

A Study to Assess the Effect of Health Promotion Intervention on Knowledge Regarding Prevention of Coronary Artery Disease Among College Students in Selected Colleges at Alappuzha, District in Kerala, India

Evaluación del impacto de la intervención en promoción de la salud sobre los conocimientos relativos a la prevención de la enfermedad arterial coronaria entre los estudiantes universitarios de colegios seleccionados en el distrito de Alappuzha, Kerala, India

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Abstract

A quantitative research approach was employed to evaluate the effect of a health promotion intervention on college students' knowledge regarding the prevention of coronary artery disease in selected colleges in the Alappuzha district of Kerala, India. The objectives were to assess the knowledge regarding prevention of coronary artery disease, and to determine the effect of health promotion intervention on knowledge regarding prevention of coronary artery disease among college students, and to find out the association between the pre-test score on knowledge regarding prevention of coronary artery disease among college students with their selected demographic variables. The conceptual framework was based on general system theory by Ludwing Von Bertalanffy. A quantitative research approach was chosen, utilizing a quasi-experimental one-group pre-test-post-test design. The 80 participants were selected using a non-probability convenience sampling technique. The necessary data was collected using a structured questionnaire. The findings were that the mean between post-test knowledge scores of experimental group ($p < 0.005$) indicates that there is a significant increase in the knowledge score of the experimental group on knowledge regarding prevention of coronary artery disease among college students after the structured teaching programme. The association between the knowledge score and various demographic variables shows a 0.05 level of significance. Therefore, there will be significant association between the pre-test level of knowledge scores of college students regarding prevention of coronary artery disease with their selected demographic variables such as gender, personal habits and diet.

Keywords: effect; health promotion intervention; knowledge; prevention; coronary artery disease; college students.

Resumen

Se empleó un enfoque de investigación cuantitativa, los objetivos fueron evaluar los conocimientos sobre la prevención de la arteriopatía coronaria para determinar el efecto de la intervención en promoción de la salud sobre los conocimientos en relación a la prevención de arteriopatía coronaria entre estudiantes universitarios en colegios seleccionados del distrito de Alappuzha, en Kerala (India) y averiguar la relación entre la puntuación obtenida en la prueba previa sobre dichos conocimientos y las variables demográficas seleccionadas. El marco conceptual se basó en la teoría general de sistemas de Ludwing Von Bertalanffy. Se optó por un enfoque de investigación cuantitativo, utilizando un diseño cuasiexperimental de un grupo pretest / post test. Los 80 participantes se seleccionaron mediante una técnica de muestreo no probabilístico por conveniencia y los datos necesarios se recogieron mediante un cuestionario estructurado. Los resultados arrojaron una diferencia media entre las puntuaciones de conocimientos pre/postest del grupo experimental ($p < 0.005$), lo cual indica que hay un aumento significativo en la puntuación de conocimientos del grupo experimental después de la impartición del programa de enseñanza estructurado. La asociación entre la puntuación y las diversas variables demográficas muestra un nivel de significación de 0.05; por tanto, hay una asociación significativa entre la puntuación y las variables demográficas seleccionadas, como el sexo, los hábitos personales y la dieta.

Palabras clave: efecto; intervención de promoción de la salud; conocimientos; prevención; enfermedad arterial coronaria; estudiantes universitarios.



Introduction

The heart is four-chambered organ consisting of two atria and two ventricles. The right atrium and right ventricle receive deoxygenated blood from the two *venae cavae*, i.e., the superior and inferior, and pump it into the lungs through the pulmonary arteries. The left atrium and left ventricle receive oxygenated blood from lungs and push it to various parts of the body through aorta and the vascular system.¹

The four valves of the heart keep blood flowing in a forward direction. The heart muscles require a rich oxygen supply to meet its own metabolic needs. The coronary arteries, which branch off the aorta just above the aortic valve, encircle the heart, penetrate the myocardium, and nourish the heart muscles. The contraction of the left ventricular muscles generates enough extravascular pressure to occlude the coronary blood vessels and prevent blood flow to the heart muscles during ventricular systole. For adequate blood flow through the coronary arteries, the diastolic blood pressure must be at least 60mmHg.²

The human heart, through rhythmic contraction, provides the pressure necessary to propel blood through the body. Blood flow is essential to deliver nutrients to the tissues of the body and to transport metabolic wastes, including heat, to removal sites. The presence of the arterial pulse, caused by the beating of the heart, is appropriately designated as a vital sign.³

Background of the Study

Health promotion intervention covers a wide range of social and environmental interventions that are designed to benefit and protect individual people's health and quality of life by addressing and preventing the root causes of ill health, not just focusing on treatment and cure. About 17.9 million deaths were reported due to cardiovascular diseases (CVD) in 2016, which contributes about 31% of global mortality. Among these, the major causes of death were heart attack and stroke. However, the number of deaths is predicted to increase by 23.3 million in next ten years. Low and middle-income countries contribute nearly 82% in CVD related mortality due to poor health promotion intervention strategies.⁴

A quasi-experimental study was conducted to assess the effect of knowledge about cardiovascular disease on healthy lifestyle behaviour among freshmen of Zigzag University. A quantitative research approach was used and necessary data was collected using a self-administered questionnaire among 128 first-year students, and was calculated using the Epi Info software program version 7. The sample was collected out of six practical non-health related colleges of Zigzag University by a simple random sampling technique. The results showed that the total mean knowledge score regarding healthy lifestyle behavioral practices for coronary artery disease among the participants was 98.35 ± 6.50 during the pre-intervention phase. After evaluating the effects of different student's characteristics on the acquisition of knowledge during the post intervention phase, we noticed that participants with CVDs and/or a positive family history had significantly higher total mean scores than those without personal or family history of CVDs, $p < 0.05$.⁵

Need and significance of the study

"No beauty shines brighter than a healthy heart"

Coronary artery disease (CAD) is the foremost cause of disability and death the world over and is one of the top five causes of death in Indian population. Mortality from CAD in Indians is predicted to increase rapidly and overtake that of the high-income countries. Among adults over 20 years of age, there has been a two-fold rise in CAD in rural areas and a 6-fold rise in urban areas during the period from 1960 to 2002.⁶ Previous studies have shown high prevalence of CAD in Asian Indians residing in the United States. Cardiovascular diseases (CVDs) are the leading cause of death globally, taking an estimated 17.9 million lives each year.⁴ The prevalence of CAD in Indians living in India is 21.4% for diabetics and 11% for nondiabetics.⁷ The prevalence of CAD in Kerala for people living rurally is 7.4% and for people in urban zones is 11%. In Alappuzha district, the prevalence rate of coronary artery disease is 6.3%.⁸

A descriptive research study was conducted to assess the knowledge regarding preventive measures of coronary artery disease among patient attending outpatient departments of selected

hospital of Ludhiana city. A quantitative evaluative approach design was used to assess the knowledge regarding preventive measures of coronary artery among 150 patients in OPD. The necessary data was collected using a structured knowledge questionnaire consisting of 25 open-ended multiple-choice questions. The result revealed that only 15.33% of subjects had good level of knowledge, and 84.67% subject had poor level of knowledge regarding prevention of CAD.⁹

Referencing the above evidence and details, we find that knowledge regarding the effect of lifestyle modification intervention on coronary artery disease patients is poor. However, the health promotion interventions are encouraging and highlight the importance of introducing effective multidimensional health promotion educational programs. Such programs should be aimed at improving students' knowledge about coronary artery disease and promoting healthy lifestyle behaviours. Improving understanding of the impact of lifestyle modification interventions on the health status of patients with coronary artery disease is crucial in addressing this issue following the study.

Objectives

- ❖ To assess the knowledge regarding prevention of coronary artery disease among college students.
- ❖ To determine the effect of health promotion intervention on knowledge regarding prevention of coronary artery disease among college students.
- ❖ To find out the association between pre-test score on knowledge regarding prevention of coronary artery disease among college students with selected demographic variables.

Hypothesis

- ❖ H1: There will be significant difference between pre-test and post-test knowledge scores of preventions of coronary artery disease among college students in selected areas at Alappuzha district.
- ❖ H2: There will be significant association between pre-test levels of knowledge score of college students regarding prevention of

coronary artery disease with their selected demographic variables.

Research Approach

In this study, a quantitative research approach was used to assess the effect of health promotion intervention on knowledge regarding prevention of coronary artery disease among college students in selected colleges at Alappuzha district.

Research Design

The research design used in the study was a one-group pre-test-post-test design.

Setting of the Study

The study was conducted among college students in Presidency College of Management and Technology, Charummoodu at Alappuzha district.

Population

In this study selected population was college students in selected colleges at Alappuzha district.

Sample And Sampling Techniques

Sample size

In this study the sample consist of 80 college students in selected colleges at Alappuzha district.

Sampling technique

The sample for the study was selected by using convenient sampling technique.

The sample were selected based on the inclusion and exclusion criteria.

Description of Tools

Section A

Section A was developed after extensive review of literature and based on expert opinion. It includes a structured questionnaire to collect information regarding the sample. It gathers data like age in years, gender, personal habits, type of family, family income and diet.

Section B

Section B was developed after extensive review of literature and based on expert opinion. The researcher prepared the knowledge questionnaire regarding prevention of coronary artery disease among college students. It consists of 25 questions; each correct answer counts as one mark and each wrong answer counts as zero marks.

Data Collection Process

It is a precise, systematic gathering of information relevant to researchers' purpose or objectives or hypothesis of the study.

Phase 1

After receiving approval from concern authority for the study, a demographic data questionnaire and lesson plan for teaching are designed and prepared.

Phase 2

The study was conducted in college students at selected college at Alappuzha district. 80 samples were selected according to the non-probability convenient sampling technique.

In this phase researchers explain the study and its purpose to the sample group, and obtain informed consent for their participation.

Before data collection, the investigator introduced himself and shared the purpose of the study. After assuring confidentiality, the investigator requested that the subjects participate in the study. The questionnaire was administered to the group. The average time taken to conduct the pre-test was 15 minutes. The health promotion interventions took 45 minutes, with the help of audio-visual aids like slides and examples. The participants and management cooperated well for conducting studies. They provided positive feedback about the health promotion interventions.

Phase 3

Post-test was done to assess the knowledge regarding prevention of coronary artery disease among college students using same questionnaire after seven days.

Result

Data was analysed and presented under the following headings.

Section A

Distribution of demographic variables.

Section B

To assess the effect of health promotion intervention on knowledge regarding prevention of coronary artery disease among college students with selected demographic variables at Alappuzha district.

Section C

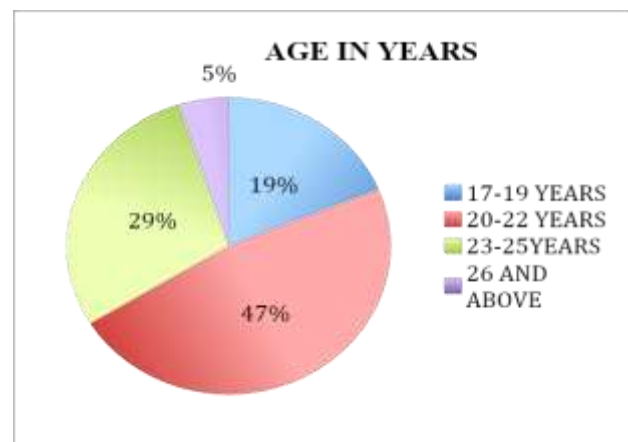
To determine association between mean pre-test score on knowledge regarding prevention of coronary artery disease among college students in selected areas at Alappuzha district with selected demographic variables.

Section A

Frequency and Percentage distribution of sample based on socio demographic variable.

Graphical Representation

Fig. 1. Age in years



Source: all charts and tables were done with our data

Fig 1: shows that the majority 48% are between 20-22 years, 29% between 23-25 years, 19% between 17-19 years and 5% are 26 and above.

Fig. 2. Gender

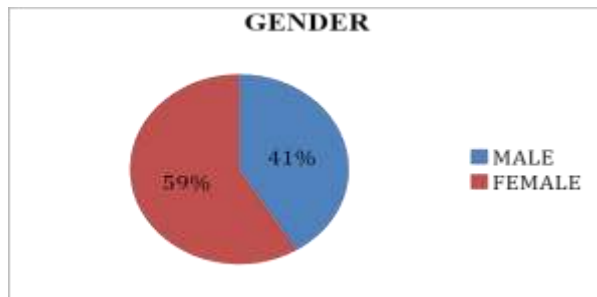


Fig. 2 shows that 59% are females and 41% are males.

Fig. 3. Personal habits



Fig 3. shows that majority 70% have no bad habits, 19% are alcoholics or have alcoholic habits, 7% are smokers and 4% are both alcoholics and smokers.

Fig. 4. Type of family

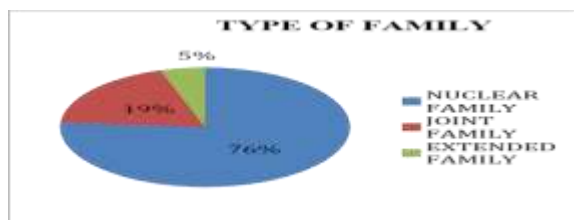


Fig. 4. shows that the majority (76%) live in a nuclear family, 19% live in joint family and 5% live in extended family.

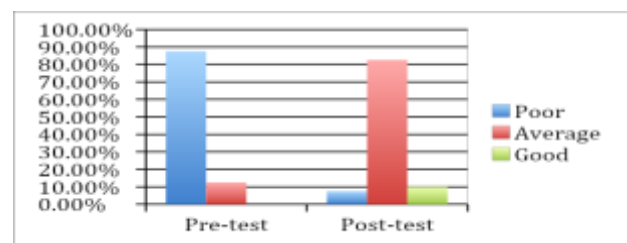
Section B:

To assess the pre and post-test score of knowledge regarding prevention of coronary artery disease among college students in selected colleges at Alappuzha district.

Table 1. Comparison of frequency and percentage according to pre and post-test knowledge score.

Level of knowledge	Range of score	Pre-test		Post-test	
		Frequency	Percentage	Frequency	Percentage
Poor	1-10	70	87.5%	6	7.5%
Average	11-20	10	12.5%	66	82.5%
Good	21-25	0	0%	8	10%

Fig. 5. Graphical representations of pre-test and post- test knowledge scores



In pre-test most of the college students had poor knowledge (87.5%) or average knowledge (12.5%), and none of them had good knowledge (0%). Whereas in the post-test, most of the college students had good knowledge (10%) or average knowledge (82.5%), and some had poor knowledge (7.5%).

Table 2. Mean, median and standard deviation of pre-test and post-test (N=80).

	Mean	Median	Standard deviation
Pre-test	7.662	8	2.79
Post-test	12.8	13	3.79

The data depicts that the mean post-test knowledge score (12.8) is higher than the mean pre-test knowledge score (7.662), the median value of post-test score (13), higher than the median pre-test value (8). To find out the significant differences between pre-test and post-test knowledge score, paired t - test was used in order to test the statistical significant between mean pre-test and post-test scores, the following hypothesis was formulated.

H₁: The mean post-test knowledge score of college students regarding prevention of coronary artery disease will be significantly higher than that of mean pre-test values.

Table 3. Mean, standard deviation, mean difference, “t” value of pre-test and post-test (N=80).

Parameter	Mean	Standard deviation	Mean difference	Df(n-1)	t-value	P-value
Pre-test	7.662	2.79	5.138	79	11.127	P<.005
Post-test	12.8	3.79				

The data in the table shows that paired t – test was used to compare the pre-test and post-test scores. The mean pre-test knowledge score was 7.662 with Sd = 2.79 and with Sd= 3.79 in the post-test with a

mean difference of 5.138. The calculated “t” value 11.127 is greater than the table value (t79=2.6395) with the degree of freedom 79 p < .005 level of significance. Therefore, health promotion intervention was effective in improving the knowledge score of college students regarding prevention of coronary artery disease with mean difference of 5.138. Hence the research hypothesis (H1) was accepted.

Section C:

H2. There will be significant association between pretest levels of knowledge score of college students regarding prevention of coronary artery disease with their selected demographic variables.

Table 4. Chi-square test, association of pre-test knowledge score with selected demographic variables. (N=80).

Demographic variables		Pre-test knowledge			Chi square table value	df	Chi square value	Inference /P-Value
		Poor	Average	Good				
-Age	17-19 years	13	2	0	12.592	6	0.9	Not significant
	20-22years	33	5	0				
	23-25years	21	2	0				
	26 and above	3	1	0				
	Total=80	70	10	0				
Gender	Male	25	8	0	5.991	2	7.081	Significant
	Female	45	2	0				
	Total=80	70	10	0				
Personal habits	Smoking	6	0	0	12.592	6	13.127	Significant
	Alcohol	9	6	0				
	Both	3	0	0				
	Nil	52	4	0				
	Total=80	70	10	0				
Type of family	Nuclear family	55	6	0	9.488	4	5.548	Not significant
	Joint family	13	2	0				
	Extended family	2	2	0				
	Total=80	70	10	0				
Monthly income	<10000	8	1	0	12.592	6	1.05	Not significant
	10001-20000	34	6	0				
	20001-30000	24	2	0				
	30001 and above	4	1	0				
	Total=80	70	10	0				
Diet	Vegetarian	3	3	0	5.991	2	8.34	Significant
	Non vegetarian	67	7	0				
	Total=80	70	10	0				

The chi-square test was used to determine the association between pre-test and the selected socio demographic variables. The pre-test knowledge is associated with the socio demographic variables such as gender, personal habit and diet. No significant association is present

Conclusion

Out of 80 samples, the majority of students are in the age of 20-22 years (47.5%). 41.25% of subjects are male and 58.75% are females. The majority of the students (70%) do not have any personal habits of smoking or alcoholism, with only 18.75% of students have habits indicating alcoholism, 7.5% of students smoke and only 3.75% of the students both smoke and habits indicating alcoholism. The majority of the students belong to nuclear families (76.25%) with a monthly income of Rs.10001-20000/- (50%). The majority of the students were non-vegetarian 92.5%.

The statistical analysis of data revealed the following knowledge level: -

In pre-test, most of college students had poor knowledge (87.5%). Some had average knowledge (12.5%), and none had good knowledge (0%). Whereas in the post-test, most of the college students displayed average knowledge (82.5%), with some showing good knowledge (10%), and less (7.5%) with poor knowledge. The chi-square test was used to determine the association between pre-test knowledge and the selected socio demographic variables. It depicts that the pre-test knowledge is associated with the socio demographic variables such as gender, personal habits, and diet. Therefore, there will be significant

association between the pre-test level of knowledge of college students regarding prevention of coronary artery disease with their selected demographic variables.

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