

**EFFECTIVENESS OF VIDEO ASSISTED TEACHING PROGRAM ON PREVENTION OF
CARDIOVASCULAR COMPLICATIONS IN TERMS OF KNOWLEDGE AND ATTITUDE
AMONG PATIENTSWITH DIABETES MELLITUS: A QUASI-EXPERIMENTAL
EVALUATORY APPROACH**

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ABSTRACT

Diabetes Mellitus is a disease of the endocrine system where the body is not able to maintain the blood sugar at the required level for good health and well-being. There is also a corresponding increase in the diabetic related complications which includes cardiovascular complications, diabetic neuropathy, diabetic retinopathy, and diabetic nephropathy. Cardiovascular complications are mainly responsible for the high morbidity and mortality in people with diabetes. **Aim:** The main aim of the study is to evaluate the effectiveness of video assisted teaching program in terms of knowledge and attitude on prevention of cardiovascular complications among patients with diabetes mellitus in selected hospitals, Meerut. **Material And Methods:** A quasi-experimental pre-test post-test design was adopted in this study. 50 diabetic patients were selected using non-probability purposive sampling technique. A structured knowledge questionnaire & attitude scale were used to collect the data. **Results:** The results revealed that comparison of posttest knowledge scores between both groups shows that the calculated unpaired t value was 4.91 which was higher than the tabulated value: 2.00 with df (48) at $P < 0.05$. The comparison of posttest attitude scores in both the groups showed that calculated unpaired t value was 11.19 which was higher than the tabulated value: 2.00 with df (48) at $P < 0.05$ which shows that the video assisted teaching program was highly affective and improving knowledge and attitude regarding prevention of cardiovascular complications among patients with Diabetic Mellitus. There was a weak positive correlation exist between post-test knowledge and attitude in both experimental and control group. There was no significant association between posttest knowledge and attitude score with the selected socio demographic variables except source of information in posttest knowledge score with socio-demographic variables in experimental group. **Conclusion:** The video assisted teaching program was highly effective in improving knowledge and attitude regarding prevention of cardiovascular complications among patients with diabetes mellitus.

KEY WORDS- Assess, knowledge, attitude, prevention, cardiovascular complications, diabetes mellitus

INTRODUCTION

Diabetes is a disease of the endocrine system where the body is not able to maintain the blood sugar at the required level for good health and well-being. It is estimated that 10-12% of the urban and 4-6% of rural population of Indians are now diabetic. There is also a corresponding increasing in the diabetic related complication which includes cardiovascular complications, diabetic neuropathy, diabetic retinopathy, and diabetic nephropathy. Cardiovascular complications are mainly responsible for the high morbidity and mortality in people with diabetes. The awareness for the importance of primary prevention increased lately and numerous strategies have been developed. A major problem of the primary prevention is the choice of the method applied for screening, the criteria used to classify risk patients, as well as the choice of therapy.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of video assisted teaching program in terms of knowledge and attitude regarding prevention of cardiovascular complications among patients with diabetes mellitus in selected hospitals at Meerut.

OBJECTIVES OF THE STUDY

1. To develop Video Assisted Teaching program regarding prevention of cardiovascular complications among patients with diabetes mellitus.
2. To assess the pretest and posttest level of knowledge and attitude on prevention of cardiovascular complications among patients with diabetes mellitus.
3. To evaluate the effectiveness of video assisted teaching program on prevention of cardiovascular complications among patients with diabetes mellitus.
4. To determine the co-relation between posttest knowledge and attitude score on prevention of cardiovascular complications among patients with diabetes mellitus
5. To find out the association between the posttest knowledge and attitude score on prevention of cardiovascular complications among patients with diabetes mellitus with their selected socio-demographic variables.

HYPOTHESES: At $P < 0.05$ level of significance

H1- There is a significant difference between pretest and posttest level of knowledge and attitude scores on prevention of cardiovascular complications among patients with Diabetic patients after video assisted teaching program in experimental group.

H2- There is a significant difference between posttest knowledge and attitude scores on prevention of cardiovascular complications among diabetic patients among experimental and control group.

H3- There is a significant relationship between knowledge and attitude score on prevention of Cardiovascular Complications among diabetic patients among experimental group and control group.

H4- There is a significant association between the posttest knowledge and attitude scores on prevention of cardiovascular complications among diabetic patients with their selected socio- demographic variables.

ASSUMPTIONS

1. The diabetic patients may have lack of knowledge and unfavorable attitude towards prevention of cardiovascular complications which will have an impact on healthy lifestyle.
2. The video assisted teaching program will improve the level of knowledge and attitude among diabetic patients on prevention of cardiovascular complications.

DELIMITATIONS OF THE STUDY

1. The study is limited to the diabetic patients from CSSH hospital.
2. The data collection is limited to only four weeks.

RESEARCH METHODOLOGY

Research approach: Quantitative research approach

Research design: Quasi experimental non-equivalent control group design

Setting of the study: For pilot study- Dr. Man Mohan Sharma's clinic, Meerut.

For main study- Chhatrapati Shivaji Subharti Hospital, Meerut.

Population: The population in this study included patients with type 1 & 2 Diabetes mellitus who were admitted in the medical wards of Chhatrapati Shivaji Subharti hospital, SVSU, Meerut.

Sampling technique: In the present study, non-probability purposive sampling technique was used

CRITERIA FOR SAMPLE SELECTION

Inclusion criteria

- Diabetic patients who are willing to participate in the study.
- Diabetic patient who knew to read and write in Hindi/English.
- Type 1 and type 2 diabetic patients.

Exclusion criteria

- Diabetes patient with cardiovascular complications.
- Diabetic patients who are critically ill.

SAMPLE SIZE

The sample size of the present study comprised of 50 diabetic patients who were admitted to the Chhatrapati Shivaji Subharti Hospital, at Meerut.

DATA COLLECTION

The data was collected by prior permission from the concerned authority. In the present study, data were collected by structured knowledge questionnaire to obtain the level of knowledge and attitude scale to assess the attitude level towards prevention of cardiovascular complications among the patients with type 1 and 2 diabetes mellitus admitted to the Chhatrapati Shivaji Subharti Hospital at Meerut.

DEVELOPMENT AND DESCRIPTION OF THE TOOLS

Instrument consist of three parts

SECTION A: Frequency and percentage distribution of demographic variables (Age, gender, education, physical activity, dietary pattern, personal habits, family history and source of information)

SECTION B: Assessment of pretest and posttest knowledge and attitude regarding prevention of cardiovascular complications among patients with Diabetic Mellitus.

SECTION C: Correlation between knowledge and attitude regarding prevention of cardiovascular complications among patients with diabetic Mellitus.

SECTION D: Association between posttest scores of knowledge and attitude regarding prevention of cardiovascular complications with their selected socio-demographic variables.

Section A: DISTRIBUTION OF DEMOGRAPHIC VARIABLES OF THE SAMPLES:

Table:1 Frequency and percentage distribution of demographic characteristics of diabetic patients in experimental and control group.

N=50

S.n	Socio-demographic variables	Experimental group(n=25)		Control group(n=25)	
		Frequency	Percentage	Frequency	Percentage
1	Age in year				
	25-35	1	4%	2	8%
	36-45	10	40%	13	52%
	46-55	10	40%	8	32%
	56-60	4	16%	2	8%
2	Gender				
	Male	14	56%	12	48%
	Female	11	44%	13	52%
3.	Education				
	No formal education	2	8%	4	16%
	Primary education	6	24%	11	44%
	Secondary education	14	56%	9	36%
	Graduation	3	12%	12	4%
	Post graduation	0	0%	0	0%
4.	Physical activity				
	Sedentary worker	2	8%	0	0%
	Light worker	3	12%	5	20%
	Medium worker	12	48%	13	52%
	Heavy worker	8	32%	7	28%
5.	Dietary pattern				
	Vegetarian	17	68%	15	60%
	Non vegetarian	8	32%	10	40%
6.	Personal habits				

	Tobacco chewing	1	4%	7	28%
	Alcoholic	0	0%	0	0%
	Smoker	3	12%	6	24%
	None of the above	21	84%	12	48%
7.	Family history				
	Yes	14	56%	10	40%
	No	11	44%	15	60%
8.	Sources of information				
	Printed media	3	12%	8	32%
	Electronic media	6	24%	5	20%
	Health personnel	9	36%	5	20%
	Peer group	7	28%	7	28%

DATA PRESENTED IN TABLE OF EXPERIMENTAL GROUP

As per age, majority of the samples (40%) were in the age group between 36-55 years. As per gender difference majority of the sample were males i.e 14 (56%). As per education, majority of the sample (14) had secondary education i.e 56%, As per physical activity, majority of samples i.e 12 (48%) were medium workers. As per dietary pattern of the samples, majority of the samples i.e 17(68%) were vegetarians. As per personal habits of the samples, majority of the sample i.e 21(84%) does have any habits of tobacco chewing, alcoholism or smoking. As per family history of having any cardiovascularrelated disease, majority i.e., 14 (56%) of them have family history of CVD. As per the sources of information, nearly 9 (36%) samples have got information from health personnel.

DATA PRESENTED IN TABLE OF CONTROL GROUP

As per age, majority of the samples 13(52%) were in the age group between 36-45 years. As per gender difference majority of the sample were females i.e 13 (52%). As per education, majority of sample 11 had primary education i.e (44%). As per physical activity, majority of samples i.e 13 (52%) were medium workers. As per dietary pattern of the samples, majority of the samples i.e 15(60%) were vegetarians. As per personal habits of the samples, majority of the sample i.e 12(48%) does have any personal habits like tobacco chewing, alcoholism or smoking. As per family history of having any cardiovascular related disease, majority i.e., 15 (60%) of them do not have any family history of CVD. As per the sources of information, majority 8 (32%) have got information from printed media.

SECTION -B

Table-2 Assessment of knowledge regarding prevention of cardiovascular complications among diabetics through a structured knowledge questionnaire before and after administration of VAT regarding prevention of cardiovascular complications in experimental and control group.

N=50

S.no	Level of assessment of knowledge	Experimental group		Control group		P- value
		Pre-test	Post-test	Pre-test	Post-test	
		F	F	F	F	
1.	Adequateknowledge	0	4	0	0	P<.001
2.	Moderate Knowledge	0	8	0	3	
3.	InadequateKnowledge	25	13	25	22	

The above table shows that in experimental group pretest, all the samples i.e. 25 diabetic patients had inadequate knowledge. In contrary, the post test scores shows that 13 of diabetic patient had inadequate knowledge followed by 8 had moderate knowledge and 4 of them had adequate knowledge regarding prevention of cardiovascular complications.

In control group pretest, all the samples i.e., 25 of them had an inadequate knowledge whereas on the other hand, post test score shows that 22 of them had inadequate knowledge and 3 of them had moderate knowledge regarding prevention of cardiovascular complications.

Table 3: Assessment of attitude regarding prevention of cardiovascular complication among diabetics before and after administration of VAT in experimental and control group.

N=50

S.no	Assessment of attitude	Experimental group		Control group		P- value
		Pre-test	Post-test	Pre-test	Post-test	
		F	F	F	F	
1.	Favorableattitude	0	16	0	1	P<.001
2.	Moderate	21	9	23	24	
3.	Unfavorableattitude	4	0	2	0	

The above table shows that in experimental group pretest, majority i.e., 21 of the diabetic patients had moderate attitude toward prevention of cardiovascular complications. On the other hand, the post test result shows that majority i.e., 16 of the diabetic patients had favorable attitude which revealed that administration of VAT is effective in increasing the attitude level of the sample toward prevention of cardiovascular complications.

In control group pretest and posttest results revealed that majority i.e., 23 (pretest) and 24 (posttest) of the diabetic patients had moderate attitude towards prevention of cardiovascular complications

Table 4: Table showing comparison of Mean, Mean Difference, Standard Deviation (SD), SD Difference (SDD) and Paired t- value of pre and posttest knowledge score in experimental group.

n=25

Knowledge of experimental group.	Mean Scores	MD	SD	SDD	Paired t-value	P value
Pre-test	9.40	7.2	1.78	2.18	9.7679	P<.001
Post-test	16.60		3.96			

Df (24), 't' tabulated value- 2.06 at 0.05 level of significance (P<0.05)

Data represented in table shows the comparison of mean pre and post-test knowledge score regarding prevention of cardiovascular complications in experimental group. The mean posttest knowledge score (16.60) was significantly higher than the mean pretest knowledge score (9.40) with the mean difference of 7.2. The pre (1.78) and posttest (3.96) standard deviation was compared with the SD difference 2.18. The obtained paired calculated t-value was 9.7679 which was higher than the tabulated value 2.06 at df 29 at 0.05 level of significance. Hence null hypothesis H_0 is rejected so accepted alternative hypothesis (H_1). So it is statistically interpreted that there was an increase in the knowledge level of the diabetic patients after administration of VAT program on prevention of cardiovascular complications.

Table 5: Table showing comparison of Mean Difference, Standard Deviation (SD), SD Difference (SDD) and t- value of pre and posttest knowledge score in control group.

Knowledge of control group	Mean	MD	SD	SDD	Paired t-value	P value
Pre-test	9.80	2.08	1.71	0.37	7.52	P<.001
Post-test	11.88		2.08			

n =25

df(24), 't' tabulated value- 2.06 at 0.05 level of significance (P<0.05)

The mean post-test knowledge score (11.88) was significantly higher than the mean pre-test knowledge score (9.80) with the mean difference of 2.08. The pre (1.71) and post-test (1.59) standard deviation was compared with the SD difference 0.37. The obtained paired calculated t-value was 7.52 which was higher than the tabulated value 2.06 at df 24 at 0.05 level of significance. Hence null hypothesis Ho1 is rejected and accepted alternate hypothesis (H1). It is statistically indicated that there was an increase in the knowledge level of the diabetic patients without administration of VAT program on prevention of cardiovascular complications.

TABLE 6: Table showing comparison of Mean Difference, Standard Deviation (SD), SD Difference (SDD) and t- value of pre and post-test attitude score in experimental group.

n=25

Attitude of experimental group	Mean	MD	SD	SDD	Pairedt-value	P value
Pre-test	40.84	17.16	0.56	0.1	22.2351	P<.001
Post-test	58.00		0.66			

df(24), 't' tabulated value- 2.06 at 0.05 level of significance (P<0.05)

Data represented in table shows the comparison of mean pre and post-test attitude score regarding prevention of cardiovascular complications in experimental group. The mean post test attitude score (58.00) was significantly higher than the mean pre test attitude score (40.84) with the mean difference of 17.16. The pre (0.56) and post test (0.66) standard deviation was compared with the SD difference 0.1. The obtained paired calculated t-value was 22.23 which was higher than the tabulated value 2.06 at df 24 at p<0.05 level of significance. Hence null hypothesis Ho1 is rejected and accepted alternate hypothesis (H1). So it is statistically interpreted that there was an increase in the attitude level of the diabetic patients after administration of VAT program on prevention of cardiovascular complications.

TABLE 7: Table showing comparison of Mean Difference, Standard Deviation (SD), SD Difference (SDD) and t- value of pre and posttest attitude score in control group.

Attitude of control group	Mean	MD	SD	SDD	Pairedt-value	P value
Pre-test	43.08	4.32	2.93	0.45	5.52	P<.001
Post-test	47.40		3.38			

n =25

Df (24), 't' tabulated value- 2.06 at 0.05 level of significance (P<0.05)

The mean posttest knowledge score (47.40) was significantly higher than the mean pretest knowledge score (43.08) with the mean difference of 4.32. The pre (2.93) and posttest (3.38) standard deviation was compared with the SD difference 0.45. The obtained paired calculated t-value was 5.52 which was higher than the tabulated value 2.06 at df 24 at 0.05 level of significance. Hence null hypothesis Ho1 is rejected and accepted alternate hypothesis (H1). So it is statistically interpreted that there was an increase in the attitude level of the diabetic patients without administration of VAT program on prevention of cardiovascular complications.

TABLE 8: Table showing comparison of Mean Difference, Standard Deviation (SD), SD Difference (SDD) and unpaired t- value of posttest knowledge scores between experimental and control group. N=50

Comparison of Post test knowledge scores in experimental group and Control group	Mean	MD	SD	SDD	SED	Unpairedt – Value	P value
Experimental group mean	16.60	4.4	3.96	1.88	0.894	4.91	P<.001
Control group mean	12.20		2.08				

df(48), 't' tabulated value- 2.00 at 0.05 level of significance (P<0.05)

Data represented in table shows that the experimental posttest mean score was significantly higher than the posttest mean score of control group with the mean difference of (4.4), the SD difference was (1.88) with standard error (0.894). The obtained unpaired t test value was significantly higher i.e 4.91 than the tabulated t-value which was 2.00 at df 48 at p<0.05 level of significance. Hence null hypothesis (Ho2) is rejected and accepted alternative hypothesis (H2). So it is statistically interpreted that in experimental group, the VAT program was highly effective in improving the level of knowledge regarding prevention of cardiovascular complications among diabetic patients.

Table 9: Table showing comparison of Mean, Mean Difference, Standard Deviation (SD), SD Difference (SDD) and unpaired t- value of posttest attitude scores between experimental and control group. N=50

Comparison of Posttest knowledge scores in attitude group and Controlgroup	Mean	MD	SD	SDD	SED	Unpairedt - Value	P value
Experimentalgroup mean	58		3.32				
Control groupmean	47	11	3.38	0.06	0.947	11.19	P<.001

df(48), 't' tabulated value- 2.00 at 0.05 level of significance (P<0.05)

Data represented in table shows that the experimental posttest mean score was significantly higher than the posttest mean score of control group with the mean difference of (11), the SD difference was (0.06) with standard error (0.947). The obtained unpaired t test value was significantly higher i.e 11.19 than the tabulated t-value which was 2.00 at df 48 p<0.05 level of significance. Hence null hypothesis (H₀) is rejected so accepted alternative hypothesis (H₂). So it is statistically interpreted that in experimental group, the VAT program was highly effective in improving attitude regarding prevention of cardiovascular complications among diabetic patients.

SECTION: C

Table 10: Correlation between posttest knowledge and attitude scores of experimental and control group.
N=50

S.no.	Group	r -value
1.	Experimental	0.025
2.	Control	0.009

- The above table reveals that the correlation (r-value) between post-test knowledge and attitude scores among experimental and control group were 0.025 and 0.009 respectively. Hence it is proved that there was a weak positive relationship exists between post-test knowledge and attitude score in experimental and control group. Since, the calculated 'r' value is in the range of -1 to +1 and is statistically significant. Hence the null hypothesis (H₀) is rejected and alternate hypothesis (H₃) is accepted.

SECTION- D

Table 11: Chi square value showing an association between post-test scores of knowledge among diabetic patients with their selected socio-demographic variables in experimental group. n=25

S.N	Socio-Demographic variables	Post-test knowledge in Experimental Group			χ^2 value		Df	Level of significance at 0.05	P value
		Adequate knowledge	Average knowledge	In-adequate knowledge	Calculated value	Table value			
1.	Age in years				9.735	12.59	6	NS	.13
	25-35	0	1	0					
	36-45	4	2	4					
	46-55	0	3	7					
	56-60	0	2	2					
2.	Gender				3.18	5.99	2	NS	.20
	Male	3	3	8					
	Female	1	5	5					
3.	Education				6.627	12.59	6	NS	.35
	No formal education	0	1	1					
	Primary education	0	1	5					
	Secondary education	3	4	7					
	Graduation	1	2	0					
	Post-graduation	0	0	0					
4.	Physical activity.				7.041	12.591	6	NS	.31
	Sedentary worker	0	0	2					
	Light worker	0	1	2					
	Medium worker	4	4	4					
	Heavy worker	0	3	5					
5.	Dietary pattern				3.259	5.99	2	NS	

	Vegetarian	4	6	7						.19
	Non vegetarian	0	2	6						
6.	Personal habits									
	Tobacco chewing	0	0	1	2.93	9.487	4	NS		.56
	Alcohol	0	0	0						
	Smoker	0	2	1						
	None of the above	4	6	11						
7.	Family history				4.90	5.99	2	NS		.08
	Yes	4	5	5						
	No	0	5	8						
8.	Source of information				19.070	12.59	6	S		.004
	Printed media	0	1	2						
	Electronic media	0	2	4						
	Health personal	4	5	0						
	Peer group	0	0	7						

*At 0.05 level of significance

H4- There was no significant association between post-test practice scores with the selected demographic variables (Age, gender, education, physical activity, dietary pattern, personal habits, family history except source of infection). The table value was higher than the calculated value at $P < 0.05$ level of significance. Hence null hypothesis H_{04} is accepted and research hypothesis H_4 is rejected

Table 12: Chi-square value showing an association between post-test attitude among diabetic patients with their selected socio- demographic variables.

n=25

S.N	Socio- Demographic variables	Post-test knowledge in Experimental Group			χ^2 value		Df	Level of significance at 0.05	P value
		Adequate- knowledge	Average knowledge	In- adequate knowledge	Calculated value	Table value			
1.	Age in years				0.873	7.81	3	NS	.83
	25-35	1	0	0					
	36-45	6	4	0					
	46-55	7	3	0					
	56-60	3	1	0					
2.	Gender				0.201	3.84	1	NS	.65
	Male	9	5	0					
	Female	8	3	0					
3.	Education				1.912	7.81	3	NS	.59
	No formal education	2	0	0					
	Primary education	3	3	0					
	Secondary education	10	4	0					
	Graduation	2	1	0					
	Post-graduation	0	0	0					
4.	Physical activity.				6.234	7.81	3	NS	.10
	Sedentary worker	1	1	0					
	Light worker	1	2	0					
	Medium worker	11	1	0					
	Heavy worker	4	4	0					

5.	Dietary pattern				0.264	3.84	1	NS	.606
	Vegetarian	11	6	0					
	Non vegetarian	6	2	0					
6.	Personal habits				0.490	5.99	2	NS	.782
	Tobacco chewing	1	0	0					
	Alcohol	0	0	0					
	Smoker	2	1	0					
	None of the above	14	7	0					
7.	Family history				0.171	3.84	1	NS	.678
	Yes	10	4	0					
	No	7	4	0					
8.	Source of information				1.803	7.81	3	NS	.61
	Printed media	3	0	0					
	Electronic media	4	2	0					
	Health personal	6	3	0					
	Peer group	4	3	0					

*At 0.05 level of significance

There was no significant association between posttest attitude score with the selected socio-demographic variables (Age, gender, education, physical activity, dietary pattern, personal habits, family history and source of information). The table value was higher than the calculated value at $p < 0.05$ level of significance. Hence null hypothesis H_{04} is accepted and alternate hypothesis H_4 is rejected.

NURSING IMPLICATIONS:

Nursing Practice:

- Nurses need to take up the responsibility to educate and create awareness among diabetic patients to improve their knowledge and thus reduce the mortality-morbidity rate caused by peripheral vascular disease.
- Nurses should use video assisted teaching program as a modality to increase the level of knowledge

and attitude in their clinical area as it is interesting, harmless and highly effective.

Nursing Education:

- Nurse educators should consider the inclusion of complementary and alternative therapies in nursing curricula with increasing Inherent in the nurse's role is the ability to assess, intervene and evaluate preventive, supportive, and restorative functions of a patient's physical, emotional, mental and spiritual domains.
- Nurse educators should plan and implement the workshops and in-service education to update the knowledge of nurses, who plays a key role in assessing and managing the diabetic patients.

Nursing Administration:

- The nurse administrator should conduct surveys and organize teaching programmes to create awareness on ill effects of peripheral vascular disease in community setting and implement mass media interventions to make the public aware of peripheral vascular disease.

Nursing Research:

- Evidence based nursing practice must take higher profile in order to increase awareness on prevention of peripheral vascular disease among diabetic patients and help them to adopt lifestyle modification.

SUMMARY:

It was found that Video Assisted Teaching program was effective in improving the knowledge and attitude regarding prevention of cardiovascular complication among patients with diabetes mellitus.

CONCLUSION

There was a knowledge deficit and unfavorable attitude regarding prevention of cardiovascular complications among diabetic patients. The video assisted teaching program was found to be effective in increasing the knowledge of diabetic patients and change in the attitude in the experimental group regarding prevention of cardiovascular complication among diabetic patients. The findings of the study suggest that it is mandatory to educate diabetic patients. So, according to the study it is recommended to implement various educational intervention packages for the diabetic mellitus patients regularly to increase their knowledge and the attitude towards prevention of cardiovascular complications.

RECOMMENDATIONS

1. This study can be replicated in large samples so that findings can be generalized.
2. A comparative study can be done to see the difference in the effect of the video assisted teaching program regarding prevention of cardiovascular complication in government, urban and rural hospitals.
3. A follow-up study can be conducted to assess the knowledge and attitude of diabetic patients regarding prevention of cardiovascular complication.
4. A study can be conducted to identify the educational need of diabetic patients regarding prevention of cardiovascular complication.

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