Effect of Video Assisted Teaching Module (VATM) on Peripheral Vascular Disease among Patients with Diabetes Mellitus at Selected Hospital of Maharashtra State

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Abstract: *Aim of the study: The study aims to find out the effectiveness of VATM on the knowledge regarding peripheral vascular disease among patients with diabetes mellitus by using SIS. Problem statement: Effect of Video Assisted Teaching Module (VATM) on Peripheral Vascular Disease among Patients with Diabetes Mellitus at selected Hospital of Maharashtra State. Primary objective: The primary objective was to assess the effect of video assisted teaching module (VATM) on knowledge regarding peripheral vascular disease (PVD) among patients with diabetes mellitus. Secondary objective: 1) To assess the knowledge on PVD among patients with diabetes before intervention. 2) To find out the effect of VATM on PVD among patients with diabetes mellitus 3) To find out the association between post test knowledge score on PVD and demographic variables of patients with diabetes mellitus. Method: A pre- experimental one group pretest posttest design and quantitative approach was carried out on 110 diabetic patients admitted in selected hospital by purposive sampling technique to test video assisted teaching module (VATM) on knowledge regarding peripheral vascular disease (PVD). Results: The presents study evaluates and found that the pre-intervention demographic variables of diabetic patients were more or less similar revealing common characteristics. Before intervention it was observed that (19.4%) knowledge on peripheral vascular disease and after an intervention, the percentage of knowledge on peripheral vascular disease was significantly increased from 19.4% to 82.2%. There was a significant difference (p<0.0001) between pre test and post test knowledge scores on peripheral vascular disease. Interpretation and conclusion: The data were analyzed by applying descriptive and inferential statistics. The result of the study indicated that after intervention there was an improvement in the level of knowledge. Analysis of data shows that highly significance difference found between the pre -test and post- test knowledge scores at the level of (P<0.05). The hypothesis is proved and accepted*

Keywords: VATM, Peripheral Vascular Disease, Diabetes Mellitus, Knowledge Improvement, Pretest Posttest Design

1. Introduction

The intersection between health and lifestyle has achieved increased invisibility in both anthropology and biomedical sciences. In the last two decades, changing life styles have been linked worldwide to changes in patterns of morbidity and mortality. Solving the primary physiological causes of illness and disease may be easier than adequately addressing these lifestyle changes. [1]

Diabetes is the most common metabolic disorder all over the world. The increasing incidence of diabetes gives India the "Diabetic Capital of the World". Peripheral Vascular Disease (PVD) is one of the most common macrovascular complications of Type II DM. Nearly 50% of the patients with PVD are asymptomatic. Diabetes explains for about 50% of all non-traumatic amputations in India especially due to diabetic foot. Early detection of vascular changes helps in effective handling of diabetes and its complications. [2]

Peripheral vascular disease (PVD) is characterized by a gradual reduction in the blood flow to one or more limbs secondary to atherosclerosis[3]Risk factors for PVD include age, male gender, hypertension, hypercholes-terolaemia, hyperglycaemia and cigarette smoking.[3]PVD is projected to affect up to 15% of the population aged above 65 years and considerably increases the risk of major cardiovascular events in affected patients. Based on the severity of PVD, the stages can be classified as compensation, rest pain, chronic non-healing ulcer, gangrene and amputation

2. Need for the Study

According to a study done in urban Chennai, the prevalence of PAD in the general urban population was 3.2%. It found that age and hypertension were the major risk factors. The prevalence was 7.8% among those with known diabetes. In a cross-sectional study done in the United States of America over a period of five years between 2003 and 2008 among 3.6 million participants, the prevalence of PAD was 3.6% in the general population with an exponential increase in successive decades of life.[10]The purpose of the present study is to identify the effectiveness of a video assisted teaching module on peripheral vascular disease among diabetic patients. This video assisted teaching mainly intended to educate the diabetic patients on peripheral vascular disease, causes, risk factors, warning signs, preventive aspects and complications. The researcher strongly believes that, the result of the proposed study can enhance the knowledge on prevention of peripheral vascular disease.[19]

3. Review of Literature

Review of literature was carried out on recent and ongoing research relevant to the present study.

After thorough review, investigator has classified the literature based on variables which support aims and objectives of study. The literature as fallows –
a) Reviews related to incidence and prevalence of PVD among Diabetes patients
b) Reviews related to general information on PVD among Diabetes patients
c) Reviews related to factors influencing PVD among Diabetes patients
d) Review related to diabetes patients knowledge on PVD
e) Reviews related to Health education as a method of teaching

Assumptions
- Patients with diabetes mellitus may have some knowledge on PVD.
- VATM on PVD may enhance the knowledge of Patients with diabetes mellitus.
- The demographic variables may influence on knowledge of patients with diabetes mellitus with regarding PVD.

Delimitations
The study was limited to -
- Assessment of knowledge
- 112 samples
- Selected hospital of Maharashtra state

Hypothesis:
H1: There is a significant difference between the pre-test and post-test knowledge score on PVD among patients with diabetes mellitus
H2: There is an association between the post-test knowledge scores on PVD and demographic variables of patients with diabetes mellitus

4. Methodology

Research approach: An experimental research approach was used for the study **Research design:** Quantitative, pre-experimental one group pretest post test design **Variables under study:**

Independent variable**:** VATM on PVD was considered as independent variable.
Dependent variable**:** knowledge of patients with diabetes mellitus regarding PVD was considered as dependent variable.

Population
Target population: patients with diabetes mellitus to whom study findings generalised were the target population.
Accessible population: patients with diabetes mellitus available for the research study were the accessible population

Sample and sampling technique
Sample: Patients with diabetes mellitus admitted in a selected hospital of Maharashtra state were the samples for research study.

Sample size: Samples size was 110 Calculated based on sample size determination formula

Sampling technique: A purposive sampling technique was used to select the patients with diabetes mellitus admitted in selected hospital of Maharashtra state.

Inclusive criteria
- Patients with diabetes mellitus who gave consent to participate in the study
- Patients who understand Marathi
- Patients with diabetes mellitus available at the time of data collection

Exclusion criteria
- Patients who were critically ill
- Patients who were about to discharge from the hospital
- Patients who had visual or auditory difficulties

Tool Preparation

Development of tool:
Tools were developed on the basis of research question, hypothesis and conceptual frame work. Investigator has undergone extensive review of literature to develop the tools. However, following efforts were made by the investigator prior to construction of tools.
- Reviews from sources like text books, journals, periodicals, magazines, published thesis, newsletters etc.
- Consultation and discussion with peer group, nursing experts, subject experts, and the others concerned.
- Personal and professional experience of investigator with the women.

After such deliberations, the investigator has constructed a final draft of SIS and VATM on peripheral vascular disease.

Description of Tools:

1) Structured Interview Schedule (SIS)
The SIS was designed to assess the knowledge of patients with diabetes mellitus regarding PVD. This instrument was used by the investigator himself/herself before and after an intervention within a stipulated time period. However, the SIS contains; Part A and Part B.
Part A: seeks information on demographic variables such as age, gender, education, monthly income, and religion of patients with diabetes mellitus.
Part B: related to 36 questions/statements that seek information on PVD.
However, questions/statements are divided under 04 areas to assess the knowledge of patients with diabetes mellitus.

2) Video Assisted Teaching Module: This tool was constructed by the investigator to teach on PVD by using video among patients with diabetic mellitus admitted in selected hospital. The central objectives of video teaching module were –
- The patients with diabetes mellitus will be able to understand the concept of PVD
- The patients with diabetes mellitus will be able to appreciate the factors affecting PVD and its preventive measures
- The patients with diabetes mellitus will be able to apply skill in preventive aspects of PVD

Table 3.3: Scoring of SIS Tool Validity

Grade	Percentage	Score
Very Poor	20% & below	05 or below
Good	21% - 40%	06 – 10
Average	41% - 60%	11 – 16
Good	61% - 80%	17 – 21
Very good	81% - 100%	22 or above

Validity of SIS and VATM
Content validity of SIS and VATM were established in consultation with 7 experts from the field of Medical Surgical Nursing (*n*=4), physician (*n*=2), language expert (*n*=1).

Tool Reliability
Data was collected from 12 patients with diabetes mellitus who were admitted in selected hospital (other than the main study area) to test reliability of SIS. The Split half method was used where the tool was divided in to two parts, and the data of two different parts were calculated using Karl Pearson's correlation coefficient test. The result of test was r = 0.87, hence the tool was considered as reliable.

Pilot Study
Pilot study was conducted among 12 patients with diabetes mellitus at selected hospital of Maharashtra (other than the main study setting) to find out the effect of VATM on PVD. A prior permission was obtained from the authorities concerned for pilot study. Further, the informed consent was also obtained from patients with diabetes mellitus, and data was collected from 13th January 2021 to 21th January 2021.

Plan for Data Analysis
The data was collected to analyze by using descriptive statistics such as; percentage, mean, and standard deviation and the inferential statistics such as; One-way ANNOVA and paired 't' test to test the hypothesis with SPSS software.

5. Results

Section I: Distribution of patients with diabetes mellitus according to their demographic variables
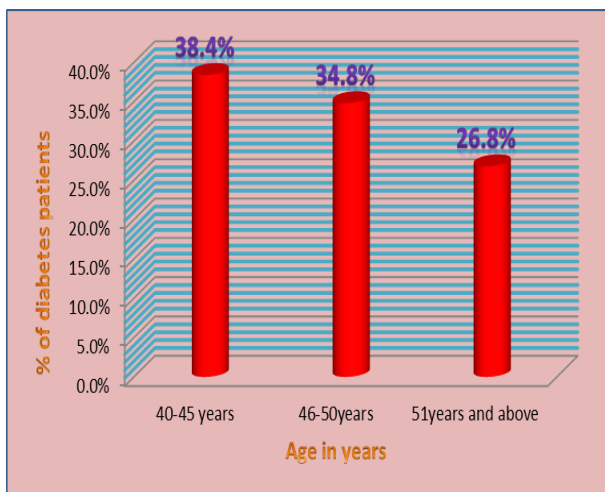Figure 4.1.1: Distribution of patients with diabetes mellitus according to age

Figure 4.1.1: Percentage distribution of patients with diabetes mellitus according to their age.

Distribution of patients with diabetes mellitus according to their age reveals that the highest percentage (38.4%) were belonged to the age group of 40-45 years whereas the patients with 51years and above were 26.8% (figure – 4.1.1).

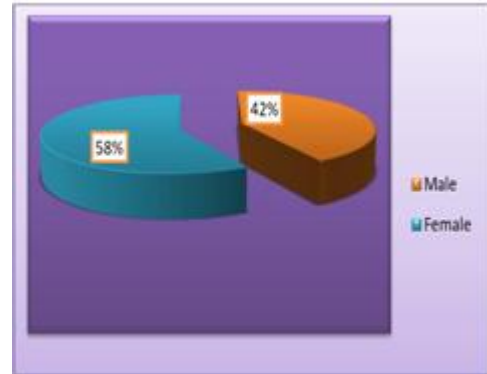**Figure 4.1.2:** Distribution of patients with diabetes mellitus according to gender

Figure 4.1.2: Percentage distribution of patients with diabetes mellitus according to their gender

Gender distribution of patients with diabetes mellitus depicts that the around (58%) were females whereas males were 42% (figure – 4.1.2).

Figure 4.1.3: Distribution of patients with diabetes mellitus according to qualification
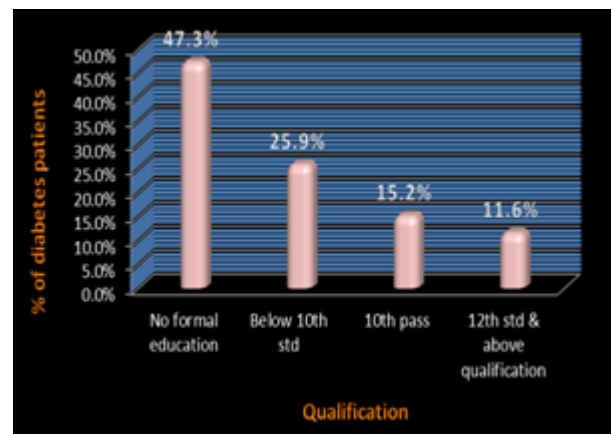

Figure 4.1.3: Percentage distribution of patients with diabetes mellitus according to qualification

Distribution of patients with diabetes mellitus according to qualification shows that majority (47.3%) were with no formal education whereas the patients with qualification of 10th pass and 12th and above were <15%. However, the patients with qualification of below 10th std were 25.9% (figure – 4.1.3).

Figure 4.1.4: Distribution of patients with diabetes mellitus according to their monthly income
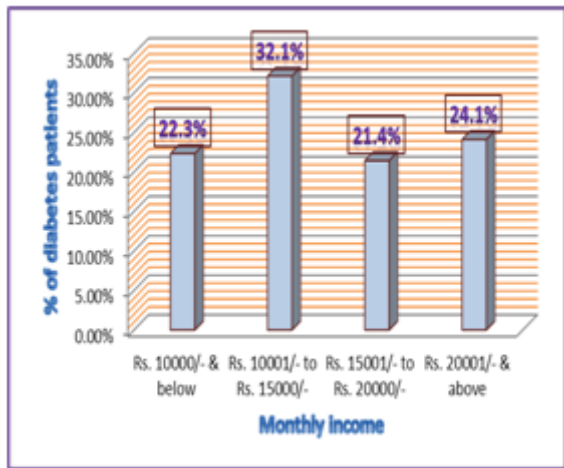
Figure 4.1.4: Percentage distribution of patients with diabetes mellitus according to their monthly income.

Distribution according to income shows that higher percentage of patients (32.1%) were in the income group of Rs. 10001–15000/- whereas the other income groups were ranged from 22% to 25% (figure – 4.1.4).

Section I: Distribution of patients with diabetes mellitus according to their demographic variables

Figure 4.1.5: Distribution of patients with diabetes mellitus according to religion
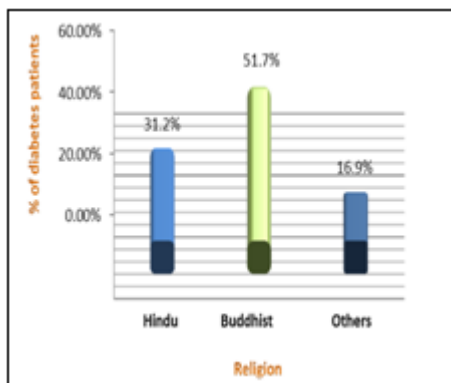

Figure 4.1.5: Percentage wise distribution of patients with diabetes mellitus according to their religion

Distribution of patients with diabetes mellitus according to religion shows that half of them 51.7% were Buddhist whereas other religion was 16.9%. However, the patients with hindu religion were around 31.2% (figure – 4.1.5).

Section II: Assessment of knowledge on PVD among patients with diabetes mellitus before intervention

Table 4.2.1: Percentage distribution of knowledge scores on PVD among patients with diabetes mellitus before intervention, *n =112*

S. No	Level of Knowledge	F	%
1	Very Poor	19	11.1%
2	Poor	92	20.5%
3	Average	01	66.6%
4	Good	0	0%
5	Very Good	0	0%
	Overall	112	19.4%

Distribution of knowledge scores of patients with diabetes mellitus before intervention reveals that most of (92) patients had poor knowledge (20.5%) whereas the patients with average, good and very good knowledge were <1%. The remaining 19 patients with diabetes mellitus had very poor knowledge were (11.1%). However, the overall knowledge of patients with diabetes mellitus was 19.4% before intervention. (table - 4.2.1).

Hence, it was interpreted that the patients with diabetes mellitus had very poor knowledge on PVD before intervention.

Section II: Assessment of knowledge on PVD among patients with diabetes mellitus before intervention

Table 4.2.2: Mean & mean % knowledge scores on PVD among patients with diabetes mellitus before intervention, *n=112*

Sr. No	Level of Knowledge	f	Mean ± SD
1	Very Poor	19	4.0±0.9
2	Poor	92	7.4±1.18
3	Average	1	24±0
4	Good	0	0
5	Very Good	0	0
	Overall	112	7.0±2.3

Distribution of Mean & SD knowledge scores on PVD before intervention shows that 92 of them had a mean score of 7.4±1.18. However, overall mean score was 7.0±2.3 (table - 4.2.2)

Hence, it was interpreted that patients with diabetes mellitus had poor mean knowledge scores on PVD before intervention

Section II: Assessment of knowledge on PVD among patients with diabetes mellitus before intervention

Table 4.2.3: Area wise percentage distribution of knowledge scores on PVD among patients with diabetes mellitus before intervention, *n=112*

Area of Knowledge	Items	Knowledge in %
Circulatory system of the human body	4	26.1%
Peripheral vascular disease and its associated factors	10	20.6%
Treatment of peripheral vascular disease	8	21%
Prevention of peripheral vascular disease	14	15.9%
Overall	36	19.4%

Table 4.2.4: Area wise Mean & SD of knowledge scores on PVD among patients with diabetes mellitus before intervention

Area of Knowledge	Items	Mean	SD
Circulatory system of the human Body	4	1.04	0.83
Peripheral vascular disease and its associated factors	10	2.06	1.0
Treatment of peripheral vascular disease	8	1.67	0.98
Prevention of peripheral vascular disease	14	2.23	2.0
Overall	36	7	2.3

Section III: Comparison of knowledge scores on PVD among patients with diabetes mellitus after intervention

Table 4.3.1: Comparison of knowledge scores on PVD among patients with diabetes mellitus after intervention, *n=112*

Level of knowledge	Pretest		Post test	
	f	%	*f*	%
Very Poor	19	11.1%	0	0%
Poor	92	20.5%	0	0%
Average	1	66.6%	0	0%
Good	0	0%	0	0%
Very Good	0	0%	112	82.2%
Overall	112	19.4%	112	82.2%

Table 4.3.2: Comparison of Mean knowledge scores & SD on PVD among patients with diabetes mellitus after intervention, *n=112*

Area of Knowledge	Before Intervention		After Intervention	
	f	Mean±SD	*F*	Mean±SD
Very Poor	19	4.0±0.8	0	-
Poor	92	7.4±1.1	0	-
Average	1	24±0	0	-
Good	0	-	0	-
Very Good	0	-	112	29.8± 2.6
Overall	112	7.0±2.3	112	29.8± 2.6

Table 4.3.3: Comparison of area wise knowledge scores on PVD among patients with diabetes mellitus after intervention, *n=112*

Area of Knowledge	No. of Items	Before Intervention	After Intervention
Circulatory system of the human body	4	26.1%	73.2%
Peripheral vascular disease and its associated factors	10	20.6%	81.0%
Treatment of peripheral vascular disease	8	21%	82.5%
Prevention of peripheral vascular disease	14	15.9%	87.1%
Overall	36	19.4%	82.8%

Table 4.3.4: Comparison of area wise Mean knowledge percentage & SD on PVD among patients with diabetes mellitus after intervention, *n=112*

Area of knowledge	No. of Items	Before Intervention		After Intervention	
		Mean	SD	Mean	SD
Circulatory system of the human body	4	1.04	0.83	2.9	1.1
Peripheral vascular disease and its associated factors	10	2.06	1.0	8.1	1.5
Treatment of peripheral vascular disease	8	1.67	0.98	6.6	1.2
Prevention of peripheral vascular disease	14	2.23	2.0	12.1	1.9
Overall	36	7	2.3	29.8	2.6

Testing of hypothesis

H1: There is a significant gain between pre-test and post-test knowledge score on PVD among patients with diabetes mellitus

Table 4.4.1: Significant gain between pre-test and post-test knowledge score on PVD among patients with diabetes mellitus, *n=112*

Overall	Mean ±SD	Mean difference	Df	t –value	P-value
Pre-test	7.02±2.36	22.82 ± 0.31	111	77.99	0.0001 S, p<0.05
Post test	29.84±2.67				

*P value<0.0001 ***highly significant, P value<0.001*
**moderately significant, P value<0.05*significant df-111

Table 4.4.2: Area wise significant difference between pre-test and post-test knowledge score on PVD among diabetic patients, *n=112*

Area of knowledge	Pre-test	Post test	't' value	P value
	Mean±S D	Mean±SD		
Circulatory system of the human body	1.0±0.8	2.9±1.13	13.6	0.0001 s. p<0.05
Peripheral vascular disease and its associated factors	2.06±1.03	8.11±1.56	35.48	0.0001 s. p<0.05
Treatment of peripheral vascular disease	1.68±0.99	6.61±1.28	32.19	0.0001 s. p<0.05
Prevention of Peripheral vascular disease	2.23±2.11	12.20±1.92	38.89	0.0001s. p<0.05
Overall	7.02±2.36	29.84±2.67	77.99	0.0001 s. p<0.05

*P value<0.0001 ***highly significant, P value<0.001*
**moderately significant, P value<0.05 * significant

Testing of Hypothesis

H2: There is a significant association between the post-test knowledge score on PVD and age in years of patients with diabetes mellitus

Table 4.5.1: Association between post-test knowledge score and age, *n=112*

Age (yrs)	No. of patients with diabetes mellitus	Mean post test knowledge score	F-value	p-value
40-45 years	43	30.0±2.3	0.4437	0.6428 NS,
46-50year	39s	29.5±2.9		

51 years and above	30	30±2.7		p>0.05

Df-2,109   table value-0.6428
*significant   NS- Not significant

Table 4.5.2: Association between post-test knowledge score and gender, *n=112*

Gender	No. of patients with DM	Mean posttest knowledge score	F-value	p-value
Male	47	30.7±3.0	9.5	0.0025
Female	65	29.2±2.1		NS, p>0.05

Df-1,110   table value-0.0025
*significant   NS- Not significant

Table 4.5.3: Association between post-test knowledge score and qualification, *n*=112

Qualification	No. of patients with diabetes mellitus	Mean posttest knowledge score	F-value	p-value
10th pass	53	29.5±2.5		0.2599
12th pass	29	30.3±2.4	1.357	NS,
Graduate	17	29.2±2.3		p>0.05
Postgraduate	13	30.6±3.7		

Df-3,108   table value-0.2599
*significant   NS- Not significant

Table 4.5.4: Association between post-test knowledge score and monthly income, n=112

Monthly income	No. of patients with diabetes mellitus	Mean posttest knowledge score	F-value	p-value
Rs.10000/- & Below	25	31.7±2.9		
Rs.10001/- to Rs. 15000/-	36	30.0±2.3	8.7	0 NS, p>0.05
Rs.15001/- to Rs.20000/-	24	29±1.8		
Rs.20001/- & Above	27	28.5±2.3		

Df-3,108 *table value*-0
*significant *NS- Not significant*

Table 4.5.5: Association between post-test knowledge score and religion, *n=112*

Religion	No. of patients with diabetes mellitus	Mean posttest knowledge Score	F-value	p- value
Hindu	35	29.8±2.7		
Buddhist	58	29.8±2.7	0.0449	0.9561 NS, p>0.05
Others	19	29.6±2.3		

Df-2,109   *table value*-0.9561 *significant
NS- *Not significant*

Summary

The study was undertaken to assess the effectiveness of VATM on knowledge regarding peripheral vascular disease among diabetes patients. An experimental approach with one group pre-test post-test design was used to collect data among 112 diabetic patients drawn purposively using inclusion and exclusion criteria.

Conclusion

From the findings of present study, it was concluded that the pre-intervention demographic variables of patient with diabetes mellitus and Percentage of knowledge and the mean scores were more or less similar revealing common characteristics. Further, it was observed that the percentages of knowledge (19.4%) on peripheral vascular disease among patients with diabetes mellitus were more or less similar before intervention.

However, after an intervention, the percentage of knowledge on peripheral vascular disease was significantly increased from 19.4% to 82.2%. There was a significant difference (p<0.0001) between pre test and post test knowledge scores on peripheral vascular disease. However, no significant association (p>0.05) was found between knowledge on peripheral vascular disease and age, gender, religion, qualification, and monthly income of patients with diabetes mellitus.

Hence VATM on Peripheral vascular disease was effective among Diabetes patients admitted in selected hospitals of Maharashtra state.

Recommendations

- Similar study with large sample can be undertaken to bring out more generalization of findings.
- I have used pre experimental one group pre test post test design similar study can be conducted by using quasi-experimental design.
- I have conducted study in private hospital, can be conducted in government hospital.
- A comparative study can be done to compare other interventions on peripheral vascular disease
- Health education on prevention of peripheral vascular disease can be given for the newly detected diabetic patient to reduce the morbidity rate
- Video assisted teaching module on peripheral vascular disease can be a part of usual counseling protocol for patients with diabetes mellitus who visits out patient department

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