

Research Article

A Study to Assess the Effectiveness of Video Assisted Program on Knowledge Regarding Self-Care Management of Diabetes Mellitus Among the Patients with Diabetes Mellitus

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A B S T R A C T

Introduction: Diabetes mellitus is a metabolic disorder characterized by hyperglycemia due to defective insulin secretion or action, leading to significant long-term complications such as damage to the kidneys, eyes, nerves, heart, and blood vessels.

Aim: The study aimed to assess the pretest and post-test knowledge scores regarding self-care management of diabetes mellitus among patients in selected community areas of Rainawari Srinagar. It also sought to evaluate the effectiveness of a Video Assisted Teaching program in improving self-care knowledge and to explore the relationship between pretest knowledge scores and demographic variables.

Method: A quantitative research approach with purposive non-probability sampling was used. The study included 60 diabetic patients from Rainawari Srinagar. Data was collected using a structured interview schedule covering socio-demographic details, clinical information, and 42 items in three domains: knowledge, comprehension, and application.

Results: The majority of subjects were aged 50-60 years, with most having primary education. Pretest results showed that 4% had inadequate knowledge, while post-test results revealed that 97.7% had good knowledge. The mean pretest score was 13.45 (± 3.959), and the post-test score was 35.88 (± 2.366), with a mean difference of 2.43 and a p-value of <0.001 , indicating significant improvement. Pretest knowledge scores showed significant associations with socio-demographic variables.

Conclusion: The study concluded that the Video Assisted Teaching program was effective in improving the knowledge of diabetic patients regarding self-care management.

Keywords: Video Assisted Teaching Program, Knowledge, Diabetic Patients.

Introduction

Diabetes mellitus is a group of disease involving carbohydrate, lipid and protein metabolism. It is characterized by persistent hyperglycemia which results from defects in insulin secretion or action of both. Diabetes mellitus has been known since antiquity. Description have been found in the egyptian papyri, in ancient Indian and chinese medical literature as well as in the work of ancient greek and Arab physician. In the 2nd century AD Atrous Cappadocia provided he first accurate description of Diabetes, while in 17th century Thomas Willis diabetes added the term melitus to the disease, in an attempt to describe the extremely sweet taste of the urine. The important work of the 19th century French physiologist Claude Bernard on the glycogenic action of the liver, paved the way for further progress in the study of the disease. In 1889, oskar Minkowski and Joseph Von Mering performed their famous experiment of removing the pancreas from a dog and producing severe and fetal diabetes. In 1921, Frederick Bating and Charles Best extended Minkowski and Mering's experiment. They isolated insulin from pancreatic islets and administrated to patients suffering from diabetes, saving the lives of millions and inaugurating a new era in Diabetes treatment.¹

WHO defines diabetes as a chronic metabolic disease that occurs when the body's blood glucose levels are too high. This can happen wen the pancreas doesn't produce enough insulin, or when the body can't use the insulin it produces properly. Insulin is a hormone that regulates blood glucose levels, helping glucose get into cells to be used for energy. When there's not enough insulin or the body doesn't use it properly, glucose builds up in the bloodstream, causing high blood sugar or hyperglycemia. The American Diabetes Association uses the acronyms DIABETES and CAUTION to help identify the warning signs of Diabetes: Drowsiness, Itching, A family history of Diabetes, Blurred vision, Excessive Weight, Tingling sensation or pain in extremities, Easy fatigue, Skin infections, Constant urination, Abnormal thirst, Unusual hunger, The rapid loss of weight, Irritability, Obvious weakness and fatigue and Nausea & Vomiting.²

A patient with Diabetes Mellitus has the potential for hyperglycemia. The pathology of DM can be unclear since several factors can often contribute to the disease. Hyperglycemia alone can impair pancreatic beta-cell function and contributes to impaired insulin secretion. Consequently, there is a vicious cycle of hyperglycemia leading to an impaired metabolic state. Blood glucose levels above 180mg/dl are often considered hyperglycemia in this context, though because of the variety of mechanisms, there is no clear cutoff point. Patients experience osmotic diuresis due to saturation of glucose transporters in the

nephron at higher blood glucose levels. Although the effect is variable, serum glucose levels above 250 mg/dl are likely to cause symptoms of polyuria and polydipsia.³

Insulin resistance is attributed to excess fatty acids and pro-inflammatory cytokines, which leads to impaired glucose transport and increases fat breakdown. Since there is an inadequate transport response or production of insulin, the body responds by inappropriately increasing glucagon, thus further contributing to hyperglycemia. While insulin resistance is a component of T2DM, the full extent of the disease results when the patient has inadequate production of insulin to compensate for their insulin resistance.⁴

A study was conducted and a sample of 60 was selected by using simple random sampling technique out of which 30 sample for experimental group and 30 for control group. Data was collected by using structured knowledge questionnaire, attitude scale and practice check list. The mean post-test scores of knowledge (77.3), attitude (67.25) and practice (78.89) of experimental group is higher than mean post-test score of knowledge (46.27), attitude (44.73) and practice (53.33) of control group. This study reveals that video assisted teaching program had been effective in improving the knowledge, attitude and practice on self-care management among patients with diabetes mellitus.

A study was conducted to assess the effectiveness of video assisted teaching on self administration of insulin among diabetic patients in selected primary health centers at chickaballapur district, Karnataka. Diabetes mellitus is recognized as one of the leading cause of death and disability worldwide, India is in leading position with largest number of Diabetes. The physical, social and economic factors involved in the occurrence and management of diabetes. As per the surveillance of WHO, it is expected that approximately 60 million people by the year 2017 and 80 million people in the world by 2030 in India and 366 million people in the world by 2030 will be affected by Diabetes Mellitus.

Objectives

1. To assess the pretest knowledge scores regarding self-care management of diabetes mellitus among patients with Diabetes Mellitus in selected community areas of Rainawari Srinagar.
2. To assess the post-test knowledge scores regarding self-care management of diabetes mellitus among patients with diabetes mellitus in selected community areas of Rainawari Srinagar.
3. To assess the effectiveness of Video Assisted teaching program by comparing pre and post-test knowledge scores regarding self-care management on diabetes mellitus among patients with Diabetes mellitus in selected community areas Rainawari Srinagar.

4. To associate the pretest knowledge scores regarding self-care management of Diabetes mellitus among patients with diabetes mellitus in selected community areas Rainawari Srinagar with selected demographic variables (age, gender, education, occupation, income per month, duration of illness, marital status, height, weight, BMI, are u on injection insulin,family history of diabetes mellitus etc)

Methodology

A quantitative research approach with purposive non-probability sampling technique was selected to carry out this study. Permission was obtained from the concerned authorities Medical officer Rainawari Srinagar to conduct the final study. Ethical clearance was obtained from Institutions Ethics Committee (ICE). Permission was also accorded from the concerned authorities principal of Bibi Halima college of nursing and medical technology to conduct the study through total enumerate sampling on selected 60 Diabetes mellitus. Permission was also obtained by taking informed consent individually from each Diabetic patients, prior to his/ her inclusion as sample in the study. Privacy, confidentiality and anonymity were being guarded. After seeking permission to conduct the study, data was collected from 60 Diabetic patients of various areas of community Rainawari Srinagar. The data were collected by Questionnaire method and standardized tool was structured interview schedule, 7 items for socio-demographic variables, 6 items for clinical information of Diabetic patients and 42 items were distributed according to the content areas based on three domain knowledge,

comprehension and application. To determine the content validity, the tool (structured interview schedule) along with the objectives of the study, content validity certificate and evaluation criteria were submitted to 10 research experts and clinicians specialized in the concerned field. Suggestions and recommendations given by the experts were accepted and necessary corrections were done to modify the tool. The reliability of the questionnaire and standardized interview schedule tool was determined by inter-rater method'. Reliability computed for assessing socio-demographic variables was $r = 0.842$.

Results

Most of the study subjects were in the age group of 41-50 years (40.0%), followed by 51-60 years (43.3%), 30-40 years (6.7%) and >60 years (10.0%), females make up the majority at 58.3%, with males accounting for 41.7% of participants, the highest percentage of participants have primary education (41.7%) followed by matric pass (31.7%), secondary education (10.0%) and illiterates were (16.7%), housewives represent the largest group at 41.7 %, followed by non-professional (40.0) and professionals (18.3%). The majority of participants earn $\leq 20,000$ rupees per month (55.0%), followed by 20,000-30,000 rupees (33.3%), $\geq 40,000$ rupees (5.0%) and 30,000-40,000 rupees (6.7%). the highest percentage of participants have had an illness for 3-5 years (48.3%), majority of participants are married (86.7%), 55.0% of participants are on injection insulin, 50.0% have family history of Diabetes mellitus, 450% were having the other health problems, most common BMI category is 18.5-24.9 (55.0%) depicted in table 1.

Table 1. Distribution of Diabetic patients by Socio-demographic variables and clinical information variables

N = 60

Variables	Opts	Percentage	Frequency
Age (in years)	30-40 years	6.7%	4
	41-50 years	40.0%	24
	51-60 years	43.3%	26
	>60 years	10.0%	6
Gender	Male	41.7%	25
	Female	58.3%	35
Education	Primary	41.7%	25
	Matric	31.7%	19
	Secondary	10.0%	6
	Illiterate	6.7%	10
Occupation	Professional	18.3%	11
	Non-professional	40.0%	24
	housewife	41.0%	25

Income Per month (in rupees)	≤ 20,000	55.0%	33
	20,000 -30,000	33.3%	20
	30,000 -40,000	6.7%	4
	≥ 40,000	5.0%	3
Duration of illness	< 2 years	23.3%	14
	3-5 years	48.3%	29
	6-8 years	23.3%	14
	9 years	5.0%	3
Marital status	Married	86.7%	52
	unmarried	8.3%	5
	Divorced	5.0%	3
Do you have family history of Diabetes mellitus	yes	50.0%	30
	No	50.0%	30
Are you on injection insulin	yes	55.0%	33
	No	45.0%	27
Do you have any other health problem	yes	45.0%	27
	No	55.0%	33
Body mass Index	Less than 18.5	0.0%	0
	18.5-24.9	55.0%	33
	25-29.9	41.7%	25
	30 or higher	3.3%	2

Table 2. Frequency and percentage distribution of pretest level of knowledge scores

N = 60

Score level	Frequency.(f)	Pct (%)
Inadequate knowledge scores(0-14)	44	73.3%
Moderate knowledge (15-28)	16	26.7%
Adequate knowledge (29-42)	0	0.0%

In pretest Assessment, Most of the subjects 73.3% had inadequate knowledge, 26.7% had moderate knowledge and 0.0% were adequate knowledge .

The pretest mean score is 13.45, indicating the average score attained by the participant before the intervention, standard deviation of 3.959, the median score which

represents the middle value in this distribution of pretest knowledge scores is 12. this indicates that half of the participants scored below 12, while the other half scored above it, the maximum pretest knowledge score recorded is 26 while the minimum is 5, the range is 21 and the mean percentage is 32.00% (table.3)

Table 3. Descriptive statistics of pretest level of knowledge scores

Descriptive statistics	Mean & standard deviation	Median score	Maximum	Minimum	Range	Mean %
Pretest knowledge scores	13.45 ± 3.959	12	26	5	21	32.00

Most of the study subjects 96.7% have had adequate knowledge scores, 3.3 % had moderately knowledge score and 0.0% had inadequate knowledge scores after the post test.(table.4). below

The mean post-test knowledge score is 35.88, standard deviation is 2.366, median score is 36 , the maximum post-test knowledge score recorded is 39, while the minimum is 27, range is 12 and mean percentage is 85.40% suggests a high level of proficiency among participants, reflecting the effectiveness of the intervention in improving knowledge levels (table 5

A significant positive co-relation between pretest and post test knowledge scores was found I,e 0.84 with a p-value of,

$p < 0.001$. the mean+-standard deviation of pretest score was 13.45 +-3.959 and the mean +-standard deviation of post-test score was 35.88+-2.366 (table 6).

A significant association was found between the pretest knowledge score and socio-demographic variable I,e income per month ($p = 0.020$) at $p \leq 0.05$ level of significance. While the other socio-demographic variables such as age($p=0.644$), gender($p=0.693$), education($p=0.802$),occupation($p=0.172$), duration of illness($p=0.383$), marital status($p=0.197$), do you have family history of diabetes mellitus($p=1.000$), do you have any other problem($p=0.026$), are you on injection insulin($p=0.481$), body mass index($p=0.236$) at $p=0.05$ level of significance (table .7).

Table 4.Criteria measure of post-test knowledge scores

N =60

Score level	Frequency(f)	Pct (%)
Inadequate knowledge scores	0	0.0%
moderately knowledge scores	2	3.3%
Adequate knowledge scores	58	96.7%

Table 5.Descriptive statistics of post-test level of knowledge

N =60

Descriptive statistics	Mean &standard deviation	Median score	Maximum	Minimum	Range	Mean %
Post-test knowledge score	35.88 +-2.366	36	39	27	12	85.40

Table 6.Comparison of frequency and percentage distribution of pretest and post-test level of knowledge

N =60							
Paired t-test	Mean +-standard deviation	Mean %	range	Mean diff	Paired t-test p-value	P value	Table vale
Pretest knowlege	13.45 +-3.959	32.00	5-26	22.430	31.755	<0.001	2.00
Post-test knowledge	35.88+-2.366	85.40	27-39				
Result				significant			

Table 7.Association of pretest knowledge scores with selected demographic variables

Variables	Opts	Ade. knowledge scores	Mod. knowledge scores	Inadequate knowledge	Chi test	P value	df	T value	Result
Age (in years)	30-40 years	0	2	2	1.668	0.644	3	7.815	Not *sig
	41-50 years	0	7	17					
	51-60 years	0	6	20					
	>60 years	0	1	5					
Gender	Male	0	6	19	0.156	0.693	1	3.841	Not *sig
	female	0	10	25					

Education	Primary	0	5	20	0.996	0.802	3	7.81	Not *sig
	Matric pass	0	6	13					
	secondary	0	2	4					
	illiterate	0	3	7					
occupation	Professional	0	5	6	3.517	0.172	2	5.991	Not *sig
	Non-professional	0	7	17					
	House-wife	0	4	2					
Income per month(in rupees)	≤ 20,000	0	8	25	9.832	0,020	3	7.815	*sig
	20,00-30,000	0	5	15					
	30.000-40,000	0	0	4					
	≥ 40,000	0	3	0					
Duration of illness	< 2 years	0	2	12	0.057	0.383	3	7.815	Not *sig
	3-5 years	0	9	20					
	6-8 years	0	5	9					
	9 years or above	0	0	3					
Marital status	Married	0	12	40	3.252	0.197	2	5.991	Not *sig
	Unmarried	0	2	3					
	Divorced	0	2	1					
Do you have family history of diabetes mellitus	yes	0	8	22	0.000	1.000	1	3.841	Not *sig
	No	0	8	22					
Are you on injection insulin	yes	0	10	23	0.496	0.481	1	3.841	Not *sig
	No	0	6	21					
Do you have any other problem	yes	0	11	16	4.972	0.026	1	3.841	Not *sig
	No	0	5	28					
Body mass index(BMI) category	Less than 18.5	0	0	0	2.885	0,236	2	5.991	Not *sig
	18.5-24.9	0	6	27					
	25-29.9	0	9	16					
	30 Or above	0	1	1					

Discussion

The analysis was done based on sample characteristics, clinical information, knowledge of patients regarding self-care management of diabetes mellitus, effectiveness of video assisted teaching program and association of pretest knowledge scores of patients with diabetes mellitus and selected demographic variables. Most of the subjects 44(73.3%) had inadequate knowledge scores regarding the self-care management of diabetes mellitus, 16(26.7) were having moderate knowledge and 0(0.0%) having adequate pretest knowledge scores. The finding of this study was supported by a study conducted in Karachi showed that around 54% of patients had poor knowledge scores, 34 %

had fair knowledge and rest of 13% had good knowledge, this suggests that there is a lack of knowledge among patients with diabetes mellitus before intervention.

The mean post-test knowledge scores obtained by patients was improved to 35.88% from a mean pretest knowledge score of 13.45 by implementing the intervention through video assisted teaching program, 3.3 % patients were having moderate knowledge and remaining 96.7% had acquired adequate knowledge scores regarding self-care management of diabetes mellitus. The findings were supported by a study conducted in Bangalore, the mean post-test score 85.40% was apparently higher than the mean pretest score (32.0%) indicating that the program was effective.

the paired t-test analysis conducted on pretest and post-test scores of subjects yielding statistically significant results, prior to intervention, the mean pretest score was 13.45 with a standard deviation of 3.959, representing an average percentage score of 32.00 %. the range of score varied from 5 to 26. following the intervention, mean post-test knowledge score increased significantly to 35.88 with a smaller standard deviation of 2.366. The corresponding to a remarkable average percentage score of 85.40% with a range of scores spanning from 27 to 39. the findings of this study was supported by Jincy Ealias, Dr Binu Babu, the findings was that the mean pretest score of knowledge increased from 5.13 to 15.94 in post-test and mean pretest score is increased from 4.00 to 8.80.

A significant association was found between the pretest and demographic variable I,e income per month ($p=0.020$). while as no significant association with other demographic variables ,age($p=0.644$), gender($p=0.693$), education($p=0.802$), occupation ($p=0.172$), duration of illness($p=0.383$), marital status($p=0.197$), do you have family history of diabetes mellitus($p=1.00$), are you on injection insulin ($p=0.481$), do you have any other problem ($p=0.026$) and BMI($p=0.236$).

Conclusion

The study was concluded with the aim of assessing the effectiveness of video assisted teaching program on knowledge regarding self-care management of diabetes mellitus among patients with diabetes mellitus.

The study findings concluded that implementing a video assisted teaching program was effective in increasing the knowledge regarding self-care management of diabetes mellitus among diabetic patients.

Recommendations

1. A similar study can be replicated on a large sample using simple random sampling to generate the findings.
2. A similar study can be replicated among the nursing students.
3. A descriptive study can be conducted to assess the knowledge regarding self-care management of diabetes mellitus.

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Conflicts of interest: None

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