

Attitude and Practice on Foot Care among Patients with Type 2 Diabetes Mellitus Attending a Tertiary Care Centre at Southern Part of Tamilnadu, India

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Abstract:

Introduction : Diabetic foot has got a high prevalence of 52% among diabetics. The duration of hospital stay and physical disability are likely to cause depression and affects overall quality of life. So it is important for general population, to know about Self Care activities which include foot care practice to avert long term complications and improve quality of life which is likely to be effective in reducing the burden of diabetic foot ulcer. **Objective:** To assess the knowledge, attitude and practice about foot care among Type 2 DM patients in a Tertiary health care center, Tamil Nadu. **Method:** A cross-sectional study was done during August and September 2021 among diabetic patients after obtaining consent at a Tertiary Hospital in southern district of Tamil Nadu. **Results:** The mean age of the study participants was 47.56 ± 9.718 years with 55.9% being male and 44.1% female and the majority (65.6%) of subjects was residing in rural areas. Among the participants, 103 (92.8%) were found to have good attitude towards self-care activities whereas 69 (62.2%) respondents practiced proper footcare. Age, gender and education were found to have significant association with the practice of proper foot care. Female gender was found to be an independent predictor for practice of adequate foot care. **Conclusion:** Regardless of good attitude towards diabetic foot care there is considerable resistance in practicing it.


Key words: Attitude, Diabetes, Diabetic foot, Knowledge, Practice.

Introduction:

Diabetes, a multi system and multi-organ disease is now considered to be an epidemic affecting both developing as well as developed countries. It is a chronic metabolic disease with elevated blood glucose level and over the years it causes damage to heart, kidneys, eyes and nerves. Type 2 diabetes is a common type of diabetes among adults. About 422 million people in the world have diabetes, majority

living in low- and middle-income countries.^[1] Diabetes is a major cause of increased morbidity and mortality in India. Treatment adherence is a major challenge for diabetics further contributing to the bottlenecks.^[2]

Among the various complications, Diabetic Foot is one of the most prevalent and devastating micro vascular complication. In India, footwear practices vary widely from a significant proportion of patients

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walking barefoot outdoors, to a majority of Indians walk barefoot indoors.^[3] Diabetic foot has got a high prevalence of 52% among diabetics.^[4] Various factors contributing to diabetic foot syndrome are peripheral sensory neuropathy, lack of patient knowledge about foot care, improper footwear and uncontrolled diabetes. Lower Extremity Amputation (LEA) is one of the most distressing consequences of Diabetic Foot Ulcer (DFU).^[5] Almost 85% of all lower extremity amputations is attributed to DFU. Management of DFU and LEA requires prolonged hospital stay and increases Out of Pocket expenditure. The longer duration of hospital stay, increased expenditure and physical disability are likely to cause depression and affecting overall quality of life.^[6-8] Diabetes has added on the economic burden in both urban and rural diabetic subjects in India. Total direct cost spent on diabetes management has doubled from 1998 to 2005.^[9] Despite being preventable, Diabetic foot ulcer (DFU) tends to affect not only physically but also has impact on psychosocial, economic domains thereby affecting DALY. Adequate knowledge and practice regarding diabetic foot care will reduce the risk of diabetic foot complications preventing disability.

Henceforth, it is important for general population, especially the diabetics to know about recommended Diabetes Self Care activities which includes foot care practice to avert long term complications and improve quality of life and thereby effective in reducing the burden of diabetic foot ulcer. There are dearth in studies on attitude and practice of adequate foot care among type 2 diabetic patients. The present study aims at assessing the attitude and practice about foot care among Type 2 Diabetes Mellitus patients in the area of Kulasekaram in Kanyakumari district of Tamil Nadu.

Objective:

To assess the attitude and practice about foot care among Type 2 Diabetes Mellitus patients attending one of the Tertiary health care centers, Tamil Nadu.

Method:

This cross-sectional study was done among 111 previously diagnosed diabetic patients attending general medicine Out Patient Department (OPD), in a Tertiary Hospital in Kulasekharam, Kanyakumari district of Tamil Nadu, during August and September 2021. The sample size was calculated using the formula $Z\alpha^2pq/d^2$ where p was 46.9% and relative precision of 20% and 111 subjects were chosen by non-probability technique. All diabetic patients of more than 5 years duration who were available in the hospital during the study period were included in the study and those who had cognitive impairment were excluded. Each participant provided a written informed consent after receiving a full explanation of the study's purpose and procedure that has been approved by the Institutional Review Board. A semi-structured self-administered questionnaire was used and data on socio-demographic details, attitude and practice of self-care activities of diabetic patients were asked.

Framework of Analysis

The data collected from the respondents were coded and entered in MS Excel 2016 sheet. The data were classified, tabulated, analyzed, and interpreted during processing. The questions on attitude and practice were evaluated separately and the mean score was determined. Participants who scored more than the determined mean score in each attitude and practice were classified as having good attitude and good practice respectively, and those who scored less than the mean score were classified as bad in each category. The data were analyzed using the SPSS (Statistical Package for Social Sciences) version 20.0 software. The statistical techniques were chosen based on the study's objectives as well as the nature of the data analyzed. Quantitative variables were expressed as mean and standard deviation and qualitative variables were expressed as percentage. Chi-square test was used to find out the association between independent and dependent variables.

Binary logistic regression method was used to find the independent predictors for following good foot care practice.

Results:

The mean age of the study participants was 47.56 ± 9.718 years with minimum age 26 years and maximum 76 years. Majority of the participants were male 62 (55.9%) while 49 (44.1%) were female. More than half of the study participants were 58 (52.3%) PG/Diploma graduates, 28 (25.2%) high school education, 8 (7.2%) middle school and 11 (9.9%) primary school level education, and only 6 (5.4%) had no formal education. Professional/ semi-professional occupation formed the majority i.e., 46 (41.4%) followed by semi-skilled/ skilled works 30 (27.0%), unskilled work 21 (18.9%) and unemployed 14 (12.6%).

Majority of the study participants 75 (67.7%) thought that the factors such as hereditary, obesity, smoking, and physical inactivity combined together contribute to Type 2 DM. Most of the study participants 103 (92.8%) had been diagnosed in the past 5-10 years. Among the respondents, majority 62 (52.9%) were taking meals 3 times a day, instead of advised frequent small quantity intake. Among the participants, 103 (92.8%) were found to have good attitude and 8 (7.2%) had bad attitude towards self-care activities. Interestingly, only 69 (62.2%) had good practice and 42 (37.8%) were not following the adequate measures to prevent foot ulcers (bad practice). Among our study participants, 39 (35.1%) were smokers. About 107 (96.4%) were aware that uncontrolled diabetes can lead to non-healing foot ulcer. It was found that 108 (97.3%) of the participants felt that it is necessary to inspect the foot daily whereas only 95 (85.6%) practiced it. Similarly, 82% felt the need of using indoor foot wear but only 67 (60.4%) practiced it. Majority of the study participants 105 (94.6%) felt that it was necessary to consult a healthcare provider in case of non-healing ulcer, interestingly, when asked what they would do if found one on their own feet, about 94 (84.7%) were willing to seek a healthcare provider, 12.6% would

self-treat and 2.7% leave it untreated. Table 1 shows the measures taken by the participants to avoid foot ulcers.

Chi-square test was used to find the association between different variables and attitude (Table 2), it was found that those who were diagnosed in the past 15 years had good attitude towards foot care among diabetics.

Among the variables studied, age 50 years and less, female gender and education of high school and above were found to have significant association with good practice on foot care (Table 3).

Variables which were found to have significant association with good practice of foot care in bivariate analysis were analyzed using binary logistic regression. Female gender was found to be the independent predictor for good practice of foot care (Table 4) in our study. This regression model had Cox & Snell R square value of 0.117 and Nagelkerke R square value of 0.159.

Discussion:

The present cross-sectional study had highlighted on the attitude and practice of foot care among type 2 diabetic patients, measures taken by them to prevent foot ulcer and the factors associated with their attitude and practice of adequate foot care in a rural area of Kanyakumari.

Our study found that majority of the study participants had good attitude towards following proper foot care but only 62.2% were practicing it. Good attitude towards foot care could be due to the high literacy rate in the district of Kanyakumari, even in the rural area.^[10] The study by Pothiraj Pitchai et al in Maharashtra found that the rural diabetic patients had inadequate knowledge of diabetic foot care and its self-care measures. Majority of diabetics were not aware regarding inspection of feet which included 64% of urban and 82 % of rural diabetics.^[11] Our result also contradicts the result of a study done at Puducherry, India^[12] and Ethiopia.^[13]

Table 1: Measures practiced by the respondents to avoid foot ulcers (n=111)*

Measures	Yes	No
	Frequency (percentage)	Frequency (percentage)
Self-inspection of foot	95 (85.6%)	16 (14.4%)
Use of indoor foot wear	67 (60.4%)	44 (39.6%)
Control of blood glucose	87 (78.4%)	24 (21.6%)
Wash the feet daily with warm water	65 (58.6%)	46 (41.4%)
Pat dries the foot after washing	65 (58.6%)	46 (41.4%)
Moisturize the dry area of feet daily	60 (54.1%)	51 (45.9%)
Check the feet for any injury	84 (75.7%)	27 (24.3%)
Change the foot wear if shoe bite occurs	88 (79.3%)	23 (20.7%)

*Multiple Responses

Table 2 : Association between different variables and attitude towards foot care among the study participants

Variables		Attitude		C ²	p value
		Bad n (%)	Good n (%)		
Age	≤ 50 years	4 (5.3 %)	71 (94.7 %)	1.21	0.271
	≥ 51 years	4 (11.1 %)	32 (88.9 %)		
Gender	Male	7 (11.3 %)	55 (88.7 %)	3.50	0.061
	Female	1 (2 %)	48 (98 %)		
Education	Up to middle school	1 (4 %)	24 (96 %)	0.49	0.481
	High school and above	7 (8.1 %)	79 (91.9 %)		
Occupation	Skilled works and above	7 (9.2 %)	69 (90.8 %)	1.44	0.229
	Unemployed/Semi-skilled works	1 (2.9 %)	34 (97.1 %)		
Income of the individual	≤ Rs 10,000	1 (2.2 %)	44 (97.8 %)	2.81	0.094
	> Rs 10,000	7 (10.6 %)	59 (89.4 %)		
Duration of Diabetes	≤ 15 years	6 (5.7 %)	100 (94.3 %)	8.41	0.004*
	≥ 16 years	2 (40 %)	3 (60 %)		

*Statistically significant association with p value < 0.05

Self-inspection of foot is an important measure to check for any ulcers. In the current study 97.3% were aware of self-inspection of foot but only 85.6% practiced it daily. One Ethiopian study found that 64.2% of the study participants did inspect their feet daily.^[13] This finding contradicts the result of previous studies where the percentage of study subjects who did self-inspection of foot was low^[14,15] and highlights effective health education.

Practice of using indoor foot wear was 60.4% in the current study which was higher when compared to previous studies^[4,13] but another study found that 73.5% of diabetics used indoor foot wear.^[16] About 54.1% of our study participants applied moisturizer to their feet daily which is similar to the finding of Tuha A et al.^[13] In another study, about 67.1% participants used to apply moisturizer to their feet daily.^[15] Kulasekharam being wet area receiving

Table 3: Association between different variables and practice towards foot care among the study participants

Variables		Practice		c ²	p value
		Bad n (%)	Good n (%)		
Age	≤ 50 years	23 (30.7 %)	52 (69.3 %)	5.05	0.025*
	≥ 51 years	19 (52.8 %)	17 (47.2 %)		
Gender	Male	31 (50 %)	31 (50 %)	8.83	0.003*
	Female	11 (22.4 %)	38 (77.6 %)		
Education	Upto middle school	14 (56 %)	11 (44 %)	4.52	0.033*
	High school and above	28 (32.6 %)	58 (67.4 %)		
Occupation	Skilled works and above	25 (32.9 %)	51 (67.1 %)	2.50	0.114
	Unemployed/Semi-skilled works	17 (48.6 %)	18 (51.4 %)		
Income of the individual	≤ Rs 10,000	19 (42.2 %)	26 (57.8 %)	0.61	0.432
	> Rs 10,000	23 (34.8 %)	43 (65.2 %)		
Duration of Diabetes	≤ 15 years	40 (37.7 %)	66 (62.3 %)	0.01	0.919
	≥ 16 years	2 (40 %)	3 (60 %)		

*Statistically significant association with p value < 0.05

Table 4: Binary logistic regression to find the independent predictor for good practice of foot care

Variables	b	S.E	Significant	Exp (b)	95% C.I for EXP (b)
Gender	1.122	0.440	0.011*	3.072	1.296 – 7.278
Age	0.715	0.463	0.123	2.044	0.825 – 5.065
Education	0.461	0.521	0.377	1.585	0.571 – 4.402
Constant	-0.774	0.468	0.098	0.461	

*Statistically significant with p value < 0.05

heavy rainfall with humid climate, usage of moisturizer is generally low.

In our study we found that the patients with duration of diabetes (≥ 15 years) had statistically significant association with the good attitude towards foot care. Result from another study found significant association between practice of adequate foot care among diabetics who were diagnosed for more than 5 years.^[15] With increased duration of illness, there is fear about development of complication enabling better attitude towards foot care.

The current study shows statistically significant association of female gender and practice of adequate foot care among the diabetics. Previous

studies also found that female gender had practiced proper foot care.^[13,17] Literacy rate among female is higher than males in this district ensuring better foot care.

Educational status of the patient had an impact on the practice of adequate foot care. This study found a statistically significant association between education of patient above high school level and good practice of foot care. This finding is consistent with the result done by previous studies.^[12, 18-20] Education results in better understanding of the issue enabling behavioral change towards better practices. Occupation was not found to have statistically significant association with attitude and practice on

foot care. This result was supported by the findings from previous study.^[15]

Younger age group was found to have statistically significant association with practice of foot care. Similar finding was observed by another study done at rural North India.^[20] Younger age has better access to information and health care facility resulting in better foot care practices. This highlights the need in improved health education of geriatric people.

Conclusion:

The current study found that diabetes patients' practice of foot care was inadequate despite having good attitude towards adequate foot care. Female gender was found to be independent predictor for adequate foot care practices to prevent foot ulcer. The study findings have revealed gaps in their attitude and practice, emphasizing the urgent need for a patient-centered educational intervention for behavior change. To reduce diabetic foot complications, it is critical to activate the role of health education and motivation by everyone who has direct contact with the patient.

Declaration:

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