Even though the prevalence of diabetes mellitus has increased globally, diabetic foot ulcers are still more common. However, complications like infection, gangrene, and amputation can be significantly reduced, delayed, or prevented with patient education and the appropriate preventive measures and appropriate foot

self-care. Health education should be provided to the patient by healthcare providers who play a vital role in Health education, especially doctors and nurses need to receive training on educating patients about foot care to deliver a complete and clear message to diabetic patients.

Ethical consideration

Ethical clearance was obtained from the research committee- Faculty of Applied Medical Sciences, University of Al-Butana. Official letters to the manager of the Ribat University Hospital to get permission. Consent form from all patients participating in the study.

Conflict of interest. Nil

References

1. Chisholm-Burns MA, Wells BG, Schwinghammer TL. Pharmacotherapy Principles and Practice. McGraw-Hill; 2016.
2. Elbaruni K, Abdulwahed E, Khalfalla W, Alsudany R, Jerbi R, Alwaseea N, Ahmed F, Alaqli E, Ashur AB, El Magrah H, Mousa A. Association Between Some Inflammatory Markers and HbA1c in Patients with Type 2 Diabetes Mellitus. *AlQalam Journal of Medical and Applied Sciences*. 2023 Mar 31:137-41.
3. Saeedi P, Petersohn I, Salpea P, Malanda B, Karuranga S, Unwin N, et al. Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: Results from the International Diabetes Federation Diabetes Atlas, 9th edition. *Diabetes Res Clin Pract*. 2019;157:107843.
4. Hanley G, Chiou P, Liu C, Chen H, 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.
5. Mehmood MK, Parkar AZ, Mustafa NT, Mustafa SS, Makin MA, Alawadi F, et al. Diabetic foot self-care: Awareness and practice among type 2 diabetic patients in primary healthcare centers, Dubai Health Authority. *Int J Community Med Public Health*. 2019;6(1):1-7.
6. Pourkazemi A, Ghanbari A, Khojamli M, Balo H, Hemmati H, Jafaryparvar Z, Motamed B. Diabetic foot care: knowledge and practice. *BMC Endocr Disord*. 2020;20:40. Available from: <https://doi.org/10.1186/s12902-020-0512-y>
7. Mahdalena, et al. Effectivity of Foot Care Education Program in Improving Knowledge, Self-Efficacy and Foot Care Behavior among Diabetes Mellitus Patients in Banjarbaru, Indonesia. *Kesmas: Natl Public Health J*. 2016;11(2):56-60. DOI:10.21109/kesmas.v11i2.583
8. Goodridge D, Trepman E, Embil JM, Daughy D. Health-related quality of life in diabetic patients with foot ulcers: literature review. *J Wound Ostomy Continence Nurs*. 2005;32(6):368-77.
9. Türk Açelya, Aktekin Şahin Ezgi, Özcan Ayfer. Research of knowledge and attitudes of patients with diabetic foot ulcer regarding foot care. *Int J Diabetes Clin Res*. 2021;8:144.
10. Mohammed MAA, Rahman NIA. Knowledge, attitude, and practice of foot care among type 2 diabetic patients attending diabetic clinic, Al Ribat Teaching Hospital in Sudanese patients. *Adv Diabetes Metab*. 2018;6:34-53.
11. Tuha A, Faris AG, Andualem A, Mohammed SA. Knowledge and practice on diabetic foot self-care and associated factors among diabetic patients at Dessie Referral Hospital, Northeast Ethiopia: Mixed method. *Diabetes Metab Syndr Obes*. 2021;14:1203-14.
12. Shamim M, Alhakbani MS, Alqahtani MS, Alharthi OS, Alhaqbani YJ. Knowledge, attitude, and practice regarding diabetic foot care among Saudi and non-Saudi diabetic patients in Alkharj. *J Family Med Prim Care*. 2021;10(2):859-64.
13. Alharbi MO, Sulaiman AA. Foot care knowledge, attitude and practices of diabetic patients: A survey in Diabetes health care facility. *J Family Med Prim Care*. 2022;11(10):3816-23.
14. Abdulghani HM, AlRajeh AS, AlSalman BH, AlTurki LS, AlNajashi NS, Irshad M, et al. Prevalence of diabetic comorbidities and knowledge and practices of foot care among diabetic patients: A cross-sectional study. *Diabetes Metab Syndr Obes*. 2018;11:417-25.
15. Chiwanga FS, Njelekela MA. Diabetic foot: Prevalence, knowledge, and foot self-care practices among diabetic patients in Dar es Salaam, Tanzania - A cross-sectional study. *J Foot Ankle Res*. 2015;8:20.
16. Mosa BD, Mohammed S, Ashuro J, Omer Z, Ahmedin A, et al. Knowledge, Attitude and Practice towards Prevention of Diabetic Foot Ulcer among Adult Diabetic Patients Attending at Follow-Up Clinic of Hawassa Comprehensive Specialized Hospital, Sidamma, Ethiopia. *Int Arch Nurs Health Care*. 2022;8:177. doi:10.23937/2469-5823/1510177
17. Ahmad S, Ahmad MT. Assessment of knowledge, attitude and practice among diabetic patients attending a health care facility in North India. *Indian J Basic Appl Med Res*. 2015;4(3):501-9.
18. Khamseh ME, Vatankhah N, Baradaran HR. Knowledge and practice of foot care in Iranian people with type 2 diabetes. *Int Wound J*. 2007;4(4):298-302.

المخلص

تعد قرح القدم السكرية من أكثر الآثار الجانبية شيوعاً لمرض السكري، وترتبط بارتفاع معدلات الاعتلال والوفيات لدى مرضى السكري. إذا لم يعالج داء السكري بشكل صحيح، فقد تؤدي قرح القدم السكرية إلى الإعاقة وحتى الوفاة. للوقاية من هذه الحالة، يجب أن يكون المريض على دراية بالعناية الذاتية بالقدم السكرية وأن يمتلك خبرة كافية في ذلك. هذه الدراسة الوصفية أجريت لتقييم ممارسات مرضى السكري البالغين في عيادة المتابعة بمستشفى الرباط الجامعي فيما يتعلق بالوقاية من قرح القدم السكرية، وتألّفت العينة من (80) مريضاً مصاباً بمرض السكري، والذين شكلوا جميع المرضى المتاحين خلال شهر فبراير 2023. جمعت البيانات من خلال استبيانات، وتم إدخال البيانات وتحليلها باستخدام الحزمة الإحصائية للعلوم الاجتماعية (SPSS). شارك في هذا البحث 80 مريضاً، 45% منهم من الذكور. 50% من المرضى الذين تتراوح مدة مرضهم بين 1 و10 سنوات. ووفقاً لنتائج هذه الدراسة، بلغ المتوسط العام للممارسة 45.75%، مما يعني أن مستوى ممارسة المرضى للوقاية من قرح القدم السكرية منخفض. وكان المتوسط العام للممارسات المتعلقة بالوقاية من قرح القدم السكرية غير كافٍ، لذا فإن زيادة وعي المرضى بأهمية العناية الذاتية بالقدم أمر بالغ الأهمية.