

knowledge, Attitude and Practice Regarding Foot Care Among Diabetic Patients Who Visited Health Centers In Khartoum State, Sudan, 2018

ALafraa Ahmed Mohammed Ahmed¹; Elfatih M. Malik², MBBS, MD

1 Medical student, faculty of medicine, University of Khartoum, Sudan;

2 Assistant Professor, Sudan FETP Technical Advisor, Faculty of Medicine, University of Khartoum, Sudan.

Conflict-of-interest statement: The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper.

Open-Access: This article is an open-access article which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Correspondence to: ALafraa Ahmed Mohammed Ahmed, Faculty of medicine, University of Khartoum, Sudan.

Email: afraahmed41@gmail.com

Telephone: +249 998204849

Received: August 22, 2019

Revised: August 28, 2019

Accepted: August 29, 2019

Published online: September 24, 2019

ABSTRACT

AIM: Foot care received little attention from medical doctors who are concentrating on therapeutic and diagnostic measures more than education of patients and preventive aspects. The aim of this study was to assess knowledge, attitude and practice regarding foot care among Sudanese diabetic patients.

MATERIALS AND METHODS: In this multi-central cross-sectional study, 270 diabetic patients interviewed using a questionnaire containing qualitative and quantitative aspects after taking verbal consent. Data has been analysed using SPSS software version 20.

RESULTS: Overall, 176 (65.2%) women and 94 (34.8%) men were included. The mean (SD) age in years was 57 (11.6). A total of

219 (81.1%) have educational level below university level. Those who have knowledge about foot care constitute 151 (55.9%) with different response to knowledge measures. The source of information was medical staff in 95 (63%) of patients. Regarding attitude, 257 patients (95.2%) were aware about foot care, and they considered it as a preventable method from foot complication. On the other hand, 158 patients (58.5%) have poor practice. There are highly significant association between educational level and knowledge (< 0.001), educational level and practice (0.012) and between knowledge and practice (0.001).

CONCLUSION: These results supported the view that education and trained health care providers have a role in increasing the awareness of diabetic patients about foot care.

Key words: Knowledge; Attitude; Practice; Diabetes; Foot care

© 2019 The Author(s). Published by ACT Publishing Group Ltd. All rights reserved.

Ahmed AAM, Malik EM. knowledge, Attitude and Practice Regarding Foot Care Among Diabetic Patients Who Visited Health Centers In Khartoum State, Sudan, 2019. *International Journal of Diabetes Research* 2019; **2(1)**: 46-49 Available from: URL: <http://www.ghrnet.org/index.php/ijhr/article/view/2668>

Abbreviation

DM: Diabetes mellitus; DFU: Diabetic foot ulcer; KAP: knowledge, attitude and practice.

INTRODUCTION

Diabetes mellitus (DM) is a metabolic disorder characterized by chronic hyperglycaemia^[1]. Among the degenerative chronic diseases with high morbidity and mortality rates, DM especially type 2 (DM2), is becoming a global health issue. Every year, the incidence is increasing worldwide. If diabetic patients don't control glucose level by treatment and routine visit to doctor, they will develop serious complications such as retinopathy, nephropathy, neuropathy, coronary artery disease, cerebrovascular disease and peripheral vascular disease^[2]. Diabetic neuropathy includes mononeuropathies, polyneuropathies, plexopathies and radiculopathies. It receives

special attention because it leads to diabetic foot ulcer (DFU)^[3]. DM and its complications have negative impact on the quality of life, psychological wellbeing, social functioning, employment and cost of treatment^[4].

In 2002, WHO defined DFU as an infection, ulceration, and/or destruction of deep tissues associated with neurological abnormalities and varying degrees of peripheral vascular disease in the lower limb. DM and DFU are common medical problem in Sudan. Lower limb amputation among inpatients with diabetic foot in Khartoum hospitals increased in last years. Recently, DFU accounted for 10.2% of all complications reported from private clinics in the Khartoum state. According to some studies, the prevalence of DFU among the population of rural Sudan is 3.9%. Although the magnitude of the DFU and its consequences (amputation) is high in Sudan, limited researches have been performed to investigate the role of multiple potential etiologic factors in this complication^[5]. Foot ulcer should be managed by multidisciplinary team. Good patient's education and self-care decrease amputation. A study from Pakistan highlighted the fact that a proper education and awareness program can change the attitude of the public regarding diabetes^[6]. Although there are improvement in awareness of population about DM due to self-management education programmes for people with diabetes, still there is a gap between knowledge, attitude and practice^[7].

Foot care is a key issue to prevent foot ulcer. When patients have adequate knowledge and information, their attitude will change and they will be able to do right practice in order to prevent foot ulcer. Practices regarding foot care are prepared meal plans, exercise, foot hygiene, toe and nail care, daily check and inspection of foot and leg^[8,9].

Foot care received little attention from medical doctors who are concentrating on therapeutic and diagnostic measures more than education of patients and preventive aspects. The aim of this study was to assess knowledge, attitude and practice about foot care among Sudanese diabetic patients and association of education with knowledge and practice.

METHODS AND MATERIALS

This research is descriptive observational multi-centers cross-sectional study conduct at health centers in Khartoum, Sudan between October 2018 to December 2018. Both quantitative and qualitative methods were used in this study. A total of 270 diabetic patients from 9 health centres were enrolled in this study (30 patients from each center).

Data was collected through self-administered and structured interview questionnaire covering socio-demographic characteristics, knowledge, source of knowledge, attitude and practice after taken verbal consent from participants.

Data was analyzed using IBM SPSS software version 20. Descriptive analysis performed for quantitative and qualitative measures and displayed as frequency and percentages in form of tables. Chi-square test was used to assess the association between the socio-demographic characteristics and level of knowledge, and practice, and between knowledge and practice.

RESULTS

Overall, 176 (65.2%) women and 94 (34.8%) men were included with a mean age of 57 years (SD = 11.6) and mean duration of diabetes of 10 years (SD = 7.4). Regarding educational level, 15.9% were illiterate and 18.9% were either graduate or post-graduate.

Further analysis showed Those who have knowledge about foot care constitute 151 (55.9%), different response to knowledge measures as shown in table 1. The source of information was medical staff (doctors, diabetic educators ora nutritionist) in 95 (63%) of patients, other source like: tradition, magazine, books, posters. the scoring of knowledge was categorized. in to yes (have knowledge) and no (haven't knowledge), the frequency of patients with (yes) was 151 (55.1%) and (no) was 119 (44.9%).

Regarding attitude, 257 patients (95.2%) awarded about foot care, and 203 (79%) patients they considered foot care as a preventable method from foot complication (diabetic septic foot, infected wound, not healed wound...etc), other cause like: as part from personal hygiene (most), make me relax, as a disease.

Table 2 present responses of patients to measures of practice, The scoring of the practices of foot care is categorized into poor and good practice of foot care. The respondent will be categorized into poor practice of foot care if the correct number of question answered is between 0-5 out of 8 questions and good practice if 6-8 out of 8 questions. the frequency of patients with poor practice was 158 (58.5%) and good practice was 112 (41.5%).

Chi -square test in Table 3 and 4 present no association between gender and knowledge ($p = 0.532$), gender and practice ($p = 0.797$), on the other hand there are highly significant association between educational level and knowledge ($p < 0.001$), educational level and practice ($p = 0.012$) and between knowledge and practice ($p = 0.001$).

DISCUSSION

Socio-demographic results show that DM affect elderly, most of study participants are female, mean of duration of DM is 10 years as same in several study, most of study population below the level of university (81.1%), few of them are very educated (18.8%), most of uneducated patients are female similar to many studies. This result may be explained by the fact that female education is not allowed in our society, cultural and traditions, specially in rural area in Sudan and even educated female are not complete there education to university and stop in primary and secondary level because it married early or other causes determined by our cultural and tradition.

Regarding knowledge and response to it measures, Pakistan and Malaysian study show very good response what is surprising is that low response to knowledge measurement specially nails cutting, not walk barefoot, wear socks and inspection, not like this is different in these results maybe due to different socioeconomic and educational level in out country and other country, and the degree of effectiveness of our educational program to prevent diabetic foot and counselling from medical staff which concentrate in some measures not all measures mentioned above.

We add to this study attitude related to Foot care because most of studies concentrated on knowledge and practice. In Brazilian study show high percent of participants are performed physical examination (80%) because they want to prevent foot related complications and approximately the same in this study (79%), but make this results different that Brazilian study suggest that different in attitude related to inadequate knowledge from doctors that affect on attitude of patients toward Foot care, but we observe in this study main reason is our patients always heard about amputation almost form many sources, family, friends and social media not from medical staff which be main source of knowledge, this explain the different in percentage of knowledge, attitude and practice.

Response of patients to questions related to practice is high in

Table 1 Participants knowledge about various aspects of foot care (*n* = 151).

| Foot care aspects | Frequency | % |
|---|-----------|------|
| Regular inspection of their foot | 34 | 22.5 |
| Washing | 83 | 54.9 |
| Drying | 40 | 26.5 |
| Moistening | 82 | 54.3 |
| Nail cutting | 30 | 19.9 |
| Not bare foot | 24 | 15.9 |
| Wearing socks | 22 | 14.6 |
| Wearing diabetic shoes | 78 | 51.7 |
| Number who answer with yes | | |
| % of those who respond out of 270 participants | | |
| You need to write statement instead of one or 2 words | | |

Table 2 Participants practice related to foot care (*n* = 270).

| Foot care aspects | Description | Frequency | % |
|------------------------|-------------------------|-----------|------|
| Inspection | Daily | 201 | 74.4 |
| | Every 2 days | 5 | 1.9 |
| | Weekly | 8 | 3 |
| | Not inspected | 56 | 20.7 |
| Washing | More than one time/ day | 226 | 98.5 |
| | One time per day | 3 | 1.1 |
| | Not washing regularly | 1 | 0.4 |
| Drying | Yes | 97 | 35.9 |
| | No | 139 | 51.5 |
| | Sometimes | 34 | 12.6 |
| moistening | Yes | 187 | 69.3 |
| | No | 30 | 11.1 |
| | Sometimes | 53 | 19.6 |
| Nail cutting | Yes | 260 | 96.3 |
| | No | 0 | 0 |
| | Sometimes | 10 | 3.7 |
| Bare foot | Yes | 6 | 2.2 |
| | No | 222 | 82.2 |
| | Sometimes | 42 | 15.6 |
| wearing socks | Yes | 51 | 18.9 |
| | No | 124 | 45.9 |
| | Sometimes | 95 | 35.2 |
| wearing diabetic shoes | Yes | 65 | 24.1 |
| | No | 164 | 60.7 |
| | Sometimes | 41 | 15.1 |

most of questions except in drying, wear socks and diabetic shoes, a possible explanation for this might be that the most of practice is a part of our daily activity as Sudanese population, low response in drying due to there think that it dry by it self after few minutes after washing not as in guidelines of foot care in diabetic patients which recommended that drying feet after washing directly, also low response in wear socks and shoes because they feel uncomfortable when wear it. comparing of this result regarding response of practice with other study is high, in general several studies show that there are high response to practice like Pakistan and Indian study with few variation in percentage of response, contradiction to Malaysian study present that low response for practice of most of practice measurements comparing with response of knowledge of same study, this variations of response between practice and knowledge explain by lack of proper and fully counseling of medical staff to patients

Table 3 Association between socio-demographic characteristics and knowledge.

| Socio-demographic characteristics | | Knowledge about foot care | | Chi-square test | p-value |
|-----------------------------------|----------------|---------------------------|----|-----------------|---------|
| | | Yes | No | | |
| Sex | Male | 55 | 39 | 0.038 | 0.532 |
| | Female | 96 | 80 | | |
| Educational level | Illiterate | 11 | 32 | 0.334 | 0 |
| | Primary | 47 | 48 | | |
| | Secondary | 58 | 23 | | |
| | Graduate | 26 | 14 | | |
| | Above graduate | 9 | 2 | | |

Table 4 Association between socio-demographic characteristics and knowledge with practice.

| Socio-demographic characteristics | | Practice about foot care | | Chi-square test | p-value |
|-----------------------------------|----------------|--------------------------|------|-----------------|---------|
| | | Good | Poor | | |
| Sex | Male | 38 | 56 | 0.016 | 0.797 |
| | Female | 74 | 102 | | |
| Educational level | Illiterate | 12 | 31 | 0.218 | 0.012 |
| | Primary | 31 | 64 | | |
| | Secondary | 43 | 38 | | |
| | Graduate | 20 | 20 | | |
| | Above graduate | 6 | 5 | | |
| Knowledge | Yes | 76 | 75 | 0.202 | 0.001 |
| | No | 36 | 83 | | |

about knowledge & practice of foot care.

There are significant association between educational level and knowledge (< 0.001), and practice (0.012), also there are significant association between knowledge and practice (0.001), no significant association with sex, this results are similar to Nigerian and Pakistani studies determine the impact. and effect of education in knowledge and practice, contradiction to 2 Malaysian studies present there are not significant association between educational level and knowledge and practice because different background of education of participants which included in these studies.

CONCLUSION

These results supported the view that education and trained health care providers have a role in increasing the awareness of diabetic patients about foot care. Different in response to knowledge, attitude and practice due to impact of our society, tradition and culture.

The study offers some important insights into deficiency in educational programs and fully counselling from health care provides to diabetic patients to complications related to diabetes, that reflected on knowledge and practice of patients, and increase the gap between knowledge and practice

RECOMMENDATIONS

Training health care provider, nurse and doctors in council diabetic patients in complications related to diabetes, training diabetic educators and make works shops and courses in diabetic foot care, build special diabetic clinic in primary health center with trained diabetic educators to. Increase awareness of diabetic patients about multiple discipline in diabetes, spread of posters that talk about foot care.

ACKNOWLEDGE

Firstly I would like to extend my special Thank to my supervisor D. ELFATIH M MALIK for his continuous advice and support me in every single step in my research from the beginning to the end, also deep grateful to patients and health centers for their collaboration, respect and response, last but not at least, D.Elhami, A.Ahmed and my dear friends especially D.Alaa tawfig for their guidance, encouragement and support.

REFERENCES

- Desalu OO, Salawu FK, Jimoh AK, Adekoya AO, Busari OA, Olokoba AB. Journal Diabetic Foot Care: Self Reported Knowledge And Practice Among Patients Attending Three Tertiary Hospital In Nigeria. Ghana Medical, June 2011 Volume 45, Number 2
- Natalia de Sá Policarpo, Jayne Ramos Araujo Moura, Eugênio Barbosa de Melo Júnior, Paulo César de Almeida, Suyanne Freire de Macêdo, Ana Roberta Vilarouca da Silva. Knowledge, attitudes and practices for the prevention of diabetic foot. *Rev Gaúcha Enferm.* 2014 set; **35(3)**: 36-42. [DOI: <http://dx.doi.org/10.1590/19831447.2014.03.45187>]
- Hanu George, Rakesh PS, Manjunath Krishna, Reginald Alex, Vinod Joseph Abraham, Kuryan George, Jasmin H. Prasad. Foot Care Knowledge and Practices and the Prevalence of Peripheral Neuropathy Among People with Diabetes Attending a Secondary Care Rural Hospital in Southern India. *Journal of Family Medicine and Primary Care January.* 2013; **2(1)**: [DOI: 10.4103/2249-4863.109938]
- Mohammed Alnour Adam, Aamir Abdullahi Hamza, Alguili Elsheikh Ibrahim. Diabetic Septic Foot in Omdurman Teaching Hospital. *Sudan JMS* 2009 June; 4(2)
- Mohamed Maali Gumaa, Hussam Mohamed Shwaib, Suad M. Ali. Diabetic foot lesions predicting factors, view from Jabir Abu-alaiz diabetic centre in Khartoum, Sudan. *The Journal of Diabetic Foot Complications* 2016; **8(1)**: No. 2, 6-17
- Dinesh K Upadhyay, Subish Palaian, P. Ravi Shankar, Pranaya Mishra. Knowledge, Attitude and Practice about Diabetes among Diabetes Patients in Western Nepal. November 26, 2007
- Mohammed T. Al-Harir, Abdulaziz S. Al-Enazi, Dhaidan M. Alshammari, Ahmed S. Bahamdan, Sami M. Al-Khtani, Abdullah A. Al-Abdulwahab. Descriptive Study On The Knowledge, attitudes and practices regarding the diabetic foot. *Journal of Taibah University Medical Sciences.* 2017; **12(6)**: 492-496.
- Sheule Begum, Wipawee Kong-in, RN Jaruwan Manasurakan. Knowledge and Practice of Prevention of Foot Ulcer Among Patients with Diabetes Mellitus. The 2nd International Conference on Humanities and Social Sciences April 10th, 2010 Faculty of Liberal Arts, Prince of Songkla University, Palliative Care_008
- Mahdi A. Qadi, Hasan A. Al Zahrani. Foot Care Knowledge and Practice among Diabetic Patients Attending Primary Health Care Centers in Jeddah City. *JKAU: Med. Sci.*, Vol. 18 No. 2, pp: 55-71 (2011 A.D. / 1432 A.H.). [DOI: 10.4197/Med. 18-2.5]