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Foot Care Practices among Diabetes Patient: A Cross-sectional Study

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INTRODUCTION

Diabetes mellitus-a metabolic disorder characterized by hyperglycemia is a significant public health threat leading to substantial morbidity, mortality, and increasing health care cost [1]. Changing lifestyle, reduced physical activity, and obesity made the people vulnerable to diabetes[4].

Globally 422 million adults are living with diabetes. The global prevalence of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in the adult population. India leads the world and stands at 2nd position after China as every tenth adult (9.3%) in India is estimated to be affected by diabetes. Odisha has 4.2 million diabetes patients against countries 72 million[2].

Worldwide about 15% of diabetic people have diabetic foot, and a lower limb is lost every 30 seconds due to diabetes.[6]Foot ulcers and amputations are a significant cause of morbidity and mortality among people with diabetes, leading to a substantial, physical physiological, and financial burden for the patient and community as a whole.[8] It is estimated that 24.4% of total health expenditure among the diabetic population is related to foot complication.[9]

Multiple risk factors lead to the development of foot ulcers among diabetic people. Peripheral neuropathy and ischemia caused due to peripheral vascular disease are significant risk factors.[22] Environmental factors further contribute to the development of diabetic complications leading to foot-ulcer. For example, increase in urbanization, poor hygienic conditions, poverty, frequent co-existing HIV infection, barefoot walking, low income, cultural practices etc.[7]

To prevent such complications, one should have adequate knowledge regarding foot care, but knowledge alone will not be beneficial unless practiced with good compliance. Foot care practices, including daily foot examination and wearing appropriate footwear, are considered necessary in the early detection of diabetic foot and prevention of its complications. So the researcher felt the need to assess the knowledge and practice of foot care among diabetic patients.

METHODOLOGY

A descriptive cross-sectional study was conducted on diabetic patients attending NCD clinic and Endocrinology OPD at tertiary care hospital in Bhubaneswar where 70-75% of patients attending these OPDs come for treatment of diabetes and its Follow-ups. Eighty-seven diabetic patients who consented to be part of the study were recruited conveniently. The data was collected using the tool developed by Dr. Gyan Chand, which was further modified after consent from the author, according to the current setting. The modified tool contains:

International Journal of Advanced Nursing Education
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Part 1: demographic variables i.e., age, gender, education, occupation, income, height, weight, BMI, blood glucose level, duration of diabetes, comorbidity, advice on diabetic care, presence of an ulcer, and consultations done for ulcer.

Part 2: contains 20 independent questions related to practice regarding diabetic foot care. For this maximum score is three, and the minimum score is 0.

The subject experts from nursing, community medicine and family medicine departments of AIIMS Bhubaneswar validated the modified tool. Translating English tools to Odia and back translating from Odiya to English, ascertained the language validity.

The modified tools were administered to 20 samples for the establishment of reliability. The knowledge questionnaire reliability was established using Cronbach's alpha (r= 0.88) and for practice questionnaire, reliability was based on the split-half method (r= 0.82).

Procedure for Data Collection

The researcher took administrative permission to conduct the study from the Principal, College of Nursing, and Medical superintendent of the tertiary care hospital. Ethical clearance was obtained from Institutional Ethical committee. The data was collected from January to April 2018. Informed written consent was taken after explaining the entire research process and ensured the anonymity and confidentiality of the subjects. The questionnaires were administered to subjects for the collection of data.

RESULTS

The gathered data was organized, tabulated, analysed, and interpreted using descriptive and inferential statistics.

Section 1: Description of Sample Characteristics

Table 1: Distribution of samples on demographic variables

n=87

Sr.no	Demographic variables	Frequency	Percentage
1.	**Age (in years)**		
	31-40	11	12.6%
	41-50	17	19.5%
	51-60	33	37.9%
	61-70	26	29.8%
2.	**Gender**		
	Male	49	56.3%
	Female	38	43.6%
3.	**Education**		
	Primary	20	22.9%
	Secondary	28	32.1%
	Higher secondary	12	13.7%
	Graduation	27	31.0%

International Journal of Advanced Nursing Education
Volume 4 Issue 1, 2024
ISSN- 25827383

4.	**Occupation**		
	Housewife	16	18.4%
	Private job	17	19.5%
	Government job	8	9.2%
	Retired job	5	5.7%
	Business	20	22.9%
	Others	21	24.1%
5.	**Income (INR)**		
	No income	16	18.3%
	Less than 10,000 Rs	40	45.9%
	10,000-20,000 Rs	14	16.0%
	More than 20,000 Rs	17	19.5%

The data presented in table 1 shows that most of the samples 33 (37.9%) were between the age group of 51-60 years and 26(29.8%) belong to the age group of 61-70 years. Out of 87 samples, 49(53.3%) were male, and 38(43.6%) of the samples were female participants. Data on education showed that 28(32.1%) of them had secondary education, and 27(31.0%) were graduates. The majority of the samples were business people (22.9%). Concerning income, 40(45.9%) of them had monthly payments less than Rs10,000.

Table 2 Distribution of Samples on Clinical Variables

N=87

Sr.no	Clinical variables	Frequency	Percentage
1.	**BMI**		
	Malnourished (<18.5)	6	6.9%
	Normal (18.5-24.9)	66	75.9%
	Overweight (25.0-29.0)	9	10.3%
	Obese (>40.0)	6	6.9%
2.	**Duration since diagnosed diabetes**		
	0-5 Years	58	66.7%
	6-10 Years	18	20.7%
	>10 Years	11	12.6%
3.	**Comorbidities**		
	Yes	43	49.4%
	No	44	50.6%
4.	**Specification of comorbidities (n=43)**		
	Hypertension	10	23.25%
	Hyperthyroidism	1	2.32%
	Hypothyroidism	32	74.41%
5.	**Blood glucose level (Fasting)**		
	110-140	16	18.4
	>140	71	81.6
6.	**Prior advice on foot care**		
	Yes	22	25.3%
	No	65	74.7
7.	**Source of advice (n=22)**		
	PHC	5	22.7%
	Health care professional	12	54.5%
	Others	5	22.7%

International Journal of Advanced Nursing Education
Volume 4 Issue 1, 2024
ISSN- 25827383

8.	**History for foot ulcer** Yes No	 17 70	 19.5% 80.5%
9.	**Consultation for ulcer (n=17)** Yes No	 10 7	 58.8% 41.1%

Data in table 2 shows that among 87 samples, 66 (75.9%) of them were having normal BMI, and 6 (6.4%) of them were malnourished. Data showed that the majority of samples, 58(66.7%), had diagnosed diabetes within last 5 years. Out of 87 samples, 44(50.6%) of them are not have any comorbidities along with diabetes. Of the 43 samples with comorbidities, only 32 (36.8%) were having hypothyroidism. Maximum of samples 71(81.6%) is suffering blood glucose level beyond 140mg/dl. Data further presented that 65 (74.7%) of them had not received any prior advice on diabetic foot care. Out of 87 samples17 (19.5%) of samples suffered from foot ulcers previously, and from them, only 7(8%) of them went for further treatment.

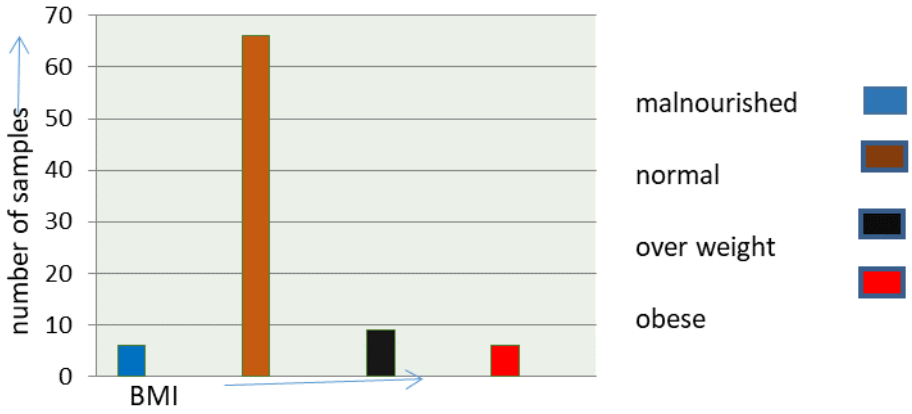

Figure 1: Bar diagram showing distributions of subjects according to BMI

Figure 1 shows that most of the samples, 66 (75.9%), have normal BMI, and 6 (6.4%) are malnourished.

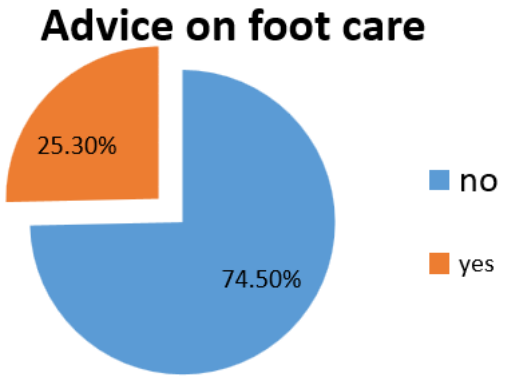

Figure 2. Pie diagram showing the distribution of subjects based on advice received on foot care

Figure 2 shows that most of the respondents, 65 (74.7%), had not received advice about foot care, and only 22(25.3) received advice.

International Journal of Advanced Nursing Education
Volume 4 Issue 1, 2024
ISSN- 25827383

Assessment of practice regarding foot care

This section shows the assessment of diabetic foot care practice.

Table 3: Mean, Median, and Standard deviation of practice regarding foot care.

Variables	Maximum score	Minimum score	Mean	Median	Standard deviation
Practice regarding foot care	56	1	27.86	28	6.34

Table 3 shows the maximum score of 56 and the minimum score as 1. The mean and median score of practice score is 27.86 and 28, respectively, with a standard deviation of 6.34.

Table 4: Frequency and percentage distribution of samples on poor practice and good practice regarding foot care

Practice	Range of score	frequency	Percentage
Poor practice	0-28	46	52.87
Good practice	29-56	41	47.13

Table 4 shows that 52.87% have expressed poor practices, whereas 47.13% have good practices regarding foot care.

Table 5a: Frequency and percentage distribution of sample on inspection and care of the foot.

N=87

Sr.no	Item	Alternatives	Frequency	Percentage
1.	Do you examine your feet?	0-once a week or less	25	28.1
		1-2-6 times a week	11	12.4
		2-once a day	27	30.3
		3-more than once a day	24	27.0
2.	How often you check the temperature of the water before you wash your feet?	3-always	36	27.6
		2-sometimes	11	18.0
		1-rarely	16	12.4
		0-never	24	40.4
3.	In what way you check the temperature of the water?	0-your foot	24	27
		1-elbow	7	7.9
		2-both	4	4.5
		3-finger	52	58.4
4.	Do you check that your feet are dry after washing?	3-always	45	50.6
		2-sometimes	14	15.7
		1-rarely	16	18.0
		0-never	12	13.5
5.	Do you dry between your toes?	3-always	44	49.4
		2-often	7	7.9
		1-sometimes	16	18.0
		0-rarely/never	19	21.3

International Journal of Advanced Nursing Education
Volume 4 Issue 1, 2024
ISSN- 25827383

6.	How often you cut your nails?	3-about once a week	47	52.8
		2-once a month	19	21.3
		1-less than once a month	11	12.3
		0-never	10	11.2
7.	Do you wear footwear?	3-most of the time	47	54.02
		2-sometimes	19	21.83
		1-rarely	11	12.64
		0-never	10	11.49
8.	Do you walk inside the house on bare feet?	3-never	7	8.04
		2-rarely	16	18.39
		1-sometimes	18	20.68
		0-always	46	52.87
9.	Do you walk outside the house on bare feet?	0-always	12	13.79
		1-sometimes	15	17.24
		2-rarely	17	19.54
		3-never	43	49.42

Data presented in table 5a shows that most of the samples, 27 (30.3%), examine their feet once a day while 11(12.4%) examine only 2-6 times a day. Out of 87 sample water temperatures were always checked by about 36 (27.6%), and 11 (18%) sometimes checked the temperature. About 52(58.4%) check the water temperature with finger and 4(4.5%) with both foot and elbow. Among these samples, 45 (50.6%) of them always checked the feet for dryness after washing, and 12(13.5%) never checked for it. About 44(49.4%) always dried their toes while 7(7.9%) often checked for it. Nails were never trimmed by 46(51.7%) of the samples, and 5(5.6%) of them did for about once a week. Data presented that in case of any injury, 46 (51.7%) of them consult a doctor and 9(10.1%) of them just ignore it. Footwear was worn by 47(52.8%) samples most of the time, and 10(11.2%) of them never worn footworn. About 43 (48.3%) of them never walked outside the house barefoot, and 12(13.8%) of them walked in barefoot. Further, the practice regarding foot care was assessed related to footwear. Out of 87 samples, the majority of 58 (66.7%) do not wear shoes. Many items were asked on footwears from 29 participants who wore shoes which is depicted in table 8b.

Table 5b: Frequency and percentage distribution of sample related to foot wear

N=29

Sr.no	Item	Alternatives	Frequency	Percentage
1.	Do you check your shoes before you put them for any foreign object?	3-often	2	6.82
		2-sometimes	13	44.82
		1-rarely	0	0
		0-never	14	48.82
2.	Do you wear socks before putting shoes?	0-never	20	68.96
		1-rarely	2	6.89
		2-sometimes	3	10.34
		3-often	3	10.34
3.	Do you wear tight socks?	3-often	0	0
		2-sometimes	2	6.89
		1-rarely	0	0
		0-never	27	93.10
4.	What kind of socks do you wear?	3-cotton	5	17.24

International Journal of Advanced Nursing Education
Volume 4 Issue 1, 2024
ISSN- 25827383

		2-wool	0	0
		1-nylon	0	0
		0-synthetic	24	82.75
5.	How often do you change your socks?	3-always	14	48.2
		2-often	2	6.8
		1-sometimes	0	0
		0-rarely	13	44.82

Data in table 5b presented that out of 87 samples, 14(48.27%) never check for any foreign objects before putting on shoes, and 13(44.82%) sometimes check for foreign objects. 20(68.96%) of the samples wear socks before putting on shoes, and 2 (6.89%) of them wear socks. From these 29 samples, 27 (93.1%) never wear tight socks. It states that 5(17.2%) wear cotton socks, whereas 24 (82.75%) wear synthetic socks. About 14(48.27%) of them change their socks always, and 13(44.82%) rarely change it.

Table 5c: Frequency and percentage distribution of sample on related to control of blood glucose

Sr.no	Items	Alternatives	Frequency	Percentage
1.	Do you examine your blood glucose level regularly?	3-always (every 15 days)	11	12.4
		2-often (every month)	25	28.7
		1-sometimes (every 3 months)	37	42.5
		0-rarely/never	14	16.09
2.	Do you take medicines for diabetes?	3-always	52	59.7
		2-often	15	17.2
		1-sometimes	8	9.0
		0-rarely	12	13.7
3.	How often do you exercise?	3-always	29	33.3
		2-often	16	18.3
		1-sometimes	23	26.4
		0-rarely/never	19	21.8

Data in table 5c depicted that about 37(41.6%) checked their blood glucose level every month, and 11 (12.4%) of them checked for 15 days. About 52(58.4%) took medicines regularly, and 12(13.5%) rarely took medications. While 29(32.6%) always did their exercise and 16(18%) sometimes did their exercise.

DISCUSSIONS

Part 1-Demographic and clinical variables

Presents that most of the samples 33 (37.9%) were between 51-60 years, and 26{29.9%} belong to 61-70 years. 49{53.6%} were male, and 38{43.7%} of the samples were female participants. Data on education showed that 28{32.2%} of them had secondary education and 27{31.0%} were graduates. Regarding income, 40{44.9%} of them had monthly income less than 10,000.

Among 87 samples, 66 (75.9%) were having normal BMI, and 6 (6.4%) were malnourished. A maximum of 71(81.6%) samples are suffering blood glucose levels beyond 140mg/dl, and none of them is having a blood glucose level less than 110mg/dl. Data showed that the

International Journal of Advanced Nursing Education
Volume 4 Issue 1, 2024
ISSN- 25827383

majority of samples, 58(66.7%), had diabetes duration between (1-5) years. Out of 87 samples, 44(50.6%) of them were not having any comorbidities with diabetes. Out of 43 samples with comorbidities, only 32 (36.8%) were having hypothyroidism. Data further presented that 65 (74.7%) of them had not received any prior advice on diabetic foot care. 17 (19.5%) of samples suffered from foot ulcers previously, and from them, only 7(8%) of them went for further treatment.

The study's findings showed that 46 (52.87%) had poor and 41 (47.13) had good practice regarding diabetic foot care, respectively. In a similar study conducted by Muhammad-Lutfi and Zaraihah, most of the patients 97 (61.8%) had poor diabetic foot care practice compared to the median score.

IMPLICATIONS

The present study's findings have several implications in the field of nursing education, nursing practice, nursing administration, and nursing research.

Nursing Education

The study implies that health professionals should be made aware of foot care among diabetics patients. The nursing curriculum should include health education methods for providing the knowledge and skill of diabetic foot care to the patients. The nursing colleges should train student nurses to assess the knowledge and practice of foot care among diabetic patients.

Nursing Practice

Nurses working in hospitals and communities should have adequate information regarding foot care among diabetic patients. The community health nurse should organize and conduct various programs among the community's people regarding the practice of foot care.

Nursing Administration

Nursing administration should take the initiative in creating plans or policies for assessing the existing conditions on the knowledge and practice regarding foot care among diabetic patients. They should plan for man, money, materials, power, and methods to conduct various awareness programs. Health administration should make the education department aware of the foot care among diabetic patients and assign students or staff to conduct health teaching in hospitals and the community.

Nursing Research

The emphasis on research and clinical studies is needed to improve the quality of nursing care. The present study is only an initial step in assessing the knowledge and practice regarding foot care among diabetic patients.

Limitations

The sample size was small; hence generalization is not possible. The foot care practices were self-reported practice not the observed practice which may be subjected to response bias.

Recommendation

Based on the assessment of the study, the following recommendations have been made for further research.

International Journal of Advanced Nursing Education
Volume 4 Issue 1, 2024
ISSN- 25827383

1) A health teaching programmes could be organised in the hospital and the community regarding the practice of foot care at home among the diabetic patients.
2) A planned teaching programmes can be implemented to improve the knowledge on practice of diabetic foot care.

CONCLUSION

Good knowledge and practice regarding diabetic foot care will reduce the risk of diabetic foot complications and ultimately amputation. Thus, most of the amputations due to foot ulcers can be prevented by educating people with diabetes and their family members. This will help in avoiding from getting foot ulcer, early identification and treatment of any foot ulcer if it develops which in turn will improve the overall health status of these patient.

REFERENCES

1) Saurabh.S, Sarkar S, Selvaraj K., Ganesh K et al. effectiveness of foot care education among people with type 2 diabetes in rural., India Indian Journal of Endocrinol Metabolism 2014 Jan-Feb; 18(1): 106–110.
2) WHO.Global report on diabetes 2016
3) International diabetes federation.IDF diabetes atlas .7th edition 2015
4) Dixit S, Maiya A, khetrapalH, Agarwal B, et al. A questionnaire-based survey on awareness of diabetic foot care in Indian population with diabetes: a cross-sectional multicentre study, Indian journal of medical sciences.2011oct;65(10):411-23
5) Muduli I, Panda C et al. Diabetic Foot Ulcer Complications and Its Management—a Medical College-Based Descriptive Study in Odisha, an Eastern State of India2015 December; 77(Suppl 2): 270–274
6) G Chand,AKumar,VKumar.The foot care process of diabetic patients with or without foot ulcers attending a tertiary care hospital in India Journal of Stem Cell Research & Therapy.2015;5:126
7) Kishore S, Upadhaya A.D, Jyotsna V P. Awareness of foot care among patients with diabetes attending a tertiary care hospital.The National Medical Journal of India.2015;28:122
8) M.Amira, N.Bader, Heba M, et al. diabetic foot complications and their risk factors from a large retrospective cohort study, May 6, 2015.
9) Tamileshp,dr.rajshankar.A study to assess the knowledge regarding diabetic foot ulcers among diabetic clients in the hospital of kancheepuram district. Indian journal of health sciences.2013 5:35-40
10) FarajaS,Marina A.A study to determine the prevalence and foot care practices among diabetic patients in Tanzania. (2015) Chiwanga and Njelekela Journal of Foot and Ankle Research (2015) 8:20
11) Goie T.T, Maidoo N. Awareness of diabetic foot diseases among patients with type 2 diabetes Mellitus at the chronic outpatients department of a regional hospital in Durban.African Journal of Primary Health Care and Family Medicine.2016
12) Mohammed.T,Abdulasis.S,Ahmed.S,Abdullah.A,S.Subaih and et al. A descriptive study on the knowledge, attitude, and practices regarding the diabetic foot in Saudi.Journal of Taibah University Medical Sciences.2017;12:492-496
13) Lufti.M, Zaraiah.M.R. Knowledge and Practice of Diabetic Foot Care in an In Patient Setting at a Tertiary Medical Center,Malasia . Malaysian Orthopaedic Journal.2014;8:22-26.

International Journal of Advanced Nursing Education
Volume 4 Issue 1, 2024
ISSN- 25827383

14) Magana. E, Alba L.R. Knowledge and Practice of Diabetic Foot Care in patients with Diabetes at Chinese General Hospital and Medical Centre. Journal of the ASEAN Federation of Endocrine Socities.2017;32.
15) Jinadasa C.V.M, Jeewantha M. A study to determine the knowledge and practice of foot care in patients with chronic diabetic ulcer. International Journal of Collaborative Research on Internal Medicine & and Public Health.2011;3:115-119.
16) Desalu O. O, Salawu F. K, Jimoh A .K, Busari O.A, Olokoba A. B etal. Diabetic Foot Care: Self-Reported Knowledge and Practice Among Patients Attending Three Tertiary Hospital in Nigeria.Ghana Medical Journal .2011;45:60-65.
17) Dharsan B.B, Bhaskar.UVamanan. K et al. A cross sectional study to assess the knowledge and practice regarding foot care among type 2 diabetes mellitus patients at a tertiary care hospital at a tertiary care hospital in coastal south Indian. Journal of Family Medicine and Primary Care.2016;5:847-852.
18) Kotru.S, kotru.B, Kumud.J . Interventions of diabetes foot care practices on the prevention of new diabetic foot ulcer in patients with type 2 diabetes mellitus in a registered foot clinic at Punjab.2015;6:494,416-430
19) Saurabh .S, Sarkar. S, Selvaraj .K, Kar S. S,Kumar. G ,etal.Effectiveness of foot care education among people with type 2 diabetes in rural Pondicherry, India.2014;18(1),106-110
20) Wendling.S,Beadle.V .A cross sectional study to assess the relationship between self-efficacy and diabetic foot self-care.2015;7:567,230-256
21) MacksonN,Pal A etal .A prospective study to assess the risk factors and foot care behaviour among diabetic patients in Pune. (2016) journal of family medicine prime care April-June;5(2):399-403
22) Pathways to diabetic limb amputation. Basis for prevention.Pecoraro RE, Reiber GE, Burgess EM Diabetes Care. 1990 May; 13(5):513-21.[PubMed] [Ref list]