



“EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON KNOWLEDGE AND PRACTICE REGARDING PREVENTION OF CORONARY ARTERY DISEASE AMONG PATIENTS WITH MODIFIABLE RISK FACTORS OF CORONARY ARTERY DISEASE IN SELECTED HOSPITAL SANJAY GANDHI MEMORIAL HOSPITAL REWA M. P.”

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Abstract: Background: Coronary artery disease (CAD) is a major and growing cause of death in India, and much of its burden is linked to modifiable risk factors such as hypertension, diabetes, tobacco and alcohol use, obesity, physical inactivity and an unhealthy diet. Patients' knowledge and practice of prevention are often limited, and nurse-led education may help to close this gap.

Objectives: To assess pre-test and post-test knowledge and practice regarding prevention of CAD among patients with modifiable risk factors, to evaluate the effect of a planned teaching programme (PTP), to examine the correlation between knowledge and practice, and to find the association between pre-test knowledge and selected socio-demographic variables.

Methods: A quantitative, pre-experimental one-group pretest–posttest study, guided by King's goal attainment theory, was conducted at Sanjay Gandhi Memorial Hospital, Rewa, Madhya Pradesh, in February 2023. Sixty hospitalised patients with modifiable risk factors of CAD were recruited by non-probability purposive sampling. Data were collected with a socio-demographic proforma, a structured knowledge questionnaire (maximum score 30) and a practice checklist. A PTP delivered with a PowerPoint presentation was given after the pre-test, and the post-test was done on the 8th day. Data were analysed with frequencies, percentages, means, standard deviations, the paired *t*-test and the chi-square test.

Results: Before the PTP, 23.3% (*n* = 14) of patients had poor, 63.3% (*n* = 38) average and 13.3% (*n* = 8) good knowledge. After the PTP, none had poor knowledge, 20.0% (*n* = 12) had average and 80.0% (*n* = 48) had good knowledge. The mean knowledge score increased from 15.00 ± 4.75 to 23.10 ± 3.60 (mean gain 8.10; paired *t* = 24.17, *df* = 59, *p* < 0.001), and the mean practice score increased from 7.24 ± 3.78 to 9.59 ± 1.24 (paired *t* = 6.40, *p* < 0.001). Knowledge and practice scores were significantly correlated. Pre-test knowledge was associated with age, sex, education, dietary habit, bad habits, awareness of CAD and family history of heart disease, but not with occupation.

Conclusion: Baseline knowledge of CAD prevention among patients with modifiable risk factors was inadequate, and a single planned teaching programme produced a large short-term gain in knowledge and a smaller gain in practice. Such programmes may be built into routine ward teaching. Because the design lacked a control group and follow-up was limited to the 8th day, the findings should be confirmed in controlled studies with longer follow-up.

Keywords: coronary artery disease; planned teaching programme; knowledge; practice; modifiable risk factors; nursing; India

1. Introduction

Coronary artery disease (CAD), also called coronary atherosclerosis, is the most common type of heart disease. It arises when cholesterol and other material build up as plaque on the inner walls of the arteries that supply the heart muscle, hardening and narrowing them. As the plaque grows, less blood and oxygen reach the myocardium, which can cause angina or myocardial infarction and, over time, heart failure and arrhythmias

[1,2]. Most heart attacks occur when a blood clot suddenly cuts off the blood supply to the heart.

Ischaemic heart disease is among the leading causes of death worldwide [3], and the Indian subcontinent carries a heavy and growing share of this burden [4]. Coronary disease in Indians tends to appear earlier in life than in many other populations, and estimates cited in the literature point to a fourfold rise in prevalence over four decades, with urban prevalence of 7–13% and rural



prevalence of 2–7% [4]. Population ageing, urbanisation and changing lifestyles are driving the shift from communicable to non-communicable disease.

Much of this burden is preventable. Hypertension, raised cholesterol, diabetes, tobacco and alcohol use, obesity, physical inactivity and an unhealthy diet are modifiable risk factors, and a healthy lifestyle is associated with a markedly lower risk of coronary events [5]. Physical inactivity alone contributes substantially to coronary heart disease and other non-communicable diseases worldwide [6], and in pooled cohort data an unhealthy lifestyle carried a larger excess risk of CAD than work-related job strain [7]. Among Indian patients with CAD, several modifiable risk factors commonly coexist [8]. Preventive measures that change behaviour are therefore likely to be more affordable and more widely applicable than sophisticated cardiac care, which cannot be offered to everyone.

Prevention depends on patients knowing which risks they carry and what to do about them, yet studies from the region show limited knowledge. In an outpatient study in Ludhiana, only 15.3% of 150 patients had a good level of knowledge about preventive measures for CAD, and 84.7% had poor knowledge [9]. In a semi-urban community in Nepal, knowledge of the causes of heart disease was poor, and a gap was found between knowledge, attitude and behaviour even among people already affected by cardiovascular disease [10]. Knowledge and practice regarding CAD prevention have also been examined among workers of a pharmaceutical company in Tehran [11] and among university students in Karachi [12].

Patients admitted to hospital with modifiable risk factors are an accessible audience, and nurses are well placed to teach them. The investigator repeatedly met patients who asked how their risk factors related to CAD and how it could be prevented. An educational programme that explains the heart, the disease, its risk factors and the practical steps of prevention may help patients recognise their own risk status and motivate them to modify their lifestyle. The present study was undertaken to evaluate such a programme in a tertiary hospital in Rewa, Madhya Pradesh. Its objectives were: (1) to assess the pre-test and post-test knowledge and practice regarding prevention of CAD among patients with modifiable risk factors; (2) to determine the effectiveness of a planned teaching programme (PTP); (3) to find the correlation between knowledge and practice scores; and (4) to find the association between pre-test knowledge and selected socio-demographic variables. The hypotheses were: H_1 , a significant association exists between knowledge and practice scores and the

socio-demographic variables; H_2 , a significant difference exists between pre-test and post-test knowledge and practice scores; and H_3 , a significant correlation exists between knowledge and practice scores. The null hypothesis (H_0) was that there is no significant difference between pre-test and post-test mean scores.

2. Methods

2.1 Study design and setting

A quantitative approach with a pre-experimental, one-group pretest–posttest design ($O_1 - X - O_2$) was used [13]. The independent variable was the PTP on prevention of CAD, and the dependent variables were knowledge and practice. Extraneous variables were the socio-demographic characteristics: age, sex, educational status, occupational status, dietary habit, bad habits, awareness of CAD and family history of heart disease. The conceptual framework was based on Imogene King's goal attainment theory [14], in which the nurse and the patient perceive each other, interact, set mutual goals and, through transaction, work towards a goal; in this study the goal was improved knowledge and practice regarding prevention of CAD. The study was conducted at Sanjay Gandhi Memorial Hospital (SGMH), Rewa, Madhya Pradesh, a 1,000-bedded multispecialty hospital, in February 2023.

2.2 Participants and sampling

The study population comprised patients with modifiable risk factors of CAD (high blood pressure, high cholesterol, smoking, alcohol use, drug abuse, diabetes, obesity, physical inactivity or unhealthy diet) who were admitted to SGMH for conditions other than CAD. A total of 60 patients were enrolled by non-probability purposive sampling. Patients were included if they had modifiable risk factors of CAD, were willing to participate and were willing to return on the post-test day if discharged. Patients who could not read and write Hindi or English were excluded. No formal sample-size calculation was reported. Selection was therefore non-random, and the sample cannot be assumed to represent all patients with modifiable risk factors.

2.3 Instruments

Data were collected with a self-structured, paper-and-pencil tool in three parts, developed from the literature, books, reports and expert guidance. **Part I** recorded socio-demographic characteristics: age, sex, educational status, occupational status, dietary habit, bad habits (alcohol, smoking or tobacco, drug abuse), awareness of CAD, family history of heart disease and waist circumference.

Part II was a structured knowledge questionnaire of multiple-choice items, each with one correct response, covering seven



areas: anatomy and physiology of the heart, definition of CAD, risk factors, clinical manifestations, diagnostic evaluation, prevention and management. Each correct answer scored one mark and each wrong answer zero, giving a maximum score of 30. Scores were graded as inadequate ($\leq 50\%$), moderately adequate (51–75%) or adequate ($> 75\%$); these grades are reported in the tables as poor, average and good.

Part III was a self-structured practice checklist on prevention of CAD, graded in the same way as the knowledge scores.

2.4 Validity, reliability and pilot study

Content validity of the tool and the PTP was established through the opinion of experts in nursing and medicine, including a cardiologist; their suggestions, mainly on the socio-demographic items, were incorporated and the tool was finalised by consensus. Reliability was established by the test-retest method for the knowledge questionnaire ($r = 0.83$) and the inter-rater method for the practice checklist ($r = 0.87$), indicating that the tool was reliable. A pilot study was carried out at SGMH from 13 to 18 February 2023 on six patients who met the inclusion criteria, using the same procedure as the main study. The pilot showed a significant gain in knowledge ($t = 5.95$, $p < 0.001$), and the tool and procedure were judged feasible and practicable for the main study.

2.5 Intervention: planned teaching programme

The PTP was developed from the literature and expert guidance and was delivered by the investigator with a PowerPoint presentation. Its content covered the anatomy and physiology of the heart, the meaning of CAD, risk factors, signs and symptoms, diagnosis, treatment and management, complications and the steps for prevention. The pre-test and the teaching session together took approximately 1 hour 30 minutes.

2.6 Data collection procedure

Formal permission was obtained from the Principal of the Government Nursing College, G.M.H. Rewa, ethical clearance was granted, and written permission was obtained from the Medical Director and the Nursing Superintendent of SGMH. Data were collected in February 2023. After a brief introduction and an explanation of the purpose of the study, written consent was obtained. The socio-demographic proforma was completed first, followed by the pre-test knowledge questionnaire and practice checklist. The PTP was then delivered, and on the 8th day the same knowledge questionnaire and practice checklist were readministered as the post-test. Patients with bad personal habits (smoking, drinking, drug abuse) or with physical and physiological problems (diabetes, high cholesterol, hypertension) were referred to a cardiologist for evaluation to rule out cardiac problems.

2.7 Ethical considerations

Participation was voluntary, and written consent was obtained from every participant. Confidentiality and anonymity were maintained, participants were assured that they would not be exposed to psychological stress or harm, and the information was used only for research purposes.

2.8 Data analysis

Data were entered in a master sheet and analysed with descriptive and inferential statistics. Categorical variables were summarised as frequencies and percentages, and knowledge and practice scores as means and standard deviations (SD). Pre-test and post-test mean scores were compared with the paired t -test ($df = 59$). The relationship between knowledge and practice scores was examined with correlation analysis, and the association between pre-test knowledge level and selected socio-demographic variables with the chi-square test. The level of significance was set at $p < 0.05$. Mean differences, their 95% confidence intervals and a standardised effect size (Cohen's d_z) were calculated from the reported test statistics, and p -values for the chi-square tests were calculated from the reported χ^2 values and degrees of freedom; these are labelled as derived values.

3. Results

3.1 Characteristics of participants

The analysis included 60 patients (Table 1). One-third (33.3%) were aged 41–50 years, 25.0% were aged 25–30 years, 23.3% were aged 31–40 years and 18.3% were older than 50 years. Three-quarters (75.0%) were male. Graduates formed the largest educational group (40.0%), followed by high school (35.0%), higher secondary (16.7%) and postgraduate (8.3%). Half of the patients (50.0%) were heavy workers, 30.0% were sedentary workers and 20.0% were moderate workers, and most (85.0%) were vegetarian. More than a third (36.7%, $n = 22$) reported at least one bad habit: alcohol use (10.0%), smoking or tobacco use (13.3%) or drug abuse (13.3%) (Figure 1). Three-quarters (75.0%, $n = 45$) said they knew about CAD, and 21.7% ($n = 13$) had a family history of heart disease.

Table 1. Socio-demographic characteristics of the patients ($N = 60$)

Variable	Frequency (n)	Percentage (%)
Age group (years)		
25–30	15	25.0
31–40	14	23.3



Variable	Frequency (n)	Percentage (%)
41–50	20	33.3
Above 50	11	18.3
Sex		
Male	45	75.0
Female	15	25.0
Education		
High school	21	35.0
Higher secondary (HSE)	10	16.7
Graduate	24	40.0
Postgraduate	5	8.3
Occupational status		
Sedentary worker	18	30.0
Moderate worker	12	20.0
Heavy worker	30	50.0
Dietary habit		
Vegetarian	51	85.0
Non-vegetarian	9	15.0
Bad habits		
Alcohol use	6	10.0
Smoking / tobacco use	8	13.3
Drug abuse	8	13.3
None	38	63.3
Aware of coronary artery disease		
Yes	45	75.0
No	15	25.0
Family history of heart disease		
Yes	13	21.7
No	47	78.3

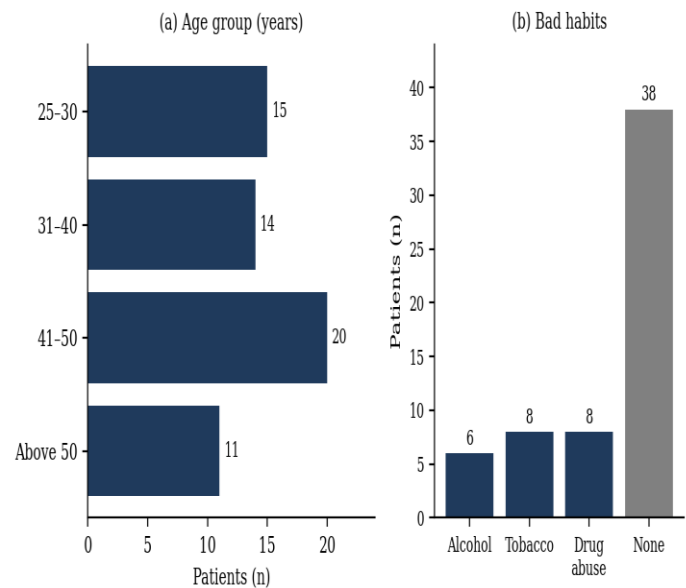


Figure 1. (a) Age group and (b) bad habits of the patients (N = 60).
3.2 Level of knowledge before and after the programme

In the pre-test, 14 patients (23.3%) had poor knowledge, 38 (63.3%) had average knowledge and 8 (13.3%) had good knowledge. In the post-test, no patient had poor knowledge, 12 (20.0%) had average knowledge and 48 (80.0%) had good knowledge (Table 2, Figure 2). Every patient who had poor knowledge before the PTP moved to a higher category afterwards.

Table 2. Distribution of patients by level of knowledge regarding prevention of coronary artery disease, before and after the planned teaching programme (N = 60)

Level of knowledge	Pre-test, n (%)	Post-test, n (%)
Poor ($\leq 50\%$)	14 (23.3)	0 (0.0)
Average (51–75%)	38 (63.3)	12 (20.0)
Good ($> 75\%$)	8 (13.3)	48 (80.0)
Total	60 (100)	60 (100)

Percentages were recalculated from the frequencies and rounded to one decimal place.

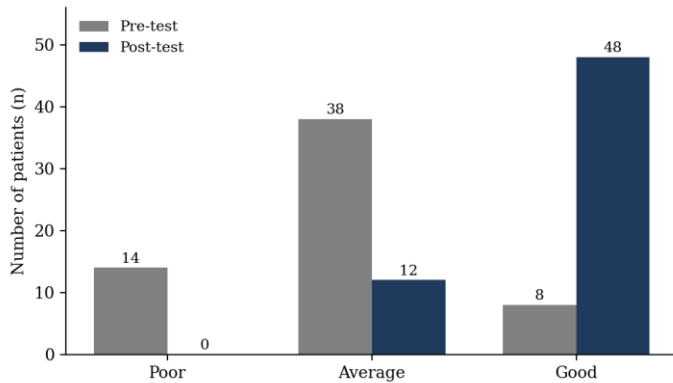


Figure 2. Level of knowledge regarding prevention of coronary artery disease before and after the planned teaching programme (N = 60).

3.3 Effect of the planned teaching programme

The mean knowledge score rose from 15.00 (SD 4.75) before the programme to 23.10 (SD 3.60) afterwards, a mean gain of 8.10 points (Table 3, Figure 3). Expressed against the maximum score of 30, mean knowledge increased from 50.0% to 77.0%. The paired *t*-test gave $t = 24.17$ with 59 degrees of freedom, a difference significant at $p < 0.05$ (and, from the *t* value, well below 0.001). From the reported *t* value, the 95% confidence interval for the mean gain was 7.43 to 8.77 points, and the standardised effect size was very large ($d_z \approx 3.1$). The mean practice score rose from 7.24 (SD 3.78) to 9.59 (SD 1.24), a mean gain of 2.35 points ($t = 6.40$, $df = 59$, $p < 0.001$); the derived 95% confidence interval was 1.62 to 3.09 and the effect size was large ($d_z \approx 0.83$). The null hypothesis was therefore rejected and the research hypothesis H_2 accepted.

Table 3. Comparison of mean pre-test and post-test knowledge and practice scores (N = 60)

Measure	Pre-test	Post-test	Mean gain	Paired t-test
Knowledge score				
Mean score (maximum 30)	15.00	23.10	8.10	$t = 24.17$
Standard deviation	4.75	3.60	–	$df = 59$
Mean score (% of maximum)	50.0	77.0	27.0	$p < 0.001$ (derived)
Practice score				
Mean score	7.24	9.59	2.35	$t = 6.40$

Measure	Pre-test	Post-test	Mean gain	Paired t-test
Standard deviation	3.78	1.24	–	$df = 59$; $p < 0.001$ (derived)

95% CI of the mean gain (derived from *t*): knowledge 7.43 to 8.77; practice 1.62 to 3.09. Cohen's d_z (derived): knowledge ≈ 3.1 ; practice ≈ 0.83 .

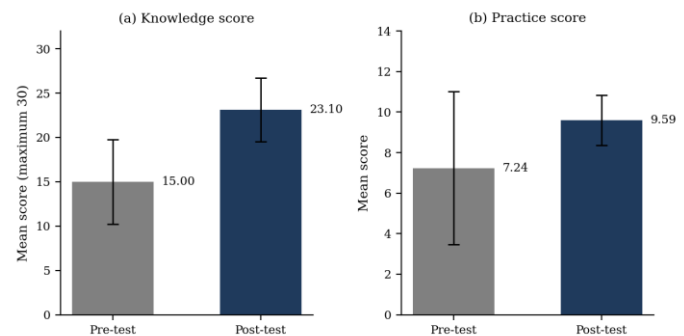


Figure 3. Mean (a) knowledge and (b) practice scores before and after the planned teaching programme. Error bars show one standard deviation.

3.4 Correlation between knowledge and practice

A statistically significant correlation was found between knowledge and practice scores, and hypothesis H_3 was accepted [correlation coefficient and *p*-value to be added by authors].

3.5 Association of pre-test knowledge with socio-demographic variables

Table 4 shows the cross-tabulation of pre-test knowledge level with the socio-demographic variables. On the reported chi-square values, pre-test knowledge level was significantly associated with age ($\chi^2 = 18.90$, $df = 6$, $p = 0.004$), sex ($\chi^2 = 22.03$, $df = 2$, $p < 0.001$), education ($\chi^2 = 30.74$, $df = 6$, $p < 0.001$), dietary habit ($\chi^2 = 13.71$, $df = 2$, $p = 0.001$), bad habits ($\chi^2 = 33.70$, $df = 6$, $p < 0.001$), awareness of CAD ($\chi^2 = 36.12$, $df = 2$, $p < 0.001$) and family history of heart disease ($\chi^2 = 23.66$, $df = 2$, $p < 0.001$), but not with occupational status ($\chi^2 = 1.24$, $df = 4$, $p = 0.87$). Poor knowledge was concentrated among women (10 of 15, 66.7%, compared with 4 of 45 men, 8.9%), patients unaware of CAD (12 of 15, 80.0%), non-vegetarians (6 of 9, 66.7%) and those using alcohol (5 of 6) or tobacco (6 of 8), whereas good knowledge was commoner among patients older than 50 years (5 of 11) and those with a family history of heart disease (7 of 13). Most of these tables had expected frequencies below 5 in many cells, so the results are approximate.



Table 4. Association of pre-test knowledge level with selected socio-demographic variables (N = 60)

Variable	Poor	Average	Good	Total	χ^2	df	p-value
Age group (years)					18.90	6	0.004*
25–30	7	8	0	15			
31–40	4	9	1	14			
41–50	2	16	2	20			
Above 50	1	5	5	11			
Sex					22.03	2	< 0.001*
Male	4	35	6	45			
Female	10	3	2	15			
Education					30.74	6	< 0.001*
High school	7	14	0	21			
Higher secondary	5	5	0	10			
Graduate	2	18	4	24			
Postgraduate	0	1	4	5			
Occupational status					1.24	4	0.87
Sedentary worker	5	10	3	18			
Moderate worker	3	7	2	12			
Heavy worker	6	21	3	30			
Dietary habit					13.71	2	0.001*
Vegetarian	8	37	6	51			
Non-vegetarian	6	1	2	9			
Bad habits					33.70	6	< 0.001*
Alcohol use	5	1	0	6			
Smoking / tobacco use	6	1	1	8			
Drug abuse	2	5	1	8			
None	1	31	6	38			
Aware of CAD					36.12	2	< 0.001*

Variable	Poor	Average	Good	Total	χ^2	df	p-value
Yes	2	35	8	45			
No	12	3	0	15			
Family history of heart disease					23.66	2	< 0.001*
Yes	2	4	7	13			
No	12	34	1	47			

*Significant at $p < 0.05$. Counts are numbers of patients. χ^2 values are as reported; p-values were derived from χ^2 and df. Many cells have expected counts below 5, so the chi-square approximation is limited.

4. Discussion

This study evaluated the effect of a single planned teaching programme on knowledge and practice regarding prevention of CAD among hospitalised patients with modifiable risk factors. The main findings were that baseline knowledge was low to average, that knowledge improved significantly after the programme, that practice improved to a smaller degree, and that baseline knowledge differed across socio-demographic groups.

4.1 Baseline knowledge

At baseline the mean knowledge score was only half of the maximum, and just 8 of 60 patients (13.3%) had good knowledge, although three-quarters said they knew about CAD. Awareness of a disease is therefore not the same as knowing how to prevent it. This pattern resembles the Ludhiana outpatient study, in which 15.3% of patients had good knowledge of preventive measures [9], and the Nepalese community study, which found poor knowledge of the causes of heart disease and a gap between knowledge and behaviour [10]. Knowledge of modifiable risk factors has also been studied among patients who have already had a myocardial infarction [15], which underlines that the question matters even after disease has appeared. A substantial minority of our patients (36.7%) reported alcohol, tobacco or drug use, and half were heavy workers, so a considerable proportion carried behavioural risk that education could target.

4.2 Effect of the planned teaching programme

The most notable result was the rise in mean knowledge from 15.00 to 23.10, equivalent to a gain from 50% to 77% of the maximum score, and the disappearance of the poor-knowledge category after the programme; the proportion with good knowledge rose from 13.3% to 80.0%. The change was statistically significant and large in magnitude. Several features of the intervention may



have contributed: the content was structured and targeted at the areas assessed, the PowerPoint presentation gave a visual aid, and the teaching was organised around the nurse–patient interaction and mutual goal setting described in King's theory [14]. The tool was expert-validated and had good reliability ($r = 0.83$ for knowledge). A similar rise has been reported after a teaching programme on CAD prevention among older adults in a rural community in Mangalore, where mean knowledge rose from about 61% to about 92% [16].

The size of the gain must nevertheless be interpreted with caution. The post-test used the same questionnaire as the pre-test, only seven days after teaching, so part of the improvement may reflect recall of specific items and familiarity with the test rather than durable learning. There was no control group, so other influences, including other health teaching received during the hospital stay, cannot be excluded. The result describes short-term knowledge gain and does not show lasting retention or a change in behaviour.

4.3 Practice and the relationship between knowledge and practice

Practice scores also improved significantly (7.24 to 9.59), but the effect ($d_z \approx 0.83$) was much smaller than for knowledge ($d_z \approx 3.1$). This is consistent with the view that knowledge can change within days whereas lifestyle behaviour changes slowly and needs sustained support. Practice was assessed within a week by a checklist, which is likely to capture stated intentions and early changes more than established habits. The significant correlation between knowledge and practice suggests that patients who know more tend to practise more, but correlation does not show that knowledge causes practice, and the strength of the relationship should be reported and interpreted once the coefficient is added.

4.4 Association with socio-demographic variables

Pre-test knowledge varied with age, sex, education, dietary habit, bad habits, awareness of CAD and family history, but not with occupation. Women had much poorer knowledge than men, and patients with school-level education had poorer knowledge than graduates, which fits the expectation that exposure to health information and schooling influence knowledge, although this study did not measure those factors. Patients who used alcohol or tobacco, who are at the highest behavioural risk, had some of the lowest knowledge, which makes them a priority group for teaching. Good knowledge was commoner among patients older than 50 years and among those with a family history of heart disease, possibly because of greater exposure to heart disease in their own lives or families. None of the patients aged 25–30 years had good knowledge, which matters because CAD in Indians occurs at

relatively young ages [4]. These findings are exploratory: the groups were small, many cells had expected counts below 5, and several tests were run, so larger samples and multivariable analysis are needed.

4.5 Strengths and limitations

Strengths of the study include a pilot-tested and expert-validated tool with good test–retest ($r = 0.83$) and inter-rater ($r = 0.87$) reliability, a standardised intervention delivered by one investigator, assessment of both knowledge and practice in a real hospital setting, and referral of patients with risky habits or physiological problems to a cardiologist. Several limitations should be noted. The sample was small, drawn from a single hospital and selected purposively, so selection bias is possible and the findings cannot be generalised. The one-group design has no control group, and follow-up was limited to the 8th day, so retention cannot be judged. The same instruments were used before and after teaching. Practice was assessed by a self-reported checklist and is open to social desirability bias, and no clinical outcomes such as blood pressure, lipid profile or body weight were analysed. Three-quarters of the patients were men, which limits conclusions for women. Finally, the chi-square analyses relied on small cell counts.

4.6 Implications

For nursing practice, nurses can organise regular education sessions on lifestyle modification for patients with modifiable risk factors, using audio-visual aids, and can prepare self-care modules on CAD prevention. For nursing education, prevention of CAD should be taught to students and reinforced through in-service education so that nurses can assess and counsel patients. For nursing administration, formal teaching programmes and training opportunities for nurses should be supported. For nursing research, this study provides baseline data from central India and a validated tool that can be reused in larger, controlled evaluations.

4.7 Recommendations for future research

Future studies should use larger, multi-centre samples; include a control or comparison group; add a delayed post-test at several weeks or months; and record behaviour and clinical outcomes so that the effect of education on practice and risk can be measured rather than assumed. Comparative studies of rural and urban populations and studies of other non-pharmacological measures, including studies run alongside medical treatment, would also be useful.

5. Conclusion

Patients with modifiable risk factors of CAD in this sample had inadequate to average baseline knowledge of its prevention. A



single planned teaching programme was followed by a large and statistically significant improvement in knowledge, with a mean gain of 8.10 points on a 30-point scale, and by a smaller but significant improvement in practice. Knowledge and practice were correlated, and baseline knowledge differed across socio-demographic groups. The results indicate that brief, well-structured nurse-led education can quickly correct knowledge deficits in this group. Because the study had no control group and measured only short-term outcomes, the findings are preliminary. Patients with multiple modifiable risk factors should still seek medical advice and follow-up care, and future research should test lasting effects on behaviour and clinical outcomes.

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Declarations

Ethics approval and consent: Formal permission was obtained from the Principal of the institution and from the Medical Director and Nursing Superintendent of the hospital, ethical clearance was granted before data collection, and written informed consent was obtained from all participants. **Funding:** no Funding. **Conflict of interest:** No conflict of interest. **Data availability:** The anonymised master sheet can be made available by the corresponding author on reasonable request.

Bibliography

- Hinkle JL, Cheever KH. Textbook of Medical-Surgical Nursing. 12th ed. Vol. 1. New Delhi: Wolters Kluwer (India); 2013.
- Lewis SL, et al. Medical-Surgical Nursing: Assessment and Management of Clinical Problems. St. Louis: Mosby; 2007.
- GBD 2013 Mortality and Causes of Death Collaborators. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2015;385:117–71. doi:10.1016/S0140-6736(14)61682-2.
- Goyal A, Yusuf S. The burden of cardiovascular disease in the Indian subcontinent. *Indian J Med Res*. 2006;124(3):235–44.
- Chiuv SE, McCullough ML, Sacks FM, Rimm EB. Healthy lifestyle factors in the primary prevention of coronary heart disease among men. *Circulation*. 2006;114:160–7.
- Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet*. 2012;380(9838):219–29.
- Kivimäki M, et al. Associations of job strain and lifestyle risk factors with risk of coronary artery disease: a meta-analysis of individual participant data. *CMAJ*. 2013;185(9):763–9.
- Achari V, Thakur AK. Association of major modifiable risk factors among patients with coronary artery disease: a retrospective analysis. *J Assoc Physicians India*. 2004;52:103–8.
- Choudhary M, et al. Knowledge regarding preventive measures of coronary artery disease among patients attending outpatient departments of selected hospital of Ludhiana city. *Int J Healthcare Sci*. 2014;2(1):60–3.
- Vaidya A, Aryal UR, Krettek A. Cardiovascular health knowledge, attitude and practice/behaviour in an urbanising community of Nepal: a population-based cross-sectional study from Jhaukhel-Duwakot Health Demographic Surveillance Site. *BMJ Open*. 2013;3:e002976.
- Attarchi M, Mohammadi S, Nojomi M, Labbafinejad Y. Knowledge and practice assessment of workers in a pharmaceutical company about prevention of coronary artery disease. *Acta Med Iran*. 2012;50(10):697–703.
- Almas A, Hameed A, Sultan FAT, et al. Knowledge of coronary artery disease risk factors and coronary intervention among university students. *J Pak Med Assoc*. 2008;58(10):553–7.
- Polit DF, Hungler BP. Nursing Research: Principles and Methods. Philadelphia: J.B. Lippincott; 2011.
- Wesley RL. Nursing Theories and Models. Pennsylvania: Springhouse Corporation; 1995.
- Khan MS, et al. Knowledge of modifiable risk factors of heart disease among patients with acute myocardial infarction in Karachi, Pakistan: a cross sectional study. *BMC Cardiovasc Disord*. 2006;6:18. doi:10.1186/1471-2261-6-18.
- Mary PA. Effectiveness of structured teaching programme regarding prevention of coronary artery disease among rural population. 2008.