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Assessment of Knowledge and Practice regarding Foot Exercises and Foot care among Type 2 Diabetic Patients attending at Kanyakumari Medical College Hospital

M. Sheeja Kumari [1], Dr. Mohan Rao V.R[2], Dr. Subhala. A[3]

[1]Research Scholar, Chettinad Academic of Research and Education.

[2]Professor Department of General Medicine, Chettinad Hospital and Research Institute (CHRI).

[3]Principal College of Nursing Dr. Kumarasamy Health Centre Kottaram, Kanyakumari.

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ABSTRACT

Background: Diabetes mellitus is a chronic disease, which occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use insulin and approximately 371 million people are carriers of this disease. The development risk of diabetic foot ulcer (DFU) through a lifetime, one of the most common and important complication in diabetic patients ranges from 10% to 25%. While 14%-24% of DFU infections have resulted in amputation, the reason of 85% non-traumatic amputations is DFU. DFU and its complications cause inconvenience to diabetic patients and their families and are a considerable financial burden for the health systems and society

Objectives: The objectives of the study were to assess the knowledge and practice level among diabetic patients regarding this disease and to find the association of knowledge and practice level with selected demographic/ clinical variables. **Methodology:** A non-experimental descriptive design was selected to carry out the study. It was conducted in 2023 among 100 type 2 diabetic patients. The sample was selected by non-probability purposive sampling technique.

Results: The findings of the present study showed that majority (41%) of the study subjects had satisfactory, 30%hadpoor,and29%hadgood knowledge regarding foot care. The mean ± SD of the knowledge level was 41.1±9.86. With regards to practice, majority (48%) of the study subjects had poor, 40%hadsatisfactory, where as only12%hadpoor practice regarding foot exercise and Foot Care. The mean ± SD of the practice level was found to be 5.91 ± 2.26. The association of knowledge and practice with demographic/clinical variables was found to be significant with residence, education, occupation, and monthly family income.

Conclusion: The findings led to the conclusion that the knowledge regarding foot exercise and Foot Care was satisfactory and practice was poor among type 2 diabetic patients. Therefore, there is a need to conduct awareness programmes about foot exercise and foot care among type 2 diabetic patients,

Keywords: N/A.

INTRODUCTION

Diabetes is an iceberg disease. According to a recent estimation, the prevalence of diabetes mellitus in adults was around 4% worldwide and this means that over 143 million persons are now affected. It is projected that the disease prevalence will be 5.4% by the year 2025, with the global diabetic population reaching 300 million.

A study was conducted on the global prevalence of diabetes for the year 2000 and projections for 2030.The projections for the year 2030 show that in developing countries, the number of people with diabetes will be close to 60 million in the age group of 20-44 years, and over 140 million in the age group of 45-64 years. It points out that “the greatest absolute increase will occur in India, where 79.4 million people will be affected by diabetes across all age groups”. In India, World Health Organization (WHO) reports showed that 32 million people had diabetes in the year 2000.The International Diabetes Federation (IDF) estimated the total number of diabetic subjects to be around 40.9 million in India and this is further set to raise to 69.9 million by the year 2025.

This study reported an overall prevalence of 2.1% in the urban areas and 1.5% in the rural areas, while among those above .

40 years of age, the prevalence was 5% in urban and 2.8% in rural areas.

A study was conducted by Abdissa D etal. on the prevalence of diabetic foot ulcer and associated factors at a follow- up clinic at Jimma Medical Center, Southwest Ethiopia among 277 type 2 diabetic patients. The result of this study showed that more than three-fourths of participants (82.7%) had type 2 diabetes mellitus. The mean duration of diabetic patients was 6.00±5.07 years. The prevalence of diabetic foot ulcer was found to be 11.6% among the study participants.

A study on the prevalence of diabetic foot ulcer and associated risk factors in diabetic patients from South India. The results of this study showed that the prevalence of diabetic foot ulcers among diabetic patientswas14.3%.Among581diabeticpatients, 42.16% belonged to urban areas whereas 57.84% belonged to rural areas.

Diabetes mellitus is already anepidemic among the Indians of the Asian subcontinent. As per WHO, India leads the world with31.7 million diabetic subjects and this number is expected to increase to 57million by the year 2026. In India, which is called the global diabetes capital, where most Indians still walk barefoot and are ignorant of foot care, there is an urgent need for coordinated preventive clinical measures to reduce the impact of diabetic foot. Taking in to consideration the high prevalence of diabetes in India, the rear millions of feet at risk. The prevalence of diabetic foot ulcers in the clinical population is 3.6%. Socio-cultural practices such as barefoot walking, use of improper foot wear, and lack of knowledge regarding foot care attributes to an increase in the prevalence of foot complications in India. Hence this study was conducted to analyse the knowledge and practice related to foot exercise and care in diabetic patients. Measures taken to increase the awareness of people can lead to an improvement in both knowledge and practice regarding diabetic foot care (exercise). Foot problems like corns and callosities can be decreased by ensuring the adoption of appropriate foot exercise practices. This also leads to the healing of foot ulcers.

Methodology A non-experimental descriptive research design was selected to carry out the study. It was conducted from September to October 2023 among 100 type 2 diabetic patients. The researcher selected the patients as per the inclusion criteria (type 2 diabetes mellitus patients who were in the age group of 40-60 years and without complications of diabetic foot ulcers) and exclusion criteria (type 2 diabetes mellitus who were below 40 years and above 60 years of age and with complications of diabetic foot ulcers) and after taking permission from the Medical Officer. Data were collected from 100 type 2 diabetic patients at the Endocrinology OPD and the assessment of knowledge regarding foot exercise and foot care was conducted through a self-structured interview schedule. The data were collected individually from the study subjects through 70 items of the self-structured interview schedule and the assessment of practice was done through an interview checklist from the patients through 12 items. Each correct and incorrect response was given a score of one (1) and zero (0) respectively. In this study for knowledge, if the score was ≥ 70% (49-70), it was considered good knowledge; if the score was 51-69% (36-48), it was considered satisfactory knowledge, and if the score was≤50%(0-35), it was considered poor knowledge. For practice, if the score was ≥70% (9-12), it was considered good practice; if the score was 51-69% (6-8), it was considered satisfactory practice, and if the score was ≤ 50% (0-5), it was considered poor practice.

Ethical Consideration Ethical approval for the current study was obtained from the Ethics Committee of our Hospital. The participants were told that they have the right to not participate in the study or to withdraw from the study if they wish at any time. Study subject's privacy was respected, and data were kept confidentially and utilized for study purposes only. They were asked to read and sign a consent form.

Results; Statistical Package for Social Sciences (SPSS) was used for data analysis. Frequency distributions were obtained and descriptive statistics were calculated. Maximum study subjects (69%) belonged to the age group of 51-60 years. The number of males (51%) and females (49%) was almost equal. Most of the study subjects (64%) resided in rural areas. Maximum study subjects (56%) were illiterate. Most of the study subjects (97%) had a non-health-related occupation. Maximum study subjects (35%) had a monthly family income of INR 15,000-50,000. 54% of the study subjects had type 2 diabetes mellitus for more than 10 years, which is almost equal to the number of subjects who had it for less than or equal to 10 years (46%) as depicted in Table 1.

Table1. Demographic/Clinical Data of the Study Subjects

Demographic/Clinical Variables		**F (%)**
Age(years)	40-50	31 (31)
	51-60	69 (69)
Gender	Male	51 (51)
	Female	49 (49)

Residence	Rural	64 (64)
	Urban	36 (36)
Education	Illiterate	56 (56)
	Primary school	16 (16)
	High school	23 (23)
	Graduate and above	5 (5)
Occupation	Health related	3 (3)
	Non-health related	97 (97)
Monthly family income (INR)	≤5000	17 (17)
	5001-15000	28 (28)
	15001-50,000	35 (35)
	>50,000	20 (20)
Duration of illness (years)	≤10	46 (46)
	>10	54 (54)

Knowledge of Foot Exercise and Foot Care

Majority of the study subjects (41%) had satisfactory knowledge (score 51-69%), followed by 30% of study subjects who had poor knowledge (score≤50%), and 29% had good knowledge (score≥70%) regarding foot exercise. The mean knowledge score of study subjects was 41.1±9.86. The minimum score was 17 and maximum was 65 with a range of 48 as depicted in Table 2.

Table 2. Knowledge of Foot Exercise and Foot Care

Level of Knowledge	Frequency(f)	Percentage (%)
Poor(0-35)	30	30
Satisfactory(36-48)	41	41
Good(49-70)	29	29

Practice of Foot Exercise and Foot Care

Majority (48%) of the study subjects had poor practice (score ≤ 50%), 40% had satisfactory practice (score 51-69%), and only 12% of the study subjects had a good practice (score≥70%) regarding foot exercise. The mean practice level of study subjects was 5.91±2.26 with a median of 6. The minimum score was1and maximum was11 with a range of 10 as depicted in Table 3.

Table 3. Practice of Foot Exercise and Foot Care

Level of Practice	Frequency(f)	Percentage (%)
Poor(0-5)	48	48
Satisfactory (6-8)	40	40
Good (9-12)	12	12

Association of Knowledge level with Demographic/ Clinical Variables

Table 4. Association of Knowledge Level with Demographic/Clinical Variables

Demographic/Clinical Variables		Knowledge Level						
		Poor (0-35)	Satisfactory (36-48)	Good (49-70)	Chi-Square	Df	p Value	Remarks
Age (years)	40-50	8	14	9	0.453	2	0.791	NS
	51-60	22	27	20				
Gender	Male	13	23	15	0.66	2	1.138	NS
	Female	17	18	14				
Residence	Rural	25	29	10	16.87	2	0.01*	S*
	Urban	5	12	19				
Education	Illiterate	27	25	4	61.25	4	0.01*	S*
	Primary school	3	11	2				
	High school	0	5	18				
	Graduate and above	0	0	5				
Occupation	Health related	0	0	3	7.572	2	0.02*	S*
	Non-health related	30	41	26				
Monthly family Income (INR)	≤5000	11	4	2	31.572	6	0.01*	S*
	5001-15000	9	15	4				
	15001-50000	10	16	9				
	>50,000	0	6	14				
Duration of illness (years)	≤10 years	12	16	18	4.252	2	0.119	NS
	>10 years	18	25	11				

S*: Significant, NS: Non-significant

There was a significant association between the knowledge level and certain demographic variables. Therefore, the researcher rejected the null hypothesis for demographic variables such as residence ($p = 0.01$), education ($p = 0.01$), occupation ($p = 0.023$), and income ($p = 0.01$) at the $p \leq 0.05$ level of significance. However, no significant association was found with demographic/clinical variables such as age ($p = 0.791$), gender ($p = 1.138$), and duration of illness ($p = 0.119$). Hence, the null hypothesis was accepted for these variables, as shown in Table 4.

Association of Practice Level with Demographic/ Clinical Variables

Table 5. Association of Practice Level with Demographic/Clinical Variables

Demographic/Clinical Variables		Knowledge Level						
		Poor (0-35)	Satisfactory (36-48)	Good (49-70)	Chi-Square	Df	p Value	Remarks
Age (years)	40-50	15	10	6	2.700	2	0.259	NS
	51-60	33	30	6				
Gender	Male	20	25	6	3.795	2	0.150	NS
	Female	28	15	6				
Residence	Rural	37	23	4	9.198	2	0.01*	S*
	Urban	11	17	8				
Education	Illiterate	36	18	0	42.93	6	0.01*	S*
	Primary School	7	8	1				
	High School	2	13	8				
	Graduate and above	1	1	3				
Occupation	Health related	0	0	3	22.68	2	0.01*	S*
	N Non-health related	48	40	9				
Monthly family income (INR)	≤5000	13	4	0	34.01	6	0.01*	S*
	5001-15000	19	8	1				
	15001-50000	15	17	3				
	>50,000	1	11	8				
Duration of illness (years)	≤10 years	20	18	8	2.442	2	0.295	NS
	>10 years	28	22	4				

S*: Significant, NS: Non-significant

There was a significant association between practice level and certain demographic variables. Hence, the researcher rejected the null hypothesis for demographic variables such as residence ($p = 0.01$), education ($p = 0.01$), occupation ($p = 0.01$), and monthly family income ($p = 0.01$) at the $p \leq 0.05$ level of significance. However, no significant association was found between practice level and demographic/clinical variables such as age ($p = 0.259$), gender ($p = 0.150$), and duration of illness ($p = 0.295$). Therefore, the null hypothesis was accepted for these variables, as depicted in Table 5.

DISCUSSION

The results of the present study revealed that most of the participants had a satisfactory level of knowledge regarding foot exercise and foot care, while the majority exhibited poor foot care practices. These deficiencies may be attributed to

inadequate awareness about diabetes mellitus, diabetic foot exercises, complications such as diabetic foot ulcers, and the importance of seeking timely medical consultation when warning signs such as redness, swelling, or fungal infections occur between the toes.

The findings of this study are consistent with those of Desalu et al. (2011), who conducted a descriptive study among 352 patients with Type 2 Diabetes Mellitus in Nigeria and reported inadequate knowledge and poor foot care practices among diabetic patients.

The study further revealed that residence, education, occupation, and monthly family income were significantly associated with both knowledge and practice levels, whereas age, gender, and duration of illness were not significantly associated. The significant association between educational status and knowledge level may be due to the ability of educated individuals to read, understand, and utilize educational materials and information technology to obtain relevant health information.

The poor level of foot care practice observed in this study is also in agreement with the findings of Desalu et al. Some of the inadequacies identified in foot care practices included failure to inspect the feet using a mirror, improper moisturizing practices, and neglecting to inspect the inside of footwear before wearing them.

The deficiencies in knowledge and practice may also be attributed to inadequate communication between healthcare professionals and patients, as well as insufficient counselling due to busy clinical schedules. Therefore, patient education regarding diabetic foot care and the prevention of foot ulceration should be incorporated into routine diabetes management. Furthermore, physicians and nurses should reinforce appropriate foot care and foot exercise practices among patients to improve self-care behaviours and reduce the risk of diabetic foot complications.

CONCLUSION

In conclusion, the findings of this study revealed that patients with Type 2 Diabetes Mellitus possessed a satisfactory level of knowledge regarding foot exercise and foot care. However, their practice of these measures was found to be poor. The study highlights a significant gap between knowledge and actual practice, emphasizing the need for continuous patient education and counselling on diabetic foot care and foot exercise practices.

Healthcare professionals should provide regular education and reinforcement regarding proper foot care behaviours to enhance patients' self-care practices. Improving awareness and adherence to recommended foot care measures can significantly reduce the risk of diabetic foot ulcers, infections, and lower-limb amputations, thereby improving the overall quality of life of patients with diabetes

REFERENCES

1. Unwin N, Whiting D, Guariguata L, Ghyoot G, Gan D, editors. IDF Diabetes Atlas. 5th ed. Brussels, Belgium: International Diabetes Federation; 2018.
2. American Diabetes Association. Economic costs of diabetes in the United States in 2019. Diabetes Care. 2019.
3. Schaper NC, Apelqvist J, Bakker K. Reducing lower-leg amputations in diabetes: A challenge for patients, healthcare providers, and the healthcare system. Diabetologia. 2017.
4. Mehra BR, Thawait AP, Karandikar SS, Gupta DO, Narang RR. Evaluation of foot problems among diabetics in a rural population. Indian Journal of Surgery. 2018.
5. UK Prospective Diabetes Study Group. Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes. 2014.
6. Chellan G, Srikumar S, Varma AK, Mangalanandan TS, Sundaram KR, Jayakumar RV, et al. Foot care practice: The key to preventing diabetic foot ulcers in India. Foot (Edinb). 2017.
7. Vatankhah N, Khamseh ME, Noudeh YJ, Aghili R, Baradaran HR, Haeri NS. The effectiveness of foot care education among people with type 2 diabetes in Tehran, Iran. Primary Care Diabetes. 2019.
8. Viswanathan V, Madhavan S, Rajasekar S, Chamukuttan S, Ambady R. Amputation prevention initiative in South India: Positive impact of foot care education. Diabetes Care. 2015.
9. Pollock RD, Unwin NC, Connolly V. Knowledge and practice of foot care in people with diabetes. Diabetes Research and Clinical Practice. 2014.
10. Desalu OO, Salawu FK, Jimoh AK, Adekoya AO, Busari OA, Olokoba AB. Diabetic foot care: Self-reported knowledge and practice among patients attending three tertiary hospitals in Nigeria. Ghana Medical Journal. 2016.
11. National Diabetes Education Program. Feet Can Last a Lifetime: A Health Care Provider's Guide to Preventing Diabetes Foot Problems. Bethesda (MD): National Institutes of Health, U.S. Department of Health and Human Services; 2015.
12. Al-Khaldi YM. Foot care among male diabetics in a family practice center, Abha, Saudi Arabia. Journal of Family and Community Medicine. 2018.
13. Khamseh ME, Vatankhah N, Baradaran HR. Knowledge and practice of foot care among Iranian people with type 2 diabetes. International Wound Journal. 2017.

14. Hasnain S, Sheikh NH. Knowledge and practices regarding foot care among diabetic patients visiting a diabetic clinic in Jinnah Hospital, Lahore. Journal of Pakistan Medical Association. 2019.
15. Shah VN, Kamdar PK, Shah N. Assessing the knowledge, attitudes, and practices of type 2 diabetes among patients of the Saurashtra region, Gujarat. International Journal of Diabetes in Developing Countries. 2019.
16. Saeed N, Zafar J, Atta A. Frequency of patients with diabetes taking proper foot care according to international guidelines and its impact on foot health. Journal of Pakistan Medical Association. 2010.
17. Viswanathan V, Thomas N, Tandon N, Asirvatham A, Rajasekar S, Ramachandran A, et al. Profile of diabetic foot complications and associated complications: A multicentric study from India. Journal of the Association of Physicians of India. 2015.
18. Lincoln NB, Radford KA, Game FL, Jeffcoate WJ. Education for secondary prevention of foot ulcers in people with diabetes: A randomized controlled trial. Diabetologia. 2018.
19. Dorresteijn JA, Kriegsman DM, Assendelft WJ, Valk GD. Patient education for preventing diabetic foot ulceration. Cochrane Database of Systematic Reviews. 2012.
20. Murugesan N, Shobana R, Snehalatha C, Kapur A, Ramachandran A. Immediate impact of a diabetes training programme for primary care physicians: An endeavour for national capacity building for diabetes management in India. Diabetes Research and Clinical Practice. 2009..