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RESEARCH ARTICLE

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

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Abstract

Introduction: Diabetic foot ulcer is among the commonest complications of diabetic mellitus, attributing to a significant number of morbidity and mortality in diabetic patients, and enormous economic loss to the families and the country. Nowadays, the incidence of diabetic foot ulcer is increasing due to the increased prevalence of diabetes, prolonged life expectancy of diabetic patients and lifestyle change. Ethiopia is one of the top five countries with the largest number of people affected by DM in sub-Saharan Africa.

Objective: To assess patients' knowledge, attitudes, and practices towards prevention of diabetic foot ulcer among adult diabetic patients attending at follow-up clinic of Hawassa Comprehensive Specialized Hospital, Sidamma, Ethiopia.

Methods: An institution-based cross-sectional study was conducted to determine the level knowledge, attitude, and practice towards prevention of diabetic foot ulcer among diabetic patients at Hawassa University Comprehensive Specialized Hospital (HUCSH) from September 1 to September 30/2021. Purposive sampling method was applied and 125 adult diabetic patients were enrolled in this study. Pre-tested and structured interviewer-administered questionnaire was used for data collection. Data was collected through face-to-face interview from study participants and the collected data was analyzed by SPSS version 25.

Results: In the current study a total of 125 participants were included and with a 100% response rate. The mean knowledge score was 11.29 ± 1.87 of which 69.6%, had good knowledge towards prevention of diabetic foot ulcer. The mean attitude score was 11.29 ± 1.870. Of which 79.2% had positive attitude. While the mean practice score was 8.7 ± 1.790 of which 43.2% had good foot care practice.

Conclusion: The overall rate of adequate knowledge and practices regarding prevention of diabetic foot ulcer among participants was unsatisfactory. Health education should be provided to the patients.

Keywords

Diabetic foot ulcer, Knowledge, Attitude, Practice, Prevention, Hawassa city, Ethiopia

Abbreviations

HUCSH: Hawassa University Comprehensive Specialized Hospital; DFU: Diabetic Foot Ulcer; DM: Diabetes Mellitus.

Introduction

Diabetes Mellitus (DM) is a chronic metabolic disease of multiple etiologies that is characterized by states of hyperglycemia with disturbances of carbohydrates, proteins and fat metabolism [1]. The most important complications of diabetes mellitus are neuropathy and foot ulcer; Diabetic Foot Ulcer (DFU) is a full-thickness wound penetrating through the dermis (the deep vascular and collagenous inner layer of the skin) located below the ankle in a diabetes patient. It occurs because of many risk factors, which include long duration or

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history of uncontrolled diabetes mellitus, poor metabolic control, foot deformities, older age and peripheral vasculopathy and poor knowledge of diabetics [2]. The common clinical presentation of DFU includes pain in the foot, absence of sensation, ulceration, loss of joint movements, absence of sensation in the foot, abscess formation and change of color and temperature when gangrene sets in [3]. Ulceration of the calcaneum and bones of the forefoot, especially the great toe and first metatarsal head, are common sites of diabetic ulcer; if a foot ulcer goes untreated and does not heal, it may become infected and manifestations of complications range from simple to highly complex, including limb amputations and life-threatening infections [4].

Global prevalence of diabetic foot is 6.3% (95% CI: 5.4-7.3%), and it is estimated that about 5% of all patients with diabetes present with a history of foot ulceration, while the lifetime risk of diabetic patients developing this complication is 15% [5]. And it is a major health issue that necessitates a multidisciplinary approach and has a negative impact on the lives of individuals. The principles of diabetic foot ulcer prevention and treatment include determining the foot at risk, routine foot supervision, patient, family, and healthcare professional education, adequate shoe selection, and treatment of early signs of foot ulcers [6].

Evidences shown that 50-80% of all diabetic foot related problems are preventable if appropriate measures are taken. It can be achieved by combination of good foot care and appropriate education for both people with diabetes and health care professionals. Management of diabetic foot ulcer: includes debridement, off-loading, dressings, treatment of infection, and application of other new therapies [7].

An understanding of the causes of foot diseases in diabetics will enable high-risk patients to be recognized early. Therefore, Knowledge, Attitude and Practice (KAP) in regard to disease, medications and life style plays an important role in achieving appropriate glycemic control in patients with DM [8].

Therefore, this hospital-based cross-sectional study will be conducted to deal with the knowledge, attitude and practice towards the prevention of diabetic foot ulcer among diabetic patients at the follow up clinic in Hawassa University Comprehensive Specialized Hospital (HUCSH), Hawassa, Sidamma, Ethiopia, from September 1 to September 30/2021.

Materials and Methods

Study setting

This study was conducted at follow up clinic of Hawassa University Comprehensive Specialized Hospital (HUCSH) Hawassa Town. Hawassa city located 273 km south of Addis Ababa, the capital city of Ethiopia and the town currently serves as the capital city of the Sidama Region and Southern Nations, Nationalities, and Peoples' Region (SNNPR). The city has 85 public and private health institutions.

Currently, Hawassa University Comprehensive Specialized Hospital provides health services for more than ~25 million people in the Sidamma and Southern Nations, Nationalities and Peoples' Region (SNNPR) and the neighboring Oromia region [9]. This teaching hospital had 16 ward with 400 beds, and 11 outpatient departments.

Study design and period

A hospital based cross-sectional study was conducted at HUCSH from September 1/2021 to September 30/2021.

Source population

All adult diabetic patients who were attending at follow up clinic of HUCSHduring the study period.

Study population

All selected adult diabetic patients who were attending at follow up clinic of HUCSH during the data collection period.

Eligibility criteria

Inclusion criteria: - All diabetic patients over 18 years of age, both male and female, with type I or type II diabetes whose diagnosis had occurred at least six months earlier and who are agreed to participate in this study and attending at the follow up clinic of HUCSH during the data collection period.

Exclusion criteria: - Diabetic patients with traumatic ulcers resulting from causes other than perceived risk factors, such as a car accident, and those who are having mental illness and who are severely ill or are being treated with chemotherapy, immunosuppressive or steroid drugs and who unable to communicate throughout the study period was excluded from the study.

Variable of the study

Dependent Variables: - Preventive measure of diabetic foot ulcers.

Independent Variables: - Socio-demographic characteristics (sex, age, occupation, residence, level of education, and marital status). Knowledge level, attitudes and practices towards prevention of diabetic foot ulcer.

Sample size determination and sampling technique

The sample size was determined using a single population proportion formula with the following

Assumptions: Estimate prevalence rate (56.2%) taken from a previous study conducted in Mizan Tepi University [2], with 95% confidence level, and 5%

degree of precision. After considering 10% for the non-response rate, the final sample size was 125. To recruit study participants non-randomized purposive sampling method was used until the required sample size was obtained.

Data Collection

Socio-demographic data like Sex; Age; Marital status; Residence; Educational level; Occupation and related factors like presence of diabetic foot ulcers and family history with diabetes mellitus were collected using a pre-structured questionnaire by the trained BSC nurse through a face-to-face interview. The purpose of the study and related risk and benefits of the study was explained to the study participants.

Data quality control

To ensure the quality of data, training was given for data collectors before starting data collection. The questionnaire was pre-tested among DM patients which representing 5% of the sample size, at Adare General Hospital to check its consistency, appropriateness, completeness and reliability of the questionnaire.

Data processing and analysis

Data were coded, entered and analyzed by using SPSS version 25 software. Descriptive statistics were used to determine the association between the two variables. The association between explanatory variables and the outcome variables was checked by using binary logistic regression model; Variables with a *p*-value of < 0.05 were considered as statistically significant.

Results

Socio-demographic information of participants

The age of participants ranged from 20 to 82 years, with a mean age of 48.86 ± 14.180. Of the 125 participants used for the study, 68 (54.4%) were males. In addition, among the participants 74 (59.2%) were urban residence while the education level for most of the participants 41 (32.8%) were college degree and 29 (23.2%) participants had Elementary education. 93 (74.4%) of the participants were married and 17 (13.6%) were singles. Majority of participants 32 (25.6%) were Government employee (Table 1).

Table 1: Socio-demographic characteristic, level of knowledge, attitude and practice at HUCSH, South Ethiopia, September, 2021 (N = 125).

Variables	Category	Frequency	Percent
Age category	< 30 Years	14	11.2
	30-49 Year	55	44.0
	50-65Year	37	29.6
	> 65 Year	19	15.2
Gender	Female	57	45.6
	Male	68	54.4
Resident	Urban	74	59.2
	Rural	51	40.8
Religion	Muslim	25	20.0
	Orthodox	39	31.2
	Protestant	61	48.8
Educational level	No formal education	27	21.6
	Elementary (1-8)	29	23.2
	Middle school (9-10)	18	14.4
	High school (10-12)	10	8.0
	College degree and above	41	32.8
Marital status	Married	93	74.4
	Unmarried/ single	17	13.6
	Divorce	8	6.4
	Widowed	7	5.6
Occupation	Farmer	26	20.8
	Government employee	32	25.6
	Private employee	15	12.0
	Merchant	30	24.0
	Non-employed	12	9.6
	Student	10	8.0
Monthly average income (ETB)	Below 500	1	.8
	500-1500	22	17.6
	1500-3000	33	26.4
	> 3000	69	55.2
Knowledge level	Poor knowledge (< 8)	10	8.0
	Satisfactory (8-10)	28	22.4
	Good knowledge (> 10)	87	69.6
Attitude level	Positive attitude	99	79.2
	Negative attitude	26	20.8
Practice Level	Good practice	54	43.2
	Poor practice	71	56.8
Duration of diabetes (yrs.)	< 10 Year	106	84.8
	> 10 Year	19	15.2
Family history of diabetes	Yes	113	90.4
	No	12	9.6
Diabetic foot ulcer	Yes	18	14.4
	No	107	85.6

Knowledge of study participants towards prevention of diabetic foot ulcer

In this study, a total of 125 participants included and the mean knowledge score was 11.29 ± 1.87. The range of knowledge score obtained in this study was 1-15 out of maximum possible score of 15. On classifying the knowledge score of the study participants, 87 (69.6%) had good knowledge. About 19 (15.2%) of DM patients were unaware that smoking causes poor circulation to the feet and 116 (92.8%) of participants had knowledge that DM complication could happen if medications are not taken regularly. Likewise, 117 (93.6%) of the respondents were aware about people with diabetes can develop an ulcer; they should use special shoes (Table 2).

Attitude of study participants towards prevention of diabetic foot ulcer

This study reveals that the mean attitude score of study participants was 11.29 ± 1.870. Of which 99 (79.2%) had positive attitude and the majority of study participants 114 (91.2%) were agreed with that of regular exercise prevents further complication on diabetic patients. Likewise, the majority of participants

Table 2: DM patients have knowledge about prevention of DFUC at HUCSH, South Ethiopia, September, 2021 (N = 125).

Knowledge Questions	Response			
	YES		NO	
	Number	%	Number	%
Do you know that if people with diabetes can develop an ulcer, they should use special shoes?	117	93.6	8	6.4
Do you know DM patients should take medication regularly because they are liable to get DM complication?	116	92.8	9	7.2
DM patients should look after their feet because they may not feel a minor injury to their feet.	112	89.6	13	10.4
DM patients should look after their feet because wounds and infection may not heal quickly	109	87.2	16	12.8
DM patients should look after their feet because they may get a foot ulcer.	115	92	10	8
DM patients should not smoke because smoking causes poor circulation and affects the feet.	106	84.8	19	15.2
Do you know if you found redness/bleeding between your toes what is the first thing you do?	108	86.4	17	13.6
How often do you think you should inspect your feet?	67	53.6	58	46.4
How often do you think your feet should be washed?	67	53.6	58	46.4
What temperature of water do you think you should wash your feet in?	24	19.2	101	80.8
How often do you think you should inspect the inside of your footwear for objects or torn lining?	64	51.2	61	48.8
How often do you think you should wear shoes and socks?	87	69.6	38	30.4
Do you know warning signs for which consultation is required?	107	85.6	18	14.4
Do you know importance of taking anti-diabetic treatment to prevent complications?	113	90.4	12	9.6
Do you know why lotion not to be applied in the interspaces?	101	80.8	24	19.2

Table 3: DM patients have attitude about prevention of DFUC at HUCSH, South Ethiopia, September, 2021 (N = 125).

Attitude Questions	Response	Frequency	Percent
Regular exercise prevents further complication.	Agree	114	91.2
	Disagree	11	8.8
Dietary modification is important to prevent diabetic foot ulcer.	Agree	109	87.2
	Disagree	16	12.8
Weight reduction is important to prevent diabetic complication	Agree	101	80.8
	Disagree	24	19.2
Diabetic foot ulcer never spoils your social life.	Agree	97	77.6
	Disagree	28	22.4
Diabetic foot ulcer is preventable diabetic complications.	Agree	93	74.4
	Disagree	32	25.6

97 (77.6%) and 93 (74.4%) were agree with diabetic foot ulcer never spoils their own social life and it is preventable diabetic complications, respectively (Table 3).

Practices of study participants towards prevention of diabetic foot ulcer

Regarding the overall diabetic foot self-care practice of study participants 54 (43.2%) had good foot care practice (< 50%). The study revealed that the majority of the respondents 69 (55.2%) have not inspect their feet daily and (56.0%) have never checked their shoes before they put them on and concerning the use of moisturizing cream on feet, almost half of 49.6% never used cream (Table 4).

Discussion

This study was conducted to assess diabetic patients' level of knowledge, level of attitude and level of practices towards prevention of foot ulcer. Daily foot care is essential for preventing complications of diabetic neuropathy and vascular insufficiency. In the current study the majority of the diabetic patients (69.6%) had good knowledge regarding prevention of foot ulcer. The finding was higher than study reported in India, (56.2%), [2], India (58%), [8], Sudan (46.7%), [10] had good knowledge of foot care, various studies have shown that low scores were common in those having poor formal education. Education has also shown positive relationship with good practices.

On the other hand, this study revealed that the

Table 4: DFU Prevention practice of DM patients at, HUCSH, South Ethiopia, September, 2021 (N = 125).

Practice Items	Response	Frequency	Percent
Do you examine/inspect your feet?	Yes	56	44.8
	No	69	55.2
Do you check your shoes before you put them on?	Yes	55	44.0
	No	70	56.0
Do you check your shoes when you take them off?	Yes	49	39.2
	No	76	60.8
Do you walk in the house barefoot?	Yes	53	42.4
	No	72	57.6
Do you walk outside barefoot?	Yes	64	51.2
	No	60	48.0
Do you checking temperature of water before using.	Yes	95	76.0
	No	30	24.0
Do you trimming nails of feet straight with care	Yes	92	73.6
	No	33	26.4
Do you ever set your legs crossed?	Yes	57	45.6
	No	68	54.4
Do you use moisturizing cream?	Yes	63	50.4
	No	62	49.6
Do you drying the feet after washing	Yes	49	39.2
	No	76	60.8
Do you use talcum powder for keeping inter digital spaces dry?	Yes	57	45.6
	No	68	54.4
Keeping skin of the feet soft to prevent dryness	Yes	65	52.0
	No	60	48.0
Daily change of socks	Yes	60	48.0
	No	65	52.0
Checking the shoes from inside before wearing	Yes	42	33.6
	No	83	66.4
Do you physical exercise?	Yes	81	64.8
	No	44	35.2
Do you taking antidiuretic drugs as prescribed	Yes	118	94.4
	No	7	5.6

majority of participants (79.2%) had positive attitude towards prevention of DFU. The result was lower than that reported from India 89% of diabetic patients have positive attitude and 11% have negative attitude regarding diabetic foot care [11].

In our study, 56.8% of the patients had poor practices and only 43.2% had good practices. Health care professionals have a very important in improving the knowledge and practices regarding foot care. Such interventions may improve the outcomes. Similar findings reported from Dessie Referral Hospital (39%; 95% CI: 34.3-45.1%) of patients with DM had a good practice on diabetic foot self-care [12].

Conclusion

The overall rate of adequate knowledge regarding diabetic foot care among participants was unsatisfactory. Health education should be provided to the patients. Training and empowering of health care providers is essential for delivering adequate health message. Media and nongovernmental organizations should play a role in raising the awareness the problem in a simplified way.

Limitation of the Study

Our cross sectional study may be limited by social desirability bias due to self-report of the participants. Besides, the study cannot evaluate the causal effect between prevalence and associated factors, and the findings represent the situation during the study period.

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Authors' Contribution

All authors participate on study design, data retrieval and capture, statistical analysis, manuscript writing, manuscript revision, editing and final approval.

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Ethical Consideration

The study was approved by the Institutional Review Board of College of Medicine and Health Sciences, of Hawassa University. An official permission letter was obtained from the study site. The objectives, expected outcomes, benefits, and risks of the study were explained for study patricians. They have also informed that participation in the current study voluntary and they can quit anytime they want. Data was collected after written informed consent was obtained from all study patricians.

Consent for Publication

Not applicable.

Data Availability

All relevant data are available within the paper.

Competing Interests

The authors have declared that no competing interests exist.

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