

EFFECTIVENESS OF AN EDUCATIONAL MODULE ON KNOWLEDGE AND ATTITUDE REGARDING HEART-HEALTH PRACTICES AMONG COLLEGE STUDENTS IN THRISSUR

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Abstract :

Background: Cardiovascular health behaviours are established progressively during young adulthood, making college students an important population for early health promotion. Structured education may improve knowledge and attitudes related to heart-health practices.

Objective: To assess the effectiveness of an educational module on knowledge and attitude regarding heart-health practices among college students in Thrissur.

Methods: A quantitative pre-experimental one-group pre-test post-test design was used among 75 civil engineering students aged 18–22 years at Nehru College of Engineering and Research Centre, Thrissur. Participants were selected by purposive sampling. Data were collected using a researcher-developed 25-item knowledge questionnaire and a 20-item five-point Likert attitude scale. The educational module covered understanding the heart, cardiovascular diseases and risk factors, normal heart-health parameters, nutrition, physical activity, lifestyle modification, preventive monitoring and a personal health plan. Post-test assessment was conducted on the seventh day after the intervention. Descriptive statistics, paired t-test and chi-square test were used.

Results: The mean knowledge score increased from 14.50 ± 2.26 in the pre-test to 20.62 ± 1.80 in the post-test (mean increase based on the reported means = 6.12; $t = 22.3024$; $p < 0.0001$). The mean attitude score increased from 78.48 ± 10.32 to 83.10 ± 10.10 ($t = 4.7144$; $p < 0.0001$). Pre-test knowledge was significantly associated with age ($\chi^2 = 17.2926$), semester of study ($\chi^2 = 21.4606$), and physical activity practice ($\chi^2 = 8.6719$).

Conclusion: The educational module was associated with significant improvement in knowledge and attitude regarding heart-health practices among the participating college students. Structured cardiovascular health education may be a useful health-promotion strategy in college settings.

Index Terms - cardiovascular disease; college students; educational module; health education; heart health; knowledge; attitude.

I. Introduction

Cardiovascular disease (CVD) is a major public health problem, and a substantial proportion of cardiovascular risk is attributable to modifiable factors. Evidence among young adults and university students indicates that dietary habits, physical inactivity, tobacco use, stress and other lifestyle behaviours are relevant to long-term cardiovascular health.[1–5] College life is a period in which individuals increasingly make independent decisions about nutrition, physical activity, sleep and stress management, making it an important period for preventive education.[6,7]

Studies among college and university students have identified gaps between cardiovascular knowledge and actual health behaviours. Research has also shown that awareness may be moderate while healthy lifestyle practices remain suboptimal, supporting the need for focused educational strategies.[8–11] Educational interventions have demonstrated potential to improve cardiovascular health knowledge and related attitudes among students and other young populations.[12–15]

The present study was undertaken to assess whether a structured educational module could improve knowledge and attitude regarding heart-health practices among college students in Thrissur. The intervention focused on practical preventive behaviours including healthy nutrition, physical activity, lifestyle modification, stress management and preventive health monitoring.

II. Objectives

- To assess the level of knowledge regarding heart-health practices among college students.
- To assess the level of attitude towards heart-health practices among college students.
- To determine the effectiveness of the educational module in enhancing knowledge and attitude regarding heart-health practices.
- To determine the association between pre-test knowledge score and selected demographic variables.

III. Research Methodology

3.1 Study design and setting

A quantitative pre-experimental one-group pre-test post-test design was used. The study was conducted at Nehru College of Engineering and Research Centre (NCERC), Thrissur. The target population comprised college students aged 18–22 years, while the accessible population was civil engineering students aged 18–22 years.[16]

3.2 Participants and sampling

The sample consisted of 75 civil engineering students who met the inclusion criteria and were willing to participate. Purposive sampling, a non-probability sampling technique, was used.[16]

3.3 Theoretical framework

The study was guided by Ludwig von Bertalanffy's General Systems Theory and its input–output model. The theory describes a system in terms of input, throughput (process), output and feedback. In the present study, college students were considered as the system. The input included selected demographic variables; the throughput consisted of the pre-test, implementation of the educational module on heart-health practices and post-test; and the output was reflected as improvement or no improvement in knowledge and attitude. Feedback was considered an indirect process for evaluating and improving the effectiveness of the module.

3.4 Instruments

The researcher-developed instrument contained three sections: demographic variables; a 25-item multiple-choice knowledge questionnaire scored from 0 to 25; and a 20-item five-point Likert attitude scale scored from 0 to 100. The knowledge questionnaire covered heart-health concepts, CVD, risk factors, normal heart-health parameters, nutrition, physical activity, lifestyle modification and preventive monitoring. The attitude scale contained 10 positive and 10 negative statements, with negative items reverse scored. Higher scores indicated more favourable attitude.[17]

Content validity was established by nursing and medical experts. Reliability testing reported KR-20=0.76 for the 25-item knowledge questionnaire and Cronbach's alpha=0.875 for the 20-item attitude scale.[18]

3.5 Educational intervention and data collection

After institutional permission, ethical approval and informed consent, the pre-test was administered using the self-administered questionnaire. The educational module was then delivered using audio-visual aids. The module addressed understanding the heart, CVDs and risk factors, normal heart-health parameters, nutritional habits, physical activity, lifestyle modifications, preventive health monitoring and a personal health plan. The same assessment was administered as a post-test on the seventh day after the intervention.[19]

3.6 Statistical analysis

Frequency and percentage were used to describe categorical variables, while mean and standard deviation were used for knowledge and attitude scores. Paired t-test was used to compare pre-test and post-test scores. Chi-square test was used to determine associations between pre-test knowledge level and selected demographic variables. The level of significance was set at 0.05.[19]

3.7 Ethical considerations

The dissertation reports approval from the Scientific Committee and Institutional Ethics Committee of P.K. Das Institute of Medical Sciences. Institutional permission and informed consent were obtained, confidentiality was maintained, and participation was voluntary.[20]

IV. Results and Discussion

The study included 75 college students. In the pre-test, 43 (57.3%) had average knowledge, 30 (40.0%) had good knowledge and 2 (2.7%) had poor knowledge. For attitude, 45 (60.0%) had a moderately favourable attitude, 28 (37.3%) had a highly favourable attitude and 2 (2.7%) had an unfavourable attitude.[21]

4.1 Selected participant characteristics

Characteristic	Category	n (%)
Gender	Female	37 (49.3)
Gender	Male	38 (50.7)
Type of family	Nuclear	55 (73.3)
Residence	Rural	38 (50.7)
Residence	Urban	37 (49.3)
Physical activity	Yes	37 (49.3)
Physical activity	No	38 (50.7)
Previously heard about heart health	Yes	41 (54.7)
Previously heard about heart health	No	34 (45.3)

Family history of heart disease	Yes	14 (18.7)
Family history of heart disease	No	61 (81.3)

Table 1. Selected demographic characteristics of participants (n=75).

4.2 Pre-test and post-test knowledge and attitude

Outcome	Pre-test Mean±SD	Post-test Mean±SD	Paired t	p-value
Knowledge (0–25)	14.50±2.26	20.62±1.80	22.3024	<0.0001
Attitude (0–100)	78.48±10.32	83.10±10.10	4.7144	<0.0001

Table 2. Comparison of pre-test and post-test knowledge and attitude scores (n=75).

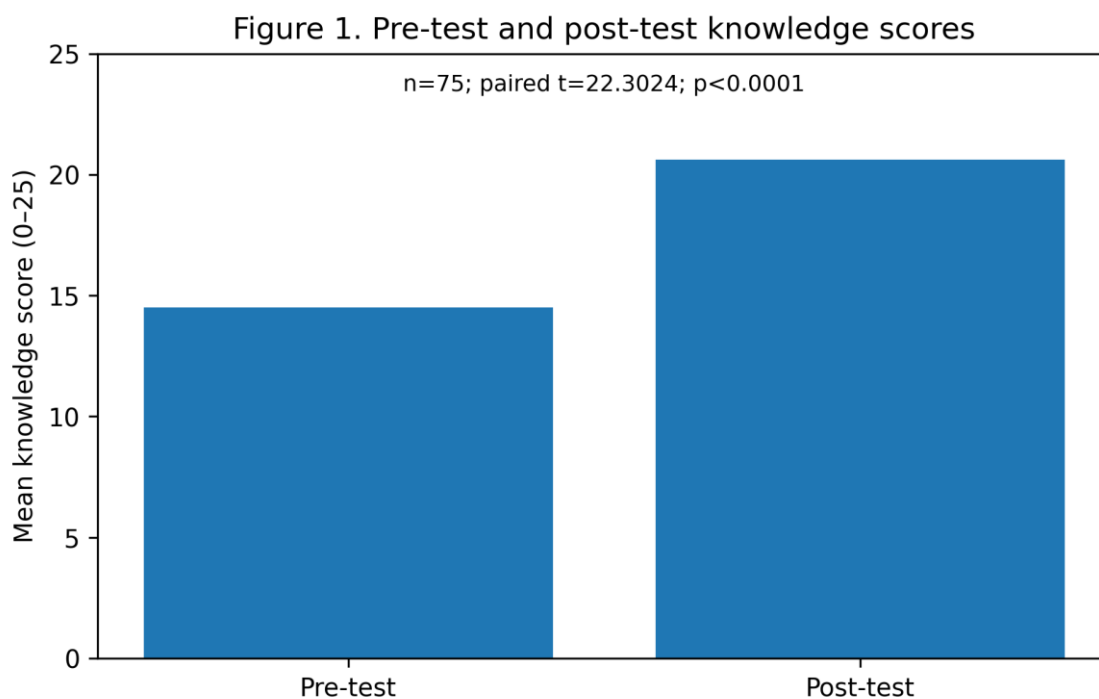


Figure 1. Pre-test and post-test mean knowledge scores among college students.

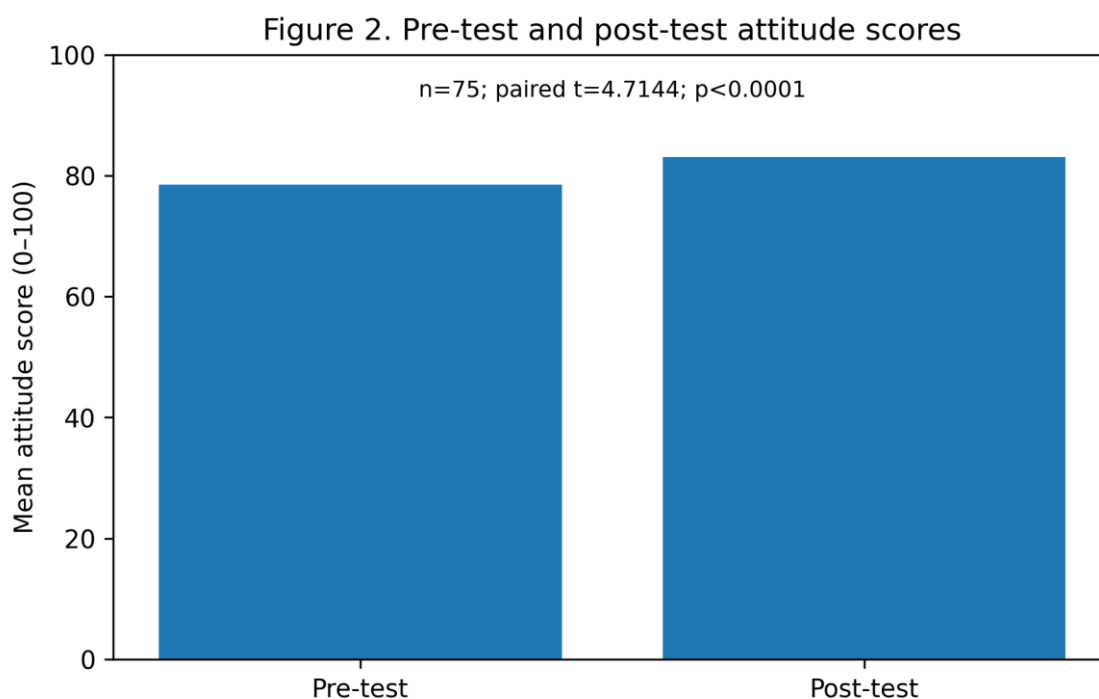


Figure 2. Pre-test and post-test mean attitude scores among college students.

4.3 Association between pre-test knowledge and selected demographic variables

Variable	χ^2	df	Decision
Age	17.2926	6	Significant
Semester of study	21.4606	9	Significant
Physical activity practice	8.6719	3	Significant
Gender	5.2604	3	Not significant
Religion	5.7147	6	Not significant
Family type	2.3694	6	Not significant
Residence	2.1988	3	Not significant
Family income	6.4600	6	Not significant
Sleeping pattern	1.8759	6	Not significant
Family history of heart disease	2.3528	3	Not significant
Heard about heart health	2.9146	3	Not significant
Health professional in family	0.4756	3	Not significant
Attended health programme	2.1545	3	Not significant

Table 3. Association between pre-test knowledge level and selected demographic variables (n=75). Significance criterion: $p < 0.05$.

The present study found that most participants had average knowledge and a moderately favourable attitude before the intervention. This pattern is consistent with reports among university and college students showing gaps in cardiovascular risk knowledge and suboptimal heart-health behaviours.[8–11,21]

Following the educational module, both knowledge and attitude scores increased significantly. The mean knowledge score rose from 14.50 to 20.62, with a paired t-value of 22.3024 ($p < 0.0001$). The mean attitude score rose from 78.48 to 83.10, with a paired t-value of 4.7144 ($p < 0.0001$). Similar improvements after structured teaching, video-assisted education, health-literacy interventions and nurse-led educational interventions have been reported in other populations.[12–15,22–24]

The significant associations between pre-test knowledge and age, semester of study and physical activity practice suggest that baseline knowledge may differ across selected student characteristics. However, most other demographic variables were not significantly associated with knowledge. This finding is compatible with literature showing that knowledge, attitudes and behaviours do not always move together and that educational exposure alone may not guarantee healthy practices.[8,10,21]

The present findings should be interpreted in light of the study design. Because the study used a one-group pre-test post-test design without randomisation or a control group, the observed improvement cannot be attributed exclusively to the educational module with the same level of certainty as a controlled trial. Nevertheless, the statistically significant within-group changes support the usefulness of the module as a health-promotion intervention in this setting.

V. Conclusion

The study demonstrated significant improvement in knowledge and attitude regarding heart-health practices after administration of the educational module among the participating college students. The findings support the role of structured, age-appropriate health education in promoting cardiovascular health awareness among young adults. Further controlled and longer-term studies are needed to determine whether such improvements are sustained and translated into actual lifestyle behaviour.

VI. Implications

- Nursing practice: Nurses can provide structured cardiovascular health education to young adults in college and community settings.
- Nursing education: Heart-health promotion can be incorporated into nursing health-teaching activities and student wellness programmes.
- Nursing administration: Educational institutions can support periodic cardiovascular health-awareness programmes and preventive screening activities.
- Nursing research: Future studies can compare different educational approaches and assess long-term behavioural outcomes.

VII. Limitations

- The sample was limited to 75 students from a single institution, restricting generalisability.
- Purposive sampling may introduce selection bias.
- The one-group pre-test post-test design did not include a control group.
- The follow-up period was short and did not assess long-term retention of knowledge or attitude change.
- Self-administered measures may be affected by response bias.
- The study assessed knowledge and attitude rather than objectively measured long-term heart-health behaviours.

VIII. Recommendations

- Replicate the study with larger samples from multiple colleges and geographical areas.
- Use a quasi-experimental or randomised controlled design with a comparison group.
- Conduct longer follow-up assessments to determine retention and behavioural change.
- Compare classroom, digital, video-assisted and blended educational strategies.
- Include objective measures of cardiovascular health behaviour where feasible.

IX. Declarations

Ethical approval: The dissertation reports approval from the Scientific Committee and Institutional Ethics Committee of P.K. Das Institute of Medical Sciences.

Informed consent: Informed consent was obtained from participants.

Conflict of interest: To be confirmed by the author before submission.

Funding: To be confirmed by the author before submission.

Data availability: Data are available from the corresponding author subject to institutional and ethical requirements.

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