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Sudhir Singh
Associate Professor, M.Sc. Nursing (MSN), School of Nursing Lingaya's Vidyapeeth, Faridabad, Haryana, India

Shivani
Associate Professor M.Sc. Nursing (MSN), Sumitra Institute of Nursing and Paramedical Sciences, Greater Noida, Uttar Pradesh, India

Deeksha
Assistant Professor, M.Sc. Nursing (Community Health Nursing), School of Nursing Lingaya's Vidyapeeth, Faridabad, Haryana, India

Shilpa J
Vice Principal cum Professor M.Sc. Nursing (Child Health Nursing) School of Nursing ARKA Jain University Jamshedpur, Jharkhand, India

Asha Bhandari
Vice Principal cum Professor, M.Sc. Nursing (OBG), School of Nursing Lingaya's Vidyapeeth, Faridabad, Haryana, India

Priyanka Tewari
Nursing Tutor BSc. Nursing, Doon Institute of medical sciences Sahaspur, Dehradun, Uttarakhand, India

Corresponding Author:
Sudhir Singh
Associate Professor, M.Sc. Nursing (MSN), School of Nursing Lingaya's Vidyapeeth, Faridabad, Haryana, India

Effectiveness of a structured teaching program on virtual diabetic foot care: A pre- experimental study among diabetes patients at Faridabad, Haryana

Sudhir Singh, Shivani, Deeksha, Shilpa J, Asha Bhandari and Priyanka Tewari

Abstract
A pre-experimental study was performed to determine the knowledge level of diabetic foot care among patients in ballabhghar, Faridabad, and to assess the impact of a Structured Teaching Programme (STP) on the improvement of foot care practices and knowledge by complication prevention. The method of purposive stratified sampling was utilized to select 60 diabetic patients for the data collection which was done on August 9th, 2025. The demographic variables consisted of age, sex, education, income, religion, duration of diabetes, the presence of other conditions, presence of edema, and previous sources of knowledge. The data collected were analyzed by calculating mean, percentage, standard deviation, degree of frequency, and chi-square, and the findings were presented in pie diagrams and tables. The necessity for the research was founded on the idea of increasing knowledge regarding the prevention of complications from injuries and diabetic foot ulcers and the connection between knowledge scores and the demographic variables chosen. As for the main demographic aspects, most of the sample (43%) were aged between 50 and 60 years, 52% were male, 41% were at secondary education level, 99% were Hindus, 47% had a family income below ₹10,000, and 56% came from middle-class households. The pre-test over all knowledge assessment pointed to a problem; the average knowledge score was 6.7833, which is equivalent to only 78% of the highest score and corresponds to poor knowledge. The majority-wise allocation corroborated this, indicating that 78% of the participants possessed poor knowledge, 20% had average knowledge, and merely 1.6% had good knowledge. The study outcome is very emphatic in indicating the necessity for supporting educational interventions like the Structured Teaching Programme as it is the only way to cope with the district's widespread lack of diabetic foot care knowledge.

Keywords: Structure teaching program, (STP) diabetic foot care, Purposive sampling technique

Introduction

Diabetes mellitus (DM), which is either due to the lack of insulin or its ineffectiveness, is one of the diseases that is increasing the fastest in the world. The predictions show that the number of people suffering from diabetes will increase from 463 million in 2019 to 700 million by 2045. One of the worst complications of diabetes is diabetic foot ulcers (DFUs), and they are mainly caused by macrovascular disease, microvascular damage, neuropathy, and ischemia which lead to infections, ulcers, gangrene, and in some cases, amputation. The global prevalence of DFUs is around 6.3%, thus it is estimated that about 50% of diabetic patients will suffer from this condition in the future, which comes with a great deal of suffering both physically and economically, as well as the psychological aspect. The methods of preventing and managing diabetic foot ulcers are pretty diverse but they should always focus on the same basic elements: recognizing the patients with the highest risk of developing DFUs and offering them routine supervision; educating not only the patients but also the families and the healthcare professionals thoroughly, providing them with the right kind of footwear, and giving the appropriate early treatment intervention. The primary risk factors are peripheral neuropathy, peripheral vascular disease, foot deformities, past ulceration or amputation, poor foot care, wearing the wrong shoes, and lack of good metabolic control. It is very important to perform regular foot examinations; every diabetic patient should have an annual screening, and high-risk individuals should be examined at

intervals of 3 to 6 months. During the assessment, the protective sensation is being tested with 10g Semmes-Weinstein monofilament testing; the vascular status, skin conditions, and bone/joint conditions are also being assessed. A body of evidence exists that supports the fact that proper self-care and patient education combined can lead to a significant drop in both the incidence of diabetic foot ulcers and the number of amputations done, thus underscoring the point that prevention strategies are of utmost importance in the management of diabetic foot complications.

Objective
1. To assess the pre- test knowledge and practice regarding diabetic foot care among diabetes patients.
2. To assess effectiveness of structured teaching program on knowledge and practice regarding virtual diabetic foot care among diabetes patients.
3. To compare the pre- test & post-test knowledge and practice score regarding virtual diabetic foot care among diabetes patients.
4. To find out the association between pre-test with selected demographic variables.

Hypotheses
1. **H1:** There will be significant improvement in the level of knowledge and practice of post-test levels among selected foot care diabetes patients.
2. **H2:** There will be significant association between pre-test knowledge and practice related diabetic foot care with the selected demographic variables.

Methodology:
- **Research approach:** A Quantitative Research Approach.
- **Research design:** A Pre- Experimental Research (pretest- posttest) Design.
- **Independents variable:** S.T.P. on knowledge and practice on diabetic foot care among diabetic patients.
- **Dependent variable:** The level of knowledge of diabetic patients.
- **Sample Technique:** Purposive sampling technique.
- **Sample Size:** 60 diabetic patients (Male and Female)

Plan for Data Analysis
It is planned to analysis and interpret data with the help of descriptive and inferential statistics.

Data collection tool
A structured questionnaire on knowledge and practice regarding diabetic foot care diabetic patients.
- **Part - A:** Demographic Variable
- **Part - B:** Structured questionnaire containing 24 multiple choice questions.

Score interpretation:
Each correct answer carries 1 mark, and wrong answer carries 0 marks. Total score is 24 marks.

Content validity and reliability
Validity of the tool was done by the consultation with the guide and expert. The necessary suggestions and modifications were incorporated in the final preparation of the tool. The reliability of the tool was assessed to be the test re-test method, findings showed that the tool was reliable.

Ethical Consideration: Written consent was obtained from Community Health Centre, Ballabhghar for formal approval of data collection.

Data Collection process: The proposed study was conducted after formal permission was obtained from the sarpanch of the village. The samples were selected based on the inclusion and exclusion criteria. Using the purposive sampling technique the study was conducted.

Analysis and interpretation of data

Table 1: Percentage wise distribution of diabetic patient

Characteristics	Frequency	Percentage (%)
Age (in year)		
30-40yrs	9	1%
40-50yrs	10	16.6%
50-60yrs	26	43%
Above 60 years	15	25%
Gender		
Male	31	51%
Female	29	48%
Educational status		
Uneducated	7	11%
Secondary school	24	40%
Postgraduate	19	31%
Graduate	10	16%
Family income (in monthly)		
Below 5k	5	8.3%
Within 10k	28	46%
Between 15-20k	13	21%
Above 20k	14	23%
Religion		
Hindu	59	98%
Muslim	1	1%
Sikh	0	0%
Christian	0	0%
Duration of diabetes mellitus		
Below 5 years	25	41%
Below 15 years	23	38%
Above 15 years	10	16%
More than 20 years	2	3%
Other disease condition		
Hypertension	30	50%
Cardiac	4	6%
No disease	24	40%
Other disease	2	3%
Any history of oedema		
Yes	4	6%
No	56	93%

Table 2: Percentage wise distribution of diabetic patient according to their Pre-test knowledge and practice regarding to diabetic foot

Level of Knowledge	Frequency (n)	Percentage (%)	Overall Mean Score	Standard Deviation (SD)
Poor	47	78.3%		
Average	12	20.0%	6.78	5.28
Good	1	1.7%		

Table 3: Percentage wise distribution of diabetic patient according to their Post-test knowledge and practice regarding to diabetic foot

Level of Knowledge	Frequency (n)	Percentage (%)	Overall Mean Score	Standard Deviation (SD)
Poor	00	0	15.66	4.24
Average	10	16.66		
Good	50	83.33		
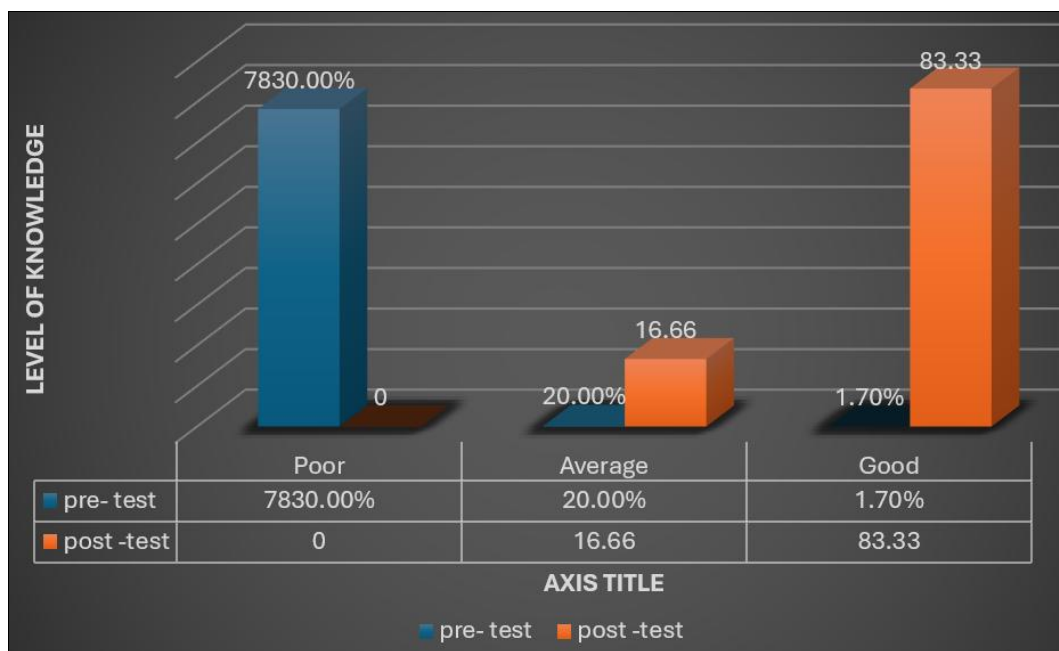
Fig 1: Pre test and post test values

Table 4: Association between the Pre-test knowledge and assessing of diabetic patient with their selected demographic variables

Demographic Variable	Category	Poor	Average	Good	(df)	(χ2)	
Age (in years)	30-40 years	6	1	1	6	2277.4	NS
	40-50 years	5	5	0			
	50-60 years	22	4	0			
	Above 60 years	14	2	0			
Sex	Male	24	6	1	2	130.371	S
	Female	23	6	0			
Religion	Hindu	46	12	1	2	174.164	S
	Muslim	1	0	0			
	Sikh	0	0	0			
	Christian	0	0	0			
Education	Uneducated	7	0	0	6	279.941	S
	Secondary School	19	5	0			
	Post Graduate	12	7	0			
	Graduate	9	0	1			
Family Income	Below ₹5k	5	0	0	6	9181.114	S
	Within ₹10k	23	5	0			
	Between ₹15k-₹20k	7	4	1			
	Above ₹20k	12	3	0			
Duration of Diabetes	Below 5 years	22	2	0	6	312.660	S
	Below 15 years	15	8	1			
	Above 15 years	8	2	0			
	More than 20 years	2	0	0			
Other Disease Condition	Hypertension	25	3	2	4	217.2	S
	Cardiac	3	1	0			
	No disease	19	1	0			
	Other	2	0	0			
Any History of Oedema	Yes	2	1	1	2	1916.96	S
	No.	46	10	0			

Discussion

1. First Objective of the study was to assess the knowledge of patients regarding risk factors of poor diabetic foot care with demographic variables, The study shows 43% of diabetic patients were aged 50-60 years, with 52% male. Educational levels varied: 41% had secondary education; 32% were postgraduates, 16% graduated, and 11% uneducated. Religious

affiliation was predominantly Hindu (99%). Regarding family income, 47% earned within 10k, 23% above 20k, 21% between 15-20k, and 9% under 5k, indicating most patients belonged to lower-income groups.

2. Second Objective of the study was to find effectiveness of structured teaching programs in improving foot care practices among diabetic patients, Percentage wise distribution of the diabetes mellitus in (78.3%) of total subject had poor knowledge (20%) had average knowledge and (1.7%) had good knowledge. Standard deviation between the level of knowledge is 5.28.

3. Third Objective was post- test knowledge regarding prevention of complication of diabetes mellitus Diabetic patients was (83.3%) of total subject had good knowledge (16.66%) had average knowledge and (0%) had poor knowledge. Standard deviation between the level of knowledge is 4.24.

4. Fourth Objective were to find out association between pre- test with selected demographic variables. In this age is not significant and other all demographic variable is significant.

Implications and Recommendations

Nursing professionals working in hospitals and communities should assess knowledge levels regarding diabetes mellitus among community members. Self-instructional pamphlets can effectively educate individuals about diabetes management. Nurse educators should prepare nursing students using these educational materials and train peripheral healthcare workers to enhance patient knowledge. The study's findings can be utilized for conducting large-scale research with expanded samples. Topics with lower knowledge scores should be modified and retested to achieve better understanding. Recommendations include conducting large-scale replication studies among community populations, implementing experimental research designs with control groups, and performing comparative studies to generalize findings effectively, thereby strengthening diabetes education programs and improving health outcomes across diverse populations.

Conflict of Interest: Not available.

Financial Support: Not available.

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