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The Knowledge Of Diabetic Patients On Prevention Of Diabetic Foot Ulcers With A View To Disseminate Information Through Health Education In A Selected Hospital Of Delhi: A Descriptive Study

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ABSTRACT

AIM: The study aimed to assess the knowledge ofdiabetic patients on prevention of diabetic foot ulcers with a view to disseminate information through health education in a selected hospital of Delhi.

METHOD: A descriptive survey design was used in this study. A total of 50 diabetic patients were selected using non probability convenient sampling technique. Data was allocated using structured knowledge questionnaire composed of two parts. The study was conducted after the permission from the ethical committee and formal administrative support. Descriptive and inferential statistics was used for the data analysis.

RESULTS: Data were collected from 50 diabetic patients out of which 39 (78%) had average knowledge, 9 (18%) had good knowledge and the least 2 (4%) diabetic patients had poor knowledge regarding prevention of diabetic foot ulcers and no association was found between the knowledge score of diabetic patients and demographicvariables such as age, gender and family history of diabetes mellitus.

CONCLUSION: The findings revealed that knowledge about prevention and care of diabetic foot ulcer among diabetic patients was average. Public awareness is needed regarding prevention and care of diabetic foot ulcer.

INDEX TERMS: Assess, knowledge, prevention, diabetic patient and diabetic foot ulcer

INTRODUCTION

Diabetes mellitus is a group of metabolic disease characterized by increased levels of glucose in the blood (hyperglycemia) resulting from defects in insulin secretion, insulin action or both.[1]

Diabetes mellitus is a group of metabolic disease characterized by hyperglycemia resulting from defect in insulin secretion, insulin action or both. The basis of abnormalities in carbohydrate, protein and fat metabolism in diabetes is the deficient action of insulin on largest tissue of skeletal muscle, adipose tissue and liver. Uncontrollable diabetes mellitus may result in long term damage, dysfunction and failure of various organs especially heart, kidney and eyes.[2]

According to International Diabetes Federation (2019), the increasing prevalence of diabetes worldwide is driven by a complex interplay of socioeconomic, demographic, environmental and genetic factors. The continued rise is largely due to an upsurge in type 2 diabetes and related risk factors, which include rising levels of obesity, unhealthy diets and widespread physical inactivity. However, levels of childhood-onset type 1 diabetes are also on the rise. Growing urbanization and changing lifestyle habits (e.g. higher calorie intake, increasing consumption of processed foods, sedentary lifestyles) are contributory factors for the increasing prevalence of type 2 diabetes at a societal level.

While global prevalence of diabetes in urban areas is 10.8%, in rural areas it is lower, at 7.2%. However, this gap is closing, with rural prevalence on the rise[3].

The typical sequence of events in the development of a diabetic foot ulcer begins with a soft tissue injury of the foot, formation of a callus. Patients with an insensitive foot do not feel injuries, which may be thermal (e.g. from using heating pads, walking barefoot onhot concrete, testing bath water with the foot), chemical (e.g. burning the foot while using caustic agents on calluses, corns, or bunions), or traumatic (e.g. injuring the skin while cutting nails, walking with an undetected foreign object in the shoe, or wearing ill-fitting shoes and socks).[1]

Foot deformities alter the normal gait and pressure distribution. Friction and resultant callosities may develop and result in fractures in the ankle or forefoot and ultimately there is a significant deformity called a charcot foot. Anhidrosis as manifestation of autonomic neuropathy can result in excessive dryness and cracking of the skin which also contributes to infection. A macrovascular and microvascular alteration produces tissue ischemia and may lead to sepsis and can result in gangrene and ultimately lead to amputation.[2]

A diabetic foot ulcer acts as a portal for systemic infections such as cellulitis, infected foot ulcers and osteomyelitis.[4] Of those who develop a foot ulcer, 6%will be hospitalized due to infection or other ulcer-related complication. The risk of foot ulceration and limb amputation increases with age and the duration of

diabetes. Diabetic foot and lower limb complications, which affect 40 to 60 million people with diabetes globally, are an important source of morbidity in people with diabetes. Chronic ulcers and amputations result in a significant reduction in the quality of life and increase the risk of early death.[3]

Diabetic foot is one of the most significant and devastating complication of diabetes and is defined as group of syndromes in which neuropathy, ischemia and infection lead to tissue breakdown and possible amputation. Around 15% of diabetic patients will develop foot ulcers in their lifetime and this is known to precede amputation in 85% of the cases. Every 20 people, a lower limb is lost due to diabetes in the world and is the most common cause of non-traumatic lower limb amputation. It is estimated that approximately 45,000 lower limbs are amputated every year in India and the vast majority of these are probably preventable.

METHOD

STUDY DESIGN- DESCRIPTIVE SURVEY DESIGN WAS USED IN THE STUDY

SAMPLE- A sample of 50 diabetic patients who fulfilled the inclusion criteria was selected based on convenient sampling method.

DATA COLLECTION- Data was collected from 50 diabetic patients admitted in a selected hospital of Delhi.

DATA COLLECTION TOOLS- A questionnaire was used to assess the knowledge of diabetic patients on prevention of diabetic foot ulcers in a selected hospital of Delhi which had 2 parts. Part A- Demographic data such as age, educational status, occupation, family history of diabetes mellitus, monthly income, previous knowledge of diabetes mellitus, dietary pattern and gender and Part-B consisted of self-structured knowledge questionnaire to assess the knowledge ofdiabetic patients on prevention of diabetic foot ulcer. Each question had four responses out of which the respondent had to choose the correct answer according to them.

The score of 1 was given for every correct answer and 0 was given for each incorrectanswer.

- Maximum score -30 and Minimum score-0
- Scoring key:

Poor Knowledge (0-10)

Average Knowledge (11-20)

Good Knowledge (21-30)

Content validity of the tool was confirmed by expert's opinion for the relevance of the questionnaire. These experts were from different specialties including medical surgicalnursing, midwifery and obstetrical nursing, mental health nursing, community healthnursing. The experts were asked to give opinion on the relevance of items content andclarity of language. Some items were modified based on the suggestions given by theexperts.

To check the reliability of the tool, the tool was administered to 5 diabetic patients. The reliability of tool was calculated using Split Half method. The reliability was found to be 0.93. Hence, the tool was found reliable.

After obtaining the ethical clearance from the ethical committee and formal administrative approval from St. Stephen's Hospital, Delhi, the pilot study was conducted from 9-12-2019 and 10-12-2019 to ensure the reliability of the tool and feasibility of the study. Five participants who matched the criteria were identified. The purpose of the study was explained to the sample and confidentiality of their response was assured. The findings of the pilot study revealed that it was feasible to conduct the study.

The final study was conducted from 27-01-2020 to 1-02-2020 among the patients who were admitted in St. Stephen's Hospital. Self-introduction was given and purpose of the study was explained to the sample. The confidentiality of their response was assured. 50 sample were selected through Non-probability convenient sampling technique. The formal informed consent was obtained from the sample who met the inclusion criteria and a structured knowledge questionnaire was administered to assess the knowledge of diabetic patients on prevention of diabetic foot ulcer. Average time taken to conduct the test was 20 minutes. At last, Information on Prevention of Diabetic foot ulcer was disseminated through health education. The data was calculated and analyzed through descriptive statistics and inferential statistics.

STATISTICAL ANALYSIS

Data was Analysed Using Descriptive and Inferential Statistics.

The obtained data and findings have been organized and presented under the following sections:

Section I: Findings related to Demographic Characteristics of Diabetic Patients.

- Frequency and percentage distribution of socio-demographic variables of diabetic patients.

Section II: Findings related to Knowledge of Diabetic Patients on the Prevention of Diabetic Foot Ulcers.

- Frequency and percentage distribution of diabetic patients according to knowledge score.

Mean, median and standard deviation of knowledge score of diabetic patients.

Section III: Association between the Knowledge of Diabetic Patients on the Prevention of Diabetic Foot Ulcers with Selected Demographic Variables.

Chi-square test to establish the association between the knowledge of diabetic patients on prevention of diabetic foot ulcers with selected demographic variables.

ETHICAL CONSIDERATION

The present study was conducted after obtaining the ethical permission from the ethical committee and the formal administrative approval from St. Stephen's Hospital, Delhi. Participants who matched the criteria were identified. Written informed consent was obtained from the diabetic patients after explaining the purpose of the study.

The Confidentiality of their response and Anonymity was assured throughout the study. They were also informed about right to refuse their participation in the study.

RESULTS

Samples Demographic data

A total of 50 patients completed the questionnaire. Majority of diabetic patients i.e. 35(70%) were in the age group of above 50 years, 9 (18%) were in the age group of 41-50 years, 5 (10%) were in the age group of 31-40 years and the least i.e. 1 (2%) were in the age group of 20-30 years. Majority of diabetic patients i.e. 30 (60%) were male and remaining 20 (40%) were female and none belonged to transgender and others. Majority of diabetic patients i.e. 14 (28%) were educated up to 10th class, 12 (24%) were graduates, 11(22%) were illiterate, 8 (16%) were educated up to 12th class and the least i.e. 5(10%) were post graduates. Majority of diabetic patients i.e. 45 (90%) belonged to non-medical occupation and the remaining 5 (10%) belonged to medical occupation. Majority of diabetic patients i.e. 22(44%) are having monthly income of above 20,000, 15 (30%) are having monthly income ranging between 5,000-10,000, 9 (18%) are having monthly income ranging between 10,001-15,000 and the least i.e. 4 (8%) are having monthly income ranging between 15,001-20,000. Majority of diabetic patients i.e. 26 (52%) were non-vegetarian and the remaining 24 (48%) were vegetarian. Majority of diabetic patients i.e. 30 (60%) were having the family history of diabetes mellitus and the remaining 20 (40%) were not having any family history of diabetes mellitus. Majority of diabetic patients i.e. 37 (74%) were not having previous knowledge on diabetic foot ulcers and the remaining 13 (26%) were having previous knowledge on diabetic foot ulcers. Table 1 (A) and table 1 ((B) provides a detailed description of the patient's demographics.

Table 1 (A) Frequency and Percentage Distribution of Demographic Variables of Diabetic Patients

n=50

S.NO	DEMOGRAPHIC CHARACTERISTICS	FREQUENCY	PERCENTAGE
1.	AGE(IN YEARS)		
	20-30 years	1	2%
	31-40 years	5	10%
	41-50 years	9	18%
	above 50 years	35	70%
2.	GENDER		
	Male	30	60%
	Female	20	40%
	Transgender	0	0%
	Others	0	0%
3.	EDUCATIONAL STATUS		
	Illiterate	11	22%
	Upto 10th class	14	28%
	Upto 12 class	8	16%
	Graduate	12	24%
	Post graduate	5	10%
4.	OCCUPATION		
	Medical	5	10%
	Non-Medical	45	90%

Table 1 (B) Frequency and Percentage Distribution of Demographic Variables of Diabetic Patients

n=50

S.NO	DEMOGRAPHIC CHARACTERISTICS	FREQUENCY	PERCENTAGE
5.	MONTHLY INCOME		
	5000-10000	15	30%
	10001-15000	9	18%
	15001-20000	4	8%
	>20000	22	44%
6.	DIETARY PATTERN		
	Vegetarian	24	48%
	Non-Vegetarian	26	52%
7.	FAMILY HISTORY OF DIABETES MELLITUS		
	Yes	30	60%
	No	20	40%
8.	ANY PREVIOUS KNOWLEDGE ON DIABETIC FOOT ULCERS		
	Yes	13	26%
	No	37	74%
	If yes mention the source……..		

Knowledge of Diabetic Patients on Prevention of Diabetic Foot Ulcers

Majority of the diabetic patients i.e.39 (78%) had average knowledge, 9 (18%) had good knowledge and the least 2 (4%) diabetic patients had poor knowledge regarding prevention of diabetic foot ulcers. the mean knowledge score of diabetic patients regarding prevention of diabetic foot ulcers was 16.9 with the standard deviation of 4.4766 and median was 16.39 indicating average level of knowledge among diabetic patients regarding prevention of diabetic foot ulcers.

Table 2: Frequency and Percentage Distribution of Diabetic Patients according to Knowledge Scores.

n=50

S. No.	Range of Scores	Level of Knowledge	Frequency (f)	Percentage (%)
1.	0-10	Good Knowledge	9	18%
2.	11-20	Average Knowledge	39	78%
3.	21-30	Poor Knowledge	2	4%

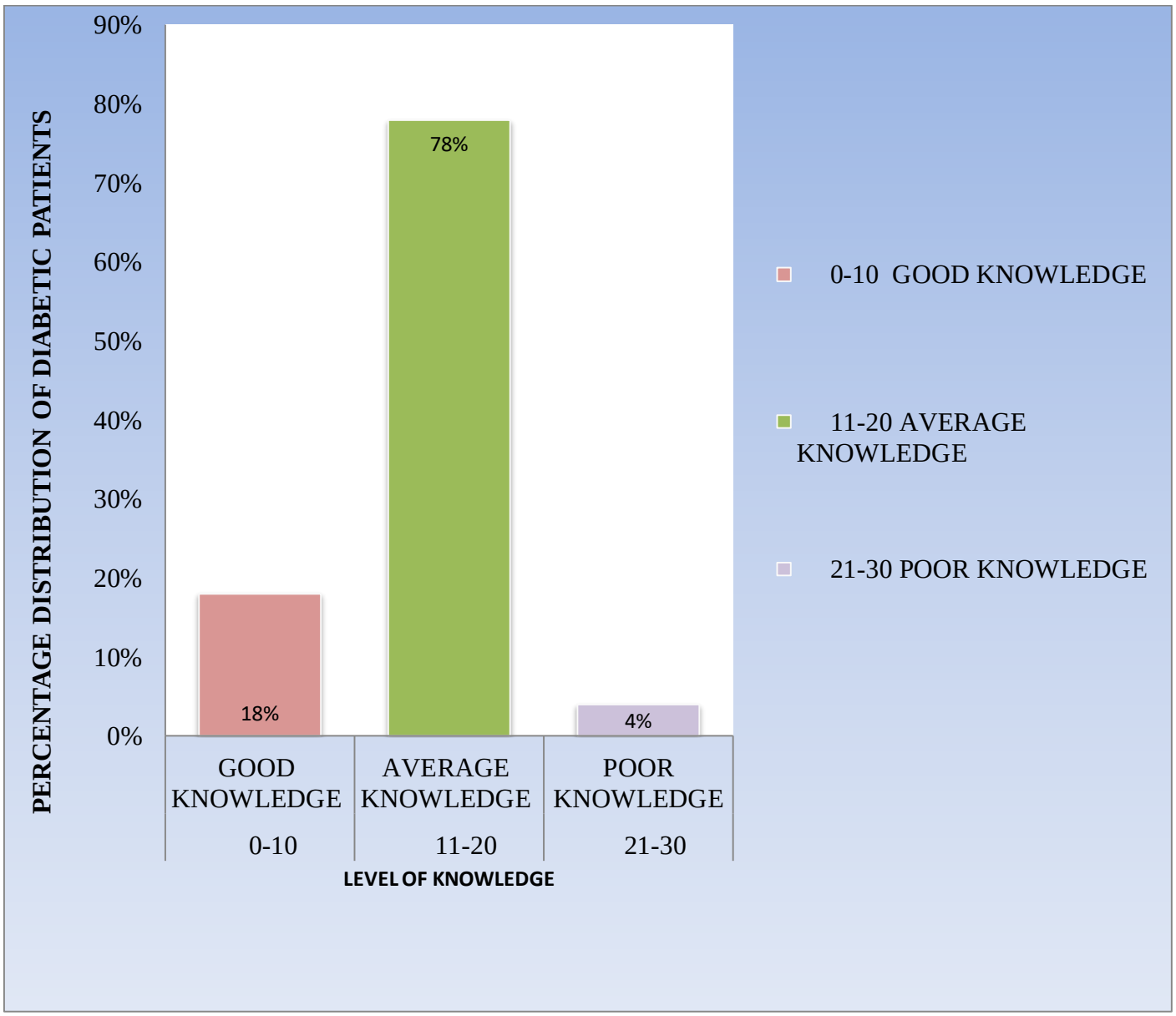

Figure 1: Bar Graph depicting Percentage Distribution of Diabetic Patients according To their Knowledge Scores

Table 3: Mean, Median and Standard Deviation of Knowledge Scores of Diabetic Patients on Prevention of Diabetic Foot Ulcers

n=50

VARIABLES	MEAN	MEDIAN	STANDARD DEVIATION
LEVEL OF KNOWLEDGE	16.9	16.39	4.47

Association between the Knowledge of Diabetic Patients on Prevention of Diabetic Foot Ulcers with Selected Demographic Variables

Chi-square test was used to establish the association between the knowledge of diabetic patients on prevention of diabetic foot ulcers with selected demographic variables. The findings indicated that there was association between knowledge of diabetic patients and previous knowledge on diabetic foot ulcer as the calculated chi square value i.e.10.6 was more than the table value i.e. 5.99 but there was no association found between the knowledge of diabetic patients and other demographic variables such as age, gender, occupation, monthly income, dietary pattern, educational qualification and family history of diabetes mellitus as the calculated chi square values were less than the table value.

Table 4 Association between Knowledge Score of Diabetic Patients and Selected Demographic Variables

n=50

S. No	Socio- demographic variables	Good	Average	Poor	(X^2)	P value	df
1.	Age (in years) 20-30 years	1	0	0	7.207^{NS}	12.59	6
	31-40 years	2	3	0			
	41-50 years Above50 years	1	8	0			
		5	28	2			
2.	Gender						
	Male Female	4	25	1	1.259^{NS}	5.99	2
	Educational Status	5	14	1			
3.	Illiterate						
	Upto10th class Upto 12th classGraduate	2	8	1			
	Post-graduate	2	12	0	6.170^{NS}	15.51	8
	Occupation Medical	1	7	0			
	Non-medical	4	7	1			
4.	Monthly income	0	5	0	1.942^{NS}	5.99	2
	5,000-10,000	2	3	0			
	10,001-15000	7	36	2			
5.	15,001-20,000						
	Above 20,000	4	11	0	4.774^{NS}	12.59	6
	Dietary pattern	1	7	1			
	Vegetarian Non-vegetarian	1	3	0			
		3	18	1			
6.	Family history of diabetes mellitusYes	4	19	1	0.0551^{NS}	5.99	2
	No Previous	5	20	1			
7.	knowledge on diabetic foot ulcers						
	Yes	7	23	0	4.196^{NS}	5.99	2
	No	2	16	2			
8.							
		6	6	1			
		3	33	1	10.6*	5.99	2

Inference: NS- Not significant,* - Significant at 'p' ≤ 0.05

DISCUSSION

The present study findings revealed that majority of the diabetic patients i.e., 39 (78%) had average knowledge, 9 (18%) had good knowledge and the least 2 (4%) diabetic patients had poor knowledge regarding prevention of diabetic foot ulcers and no association was found between the knowledge score of diabetic patients and demographic variables such as age, gender and family history of diabetes mellitus which is inconsistent with the study findings of Tamilselvi P, Rajashankar D, Kokilavani DN 19 who found that out of 100 diabetic patients, majority of the sample i.e. 56% patients had inadequate level of

knowledge, 38% had average level of knowledge and 6% had an adequate level of knowledge. The present study findings revealed that no association was found between the knowledge of diabetic patients and demographic variables such as educational qualification of diabetic patients which is consistent with the study findings of Lutfi ARM, Zaraihah MR, Ramdhan IMA23 who conducted a prospective cross sectional study between September 2013 till May 2014 on 157 patients at Hospital Sultanah Nur Zahirah 43 a tertiary medical center in Kuala Terengganu, Malaysia with an aim to determine the level of knowledge and practice of foot care in diabetics who require admission for diabetic foot complications and to determine the factors associated with the different levels of knowledge and practice of foot care. The findings of this study has no association of the level of education with the level of knowledge of foot care in diabetic patients.

Limitations

The study was conducted on a limited number of diabetic patients (50). Therefore, broad generalization cannot be made.

CONCLUSION AND RECOMMENDATIONS

The findings revealed that knowledge about prevention and care of diabetic foot ulcer among diabetic patients was average. Public awareness is needed regarding prevention and care of diabetic foot ulcer.

Replication of the study can be done using a larger probability sample to attain more generalizable results and a similar study can be conducted in the community setting.

Ethics Committee Approval: The study was conducted after obtaining the ethical permission from the ethical committee and the formal administrative approval from St. Stephen's Hospital, Delhi.

Informed Consent: Verbal informed consent was obtained from the patients who agreed to take part in the study.

Declaration of Interests: The authors have no conflicts of interest to declare.

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