Print ISSN: 2321-6379
Online ISSN: 2321-595X

Original Article

Impact and Association of Sociodemographic and Socioeconomic Factors on Diabetic Foot Ulcer

M Aparna[1], T Srinivas[2], B Vamsee Krishna[3]

[1]Assistant Professor, Department of General Surgery, Government Medical College, Mahabubnagar, Telangana, India, [2]Associate Professor, Department of General Surgery, Government Medical College, Mahabubnagar, Telangana, India, [3]Assistant Professor, Department of General Medicine, Government Medical College, Mahabubnagar, Telangana, India

Abstract

Background: Diabetic foot ulcer (DFU) has always been a complication among diabetics. DFU has many factors influencing it. Sociodemographic and socioeconomic factors play major roles. Age, occupation, income, and housing specifically have an influence on diabetic patients.

Objectives: The objectives of this study were to determine the sociodemographic and socioeconomic profile and assess its association and risk of diabetics developing DFU.

Methodology: A prospective study was conducted among 40 diabetics reporting to the department of general surgery with wound/s on foot. The study period was for a year. Details such as age, sex, education, occupation, income, and housing were noted using a questionnaire. The data were collected and analyzed.

Results: The total number of subjects was 40. The mean age among the subjects was 51.8 years. Eighteen subjects were male and 22 subjects were female. The majority of the subjects were Hindus and the remaining were Muslims and Christians. About 65% of subjects were uneducated. About 37.5% of subjects were housewives, 35% unemployed, and 27.5% were laborers. Subjects were divided based on economic status which showed to have an association. Housing was also considered and also seemed to have an association.

Conclusion: It can be concluded that sociodemographic and socioeconomic factors were associated with DFU.

Key words: Diabetic foot ulcer, Education, Income and housing, Occupation

INTRODUCTION

India has the second-highest numeral cases of DM, approximately 69.1 million cases in the world, just behind China being the first.[1] This number is anticipated to jump up to 640 million cases by the end of 2040.[1] In India, the prevalence of DM ranges between 5% and 17%.[2-4] Neuropathy and foot ulcer are the most frequent complication of diabetes mellitus.[5] Foot ulcers are the most dreaded complication in India which causes impaired mobility, disability, and morbidity.[6] Among diabetic patients, foot complications are very common and also a costly complication to treat.[7] Among developed countries, one among every six diabetics, will have an ulcer in their lifetime, assuming the risk is higher among developing countries.[8] A patient's interactivity with the environment is a risk factor connected to a history of foot ulcer. Foot trauma, vascular diseases, and peripheral neuropathy also can cause foot ulcers.[9] The occurrence of a diabetic foot ulcer (DFU) is a long-term complication which can be prevented.[10] Multiple other factors such as age, education socioeconomic status, and foot care, play a key role among diabetics.[11,12] The present study is aimed at assessing the risk factors, leading to DFUs, as well as reducing the impact in that particular area.

Access this article online

www.ijss-sn.com

Month of Submission : 07-2020
Month of Peer Review : 08-2020
Month of Acceptance : 08-2020
Month of Publishing : 09-2020

METHODOLOGY

The present prospective study of 40 cases of diabetic foot disease was carried out in the Department of General Surgery, SVS Medical College and Teaching Hospital over a period of 1 year from July 2015 to June 2016. After

Corresponding Author: Dr. T Srinivas, Department of General Surgery, Government Medical College, Mahabubnagar, Telangana, India

obtaining the informed consent of the patients, data were collected using a pretested questionnaire. General assessment and systemic examination were done for all the patients which are done. A detailed collection of age, sex, education, occupation, income, and housing was noted. The socioeconomic status was done based on BG Prasad classification,[13] data were compiled and analyzed and presented as tables and percentages. Keeping the significance level at $P = 0.05$, the association was assessed and tabulated.

RESULTS

The sociodemographic and socioeconomic data were collected from all the subjects. All 40 subjects are diabetic in this study as shown in Table 1. Age was noted, 50% of subjects were above the age of 60 years, and the remaining was between the age group 30 and 59 years. The mean age noted was 51.8 + 3.42 years. The current study shows female predominance of 55% subjects and 45% male subjects. The male and female ratio was 0.81:1.

Table 1: Distribution of sociodemographic and socioeconomic characteristics among the subjects

Characteristics	Number (%)	Mean	*P*-value
Age			*P*<0.001
30–39 years	6 (15)	51.8+3.42	
40–49 years	8 (20)		
50–59 years	6 (15)		
>60 years	20 (50)		
Sex		Ratio	
Males	18 (45)	0.81:1	
Females	22 (55)		
Religion			
Hindu	31 (77.5)		
Muslim	8 (20)		
Christian	1 (2.5)		
Education			*P*=0.03
Educated	14 (35)		
Uneducated	26 (65)		
Occupation			*P*=0.11
Manual laborer	11 (27.5)		
Housewife	15 (37.5)		
Unemployed	14 (35)		
Socioeconomic status			*P*<0.001
Upper class	0		
Upper middle	0		
Middle	6 (15)		
Lower middle	12 (30)		
Lower class	22 (55)		
Housing			*P*<0.001
Rural	37 (92.5)		
Urban	3 (7.5)		
Smoking			*P*=0.74
Smoker	9 (22.5)		
Non-smoker	31 (77.5)		
Alcohol			*P*=0.86
Alcoholic	19 (47.5)		
Non-alcoholic	21 (52.5)		

The present study had 77.5% Hindus and 20% and 2.5% Muslims and Christians, respectively. Education, which is of high importance nowadays, was noted, where 65% of subjects were uneducated and 35% educated. The occupation of the subjects was taken so as to assess the risk of DFUs. About 37.5% of the subjects were housewives or homemakers, 35% unemployed, and 27.5% were daily wage workers. Based on the income, the subjects were classified accordingly using modified BG Prasad classification into which socioeconomic class they belong too. The majority of the subjects (55%) belonged to the lower class, 30% were in the lower-middle class bracket, and only 15% belonged to the middle class. The subjects were also classified based on place of living 92.5% of subjects reside in rural areas, and the remaining 7.5% were from an urban background. The habits of the subjects were also considered in the study. About 22.5% were smokers and 47.5% alcoholics.

DISCUSSION

The mean age of study was 51.8 years, in which 50% of the subjects were above 60 years. With increasing age, the risk of developing DFU was higher and found significant ($P < 0.001$). A study done by Ashok *et al.*[14] had a mean age of 55.25 years. Females were higher than males. Risk factors such as age and sex are regarded as contributing factors in the study conducted by Lavery *et al.*[15] Among the 40 subjects, 65% were uneducated and showed to have an association ($P = 0.03$). Studies done earlier by Brancati *et al.*[16] and Lipton *et al.*[17] used education as a base for socioeconomic status. Using BG Prasad classification based on income, the subjects were divided and 55% of subjects belonged to the lower class and 45% belonged to the lower-middle and middle. Income had an influence on patients seeking health care for DFU ($P < 0.001$). Place of living 92.5% of subjects reside in rural areas and the remaining 7.5% were from an urban background. Hosing was a risk factor which was highly significant ($P < 0.001$). A cross-sectional study by Deribe *et al.*[10] in 2014 from South Ethiopia reported rural residence increases the possibility of having DFU by a factor of 4.1 when compared to urban residents. Ashok *et al.*,[14] in their results, concluded that diabetic patients belonging to rural areas were more prone to foot ulcers when compared to the urban background. This is due to farming, usage of heavy equipment, and also rodent bite causing injury which is a risk in turning into a chronic ulcer. A study by Jeffcoate and Harding[18] suggested that rural population, monks, devotees, and individuals who walk barefoot are highly prone to foot injuries. Smoking and alcohol were taken to check its association with DFU. There was no association in the study. Merza and Tesfaye.[19] reported that smoking and alcohol consumption did not appear to be a risk factor.

CONCLUSION

It can be concluded from this study that age, education, occupation, income, and housing had an association with DFUs.

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How to cite this article: Aparna M, Srinivas T, Krishna BV. Impact and Association of Sociodemographic and Socioeconomic Factors on Diabetic Foot Ulcer. Int J Sci Stud 2020;8(6):20-22.

Source of Support: Nil, **Conflicts of Interest:** None declared.