Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v2023i1.588
*Biol. Clin. Sci. Res. J., Volume, **2023**: 588*
Original Research Article

KNOWLEDGE AND PRACTICE RELATED TO DIABETIC FOOT ULCERS AMONG HEALTHCARE PROVIDERS IN A PUBLIC HOSPITAL OF PAKISTAN

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(Received, 18th September 2023, Revised 07th November 2023, Published 23rd December 2023)

Abstract: *Diabetes Mellitus (DM) affects people all over the world. It is a metabolic condition marked by persistently elevated blood sugar levels brought on by either insulin hormone resistance or shortage. Diabetes mellitus complications result in increased death, disease rates, and disability and represent a serious global health issue that endangers the health system all over the world and causes a critical economic impact for all states, especially epidemic regions. This study aimed to assess the knowledge and awareness of diabetic foot problems among healthcare providers in DHQ Hospital Bhakkar, Punjab, Pakistan. A cross-sectional analytic study was conducted in 2023 on all categories of healthcare providers using a valid, structured questionnaire. The collected data were analyzed using MS Excel and SPSS Statistics for Windows, Version 26. One hundred and ten (110) healthcare providers participated in this study. And only 41.3% of participants had good knowledge regarding diabetes mellitus. However, our findings also revealed that 85.3% of the participants had good knowledge and a favorable attitude towards diabetes mellitus and diabetic foot care. Nevertheless, although the participants had good knowledge regarding foot care, they had poor practice, with 51.9% scoring poorly on the assessment questionnaire. Our study shows that most participants had good knowledge and attitudes but poor practices. This highlights the need for more efforts by healthcare providers to enhance the population's education about diabetes and its complications.*

Keywords: Management of Diabetic Foot, Foot Ulcer, Diabetic Patients, Practice Awareness, Knowledge, Diabetic Foot Ulcer

Introduction

Diabetes Mellitus (DM) affects people all over the world. It is a metabolic condition marked by persistently elevated blood sugar levels brought on by either insulin hormone resistance or shortage (Cho NH, 2018). About 463 million cases of DM were reported globally in individuals aged 20 to 79 in 2019. That number is predicted to increase to 578 million cases and 700 million cases by 2030 and 2045, respectively (Saeedi P, 2019). Between 2010 and 2030, developing nations are projected to have 69 percent more adults with diabetes than developed countries (20%) (Ogurtsova K, 2017). In Pakistan, a developing nation, the prevalence of diabetes is rapidly increasing (J, 2017).

There are two main categories for DM complications. Microvascular problems are damage to small vessels that results in neuropathy, retinopathy, and kidney-related disorders. At the same time, macrovascular complications are long-term damage to large vessels, resulting in cardiovascular diseases (Zheng Y, 2018). According to some studies, a cross-sectional study of the population of the Alkharj region revealed a diabetes prevalence of 3.8% for females and 9.2% for males (Al-Zahrani JM, 2019). In addition to these issues, 30% of people with DM experience diabetic neuropathy, which primarily harms the longer peripheral nerves that innervate the lower extremities and affects 50% of those over the age of 50. This condition increases the risk of foot ulcers and lower-extremity amputation horrendously (Cole JB, 2020).

Methodology

This cross-sectional analytic study assesses diabetic foot knowledge, awareness, and related practice among healthcare providers in DHQ Hospital Bhakkar, Punjab, Pakistan. According to the Rao Soft online sample size calculator (Rao Soft Inc., Seattle, Washington, United States), the sample size was around 110 healthcare providers. All categories of healthcare providers were included in the study. Participants who suffered from any illness or did not answer the whole questionnaire were excluded.

After receiving written consent, the data was collected through a valid, structured, self-administered questionnaire developed using the help of others used in previous studies (Shamim M, 2021,Bilal M, 2018). The data were collected by Likert scale-related questions.

Descriptive statistics were interpreted by using numbers, percentages, and figures. The relationship between knowledge based on work-related surgical and medical areas was conducted using the Chi-square test. All value analyses were performed using IBM SPSS Statistics for Windows, Version 26 (Released 2019; IBM Corp., Armonk, New York, United States). P-value <0.05 was considered statistically significant.

Results

110 healthcare workers participated in this study; the majority were females (N=88, 80%) compared to males (N=22, 20%). All of the participants were from DHQ

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Hospital. Of them, (N=61) 55.4% worked in medicine-related departments, and (N=49) 44.5% were in surgery-related departments. Of the participants, (N=47) 42.7% were physicians, (N=55)50.0% were nurses, and (N=08) 6.9% were physiotherapists. Most of the healthcare workers had a working experience of 5-10 years (40.9%) and ≤ 5 years (50.0%), and the majority of the participants (74.5%) had a wound care experience of ≤ 5 years (Table, Figure 1). To assess the participants' knowledge regarding diabetic foot ulcers, a questionnaire composed of 15 questions was used. The assessment was based on work-related surgical areas such as general surgery, orthopedics, and wound care departments. Any healthcare worker who worked in family medicine, cardiology, and endocrinology or was a general physician was considered a medical worker. Of the participants, 85.3% had good knowledge regarding the predisposing factors of diabetic foot ulcers. Furthermore, 46.1% had good knowledge about diabetic foot care, with the majority (35.4%) being from medical departments; 59.5% and 56.5% had poor knowledge concerning the characteristics and complications of diabetic ulcers, respectively. We conducted a chi-square test to explore the relationship between knowledge questions and the workplace. A statistically significant association ($p < 0.044$) was found only with diabetic foot care questions (Table 2). This section was graded on a scale of 0 to 50, with 5 being the highest possible score for strongly agreeing and decreasing sequentially. The participants' scores varied from 10 to 50, with a median of 26. Of the participants, 37.2 % strongly agree that the regular diabetic wound assessment is necessary 21.8% strongly agree that patient education regarding diabetic ulcers is their responsibility, and 10.7% disagree regarding this responsibility. On the contrary, 10.7% of the participants did not prefer to take care of diabetic wounds strongly agreed. And 20.0% strongly agreed and believed that diabetic ulcer treatment is more critical than its prevention (Table 3).

Table 1 Demographic characteristics of healthcare workers (N=110)

Variables	Constructs	N (%)
Gender	Male Female	22 (20.0) 88 (80.0)
workplace	Surgical-related Medicine-related	49 (44.5) 61 (55.45)
Current profession	Physician Nurse Physiotherapist	47 (42.7) 55 (50.0) 8 (7.2)
Work experience	≤ 5 years 5-10 years 11-15 years 16-20 years > 20 years	55 (50.0) 45 (40.9) 8 (7.2) 1 (0.90) 1 (0.90)
Wound care experience	≤ 5 years 6-10 years 11-15 years 16-20 years > 20 years	82 (74.5) 26 (23.6) 1 (0.90) 0 (0.0) 1 (0.90S)

Figure 1: Years of experience in the study population

Table 2 Participants' knowledge of diabetic foot ulcers based on their work environment (N=110)

INSTRUMENT ITEMS		WORKPLACE			
Variables	**knowledge**	**Surgical-related %**	**Medicine -related %**	**%**	**P-VALUE**
Predisposing factor in ulcer formation	Good knowledge	32.9	52.4	85.3	0.701
	Poor knowledge	5.5	9.2	14.7	
Characteristics of ulcers	Good knowledge	18.3	22.2	40.5	0.176
	Poor knowledge	19.1	40.4	59.5	
Complications of ulcers	Good knowledge	17.5	26	43.5	0.541
	Poor knowledge	19.8	36.7	56.5	
Diabetic foot care	Good knowledge	13.7	35.4	48.1	0.044
	Poor knowledge	23.7	28.2	51.9	

Table 3 Questionnaire related to healthcare workers' attitude towards diabetic foot care (N=110)

ITEMS	STRONGLY AGREE N(%)	AGREE N(%)	NEITHER AGREE NOR DISAGREE N(%)	DISAGREE N(%)	STRONGLY DISAGREE N(%)
I think diabetic ulcer treatment is more important than ulcer prevention	22 (20.0)	18 (16.3)	9 (8.1)	21 (19.0)	40(36.3)
I don't think it is necessary to address diabetic wounds regularly	14 (10.7)	21 (16.0)	10 (9.09)	24 (21.8)	41(37.2)
Diabetic wound care is time-consuming for me to carry out	19(17.2)	22 (20.0)	30 (22.9)	14 (12.7)	25 (19.1)

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In comparison with other job tasks, diabetic wound care is a low-priority task for me	22 (20.0)	12 (10.9)	24 (21.8)	20 (18.1)	32 (29.0)
If I have the opportunity, I would like to avoid taking care of diabetic wounds	17 (15.4)	29 (26.)	31 (28.1)	9 (8.1)	24 (18.3)
I don't have time to advise each patient individually on how to look after their wounds	21 (19.0)	9 (8.1)	14 (12.7)	32 (29.0)	34 (26.0)
I am not usually the one who handles educating patients with diabetic ulcers on how to reduce re-ulceration	22 (20.0)	9 (8.1)	14 (10.7)	41(37.2)	24 (21.8)
I cannot think about pain when cleaning diabetic wounds	18 (16.3)	24 (21.8)	28 (25.4)	22 (20.0)	18(16.3)
I don't like to care for diabetic wounds in my practice	17 (15.4)	41(37.2)	10 (9.09)	22 (20.0)	20 (18.1)
I am not satisfied with caring for diabetic wounds	18 (16.3)	25 (22.7)	26 (23.6)	24 (21.8)	17 (15.4)

Discussion

Most of the study's participants in the healthcare field were women (80%). However, 54..4% of them worked in medicine. Physicians made up the majority of healthcare employees (47.5%), and the majority (74.5%) had work experience of five years or less or equivalent to it. In contrast to a previous study on nurses from Malaysia that found insufficient knowledge regarding diabetic foot ulcers and proper care for the diabetic foot (Wui NB, 2020), the majority of healthcare workers in this study had good knowledge regarding the predisposing factors of diabetic foot ulcers (85.3%) and good knowledge about diabetic foot care (48.1%). However, the engagement of different healthcare workers in this study may account for that discrepancy.

A person's attitude is a crucial quality that can affect their aspirations (RE, 2019) . For instance, an optimistic outlook can aid in preventing the onset of a disease (Maylor M, 1999). Studies have demonstrated that healthcare professionals favor treating ulcers (Wui NB, 2020). Similar optimistic findings can be seen in our study about foot care. The opinions of healthcare professionals toward treating diabetic ulcers are displayed in Table 3. A better illness outcome and fewer complications are linked to a happy mood among healthcare professionals.

On the other hand, 39.7% of participants said that managing diabetic foot ulcers required a lot of time, 41.2% said they would like to avoid caring for diabetic wounds if they could, and 38.9% expressed dissatisfaction with diabetic wound care. In a prior study on nurses' views in Saudi Arabia, disappointing results were found, and 10% of the nurses believed that ulcer prevention required a lot of time (Kaddourah B, 2016). The attitudes and knowledge of the healthcare staff were not correlated in this study. However, a study done on Belgian nurses showed a link between attitudes and knowledge. Additionally, it discovered a correlation between healthcare personnel's attitudes and working methods (Beeckman D, 2011)..

Conclusion

DM is a prevalent disease in Pakistan. With poor glycemic control, many people suffer from its devastating complications. Our study shows that most participants have good knowledge and attitudes but poor practices. This highlights the need for more efforts to enhance healthcare providers' education about diabetes and its complications.

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.
Consent for publication
Approved
Funding
Not applicable

Conflict of interest

The authors declared absence of conflict of interest.

Authors Contribution

Rabia Noureen
Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, final approval of manuscript
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Conception of Study, Final approval of manuscript
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Data entry and Data analysis, drafting article.
Madiha Mukhtar
Data entry and Data analysis, drafting article.

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