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Assess the knowledge and practice on foot self-care among patients with diabetic mellitus

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Abstract
Introduction: Diabetic foot is one of the most significant and devastating complications of diabetes. The incidence of occurrence of diabetic foot ulcer is closely related with knowledge on self-management of foot care to carry out appropriate tasks focused on foot care and self-foot examination. Hence the study was conducted with the aimed to assess the level of knowledge and practice on foot self-care among patients with diabetes mellitus admitted in Saveetha Medical College and Hospital.
Materials and Methods: Hospital based cross-sectional study was carried out with 60 samples that met the inclusion criteria were selected using convenience sampling technique. Demographic variables were collected followed by variables associated with knowledge and practice on foot self-car was assessed by using multiple choice questionnaire and observational checklist. Interview method was adopted to collect the data on one to one basis. The data were tabulated and analyzed by descriptive and inferential statistics.
Results: The finding of the study reveals that out of 60 participants, 9(15%) had adequate knowledge and best practice of foot self-care. There is a statistically significant (P<0.05) positive correlation between the knowledge and practice on foot self-care and the level of knowledge had significant associated with the duration illness.
Conclusion: The findings of the current study concluded that level knowledge and practice on foot self-care was not satisfactory which is an emerging need for implementation an educational programme based on national policy on diabetic foot management and increase compliance would help to improve their self-care management of foot care.

Keywords: Diabetes mellitus, diabetic foot ulcer, foot care, foot self-care, knowledge, practice, self-care management

Introduction
Diabetes mellitus (DM) is fastest growing threat to public health globally and challenging the world in the 21st century. According to International Diabetes Federation estimates, around 415 million people had DM in 2015 and this number is expected to rise to 642 million by 2040 [1]. If left untreated, diabetes can cause many complications such as acute diabetic ketoacidosis, non-ketotic hyperosmolar, diabetic foot ulcer (DFU) and coma or death. Despite medical advancements and prevention reports, the incidence rate of diabetic foot and morbidity remain high across the world [2]. Diabetic foot is one of the most significant and devastating complications of diabetes characterized by ulceration that is associated with neuropathy and/or peripheral arterial disease of the lower limb. Patients who had to suffer from amputation operation accounted for about 5%–10%, which is more than 50% of all non-traumatic amputation [3]. Among the complications of diabetes, lower limb amputation due to DFU is considered to be potentially preventable [4]. Lower limb amputations in patients with diabetes are preceded by a foot ulcer, whose risk factors apart from peripheral vascular disease and peripheral neuropathy, weak immune system are barefoot walking, inappropriate footwear, poor foot hygiene, poor self- care management of foot care and delay in seeking medical attention [5]. It was suggested that those patients who did not receive information on the management of the disease had a significant risk of developing diabetic foot complications in a review from 2008 about self-management and education for diabetes [6]; more specifically, they had 4 times more risk of developing such complications compared with those patients who received information about self-management of the disease. Others have shown reduction in the foot amputation rate from 0.8% to 0.5% when appropriate diabetic foot care and education are implemented [7]. The right foot care, good blood glucose control, and the diabetes education can prevent up to

85% of the diabetic foot amputations [8]. Many studies suggested that the rate of amputations is minimized due to the success of good patient education and self/nursing care [9-11]. In this contest, the self-management of diabetes especially foot care by patients achieves the goal of assisting them in becoming aware of their own condition by improving their knowledge and skills at carrying out appropriate tasks focused on self-care and self-examination, encouraging the positive behavior that may allow them to at least reduce the risk of complications [12, 13]. Considering the importance of knowledge and practice regarding self-care management of foot care to prevent diabetic foot ulcer and its associated problems, this study was conducted with the aim to assess the level of knowledge and practice of foot self-care among patients with diabetes mellitus.

Methods and Materials

A quantitative research approach with hospital based cross sectional research design was adopted to assess the level of knowledge and practice on foot self-care among patients with diabetes mellitus admitted in Saveetha Medical College and Hospital after obtaining permission from the hospital authority. 60 participants were selected by using convenience sampling technique who met the inclusion criteria. The inclusion criteria for selection of participants were Patients with diabetic mellitus on regular treatment for one year to five years, could understand Tamil or English language and willing to give consent to participate in the study, available during the time of data collection. Diabetes mellitus Patient with foot ulcer, Charcot foot, foot amputation, were excluded from the study. The patients who consented in written form to participate were informed about the purpose of the study and obtained informed consent. The tool used for the study was demographic variables, multiple choice questionnaires to assess the level of knowledge and observational checklist to assess the level of practice. The questionnaire and observational checklist were related to self-care management of foot care. The questionnaire contains 20 multiple choice questions and checklist contains 10 items. The level of knowledge was categorized as inadequate knowledge (<50%), moderately adequate knowledge (51-75%) and adequate knowledge (>76%). The level of practice was categorized as poor (<50%), good (51-75%) and best practice (>76%). Structured interview schedule was used to collect the data on one to one basis. They were assured about their confidentiality and anonymity throughout the study. The data collected were entered into Microsoft excel subjected to statistical analysis and were analyzed by using descriptive and inferential statistics. Pearson's correlation coefficient was used to examine the correlation between knowledge and practice. P values less than 0.05 were considered statistically significant.

Results

Table 1: Frequency and percentage distribution of demographic variables of Patients with Diabetes Mellitus

Demographic Variables	Frequency	Percentage
Age		
45 to 50 years	24	40.0
51 to 65 years	19	31.7
Above 65 years	17	28.3
Gender		
Male	30	50.0
Female	30	50.0
Marital status		
Single	19	31.7
Married	21	35.0
Widow/Separated	20	33.3
Type of family		
Nuclear family	23	38.3
Joint family	37	61.7
Educational status		
1 – 10th standard	12	20.0
10 – 12th standard	30	50.0
Above 12th standard	18	30.0
Occupation		
None/retired	18	30.0
Employed	21	35.0
Self employed	21	35.0
Duration of illness		
1 – 12 months	23	38.3
1– 3 Years	12	20.0
3 - 5 Years	25	41.7
Type of DM		
Insulin dependent	28	46.7
Non-insulin dependent	32	53.3
Family history of DM		
Yes	27	45.0
No	33	55.0
Type of treatment		

Insulin	32	53.3
Oral hypoglycemic agents	28	46.7
Health Information Obtained through		
Health Personnel	20	33.3
Newspaper	10	16.7
Television	10	16.7
Social Media	20	33.3

The findings of the current study observed that majority (40%) of the participants were in the age group of 45-50 years and equally (50%) from both the sex. 35% of the participants were married, 61% were living in joint family. Regarding educational status, all are literate, and 30% were not doing any job. 25(41.7%) had DM within 3-5 years, 32(53.3%) were in type II DM, 33(55%) had no family history DM, and 32(53.3%) were on the treatment of insulin. Majority (33%) of them obtained the health information through health personnel and social media as depicted in Table 1.

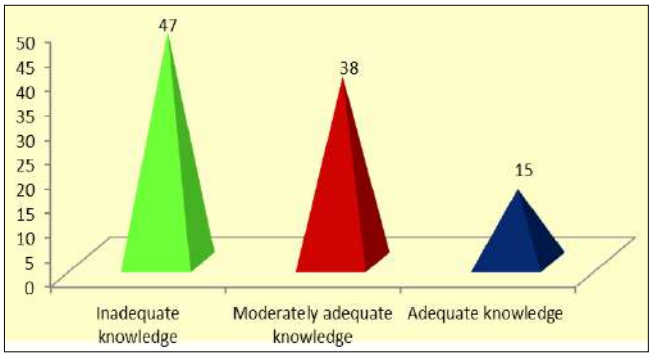

Fig 1: Percentage distribution of level of knowledge on foot self-care among patients with diabetes mellitus

Figure 1. Portrays that out of 60 participants, 28(46.7%) had inadequate knowledge, 23(38.3%) had moderately adequate knowledge and 9(15%) had adequate knowledge regarding foot self-care.

Table 2: Frequency and Percentage Distribution of level of Practice on foot self-care among patients with diabetes mellitus

Level of Practice	Frequency	Percentage
Poor Practice	26	43.33
Good Practice	25	41.67
Best Practice	9	15.0

Table 3 shows that out of 60 patients with diabetes mellitus, 29 (48.4%) had poor practice, 23 (38.3%) had good practice, 8 (13.3%) had best practice of foot self-care.

Table 3: Correlation of knowledge and practice on foot self-care among patients with diabetes mellitus

Variables	Mean	S.D	Karl Pearson's Correlation Value
Level of Knowledge	13.71	2.73	r = 0.45 p=0.049 df=59 S
Level of Practice	4.84	2.59	

S – Significant, df- Degrees of freedom,

The mean score of level of knowledge was 13.71±2.73 and the mean score of practice was 4.84±2.59. The calculated Karl Pearson's Correlation value of r = 0.45 which clearly infers that there is a statistically significant positive correlation between the level of knowledge and level of practice on foot self-care.

Table 4: Association between level of knowledge with selected demographic variables among patient with diabetes mellitus

Demographic Variable	Level of knowledge						Chi-Square
	Inadequate		Moderately adequate		Adequate		
	No	%	No	%	No	%	
Duration of illness							χ^2=9.652
1 – 12 months	7	11.7	13	21.7	3	5.0	df=4
1– 3 Years	4	6.7	5	8.3	3	5.0	p=0.047
3 - 5 Years	12	20.0	10	16.7	3	5.0	S*

S* - Significant, df - degrees of freedom

The chi-square test reveals that there is a significant (p<0.05) association between the level of knowledge with the demographic variables of duration of illness among patients with diabetes mellitus.

Discussion

Evidence suggests that consistent patient education with prophylactic foot care may reduce the risk of foot ulceration and amputation. Hence, the current study intensively analyzed the level of knowledge and practice on foot self-care among patients with diabetes mellitus. The current study observed that most of the participants were Type II diabetes mellitus, on the treatment of insulin therapy to control the diabetes mellitus, and were obtained the health information through health care personnel and social media. Diabetic foot ulcer is commonly occurred in patients with Type II DM when compared with Type I DM as well obtaining health information is very important and crucial factor for effective prevention of foot ulcer. The present study findings demonstrated that only 9(15%) had adequate knowledge and best regarding foot self-care. So the percentage obtained knowledge and practicing foot self-care was not satisfactory. This study finding consistent with the study conducted by Pourkazemi A *et al.* who concluded that the majority of participants had a poor knowledge (84.8%) and (49.6%) of them had poor performance regarding the prevention and care of DFU and also there was a significant and direct correlation between knowledge and practice. The current study also found positive and significant correlation between the knowledge and practice which indicates that the practice level will be best when they have adequate knowledge. In another study by Rao Li *et al.*, reported that the foot self-care knowledge was medium and the foot self-care behaviour was poor and also the status of knowledge and behaviours were influenced by education, duration of diabetes mellitus, periodic inspection, and education about diabetic complications. In the present study significant associated with duration of illness with the level of knowledge on foot care. Similarly study by OO Desalu *et al.* revealed that out 352 diabetes patients, 30.1% had good knowledge and 10.2 % had good practice of DM foot care and Majority (78.4%) of patients with poor practice had

poor knowledge of foot care among patients attending three tertiary hospital in Nigeria. Chamil Vidusha *et al.* conducted a study and their results demonstrate a satisfactory knowledge on diabetic foot disease; however their practices of preventive techniques were unsatisfactory among patients with chronic diabetic ulcers in Sri Lanka. Hemin Jawad *et al.* stated that the majority of participants (38%) were of poor knowledge score and moderate (40%) practice score out of 250 patients with Type II diabetes mellitus in Erbil, Iraq. Y.M. Solan *et al.* found that eighteen percent of study population reported history of foot ulcer and almost 53.6% patients had good foot care knowledge out 250 patients attending Jazan Diabetes Center. In the present study diabetic patients with foot ulcer were excluded from the study. Sheeba *et al.* found that 77% subjects had good knowledge regarding diabetes and of the subjects had good level of self-care practices of diabetes mellitus and out of which 79% of subjects follow proper foot care among 100 patients with type 2 diabetes mellitus. As the level knowledge is an important in this context, the current recommend conducting interventional study by importing self-care practice on foot care or foot hygiene through educational program as well to compare the level of knowledge and practice between rural and urban as patients with DFU and Non DFU among patients with diabetes mellitus.

Conclusion

Adequate knowledge and good practices are important to effectively prevent the complications of diabetes mellitus especially diabetic foot ulcer. The findings of the current study concluded that level knowledge and practice on foot self-care was not satisfactory which is an emerging need for implementation an educational programme based on national policy on diabetic foot management and increase compliance would help to improve their self-care management of foot care. The health care personnel working in the hospital especially diabetic nurse educator and community area should actively educate the patients with diabetes mellitus regarding the self-care management of diabetes mellitus.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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