International Journal of Trend in Scientific Research and Development (IJTSRD)
Volume 10 Issue 3, May-Jun 2026 Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470

An Experimental Study to Evaluate the Effectiveness of A Video-Assisted Teaching Programme Regarding Lifestyle Modification for Prevention of Myocardial Infarction among Diabetes Mellitus Patients in Selected Hospitals at Dewas District

Dr. Kamlesh Kumar Mewada

Professor, Amaltas Institute of Nursing Science, Dewas, Madhya Pradesh, India

ABSTRACT

Background: Diabetes Mellitus (DM) accelerates macrovascular complications, increasing Myocardial Infarction (MI) risks., this study investigated the effectiveness of a Video-Assisted Teaching Programme (VATP) on lifestyle modification knowledge for MI prevention among diabetic patients in Dewas District.

Methods: A quasi-experimental, one-group pre-test/post-test study was conducted among 60 Type 2 DM patients selected via simple random sampling. Knowledge was assessed using a 24-item questionnaire before and 7 days after a 45-minute VATP session.

Results: The mean knowledge score increased significantly from 10.45 (43.54%) to 20.35 (84.79%), showing an enhancement of 9.90 (41.25%). The paired t -test value was 44.12 (df=59, $p < 0.05$). Baseline scores were significantly associated with education and prior information sources.

Conclusions: The VATP is highly effective in improving preventive knowledge. Incorporating structured multimedia education into hospital services is an efficient strategy to lower cardiovascular risks.

How to cite this paper: Dr. Kamlesh Kumar Mewada "An Experimental Study to Evaluate the Effectiveness of A Video-Assisted Teaching Programme Regarding Lifestyle Modification for Prevention of Myocardial Infarction among Diabetes Mellitus Patients in Selected Hospitals at Dewas District" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-10 | Issue-3, June 2026, pp.587-591, URL: www.ijtsrd.com/papers/ijtsrd102082.pdf

IJTSRD102082

INTRODUCTION

Diabetes Mellitus is a chronic metabolic disorder. Hyperglycemia accelerates endothelial damage, leading to a two-to-fourfold increase in acute Myocardial Infarction (MI) risks compared to non-diabetic populations.

Adopting targeted lifestyle adjustments-such as cardioprotective nutrition, planned exercise, strict drug compliance, and tobacco cessation-substantially mitigates this risk. However, baseline health literacy regarding macrovascular complications remains poor in regional settings.

Traditional health education often lacks long-term engagement. To address this gap, utilized a structured Video-Assisted Teaching Programme (VATP), providing a standardized, visually engaging alternative that helps patients overcome literacy barriers and understand essential cardiac self-care practices.

METHODS: A quasi-experimental study was conducted in selected clinics within Dewas District, Madhya Pradesh. A sample of 60 Type 2 Diabetes Mellitus patients was selected using simple random sampling based on specific criteria: aged 35–65 years, diagnosed for >6 months, and free from pre-existing coronary diseases.

The independent variable was a 45-minute researcher-developed VATP covering four core modules: the diabetes-MI link, nutritional modifications, planned exercise (150 mins/week), and pharmacological compliance.

Knowledge was measured at baseline (pre-test) and on day 7 post-intervention (post-test) using a validated 24-item Structured Lifestyle Modification Knowledge Questionnaire (SLMKQ). Based on the instructional framework, items were distributed across four domains. Total scores were tiered into: Inadequate (<50\%), Moderate (50\%-75\%), and Adequate (>75\%).

RESULTS & DATA ANALYSIS:

Allocation of Questionnaire Items

TABLE 1: STRUCTURAL ALLOCATION OF QUESTIONNAIRE ITEMS ACROSS LIFESTYLE DIMENSIONS

LIFESTYLE MODIFICATION EVALUATION CATEGORIES	NUMBER OF ITEMS
Domain 1: Pathophysiological Connection & Symptom Recognition	6
Domain 2: Cardioprotective Nutritional Adjustments	6
Domain 3: Planned Physical Activity & Glycemic Tracking	6
Domain 4: Pharmacological Compliance & Substance Abuse Avoidance	6
OVERALL COMPREHENSIVE CRITERIA MATRIX	**24**

As detailed in Table 1, the knowledge evaluation instrument features an equal distribution of 24 objective multiple-choice items split evenly (6 items or 25% each) across the four core preventative lifestyle domains established. This balanced design ensures objective and comprehensive structural measurement of diabetic self-care literacy.

Socio-Demographic Distribution

The largest age subgroup was 46–55 years (41.67%). Males comprised 53.33% and females 46.67%. Regarding education, 36.67% completed secondary school and 28.33% were graduates. Most participants had a disease duration of 1–5 years (50.00%), managed their condition with Oral Hypoglycemic Agents (63.33%), and reported a sedentary lifestyle (60.00%). Additionally, 43.33% used tobacco, and health professionals (41.67%) served as the main prior information source.

SOCIO-DEMOGRAPHIC PROFILE DATA

TABLE 2: SOCIO-DEMOGRAPHIC DISTRIBUTION OF THE DIABETIC PATIENT COHORT (N=60)

Demographic Parameters	Sub-Category Options	Patient Count (n)	Patient Percentage (%)
Age (in years)	35–45 years	14	23.33%
	46–55 years	25	41.67%
	56–65 years	21	35.00%
Gender	Male	32	53.33%
	Female	28	46.67%
Educational Status	No formal school	9	15.00%
	Secondary	22	36.67%
	Senior Secondary	12	20.00%
	Graduate+	17	28.33%
Occupational Profile	Government	9	15.00%
	Private sector	24	40.00%
	Self-employed	12	20.00%
	Homemaker	15	25.00%
Monthly Family Income	Less than ₹10,000	19	31.67%
	₹10,001–₹20,000	27	45.00%
	More than ₹20,000	14	23.33%
Duration of Diabetes	1–5 years	30	50.00%
	6–10 years	20	33.33%
	More than 10 years	10	16.67%
Current Treatment	Oral Hypoglycemic Agents	38	63.33%
	Insulin	9	15.00%
	OHA + Insulin	13	21.67%
Physical Activity Level	Sedentary	36	60.00%
	Light exercise	8	13.33%
	Moderate exercise	16	26.67%

Tobacco History	Yes	26	43.33%
	No	34	56.67%
Source of Info	Health Professionals	25	41.67%
	Mass Media	18	30.00%
	Family/Friends	10	16.67%
	Printed	7	11.67%

Table 2 documents that the surveyed cohort represents a predominantly middle-aged (41.67% aged 46-55), urban/semi-urban sample with a high percentage of sedentary lifestyles (60.00%) and oral treatment regimens (63.33%). The baseline demographic data highlights that while a large portion (41.67%) interacts directly with health professionals, severe knowledge gaps regarding secondary cardiac outcomes still exist.

Domain-Specific Knowledge Mean Shifts:

TABLE 3: DOMAIN-SPECIFIC KNOWLEDGE MEAN MODIFICATIONS AND PAIRED T -TEST MATRIX (N=60)

Target Knowledge Domains	Pre Mean	Pre %	Post Mean	Post %	Mean Gain	Paired t-test Value
Domain 1: Pathophysiological Connection	2.45	40.83%	4.92	82.00%	2.47	19.84 (S), df=59
Domain 2: Nutritional Adjustments	2.72	45.33%	5.12	85.33%	2.40	22.15 (S), df=59
Domain 3: Physical Activity & Tracking	2.52	42.00%	5.08	84.67%	2.56	21.43 (S), df=59
Domain 4: Pharmacological Compliance	2.76	46.00%	5.23	87.17%	2.47	24.62 (S), df=59
OVERALL COMPREHENSIVE EVALUATION	10.45	43.54%	20.35	84.79%	9.90	44.12 (S), df=59

(S) - Statistically Significant at $p < 0.05$ level.

Table 3 reveals that the implementation of the educational intervention developed generated a uniform, positive knowledge increase across all four domains. The highest baseline score was in pharmacology (46.00%), which rose to 87.17% post-test. The overall mean score increased significantly by 9.90 (41.25%), validated by a paired t -test value of 44.12 ($p<0.05$), demonstrating that the teaching program successfully enhanced specific and general preventive knowledge.

Overall Score Summary

TABLE 4: SUMMARY OF OVERALL BASELINE, POST-TEST, AND KNOWLEDGE ENHANCEMENT PARAMETERS (N=60)

Measurement Phase	Min	Max	Range	Mean Score	Mean %	±SD	CV (%)	Paired t-test Result
Pre-Test Assessment	6	16	10	10.45	43.54%	2.12	20.29%	**44.12** (Significant, df=59)
Post-Test Assessment	16	24	8	20.35	84.79%	1.65	8.11%	
Enhancement Shift	4	15	11	9.90	41.25%	1.84	18.59%	

Table 4 highlights the narrowing variance and upward improvement of knowledge scores. The group standard deviation dropped from \pm2.12 at pre-test to \pm1.65 at post-test, while the coefficient of variation decreased from 20.29% to 8.11%. This mathematical reduction in variability indicates that the video program helped establish a more uniform and consistent level of knowledge across the patient cohort.

Analysis of Prevalence Shifts in Knowledge Levels

TABLE 5: PREVALENCE SHIFTS IN KNOWLEDGE TIERS BEFORE AND AFTER INTERVENTION (N=60)

PATIENT KNOWLEDGE TIERS	OBJECTIVE BOUNDS	PRE-TEST (n)	PRE-TEST (%)	POST-TEST (n)	POST-TEST (%)
Inadequate Knowledge	0–11 marks	44	73.33%	0	0.00%
Moderate Knowledge	12–17 marks	13	21.67%	7	11.67%
Adequate Knowledge	18–24 marks	3	5.00%	53	88.33%
TOTAL SAMPLE PROFILE	24 Marks	60	100.00%	60	100.00%

Table 5 indicates a complete restructuring of literacy distributions post-intervention. Initially, a substantial majority (73.33%) of diabetic patients placed into the inadequate knowledge tier. Following the delivery of the multimedia program, 88.33% of the sample achieved adequate knowledge scores, and no participants remained in the inadequate level. This complete shift demonstrates effective information retention.

Chi-Square Demographic Association Matrix

TABLE 6: CHI-SQUARE ASSOCIATION MATRIX BETWEEN PRE-TEST KNOWLEDGE AND SOCIO-DEMOGRAPHIC INDICATORS (N=60)

Sl. No	Socio-Demographic Parameters	Target Categories	≤ Median	> Median	χ2 Value	df	p-Value / Significance
1	Age (in years)	35–45 46–55 56–65	8 4 11	6 11 10	1.14	2	0.566 (NS)
2	Gender	Male Female	18 15	14 13	0.28	1	0.597 (NS)
3	Educational Status	No formal Secondary Sr. Sec. Graduate+	8 14 16 5	1 8 6 12	11.42	3	0.010 (S)
4	Occupational Profile	Government Private Self Homemaker	4 13 7 9	5 11 5 6	2.45	3	0.484 (NS)
5	Monthly Income	Less than ₹10k ₹10k–₹20k ₹20k	12 14 7	7 13 7	1.82	2	0.403 (NS)
6	Diabetes Duration	1–5 years 6–10 years 10 years	17 11 5	13 9 5	0.94	2	0.625 (NS)
7	Treatment Regimen	Oral Agents Insulin Combination	20 6 7	18 3 6	1.56	2	0.458 (NS)
8	Physical Activity	Sedentary Light Moderate	22 5 6	14 3 10	2.12	2	0.346 (NS)
9	Tobacco History	Yes No	16 17	10 17	0.48	1	0.488 (NS)
10	Source of Prior Info	Health Professionals TV Friends Printed	9 11 7 6	16 7 3 1	**9.88**	3	**0.019 (S)**

(NS) - Non-Significant; (S) - Statistically Significant at $p < 0.05$ level.

Table 6 reveals that baseline cardiovascular preventative knowledge was independent of age, gender, income, or disease duration (p>0.05). However, formal educational status (\chi^2=11.42, p=0.010) and the primary source of prior information (\chi^2=9.88, p=0.019) maintained highly significant associations with pre-test performance. This confirms that higher formal educational status and direct access to medical professional advice contribute to better baseline health literacy.

DISCUSSION & CONCLUSIONS:

The pre-test data revealed that a substantial majority (73.33%) of diabetic patients possessed inadequate baseline knowledge regarding their personal cardiovascular risks. This highlights a clear information gap within routine metabolic care.

The implementation of the visual curriculum led to highly significant knowledge improvements across all evaluated domains. utilizing a structured, multimedia program successfully simplifies complex physiological relations and dietary guidelines into actionable self-care decisions. This visual approach overcomes literacy limitations, producing uniform post-test comprehension across diverse patient backgrounds.

Because baseline literacy is strongly linked to formal education and communication networks, healthcare systems should establish standardized visual counseling directly within clinical outpatient areas.

In conclusion, the Video-Assisted Teaching Programme is an effective and scalable method to improve patient literacy. As demonstrated,

incorporating structured multimedia tools into regular clinical workflows provides a practical strategy to support required lifestyle modifications and lower secondary myocardial infarction risks among diabetic patients within Dewas District.

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