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CASE REPORT

Effectiveness of Health Education in Improving Foot Care Knowledge, Attitudes, and Practices Among Diabetics at an NCD Clinic in Chennai

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ABSTRACT

Background: Proper foot care techniques, a good outlook, and adequate education are necessary for the effective avoidance of diabetic foot problems. The purpose of this study was to assess how health education affected the knowledge, attitudes, and foot self-care practices of diabetic patients.

Methods: This was a quasi-experimental (before and after) study conducted for a study period of 12 weeks (December-February 2023) at the Rural Health Training Centre, Poonamallee Primary Health Care Centre (PHC), among persons with diabetes over the age of 30 years who are on regular follow-up of treatment and willing to participate in the study. We interviewed all the patients in 2 phases, before and after intervention, using a questionnaire. Scores for knowledge, attitudes, and practices were computed both before and after the intervention.

Results: Following the intervention, the knowledge score [median score pre-intervention (pre) = 5.6, median score post-intervention (post) = 6.6] (p-value = 0.021), practice score [median score pre = 3, median score post = 4.8] (p-value = 0.001), and total score (p-value = 0.001) all significantly increased. The increase in attitude score after intervention was marginally non-significant [median score pre = 4.0, median score post = 5.0] (p-value = 0.058).

Conclusion: In order to lower the prevalence of diabetic foot problems, educational initiatives that raise community knowledge of diabetic foot care must actively engage the community.

Keywords: knowledge, attitude, practice, foot care, diabetics.

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INTRODUCTION

The World Health Organization (WHO) defines non-communicable diseases (NCDs), known as chronic or lifestyle-related diseases, as illnesses that are not contagious. Diabetes is one of the four primary non-communicable disease groups, along with cancer, heart disease, and chronic respiratory conditions. Globally, diabetes mellitus is the leading cause of illness and mortality, making it a significant public health concern. Many people with type 2 diabetes (T2D) have one or two risk factors for diabetic foot illnesses, including diabetic foot ulcers (DFUs) and diabetic peripheral neuropathy (DPN), at the time of diagnosis. (1,2)

According to a 2005 International Diabetic Federation research, 85% of lower extremity amputations caused by diabetes start with a foot ulcer. One in six diabetics in affluent nations will experience an ulcer at some point in their lives; the rate is significantly greater in developing nations. (3) One of the most common, costly, and dangerous side effects of diabetes is diabetic foot. Because they have less feeling or circulation in their feet, people with diabetes mellitus are more likely to have nontraumatic foot or leg amputations. Amputations may result from this condition's ulcerations, infections, and delayed wound healing.

Every 30 seconds, someone in the world is thought to lose a lower limb or a piece of a lower limb due to diabetes. Individuals with diabetes are 10–20 times more likely to have an amputation than those without the condition. If proper education programs and appropriate footwear are not available, diabetic foot can have a major detrimental effect on society, the economy, and public health, especially in low-income regions. (4) Among individuals with diabetes, foot issues are the most common cause of hospitalization. The intricate interplay of microvascular and macrovascular disorders causes diabetic foot problems, which increase the patient's risk of harm and severe infection that may lead to amputation. Sensory neuropathy, the most common type of neuropathy affecting diabetics, results in the loss of protective sensation in the lower limbs. This significantly increases the likelihood of complications that result in lower limb amputation when paired with other risk factors. (5) It's critical to practice diabetic foot care, which includes wearing suitable

footwear and performing daily foot exams, in order to diagnose and avoid issues early.

People with inadequate understanding and practice of diabetic foot care are more likely to develop diabetic foot ulcers. (6) Basic health education initiatives can enhance foot care practices and understanding. (7) However, there isn't much research demonstrating the benefits of health education programs for diabetic foot care. Therefore, the purpose of this study was to assess how a health education intervention affected the knowledge, attitudes, and practices of diabetic patients over 30 who were receiving care at the Rural Health Training Centre, upgraded PHC, Poonamallee, with reference to foot care.

METHODOLOGY

The study was done using a quasi-experimental (before and after) study design, conducted for a study period of 12 weeks (December-February 2024) in the Rural Health Training Centre, Poonamallee, upgraded PHC.

- Inclusion criteria: persons above 30 years of age, both genders, diabetes mellitus patients, patients on regular follow-up of treatment, patients willing to participate in the study
- Exclusion criteria: Persons with cardiovascular diseases, chronic debilitating conditions, or physical disabilities under the care of a caretaker.

Sample size was calculated based on the mean knowledge scores before and after health intervention from a previous study. (8) The calculated sample size is 30 to achieve a power of 80% and a two-sided significance level of 5%.

Diabetic patients attending the clinic were approached for the study and, based on eligibility criteria, recruited by consecutive sampling. The nature and purpose of the study were explained to the patient, and written informed consent was obtained. Confidentiality was ensured. Institutional ethics committee approval was obtained prior to the start of the study. Sociodemographic details were collected from the patients who consented to the study and were interviewed with the questionnaire. The questionnaire was prepared by the authors after an extensive review of literature of similar studies. Socioeconomic status was measured using the modified Kuppusamy scale. (9)



STUDY PROCEDURE

The study was conducted in 2 phases.

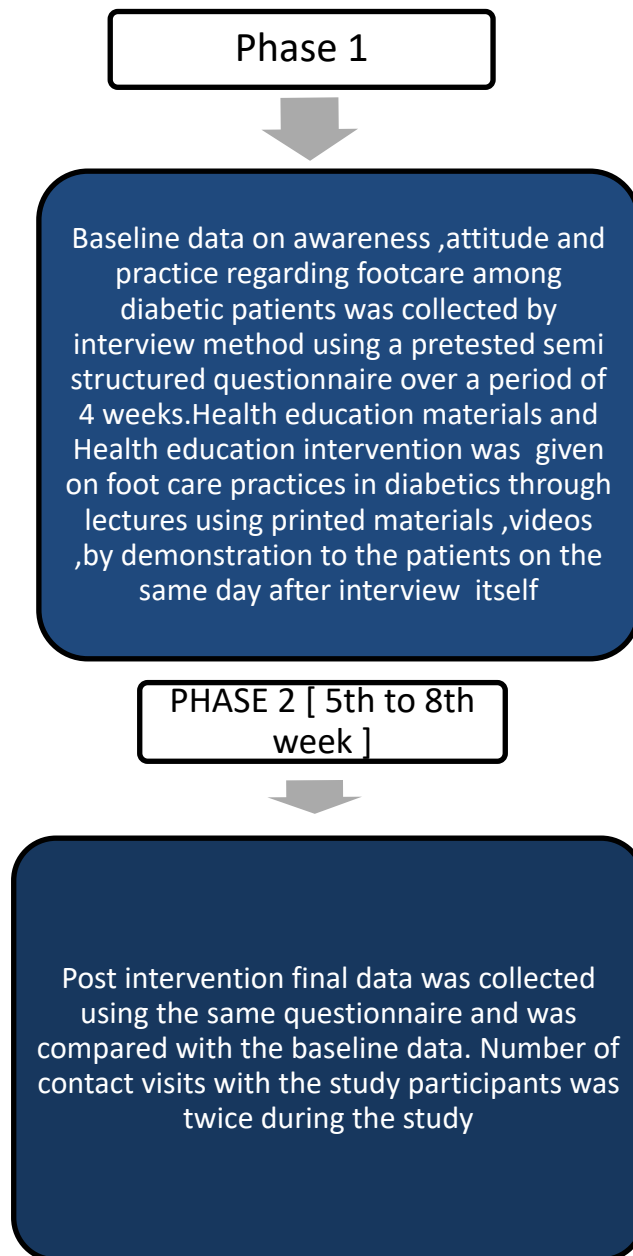


Figure 1: Flow Diagram Of The Study

We used a diabetic foot care questionnaire that consists of nine practice questions, five attitude questions, and eleven knowledge questions. Each of these questions was given a score. It addressed proper foot care practices, including how to wash your feet, how to take care of your skin and nails, and

how to take care of your shoes. The survey was translated into Tamil, the local tongue. Before and after the intervention, we conducted interviews with every patient. One mark was awarded for the right response and zero for the incorrect one.
 Scoring pattern of questionnaire



- The knowledge component comprises 11 questions.

Each question carries 1 mark. For questions with multiple correct answers, all choices are equally valued mark-wise. "Yes" or "no" are valued as: A correct response carries 1 mark. A wrong response carries 0 marks.

- The attitude component comprises 5 questions. Agree as a response carries 1 mark; disagree, don't know, and other options carry 0 marks.
- The practice component comprises 9 questions. Yes, as a response carries 1 mark. "No" or "never" as a response carries 0 marks. Sometimes a response carries 0.5 marks.

The scores for each of the knowledge, attitude, and practice categories were then totaled. The median score for each category was used to evaluate the degree of knowledge, attitude, and practice—whether good or poor.

Ethical Issues: Approval was obtained from the Institutional Ethics Committee prior to the conduct of the study. Informed consent was obtained from the study participants.

Statistical Analysis: The consistency and completeness of the data were examined. Software called IBM SPSS version 21 was used to enter and analyze data. Descriptive statistics like percentages and means were used. Comparison of knowledge, attitude, and practice scores before and after intervention was compared using the Wilcoxon signed-rank test. A p-value of less than 0.05 was taken as statistically significant.

RESULTS

A total of 30 patients were included in this study. The majority of them are in the age range of 61-70 years (30%), followed by 41-50 years (23%) (Figure 2). Figure 3 shows that the majority of them are females (50%), followed by males (47%) and other genders (3%). The majority of them belong to the upper lower (33%) socioeconomic class (Figure 4). Table 1 shows that there was a significant increase in the knowledge score ($P=0.021$), practice score (p-value), and total score (p-value) after intervention. The increase in attitude score after intervention was not found to be marginally non-significant (p-value).

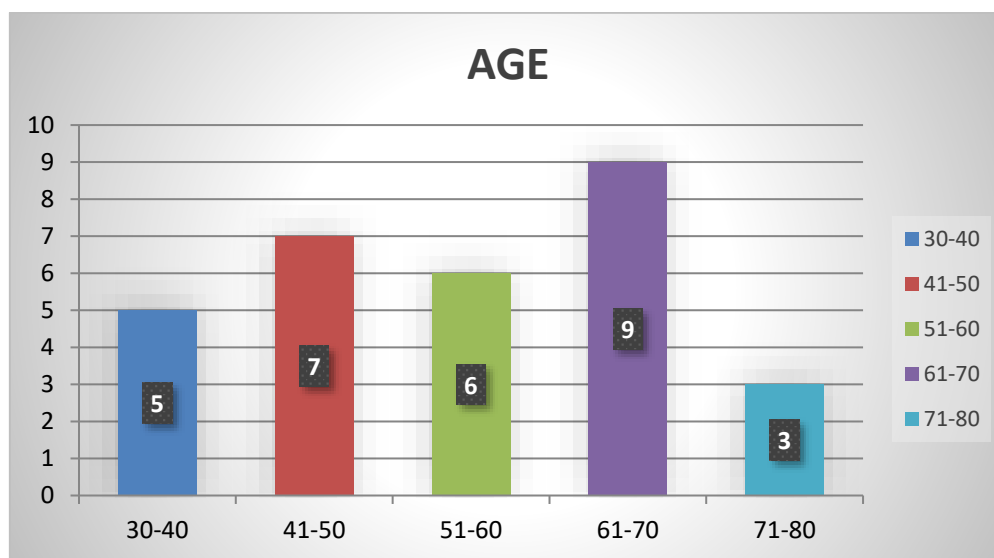


Figure 2: Distribution of age



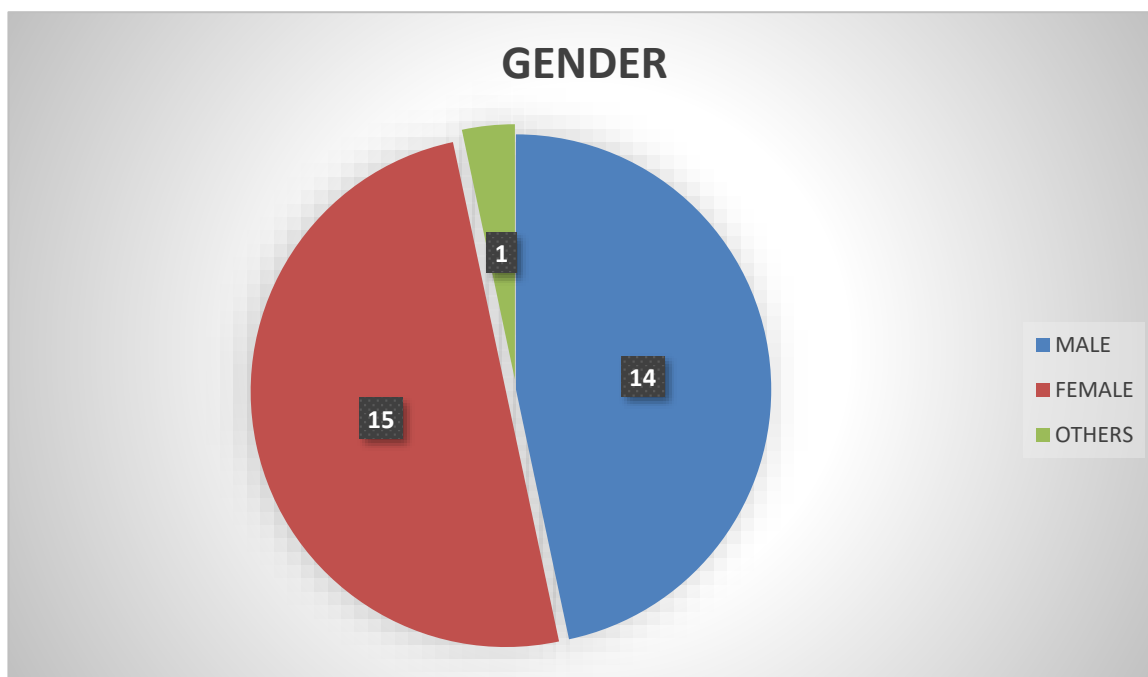


Figure 3: Distribution of gender

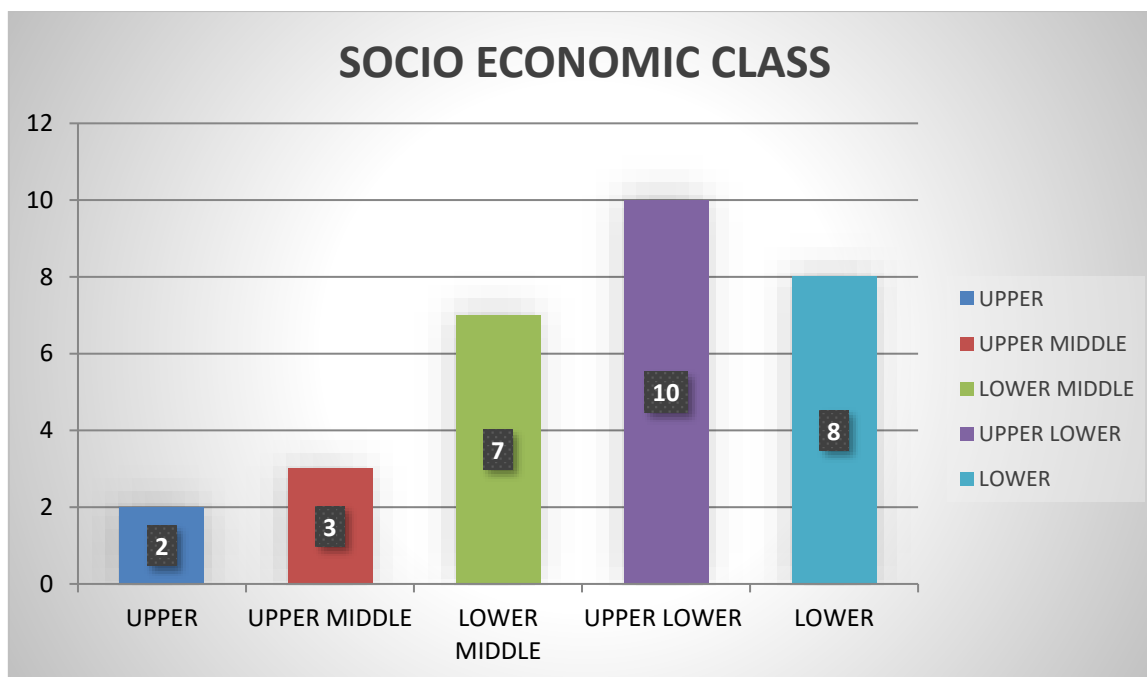


Figure 4: Distribution of socioeconomic class



Table 1: Comparison of scores before and after health education

Component	Wilcoxon signed rank test		P value
	Preintervention median (IQR) score 50th percentile, 25th and 75th percentile	Post intervention median (IQR) score 50th percentile 25th and 75th percentile	
Knowledge	5.6 5.03-6.82	6.6 5.05-10.48	0.021
Attitude	4 3.00-5.00	5 3.00-5.00	0.058
Practice	3.3 2.00-4.63	4.8 3.00-8.00	0.001
Total	13.5 10.27-15.33	15.7 11.90-23.48	<0.001

IQR=Interquartile range

DISCUSSION

Our research revealed that following the intervention, the knowledge score ($P=0.021$), practice score ($p\text{-value}=0.001$), and total score ($p\text{-value}=0.001$) all significantly increased. Assessments of diabetics' foot care practices and knowledge before and after health education interventions are extremely rare in the literature (7, 8, 10–12). The significance of health education is highlighted by the fact that following a health education intervention, foot care knowledge and practice significantly increased in all of these trials. Suman S. et al. (7) demonstrated that, of the 60 patients, 47 had improved, 12 had not, and one patient had experienced a score decline.

After two weeks of health education, the average foot care score improved from 5.90 ± 1.82 at baseline to 8.0 ± 1.30 ($P < 0.001$). According to a study conducted in Lucknow by Pandey A et al. (12), out of 80 patients with diabetes mellitus, 70% of the respondents had low knowledge, 30% had average information, and none had good knowledge on the pre-test. In contrast, 12.5% of respondents had good knowledge on the post-test. The remaining 11.3% received low scores, while 76.3% received mediocre scores. The knowledge median baseline score was poor. The results of previous research, primarily conducted in tertiary care settings, were comparable to this. (7, 13–18) We found that educating patients one-on-one for even five to six minutes improved their foot care regimen.

Though knowledge and practices regarding diabetic foot care improved significantly, the increase in attitude score was not significant, since the post-intervention attitude was assessed after 4 weeks. The attitude may improve significantly in the long run when the patients can see the effects of proper foot care practices. Regular reinforcement of this teaching is likely to result in the development of healthy behaviors that may eventually prevent disability and reduce medical expenses. The results of this study should remind doctors, nurses, and other health care providers of the need to improve diabetics' compliance and their knowledge of foot care. The study's strength is that it is one of the few conducted in India to assess the impact of a health education program on diabetic foot care. This study's drawback was that the majority of the patients in our sample were from the Poonamallee region, which is not representative of Tamil Nadu's entire population. Though the sample size was adequate based on previous study findings, the study was conducted only among 30 participants. Future studies should focus on large sample sizes and long-term follow-up with multiple visits.

CONCLUSION

Most diabetic patients who visited the NCD clinic had inadequate knowledge, attitudes, and practices about foot care; however, following a health education intervention, diabetics' knowledge and practices significantly improved. In order to lower the



prevalence of diabetic foot problems, educational initiatives that raise community knowledge of diabetic foot care must actively engage the community. Every level of healthcare should do this. Our study's findings showed that individuals take inadequate care of their feet and are ignorant of the risk factors for diabetic foot disease. Every hospital and diabetic clinic should be required to offer awareness activities.

CONFLICT OF INTEREST: None declared

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