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Effectiveness of Structured Teaching Program on Knowledge Regarding Heart Attack among Students of Selected Degree College Distt. Mandi, Himachal Pradesh: A Quasi-Experimental Study

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Abstract: ***Heart attack (myocardial infarction) is a life threatening cardiovascular emergency and a major cause of morbidity and mortality worldwide. The present study was conducted to assess the effectiveness of a structure teaching program on knowledge regarding heart attack among students of a Selected Degree College Distt. Mandi, Himachal Pradesh. The objectives were to assess the pre-test and post-test knowledge, evaluate the effectiveness of the Structured Teaching Programme (STP) and determine the association between post-test knowledge scores with their selected socio-demographic variables. A quasi - experimental one -group pre- test post-test research design was adopted. A total of 220 students from Vallabh government college Distt. Mandi, Himachal Pradesh, participated in the study. Data were collected by using a self - structured knowledge questionnaire. In the pre-test, 53.6% of students had below average knowledge and 46.4% had average knowledge, while none had good knowledge. After the Structured Teaching Programme, 96.4% of students had good knowledge and only 3.6% had average knowledge. The mean knowledge score increased significantly from 13.87 ± 2.131 to 31.66 ± 2.206, with a mean difference of 17.79 (paired t = 110.737, p < 0.001). The Structured Teaching Programme was effective in significantly improving knowledge regarding heart attack among college students. Regular educational interventions are recommended to enhance awareness and promote prevention.***

Keywords: Heart Attack, Myocardial Infarction, Structured Teaching Programme, College Students, Quasi-Experimental Study

1. Introduction

No Beauty Shines Brighter Than a Healthy Heart.
— Shanina Singh

Heart attack, medically known as myocardial infarction (MI), is a serious and potentially life-threatening cardiovascular emergency that occurs when blood flow to a portion of the heart muscle is reduced or blocked, resulting in injury to the heart muscle. Cardiovascular diseases (CVDs) remain the leading cause of death globally. An estimated 19.8 million people died from CVDs in 2022, accounting for approximately 32% of all deaths worldwide, with about 85% of these deaths attributed to heart attack and stroke. Most cardiovascular diseases can be prevented by addressing modifiable risk factors such as tobacco use, unhealthy diet, physical inactivity, obesity and harmful use of alcohol.[1]

The burden of cardiovascular disease is also substantial in India. Cardiovascular diseases contribute significantly to mortality and disability, with ischaemic heart disease being an important contributor. Recent initiatives by the Indian Council of Medical Research (ICMR) have focused on improving the early identification and management of ST-segment elevation myocardial infarction (STEMI) through hub-and-spoke models and tele-ECG services. These initiatives emphasize the importance of rapid recognition, timely diagnosis, referral and treatment of patients with acute myocardial infarction.[2]

A heart attack requires immediate recognition and emergency medical care because delays in treatment can increase myocardial damage and the risk of complications. Common warning signs include chest discomfort or pressure, discomfort in the arms, shoulders, back, neck or jaw, shortness of breath, sweating, nausea, dizziness and unusual tiredness. Symptoms may vary among individuals and may sometimes be mild or atypical. Therefore, knowledge of the warning signs and the importance of seeking immediate medical attention is essential for reducing delays in treatment and improving outcomes.[3]

The development of myocardial infarction is associated with several modifiable and non-modifiable risk factors. Smoking, hypertension, diabetes, high cholesterol, physical inactivity, overweight or obesity, unhealthy dietary practices and family history can increase the risk of acute coronary events. Preventive measures such as maintaining a healthy diet, engaging in regular physical activity, avoiding tobacco,

maintaining a healthy body weight and controlling blood pressure, blood glucose and cholesterol levels can help reduce cardiovascular risk.[4]

Although advances in diagnostic techniques and emergency cardiac care have improved the management of myocardial infarction, early recognition and appropriate health-seeking behavior remain essential. Current approaches to acute coronary syndrome emphasize rapid assessment, electrocardiography and timely restoration of coronary blood flow when indicated. In India, the ICMR STEMI programme has demonstrated the importance of strengthening referral systems and reducing treatment delays, particularly in underserved areas.[5]

Health education plays an important role in improving awareness regarding cardiovascular health, warning signs, risk factors and preventive practices. College students represent an important population for health education because knowledge and lifestyle behaviors developed during young adulthood may influence future health. Providing structured education may help students recognize the warning signs of heart attack, understand modifiable risk factors and develop healthier practices. Therefore, there is a need to assess existing knowledge and provide appropriate educational interventions regarding heart attack among college students.[6]

In view of the increasing burden of cardiovascular disease, the importance of early recognition, and the role of health education in prevention, the present study was undertaken to assess the effectiveness of a Structured Teaching Programme on knowledge regarding heart attack among students of a selected degree college in District Mandi, Himachal Pradesh.

2. Review of Literature

D. Devasirvadam Victor, M. V. Ashmica, V. Bhuvaneshwari, K. Arivumathi et al. (2025) conducted a pre-experimental study to assess the effectiveness of a Structured Teaching Programme on knowledge regarding the early signs and immediate treatment of myocardial infarction among fifth-semester B.Sc. Nursing students at Arulmigu Meenakshi College of Nursing, Kanchipuram. In this study, 100 students were selected using a non-probability convenience sampling technique. Data were collected using a structured knowledge questionnaire. The findings showed that, in the pre-test, 42% of students had inadequate knowledge, 43% had moderate knowledge, and 15% had adequate knowledge. In the post-test, 11% of students had inadequate knowledge, 30% had moderate knowledge, and 59% had adequate knowledge, indicating a clear improvement in knowledge following the Structured Teaching Programme.

Rani Usha N , Darshini Priya N, Rani Usha N, Teja Rajamgari (2025) conducted a pre -experimental study to assess the effectiveness of a structured teaching programme on knowledge regarding management of modifiable risk factors of myocardial infarction among newly diagnosed patients with diabetes mellitus in the outpatient department of NRI General Hospital, Chinakakani, Guntur District, and Andhra Pradesh. In this study, a total of 60 patients were selected using a non-probability sampling technique. Data was collected through a structured knowledge questionnaire. The study findings revealed that 73.3% of the patients had inadequate knowledge in the pre-test**,** while post-test findings revealed that 63.3% attained adequate knowledge**.** The mean knowledge score increased from 13.1 ± 3.9 in the pre-test to 24.2 ± 4.1 in the post-test**,** with a calculated paired t value of 14.4, which was statistically significant at the 0.05 level, demonstrating the effectiveness of the structured teaching programme in improving knowledge.

Thomas Sijumon (2025) conducted a pre - experimental study to assess the effectiveness of structured teaching programme on knowledge regarding life style modification among myocardial infarction client in selected hospitals, of Madhya Pradesh. In this study, 100 samples were selected by using purposive sampling technique, and data were collected through a self - structured questionnaire. The study findings show that in the pre-test, the majority of participants (95%) had inadequate knowledge and 5% had moderate knowledge regarding lifestyle modification in myocardial infarction, with none having adequate knowledge. After the structured teaching programme, 77% attained adequate knowledge and 23% had moderate knowledge, with no one remaining in the inadequate knowledge category, indicating improvement after the intervention.

Problem Statement: A study to assess the effectiveness of structured teaching program on knowledge regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh.

3. Aim of the Study

The aim of the study is to assess the effectiveness of structured teaching program on knowledge regarding heart attack among students of selected Degree college of Distt. Mandi, Himachal Pradesh.

4. Objectives

1) To assess the pre-test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh.
2) To assess the post-test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh.
3) To evaluate the effectiveness of structured teaching programme on knowledge regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh.
4) To determine the association between post test knowledge score with their selected socio -demographic variables regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh.

Hypothesis

H_1: There will be a significant difference between mean pre-test knowledge score and post-test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh.

H_2: There will be a significant association between the post-test knowledge score regarding heart attack with their selected socio -demographic variables among students of selected Degree College Distt. Mandi, Himachal Pradesh.

Delimitation

The study is delimited to:

- The study is conducted among students of degree college Distt. Mandi, Himachal Pradesh.
- The sample size is limited to 220 students.
- Data collection period is limited to 2 weeks

5. Material and Methods

Research approach: In the present study, a quantitative research approach was used.

Research design: In the present study, a quasi-experimental research design was adopted. The study used one group pre- test and post-test design.

Research setting: The present study was conducted at Vallabh Government College Distt. Mandi, Himachal Pradesh.

Target population: In present study the target population includes students of Degree Colleges of Distt. Mandi, Himachal Pradesh.

Sample size: In the present study, the sample size is 220 students, which was calculated by using Cochran's formula.

Sampling technique: In the present study a stratified random sampling technique was used to select 220 students.

Sampling criteria

Inclusion criteria: In the present study, the sample was selected as per criteria:

- Students who are willing to participate.
- Students who are present at the time of data collection.
- First year students only.

Exclusion criteria: In the present study, participants who did not meet the criteria were excluded, including:

- Students who are not available at the time of data collection.
- Students who are not willing to participate.

Variables

- **Independent variable:** In the present study, the independent variable is the structured teaching programme on knowledge regarding heart attack.
- **Dependent variable:** In the present study, the dependent variable is the knowledge regarding heart attack among degree college students.

Research Tool:

The research tool consist two sections:

Section- A: Socio- Demographic variables

This section consists of demographic variables such as age, gender, educational stream, area of residence, type of family, religion, dietary pattern, education of father, education of mother, family income, any history of heart diseases in family and an source of information regarding heart attack.

Section-B: Self-Structured Knowledge Questionnaire

It consists of self – structured knowledge questionnaire to assess the level of knowledge regarding heart attack. It consists of 40 multiple choice questions with four options. Each correct response carries one mark and incorrect carries zero marks. The total score is 40 for 40 items. To interpret the level of knowledge, the score is classified as:

S. No.	Criteria measure level of knowledge	Range of score	Range of score in %
1	Below average	0-13	LESS THAN 33.3%
2	Average knowledge	14-26	33.4%-66.6%
3	Good knowledge	27-40	66.7%-100%

Validity of the tool: Content validity was determined by experts in the field of medical surgical nursing. The demographic variables and self-structured knowledge questionnaire were submitted to 10 experts in the field of Medical Surgical Nursing for their review. Their Suggestions and recommendations were carefully considered and suitable modifications were made according to improve the clarity, relevance and adequacy of the tool.

Pilot study: The pilot study was conducted on 12% of the sample size at R.N.T Government Degree College Sarkaghat Distt. Mandi, Himachal Pradesh from 02-03-2026 to 09-03-2026. The students were selected by stratified random sampling technique. Analysis of the pilot study was done in accordance with the objectives of the study. The participants of the pilot study excluded from the final study.

Reliability of tool: Reliability of the self- structured knowledge questionnaire was established by using test - retest method using Karl Pearson coefficient of correlation formula. Where 'r' value is 0.82. Hence the tool was found reliable.

Ethical Consideration

- Ethical clearance was obtained from the Institutional Research and Ethical Committee of Murari Lal Memorial College of Nursing Oachghat, Solan Himachal Pradesh.
- Permission for conducting the study was obtained from the concerned authority of Vallabh Government College Distt. Mandi, Himachal Pradesh.
- Written informed consent was obtained from the study participants before data collection.
- All the students were informed about the purpose of study, their part during the study.
- The participants were assured that there was no harm and no risk involved in the study.

Data Collection Procedure

In the present study, the data collection period was extended from 21-04-2026 to 27-04- 2026 in Vallabh Government College Distt. Mandi, Himachal Pradesh.

The purpose of the study was explained to the subjects and informed consent was obtained from them. A pre- test was conducted to assess the existing knowledge of the subjects regarding heart attack. After the pre - test, a structured teaching program was administered on the same day to improve their knowledge regarding heart attack. Then, after 7 days' post- test was conducted to check the effectiveness of structured teaching program.

Plan for analysis: The collected data were analyzed using descriptive and inferential statistics. The data was analyzed in terms of descriptive (mean, percentage, standard deviation) and inferential statistics (paired' test, chi square).A paired t' test was used to determine the difference between pre - test and post- test in terms of knowledge score regarding heart attack among students. 'Chi square' test was used to find out the association between post- test knowledge score regarding heart attack among students.

6. Results and Analysis

Section I: Description of socio- demographic variables of selected college students.

Table 1: Frequency and percentage wise distribution of students according to socio-demographic variables

Socio - demographic variables	Options	Frequency (f)	Percentage (%)
Age (in years)	17 years	16	7.2%
	18 years	111	50.5%
	19 years	93	42.3%
	Above 19 years	0	0%
Gender	Male	83	37.7%
	Female	137	62.3%
	Transgender	0	0%
Educational stream	Medical	55	25%
	Non- medical	55	25%
	Arts	55	25%
	Commerce	55	25%
Area of residence	Rural area	112	50.9%
	Urban area	108	49.1%
Type of family	Nuclear family	96	43.6%
	Joint family	94	42.7%
	Extended family	30	13.6%
Religion	Hindu	124	56.4%
	Muslim	29	13.2 %
	Sikh	67	30.5%
	Christian	0	0%
	Other	0	0%
Dietary - pattern	Vegetarian	92	41.8%
	Non- vegetarian	88	40%
	Eggetarian	40	18.2%
Education of father	No formal education	7	3.2%
	Primary education	28	12.7%
	Secondary education	58	26.4%
	Senior- secondary education	70	31.8%
	Graduate &above	57	25.9%
Education of mother	No formal education	17	7.7%
	Primary education	41	18.6%
	Secondary education	109	49.5%
	Senior- secondary education	48	21.8%
	Graduate &above	5	2.3%
Family income per month	Rs ≤10,000	0	0.0%
	Rs 10,001- 20,000	18	8.2%
	Rs 20,001-30,000	121	55%
	Rs≤ 30,001	81	36.8%
History of heart diseases in family	Yes	67	30.5%
	No	153	69.5%
Source of information regarding heart attack	Family and friends	64	29.1%
	Health personnel	34	15.5%
	Mass media, Newspaper, Radio, TV	89	40.5%
	No information	33	15%

Table 1:

Depicts the socio-demographic characteristics of the 220 selected Degree College students. Regarding age, the majority of participants were 18 years old (111, 50.5%), followed by 19 years (93, 42.3%) and 17 years (16, 7.2%). With regard to gender, 137 (62.3%) participants were females and 83 (37.7%) were males. Regarding educational stream, an equal distribution was observed among medical, non-medical, arts and commerce streams, with 55 (25%) participants in each stream. In terms of area of residence, 112 (50.9%) participants belonged to rural areas and 108 (49.1%) to urban areas.

Regarding family type, 96 (43.6%) participants belonged to nuclear families, 94 (42.7%) to joint families and 30 (13.6%) to extended families. With respect to religion, 124 (56.4%) participants were Hindus, 67 (30.5%) were Sikhs and 29 (13.2%) were Muslims. According to dietary pattern, 92 (41.8%) participants were vegetarians, 88 (40.0%) were non-vegetarians and 40 (18.2%) were eggetarians.

Regarding father's education, 70 (31.8%) had senior-secondary education, 58 (26.4%) had secondary education, 57 (25.9%) were graduates and above, 28 (12.7%) had primary education and 7 (3.2%) had no formal education. Regarding mother's education, 109 (49.5%) had secondary education, 48 (21.8%) had senior-secondary education, 41 (18.6%) had primary education, 17 (7.7%) had no formal education and 5 (2.3%) were graduates and above.

Regarding monthly family income, 121 (55.0%) participants belonged to the Rs. 20,001–30,000 income group, 81 (36.8%) had an income above Rs. 30,001 and 18 (8.2%) had an income of Rs. 10,001–20,000. Regarding family history of heart disease, 153 (69.5%) participants reported no family history, whereas 67 (30.5%) reported a positive family history. Regarding the source of information about heart attack, 89 (40.5%) participants reported mass media as their source, followed by family and friends (64, 29.1%), health personnel (34, 15.5%), while 33 (15.0%) had no information regarding heart attack.

Section II: Findings related to the pre- test knowledge score regarding heart attack among students of selected degree college Distt. Mandi, Himachal Pradesh.

Table 2: Frequency and percentage wise distribution of selected Degree College students according to their level of knowledge score in pre- test, n= 220

Criteria Measure of Pre – Test Knowledge Score			
Category	Score level	Frequency(f)	Percentage (%)
Below average	0-13	118	53.6
Average	14-26	102	46.4
Good	27-40	0	0

Maximum Score = 40 Minimum Score = 0

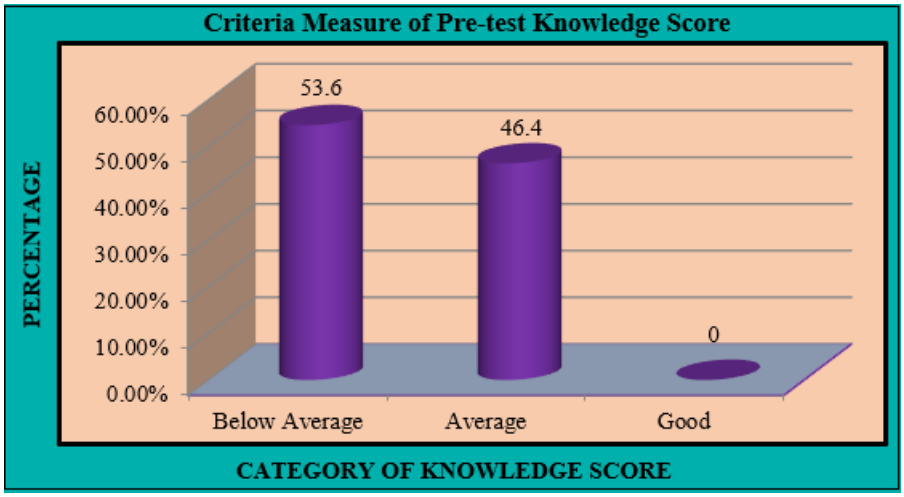

Figure 2: Percentage distributions of selected Degree College students according to their level of knowledge score in pre-test.

Table 2 and figure 2: Presents that out of 220 participants, the majority 118 (53.6%) had below average knowledge regarding heart attack, while 102 (46.4%) participants had average knowledge. While none of the participants had good knowledge regarding heart attack in the pre-test.

Table 3: Mean, standard deviation and mean percentage of pre- test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh, n= 220

DESCRIPTIVE STATISTICS OF PRE-TEST KNOWLEDGESCORES							
Descriptive statistics	Mean	Standard deviation	Median score	Maximum	Minimum	Range	Mean (%)
Pre – test knowledge	13.87	2.131	13	21	11	10	34.7

Maximum score = 40
Minimum score = 0

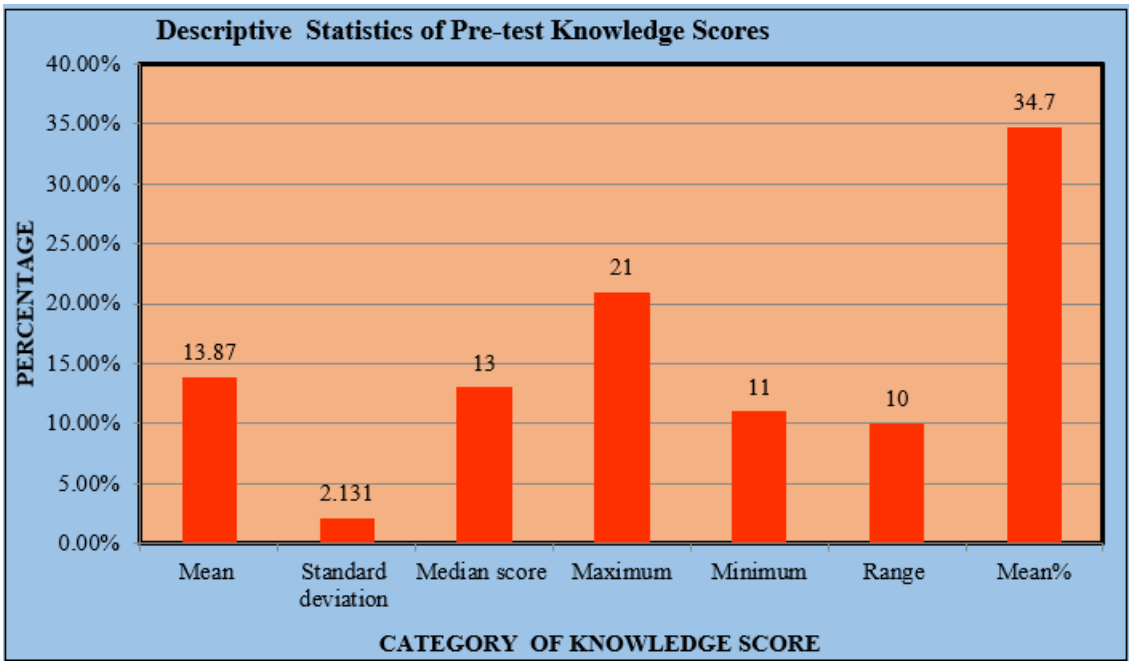

Figure 3: Mean, standard deviation and mean percentage of pre- test knowledge score of selected degree college students regarding heart attack

Table 3 and figure 3: Depicts the descriptive statistics of pre-test knowledge scores regarding heart attack among students. The findings revealed that the mean pre-test knowledge score was 13.87 with a standard deviation of 2.131, indicating low baseline knowledge among the participants. The median score was 13, while the maximum obtained score was 21 and the minimum score was 11, with a range of 10. The mean percentage score was 34.7.

Section-III: Findings related to the post- test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh.

Table 4: Frequency and percentage distribution of post-test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh, n= 220

Criteria Measure of Post- Test Knowledge SCORE			
Category	Score level	Frequency(f)	Percentage (%)
Below average	0-13	0	0
Average	14-26	8	3.6
Good	27-40	212	96.4

Maximum score =40 minimum score = 0

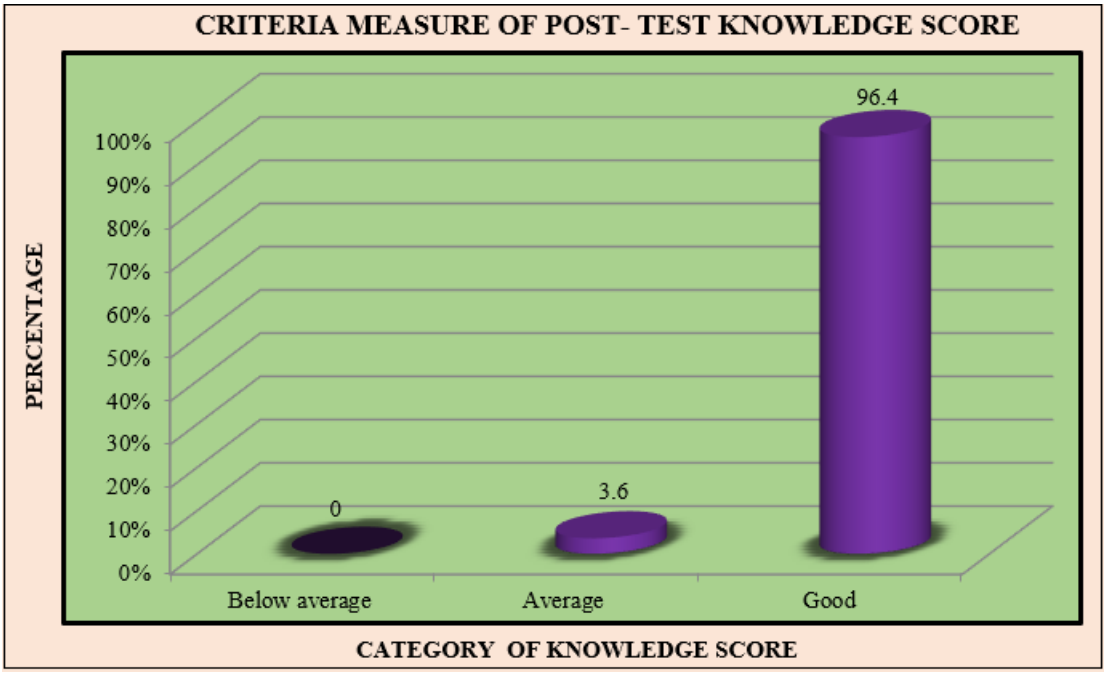

Figure 4: Percentage distributions of students according to their post-test knowledge score regarding heart attack.

Table 4 and figure 4 : Shows that after the administration of the structured teaching program, the majority 212 (96.4%) participants had good knowledge, only 8 (3.6%) participants had average knowledge while, none of the participants had below average knowledge regarding heart attack in post- test

Table 5: Mean, standard deviation and mean percentage of post- test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh, n=220

Descriptive Statistics	Mean	Standard Deviation	Median Score	Maximum	Minimum	Range	Mean (%)
Post – Test Knowledge	31.66	2.206	32	36	26	10	79.10

Maximum score=40 Minimum score=0

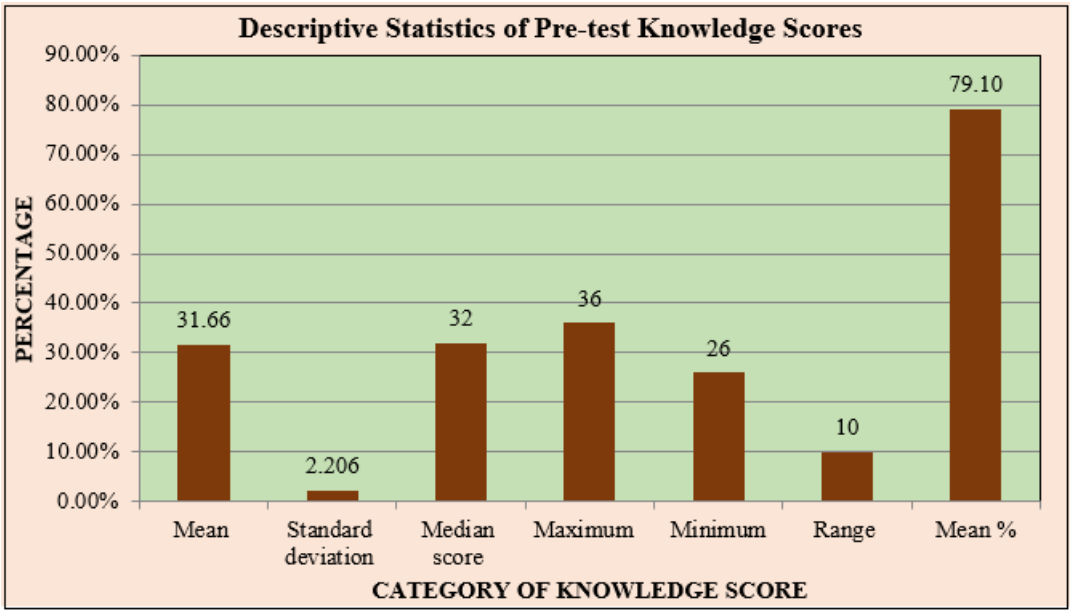

Figure 5: Mean, Standard Deviation and mean percentage of post- test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh.

Table 5 and figure 5: Presents the descriptive statistics of post-test knowledge scores regarding heart attack among college students. The analysis reveals that the mean and standard deviation post-test knowledge score was 31.66±2.206.The median score was 32, while the maximum obtained score was 36 and the minimum obtained score was 26, with a range of 10. The mean percentage score was 79.10%.

Section – IV: Findings related to the effectiveness of structured teaching program regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh.

Table 6: Comparison of pre-test and post-test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh, n=220

CRITERIA MEASURE OF KNOWLEDGE SCORE					
Category	Score level	Pre-test (frequency %)		Post –test (frequency %)	
Below average	0-13	118	53.6	0	0
Average	14-26	102	46.4	8	3.6
Good	27-40	0	0	212	96.4

Maximum score =40 Minimum score = 0

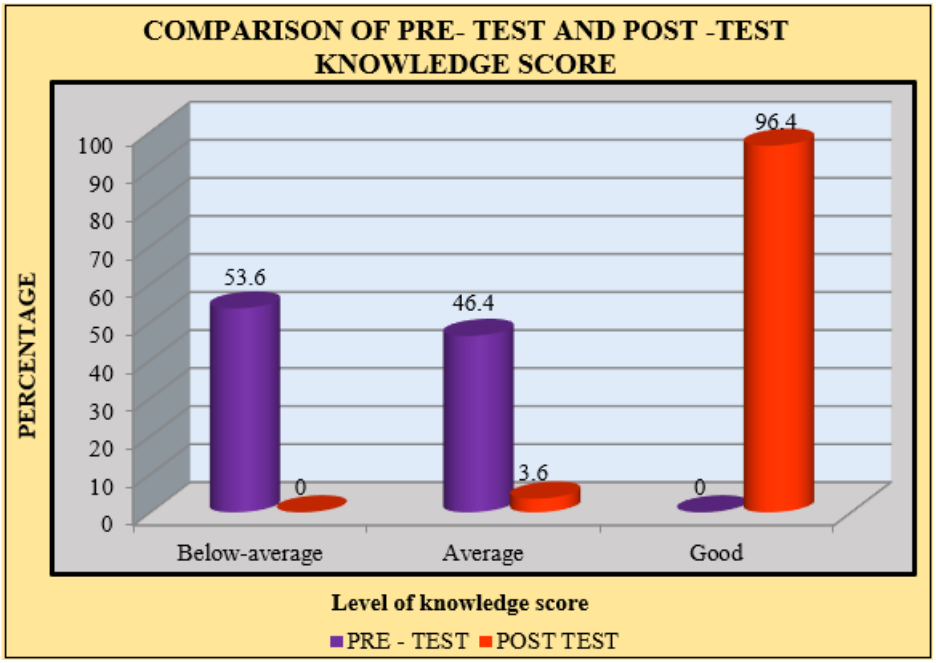

Figure 6: Comparison of pre-test and post-test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh

Table 6 and figure 6: Shows the comparison of pre-test and post-test knowledge score regarding heart attack among students. In the pre-test, the majority 118 (53.6%) participants had below average knowledge, while 102 (46.4%) had average knowledge and none had good knowledge. After the administration of structured teaching programme, a marked improvement was observed as 212 (96.4%) participants attained good knowledge and only 8 (3.6%) had average knowledge, while none remained in the below average category in post - test.

Table 7: Mean, standard deviation, mean percentage and mean difference between the pre- test and post- test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh, n=220

Pre – Test Knowledge			Post – Test Knowledge			Mean percentage difference
Mean	Standard deviation	Mean (%)	Mean	Standard deviation	Mean (%)	
13.87	2.131	34.7	31.66	2.206	79.10	44.4

Minimum score =40 minimum score = 0

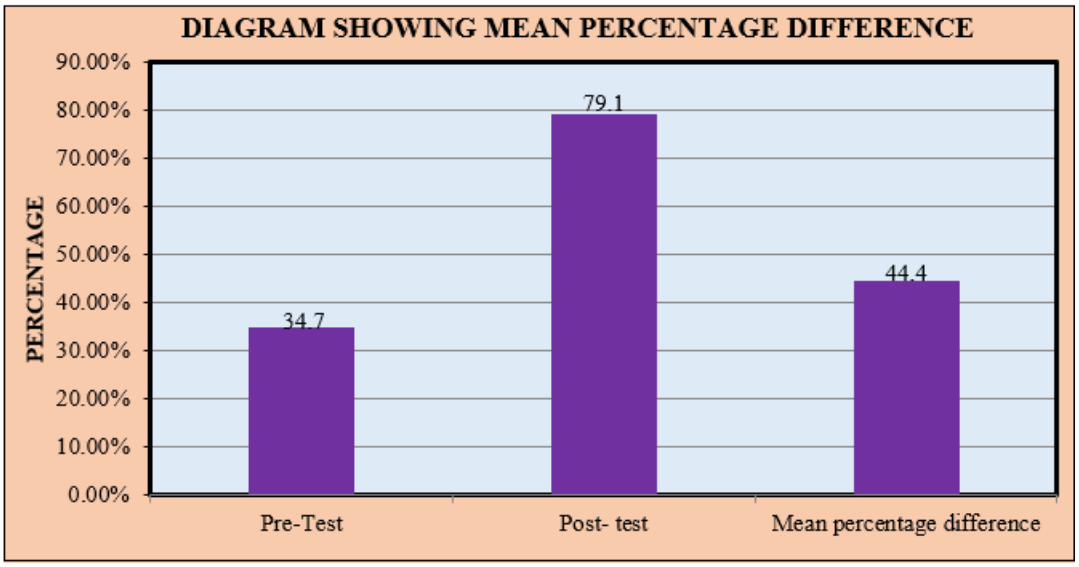

Figure 7: Graph showing the pre- test and post- test knowledge score and mean percentage difference knowledge score regarding heart attack among students

Table 7 and figure 7: Shows the mean, standard deviation, mean percentage, and mean percentage difference between the pre-test and post-test knowledge scores regarding heart attack among college students. The pre-test mean knowledge score was 13.87 ± 2.131 (Mean ± SD), with a mean percentage of 34.7%. The post-test mean knowledge score was 31.66 ± 2.206 (Mean ± SD), with a mean percentage of 79.1%. The mean percentage difference between the pre-test and post-test knowledge scores was 44.4%.

Section V: Findings related to comparison of mean, mean percentage, standard deviation and 't' value of sample.

H_1: There will be a significant difference between pre-test knowledge score and post- test knowledge score of regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh.

Table 8: Comparison of mean, mean percentage, standard deviation between pre- test knowledge score and post- test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh, n = 220

Paired - t test	Mean±SD	Mean %	Range	Mean difference	Paired 't' test	p Value	Table value at 0.05
Pre – test knowledge	13.87±2.131	34.70	11-21	17.79	110.737	<0.001	1.97
Post – test knowledge	31.66±2.206	79.15	26-36				

Maximum score = 40 Minimum score =0

Table 8: Presents the comparison of mean pre-test and post-test knowledge scores regarding heart attack among students using the paired t-test. The mean pre-test knowledge score was 13.87±2.131 (34.7%), which increased to 31.66±2.206 (79.10%) in the post-test. The mean difference was 17.79, showing improvement in knowledge after the structured teaching programme. The calculated paired t-test value was 110.73, which was highly significant at p <0.001 and greater than the table value of 1.97 at 0.05 level of significance. Hence, the research hypothesis (H_1) was accepted.

Section - VI: Findings related to the association of post – test knowledge score regarding heart attack with their selected socio- demographic variables.

H_2: There will be a significant association between the post-test knowledge score with their selected socio -demographic variables regarding heart attack among students of Degree College Distt. Mandi, Himachal Pradesh.

Table 9: Association of post-test knowledge scores with their selected socio-demographic variables, n= 220

Socio- Demographic Variables	Options	Good	Average	Below average	Chi-square Test	p Value	df	t-Value	Result
Age (in years)	17 Years	16	0	0	0.89	0.64	2	5.99	Not significant
	18 Years	106	5	0					
	19 Years	90	3	0					
	Above 19 Years	0	0	0					
Gender	Male	80	3	0	0.00	0.99	1	3.84	Not significant
	Female	132	5	0					
	Transgender	0	0	0					
Educational stream	Medical	55	0	0	8.30	0.04	3	7.81	Significant
	Non-Medical	55	0	0					
	Arts	51	4	0					
	Commerce	51	4	0					
Area of residence	Rural area	109	3	0	0.60	0.44	1	3.84	Not significant
	Urban area	103	5	0					
Type of family	Nuclear family	93	3	0	0.18	0.91	2	5.99	Not significant
	Joint family	90	4	0					
	Extended family	29	1	0					
Religion	Hindu	121	3	0	4.42	0.11	2	5.99	Not significant
	Muslim	29	0	0					
	Sikh	62	5	0					
	Christian	0	0	0					
	Other	0	0	0					
Dietary pattern	Vegetarian	88	4	0	0.29	0.86	2	5.99	Not significant
	Non-vegetarian	85	3	0					
	Eggetarian	39	1	0					
Education of father	No formal education	7	0	0	1.38	0.85	4	9.49	Not significant
	Primary education	26	2	0					
	Secondary education	56	2	0					
	Senior-secondary education	68	2	0					
	Graduate & above	55	2	0					
Education of mother	No formal education	16	1	0	3.50	0.48	4	9.49	Not significant
	Primary education	40	1	0					
	Secondary education	103	6	0					
	Senior-secondary education	48	0	0					
	Graduate & above	5	0	0					
Family income per month	Rs ≤10,000	0	0	0	0.77	0.68	2	5.99	Not significant
	Rs 10,001–20,000	18	0	0					
	Rs 20,001–30,000	116	5	0					
	Rs ≥30,001	78	3	0					
History of heart diseases in family	Yes	65	2	0	0.12	0.73	1	3.84	Not significant
	No	147	6	0					
Source of information regarding heart attack	Family and friends	61	3	0	2.06	0.56	3	7.81	Not significant
	Health personnel	34	0	0					
	Mass media, Newspaper, Radio, TV	86	3	0					
	No information	31	2	0					

Table 9: Depicts the association of post-test knowledge score regarding heart attack among students with their selected socio-demographic variables using the chi-square test. The findings revealed that statistically significant association was observed only between educational stream and post-test knowledge scores regarding heart attack. Therefore, H_2 was accepted for educational stream. However, no significant association was found between post-test knowledge scores and age, gender, area of residence, type of family, religion, dietary pattern, parents' education, family income, family history of heart disease, and source of information. Therefore, H_2 was rejected for these variables.

7. Discussion

The first objective is to assess the pre-test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh. The present study shows that in pre- test, the majority of participants 118 (53.6%) had below average knowledge regarding heart attack, while 102 (46.4%) participants had average knowledge. While none of the participants had good knowledge regarding heart attack in the pre-test. The objective is supported by Neeraj Verma, Pratiksha Patric (2023) study. In the pre-test majority of participants 47(87%) had poor knowledge, while 8 (13%) participants had average knowledge regarding heart attack. While none of participants had good knowledge regarding heart attack in pre-test.

The second objective is to assess the post-test knowledge score regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh. The present study shows that after the administration of the structured teaching program, the majority 212 (96.4%) participants had good knowledge regarding heart attack, while only 8 (3.6%) participants had average knowledge. None of the participants had below average knowledge in the post – test. This objective is supported by Munirathnamma K (2023) study. The study post-test results showed that 39 (97.5%) participants had good knowledge and 1 (2.5%) had average knowledge, while none of the participants had poor knowledge regarding Heart Attack. Both study results showed that there is increase in post test knowledge score after administration of structured teaching program.

The third objective is to evaluate the effectiveness of structured teaching program on knowledge regarding heart attack among students of selected Degree College Distt. Mandi, Himachal Pradesh. The present study shows that the pre-test mean knowledge score was 13.87 ± 2.131 (Mean ± SD), with a mean percentage of 34.7%. The post-test mean knowledge score was 31.66 ± 2.206 (Mean ± SD), with a mean percentage of 79.1%. The mean percentage difference between the pre-test and post-test knowledge scores was 44.4%.The objective supported by Ancy Ramesh, N Nayana Kitey (2024) study results. The study revealed that in the pre-test, the mean knowledge score was 15.28 ± 2.30 (Mean ± SD), with a mean percentage of 46.3%. The post-test mean knowledge score was 26.61 ± 3.64 (Mean ± SD), with a mean percentage of 80.64%. The mean percentage difference between the pre-test and post-test knowledge scores was 34.34% indicating a substantial gain in knowledge regarding heart attack after the structured teaching program.

The fourth objective is to determine the association between post-test knowledge score regarding heart attack with their selected socio -demographic variables among students of selected Degree College Distt. Mandi, Himachal Pradesh. The present study shows that statistically significant association was observed only between educational stream and post-test knowledge scores regarding heart attack. However, no significant association was found between post-test knowledge scores and age, gender, area of residence, type of family, religion, dietary pattern, parents' education, family income, family history of heart disease, and source of information. The objective supported by Wajid Syed, Osama Samarkandi, Abdulmajeeda A. Alanzi et.al (2024) the study found a significant association between knowledge score regarding heart attack and demographic variables including gender, age, educational level and marital status**,** while no significant association was observed with other demographic characteristics.

8. Conclusion

The study concluded that the students had moderate knowledge regarding heart attack before the administration of the structured teaching program. After the intervention, a significant improvement in knowledge was observed among the students, indicating the effectiveness of the program. The statistical analysis further confirmed that the structured teaching program was highly effective in enhancing students knowledge regarding heart attack.

The findings of the study highlight the importance of health education in improving knowledge and awareness regarding heart attack. Enhanced knowledge helps students understand the risk factors, warning signs, preventive measures, and management of heart attack, thereby facilitating early recognition and timely intervention. The study also emphasizes the need for regular educational programs to increase awareness and promote healthy lifestyle practices among young adults. Therefore, structured teaching programs can be considered an effective educational strategy for enhancing knowledge and creating awareness regarding heart attack among Degree College students.

Thus, the objectives of the study were achieved, and the structured teaching program proved to be an effective educational strategy for improving knowledge regarding heart attack among Degree College students.

9. Implications

Implications refer to the practical significance or application of the findings of a study. They explain how the results can be used in real-life situations such as nursing practice, nursing education, nursing administration, and nursing research to improve knowledge, skills, and outcomes.

1) Nursing Education

- Nurse educators can use structured teaching program to effectively enhance students' knowledge about heart attack and its prevention.
- They can include essential topics related to cardiovascular health in the teaching curriculum for better awareness among students.
- Nurse educators can organize interactive health education sessions, seminars, and workshops to promote healthy lifestyle practices.
- They can encourage students to actively participate in discussions and group activities to improve understanding and retention of information related to heart attack prevention.

2) Nursing practice

- Nurses can provide health education to patients and students regarding heart attack prevention and risk factors.
- Nurses can identify early warning signs of heart attack and guide individuals for timely medical intervention.
- Nurses can motivate individuals to adopt healthy lifestyle practices such as regular exercise, balanced diet, and stress management.
- Nurses can participate in health awareness programmes to improve knowledge and reduce the risk of cardiovascular diseases.

3) Nursing administration

- Nursing administrators can plan and organize regular health education programmes in colleges and healthcare settings to improve awareness.

- They can provide adequate resources such as teaching materials, audiovisual aids, and trained staff for effective implementation of structured teaching programmes.
- Nursing administrators can encourage and support nurses to conduct awareness campaigns on cardiovascular health.
- They can develop policies and guidelines to promote preventive education regarding heart attack among students and the community.

4) Nursing research

- Nursing researchers can conduct similar studies on larger samples to strengthen the validity and generalizability of the findings.
- Comparative studies can be done between different educational methods to identify the most effective teaching strategy.
- Further research can be carried out to assess the long-term retention of knowledge after structured teaching programmes.
- Future studies can be conducted to evaluate the impact of educational interventions on behavior change and prevention practices.

10. Limitations

- The study did not include a control group, which may limit the ability to compare the effectiveness of the intervention.
- The present study was limited to assessing only the knowledge of college students regarding heart attack it did not take into account their attitude and practices.
- The sample was restricted to college students only therefore, the findings of the study cannot be fully generalized to the entire population.

11. Recommendations

Based on the findings of the study following recommendations are offered for future research.

- A similar study can be conducted on a large sample in different setting to generalize the study findings.
- A similar study can be conducted using a control group to better assess the effectiveness of the structured teaching programme.
- Further studies can be conducted to assess attitude and practices along with knowledge regarding heart attack among college students.
- A longitudinal study can be conducted to evaluate the long-term retention of knowledge after the intervention.
- Similar studies can be replicated in different age groups and populations to strengthen the evidence base.

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Author Contributions

MONIKA DEVI conceived and designed the study, conducted the literature review, developed the research tool, collected and analyzed the data, and prepared the manuscript. DR. RAGHUNANDAN SINGH provided supervision and guidance throughout the study, contributed to the study design and research methodology, and critically reviewed the manuscript. Ms. NITIKA SHARMA provided academic and methodological guidance, contributed to the review of the research tool, and critically reviewed the manuscript. All authors read and approved the final version of the manuscript.

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