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RESEARCH ARTICLE

A STUDY TO EVALUATE THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAM (STP) ON KNOWLEDGE AND PRACTICE REGARDING PREVENTION OF CARDIO VASCULAR DISEASES AMONG THE STUDENTS OF A SELECTED COLLEGE OF KERALA

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ABSTRACT

Introduction: Cardiovascular diseases (CVDs) are the number one cause of death globally, claims an estimated 17.9 million lives each year. It is a major cause of disability and premature death throughout the world, and contributes substantially to the escalating costs of health care. Modifications of risk factors were found to reduce mortality and morbidity in people with diagnosed or undiagnosed cardiovascular disease. Teaching programme was found to be helpful in prevention of absolute cardiovascular risk among young adults. **Objectives of the study:** 1. To evaluate the impact of structured teaching program (STP) on knowledge and practice regarding prevention of cardio vascular diseases among college students. 2. To find out relationship between knowledge and practice of college students regarding prevention of cardio vascular diseases. **Methodology:** A one group pre-test, post-test design, quasi-experimental was carried out at Najath College of Science And Technology, Karuvarakundu, Malappuram, Kerala. A total enumeration sampling technique was used to select 62 undergraduate students for the study. Structured knowledge questionnaire and an expressed practice questionnaire were used to collect the data. **Results:** The administration of structured teaching programme (STP), significantly increased the knowledge ($P < 0.001$) and improved practice ($P < 0.001$) of the students regarding prevention of cardio vascular diseases. The study reported a statistically significant positive correlation ($r = 0.60$, $P < 0.001$) between post-test knowledge and practice. The study found that the knowledge of the students was not dependent of a selected demographic variables whereas practice was influenced by gender ($\chi^2 = 4.14$, $P = 0.041$). **Conclusion:** The study emphasizes the importance of a structured teaching module in prevention of cardiovascular diseases among students at different levels of professional education. Therefore, the pre-tested regular health education programs would be instrumental to improve the knowledge and practice of the students in prevention of cardiovascular diseases

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INTRODUCTION

Cardiovascular diseases (CVDs) are the leading cause of death globally, taking an estimated 17.9 million lives each year. More than 75% of deaths occur in low and middle income countries and occur almost equally in men and women. The 85% of all CVD deaths are due to heart attack and stroke. By 2030, almost 23.6 million people will die from CVDs, mainly from heart disease and stroke. These are projected to remain the single leading causes of death.¹ Cardiovascular diseases are a major cause of disability and premature death throughout the world and contribute substantially to the escalating costs of health care.

The underlying pathology is atherosclerosis, which develops over many years and is usually advanced by the time symptoms occur, generally in middle age. Acute coronary and cerebrovascular events frequently occur suddenly and are often fatal before medical care can be given. Modification of risk factors has been shown to reduce mortality and morbidity in people with diagnosed or undiagnosed cardiovascular disease. Several forms of therapy can prevent coronary, cerebral and peripheral vascular events. Decisions about whether to initiate specific preventive action, and with what degree of intensity, should be guided by estimation of the risk of any such vascular event. The risk prediction charts that accompany these guidelines allow treatment to be targeted

according to simple predictions of absolute cardiovascular risk.² Demographic data indicate that the heart disease rate among Indians / South Asians is double that of the national averages of the western world. This may be attributed to an underlying genetic predisposition to metabolic deregulation and cardiomyopathy as well as a recent shift of modifiable risk factors towards increasing consumption of red meats / saturated fats / trans-fats / junk foods and higher stress in sedentary call-center workers in India. Public health estimates indicate that India accounts for approximately 60% of the world's heart disease burden despite having less than 20% of the world's population. Heart disease is the number one cause of mortality and a silent epidemic among Indians. When heart disease strikes Indians, it tends to do so at an earlier age (almost 33% earlier) than other demographics, often without prior warning. Furthermore, 50% of all heart attacks in Indian men occur under 50 years of age and 25% of all heart attacks in Indian men occur under 40 years of age, Indian women have high mortality rates from cardiac disease as well. Every six seconds, regardless of age or gender, someone will die from stroke. A well balanced, heart healthy diet as well as positive lifestyle changes such as exercise, stress reduction techniques, control of hypertension and diabetes, and also quitting smoking may reduce the occurrence of heart disease. Einarson TR, *et al* (2018) conducted a systematic review to estimate the current prevalence of CVD among adults with Type-2 diabetes mellitus (T2DM) by reviewing literature published from 2007 to March 2017. Globally, overall CVD affects approximately 32.2% of all persons with T2DM. CVD is a major cause of mortality among people with T2DM, accounting for approximately half of all deaths over the study period. Coronary artery disease and stroke were the major contributors.³ Nangia R, *et al* (2016) conducted various studies in India to assess the prevalence of raised BMI, blood pressure, cholesterol and blood sugar among serving armed forces personnel ≥ 35 years of age. The study concluded that high prevalence of pre-obese and pre-hypertension suggests a need for concerted efforts towards preventive activities in this field.⁴

Most premature deaths due to CVD can be avoided. Many high-income countries have seen significant decrease in age-adjusted CVD mortality rates with a combination of preventive interventions to avert disease, early treatment to prevent death during acute events (heart attacks and strokes) and treatment to prevent recurrent events and to prolong the lives of people with prior CVD. Reduction in the burden of modifiable CVD risk factors are estimated to contribute as much as 50% to the observed decrease in mortality from CVDs in high-income countries, reflecting a combined impact of population interventions to reduce risk factors and clinical treatment.⁵ Since the number of risk factors increases substantially between the ages of 20 and 35, there is a need to develop prevention programs to lower the CVD risk through diet and exercise.⁶ There is an urgent need to promote primordial, primary, and secondary prevention strategies. Primordial strategies such as promotion of smoking/tobacco cessation, physical activity, and healthy dietary habits should prevent risk factors from occurring in the first place. Primary prevention should focus on screening and better control of risk factors (hypertension, hypercholesterolemia, and diabetes) to prevent incidence of overt CVD. Good quality secondary prevention and better management of acute and chronic events will prevent premature mortality and morbidity.⁷ The early identification facilitates early, active management of blood

pressure and formulation of preventive strategies thereby decreasing morbidity and mortality due to cardiovascular diseases.⁸ High prevalence of obesity and overweight in college students indicate an urgent need to increase awareness via education and motivation of all stakeholders.⁹ With the review of literature and own experience, the investigator felt need to conduct a study to evaluate the effectiveness of structured teaching program (STP) on knowledge and practice regarding prevention of cardio vascular diseases among college students in a selected college of Kerala.

Objectives of the study

- To evaluate the impact of structured teaching program (STP) on knowledge and practice regarding prevention of cardio vascular diseases among college students.
- To find out relationship between knowledge and practice of college students regarding prevention of cardio vascular diseases.
- To find out the association of knowledge and practice of college students with a selected variables socio-demographic variables like gender, stream of study, type of family, family income, education of father, education of mother, occupation of father, occupation of mother.

Hypotheses

H₁- Knowledge and practice of college students, after the administration of structured teaching program on prevention of cardio vascular diseases will be significantly higher at 0.05 level of significance.

H₂- There will be significant positive relationship between post-test knowledge and practice score of college students, after the administration of structured teaching program on prevention of cardio vascular diseases at 0.05 level of significance.

Assumptions

The researcher assumes that

- College students have some knowledge about cardio vascular diseases and their prevention.
- The knowledge of college students regarding prevention of cardio vascular disease can be measured by structured knowledge questionnaire.
- The practice of college students regarding prevention of cardio vascular disease can be measured by structured practice questionnaire.
- The higher the knowledge level more will be the practice towards prevention of cardio vascular diseases

Delimitations: The study is delimited to: College students who were studying in Najath College of Science And Technology, Karuvarakundu, Malappuram, and Kerala and available during the study.

MATERIALS AND METHODS

A one group pre-test, post-test quasi-experimental study to evaluate the effectiveness of structured teaching programme (STP) on knowledge and practice regarding prevention of cardio vascular, was carried out at Najath College of Science and Technology, Karuvarakundu, Malappuram, Kerala.

A total enumeration sampling technique was used to select 62 samples. Variables under study were knowledge and practice regarding prevention of cardio vascular diseases and socio-demographic variable like gender, Stream of study, Type of family, Family income, Education of father, Education of mother, Occupation of father, and Occupation of mother. The College students, who had moderate and high risk score in risk factor assessment (score 30-95) were included in the study. The students who were having mild risk for developing cardio vascular disease and not willing to participate in this study were excluded.

The Tools consisted of three sections

Section- I: Socio demographic data of the students like age, sex, religion, type of family, stream of study, family income, educational status of father and mother, occupation of father and mother.

Section II Structured knowledge questionnaire consisted of 26 multiple choice questions (MCQs) related to prevention of cardio vascular diseases. **Scoring:** Every correct answer was awarded a score of 1 and 0 to wrong answer. The maximum score was 26 whereas minimum was 0.

Section III: Structured practice questionnaire: an expressed practice questionnaire in terms of rating scale was constructed. It consisted of 25 items. Each item was having three option of “always”, “sometimes” and “never”. Positive statement carried the marks 3, 2, and 1 respectively for always, sometimes and never whereas negative statement carries 1, 2, and 3 marks respectively. Maximum Possible score was 75 and minimum possible was 25.

Content validity and reliability of tool: To ensure the content validity of tools (i.e. structured knowledge questionnaire, structured practice questionnaire) and structured teaching program (STP) were submitted to 8 experts from the field of public health, cardiology and nursing. The experts were requested to judge the items based on objectives, relevance and adequacy of the content organization, clarity, feasibility and appropriateness of items of the tool for the purpose of the study. Valuable inputs of the experts were taken and modifications were made as per the suggestions and tools were finalized. To ensure the reliability, pre testing of the tools was done to check the clarity of the items and feasibility and practicability of the tools. The calculated reliability score of structured knowledge questionnaire was found to be 0.78 from KR20. Similarly reliability score of structured practice questionnaire was found to be 0.89 from Cronbach's alpha method. Hence all the research tools were found to be valid, reliable, un-ambiguous and feasible.

Procedure of data collection: After obtaining the administrative approval from appropriate authority, the study was conducted from 28th December 2019 to 04th January 2020. Purposes of the study were explained to the college students. Written Consent was taken after explaining the purpose data collection and confidentiality was assured. The subjects chosen had the characteristics similar to those of the subjects under study. Average time taken for the completion of structured knowledge questionnaire and structured self – expressed practice questionnaire was 30-35 minutes and the tools were found clear and relevant.

- A sample of 96 college students who met the researcher's criteria. i.e., moderate and high risk students were selected using total enumeration sampling technique. Only 62 students out of 96 were present during data collection period.
- Pre -test of knowledge and practice was administered on 28 December 2019. The same day structured teaching program was administered.
- On 8th day, i.e. 4th January 2020 post test of knowledge and practice was conducted.

Ethical consideration: Application was submitted to get the administrative permission from the Najath College of Science and Technology, Karuvarakundu, Kerala. The study was conducted after obtaining the approval from the research committee of Rajkumari Amrit Kaur College of Nursing and administrative approval from Najath College of Science and Technology, Karuvarakundu, Kerala.

Statistics: The data were analyzed using IBM SPSS version 26. The data were presented in the tables and figures using frequency, percentage, mean, median, standard deviation, t-test to compare the means, chi-square test to find out association and Karl Pearson's co-efficient of correlation to establish relationship among the variable were used to show the results of the study.

RESULTS

Table-1 shows that 62.90% students were male and 37.09% were female. More two third of students (82.25%) were from commerce stream and 17.74% were from science stream. Majority (56.45%) of students belonged to nuclear family. Majority of the students (40.32%) had less than INR 10,000 as monthly family income and only 6.45% had family income of INR 30,000 and above. Majority of the fathers (56.45%) and mothers (61.29%) of the students studied up to high school. The 35.48% of the fathers were doing business whereas 91.93% mothers were homemaker. Table-2 shows a statistically significant ($P < 0.001$) increase in knowledge and improvement in practice ($P < 0.001$) of the students after administration of the STP. The data given in table 3 shows the frequency of scores in pre- test under poor category was 8 which was reduced to 1 in post -test. The frequency of scores in average category also declined from 51 in pre -test to 26 in post- test. On the contrary the frequency of scores in good category increased to 35 in post -test from 3 in pre- test. This suggests the majority of students scores were under good category after the intervention. Similarly, it shows that there were no students with poor practice, the frequency of scores in fair practice category was reduced to 6 (post-test) from 42 (pre- test). On the contrary the frequency of pre- test practice in good category (21) was increased (56) in post-test. This suggests the majority of student scores were under good category after the intervention. Table 4 shows that computed chi square values of selected variables were found to be statistically non-significant at 0.05 level of significance except gender. This indicates that practice was not dependent and not influenced by a selected demographic variables except gender ($P = 0.041$). Table 5 shows a statistically significant positive correlation ($r = 0.60$, $P = < 0.001$) between post-test knowledge and practice score of college students at 0.05 level of significance.

Table 1. Frequency and percentage distribution of college students with moderate and high risk of cardio vascular disease N=62

S.No.	Sample characteristics	Description	Frequency	Percentage
1	Gender	• Male	39	62.90%
		• Female	23	37.09%
2	Stream of study	• Science	11	17.74%
		• Commerce	51	82.25%
		• Arts	0	0
3	Type of family	• Nuclear	35	56.45%
		• Joint family	26	41.93%
		• Single parent	1	01.61%
4	Family income INR	• <10,000	25	40.32
		• 10,001-20,000	22	35.48%
		• 20,001-30,000	11	17.74%
		• 30,001-above	4	06.45%
5	Education of father	• Illiterate	0	0
		• Primary school	13	20.96%
		• High school	35	56.45%
		• Higher secondary	9	14.51%
		• Graduation & above	5	08.06%
6	Education of mother	• Illiterate	0	0
		• Primary school	6	09.67%
		• High school	38	61.29%
		• Higher secondary	11	17.74%
		• Graduation and above	7	11.29%
7	Occupation of father	• Government job	2	03.22%
		• Private job	16	25.80%
		• Business	22	35.48%
		• Agriculture	16	25.80%
		• Unemployed	6	9.67%
8	Occupation of mother	• Home maker	57	91.93%
		• Government job	3	04.83%
		• Private job	2	03.22%
		• Business	0	0
		• agriculture	0	0

Table 2. Pre & post-test knowledge and Practice scores of undergraduate college students. N=62

Variables	Mean, Sd		SEM	“t” Value	‘P’ Value
	Pre-test	Post-test			
Knowledge scores (Maximum possible score=26)	12.85 ±3.52	18.3 ±3.37	0.5	10.88	<.001
Practice scores (Maximum possible score=100)	48.53±4.28	58.08±6.79	0.87	10.41	<.001

*statistically significant at 0.05 level of significance.

Table- 3. Category-wise distribution knowledge and practice scores N=62

Variable	Score categories	Pre-test	Post-test
		Frequency (%)	Frequency (%)
Knowledge (Maximum possible score 75)	Poor (1-9)	8 (12.9%)	1 (1.61%)
	Average (10-18)	51 (82.25%)	26 (41.93%)
	Good (19-26)	3 (4.83%)	35 (56.45%)
Practice (Maximum possible score 75)	Fair practice (26-50)	41 (66.12%)	6 (9.67%)
	Good practice (51-75)	3 (33.87%)	56 (90.32%)

The positive correlation shows improvement in the practice with increased knowledge of college students regarding prevention of cardio vascular diseases also increased.

DISCUSSION

The present study found that 12.9% students had poor knowledge regarding prevention of cardio vascular disease. The findings are in accordance with Awad A, *et al* where in respondent's knowledge regarding CVD risk factors was moderate. Almost 60% of respondents did not know any type of CVD, and coronary heart disease was the commonest identified type (29.0%).¹⁰

The present study findings are also consistent with George GM, *et al* wherein only 25.4% of the participants had adequate knowledge regarding cardiovascular risk factors.¹¹ With regard to practice of college students towards prevention of cardio vascular diseases, it was found that 66.12% had fair practices and only 33.87% had good practices.

The similar findings were reported by Vaidya A, *et al* that 19.5% and 13.9% students had satisfactory and highly satisfactory practices respectively.¹² The present study showed that structured teaching program (STP) was effective in enhancing the knowledge ($P < 0.001$) and practice ($P < 0.001$) of college the students regarding prevention of cardio vascular diseases.

Table 4. Association between post-test knowledge and practice score of undergraduate college students on prevention cardio vascular disease with selected VariablesN=62

Sample characteristics		Knowledge scores		χ^2 (df)	P value	Practice scores		χ^2 (df)	P value
		Below median	Above median			Below median	Above median		
Gender	Male	23	15	2.15 (01)	>0.05	24	15	4.14 (01)	>0.041*
	Female	10	14			8	15		
Stream of study	Science	8	4	0.45 (02)	>0.05	4	7	1.23 (02)	>0.05
	Commerce	28	22			28	23		
	Arts	0	0			0	0		
Type of family	Nuclear	22	13	0.5 (02)	>0.05	21	14	1.87 (02)	>0.05
	Joint family	14	12			11	15		
	Single parent	01	0			0	1		
Monthly Family income	<10,000	13	13	2.39 (03)	>0.05	12	12	0.92 (03)	>0.05
	10,001-20,000	15	06			14	9		
	20,001-30,000	06	05			5	6		
	30,001-above	02	02			2	2		
Education of father	Illiterate	0	0	2.66 (04)	>0.05	0	0	1.95 (04)	>0.05
	Primary school	05	08			6	7		
	High school	22	13			17	18		
	Higher secondary	06	03			5	4		
	Graduation & above	03	02			4	1		
Education of mother	Illiterate	0	0	7.32 (04)	>0.05	0	0	0.67 (04)	>0.05
	Primary school	3	3			3	3		
	High school	19	19			19	19		
	Higher secondary	11	0			7	4		
	Graduation and above	03	04			3	3		
Occupation of father	Government job	1	1	2.61 (04)	>0.05	0	0	0.67 (04)	>0.05
	Private job	8	8			7	9		
	Business	13	9			13	11		
	Agriculture	11	5			8	8		
	Unemployed	5	1			4	2		
Occupation of mother	Home maker	34	23	0.81 (04)	>0.05	28	28	0.31 (04)	>0.05
	Government job	1	2			2	1		
	Private job	0	2			2	0		
	Business	0	2			1	0		
	agriculture	0	0			0	0		

The similar findings were drawn by Pandurangan H, *et al* that the results of post-intervention showed significant improvement in knowledge score.¹³

CONCLUSION

Incidents of many diseases are preventable through changes in health behavior. This reveals the importance of adopting health education strategies for educating the students, through various mass media, regarding the risk factors of cardiovascular diseases and adapting healthy behavior. The regular health education programs would be instrumental to identify the learning needs of the students to recognize the risk factors. Therefore, the educators should be trained to identify the needs and problems of the students, and enable them with a pre-tested teaching programme to modify the health behavior.

Limitations

- The present study was limited to a small sample size of 62 college students for assessing the knowledge and practice which poses a restriction to make a broader generalization.
- The study sample was restricted to only one setting and that was Najath College of Science and Technology, Karuvarakundu, Kerala.
- Standardized tool was not used in the present study because of non-availability. So self-developed tool was used in both phases.

Recommendations

- A similar Longitudinal studies study can be conducted with a large sample thereby findings can be generalized.

- A true experimental study can be carried out with experimental and control group.
- A study can be conducted at hospital settings among patients diagnosed with cardio vascular disease regarding management of cardio vascular diseases.
- A similar study can be conducted in various other groups like office workers, teachers and high income groups etc.
- A comparative study can be conducted on samples drawn from urban and rural population.
- A similar study can be conducted by using other teaching strategies such as self-instructional module, information booklet and planned teaching program etc.
- A similar study can be conducted to assess the attitude of college students towards prevention of cardio vascular diseases.
- Technology based interventions can be used phase like mobile APP, videos etc.
- Qualitative studies can be undertaken to explore the current knowledge and practices of prevention of cardio vascular diseases by using unstructured interview schedule

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