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Knowledge regarding Early Detection and Prevention of Cardiovascular Risk Factors among Young Adults at Tiruvalla, Kerala

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Abstract: ***Cardiovascular diseases are major and growing contributors to mortality and disability in South Asia. Young adults with cardiovascular diseases and CVD risk factors are a major concern of today. With the help of proper health education and early detection, 90% of CVD and development of its risk factors are preventable. Aim: To assess the effect of structured teaching programme on knowledge regarding early detection and prevention of cardiovascular risk factors among young adults in a selected educational institution at Tiruvalla, Kerala, India. Method and Material: One group pre-test post-test research design was used in this study. Purposive sampling technique was used to select 110 young adult samples from a selected educational institution at Tiruvalla, Kerala who fulfilled the inclusion criteria. Baseline variables and knowledge level of young adults, on early detection and prevention of cardiovascular risk factors were assessed using baseline Proforma and structured knowledge questionnaire. Result: Comparison of overall mean knowledge score shows that 15.57 (pre-test) and 25.56 (post-test), revealing a mean difference of 9.99, which shows that the knowledge score of young adults on this topic has statistically- significant improvement in comparison with pre-test scores with post-test scores (Z= -9.02, p=0.001).***

Keywords: cardiovascular diseases, CVD risk factors, young adults, early detection and prevention

1. Introduction

Globally, cardiovascular diseases (CVDs), which include coronary heart disease (CHD), strokes, rheumatic heart disease (RHD), cardiomyopathy and other heart diseases, represent the leading cause of death.[2] An estimated 17.7 million people died from cardiovascular diseases in 2015, representing 31% of all global deaths. Of these deaths, an estimated 7.4 million were due to coronary heart disease and 6.7 million were due to stroke. Most cardiovascular diseases can be prevented by addressing behavioural risk factors such as tobacco use, unhealthy diet, obesity, physical inactivity and harmful use of alcohol.[1] "The Hindu Daily" on Sep.30, 2016 reported that Cardiovascular Disorders are the cause of 25 per cent deaths in India. The young population with a sedentary lifestyle, unhealthy eating habits and genetic predisposition are the major causes leading to this crisis. Heart disease has affected young Indians 10 years ahead of their Western counterparts, particularly over the past three decades, owing to sedentary lifestyles and lack of exercise.[2]

Along with Kerala, Goa and Tamil Nadu have the largest dominance of non-communicable diseases. Risk factors leading to this crisis includes unhealthy diet, high blood pressure, high blood sugar, high cholesterol and overweight, which mainly contribute to ischaemic heart disease, stroke, and diabetes. [3]

Objectives

1) To assess the pre-test knowledge regarding early detection and prevention of cardiovascular risk factors among young adults.
2) To identify the effect of structured teaching programme on knowledge regarding early detection and prevention of cardiovascular risk factors among young adults.
3) To find the association between pre-test scores on knowledge regarding early detection and prevention of cardiovascular risk factors among young adults and selected baseline variables.

2. Literature Survey

"The Hindu" daily (Feb 12, 2018) reported that, according to Cedars-Sinai Heart Institute, obesity plays a predominant role in sudden cardiac arrest among younger people which portrays the importance of earlier screening. Investigators found an unexpectedly high prevalence of cardiovascular risk factors among the youth who suffered sudden cardiac arrest.[4]

A study was conducted among 850 healthy young adults, residing in two cities of Valparaiso province, Chile, who belong to the age group of 22 - 28 years in order to assess the knowledge regarding prevalence and importance of cardiovascular risk factors in an attempt to facilitate the development of preventive strategies. Result shows that 5% of the studied population had high blood pressure, 14% had obesity, 57% smoked, 25% had high total cholesterol levels, 10.5% had high levels of low density lipoprotein cholesterol, 46% had low levels of high density lipoprotein cholesterol, 16% had high triglyceride levels, 36% had insulin resistance, 7% had a metabolic syndrome, 14% were heavy drinkers and 38% were sedentary. Women had a higher prevalence of obesity and metabolic syndrome. Only 24% of the studied subjects, depicted no risk factors. Result

shows that, a high prevalence of cardiovascular risk factors was found in young adult population.[5]

3. Research Methodology / Approach

The research approach used was quantitative research approach and the research design used in this study was Pre experimental one group pre-test post-test research design.

a) **Research variables:** In this study, **dependent** variable is the knowledge of young adults regarding early detection and prevention of cardiovascular risk factors, **independent** variable is structured teaching programme on the same topic and **extraneous** variable is previous knowledge and the influence of media about the same.
b) **Baseline Proforma:** In this study, baseline proforma are age, gender, educational status, height, weight, and family history of cardiovascular diseases, food preferences, history of smoking, and history of alcoholism and exercise pattern.

The samples in the present study are the college students between 19 and 25 years who are studying in a selected Arts & Science College at Tiruvalla, Kerala. Sampling technique used for the present study is non probability purposive sampling.

These steps were adopted in the development of the tool:

Based on the objectives of the study, literature were reviewed from books, journals, periodicals and unpublished dissertations. After the discussion with subject experts and guide, the initial draft of the tool was prepared. The blue print of the questions were prepared and based on that, the tool was constructed. Finally, content validity and reliability of the tool was verified.

3.1 Description of the tool

Section A: Baseline Proforma
Baseline Proforma includes age, gender, educational status, height, and weight, family history of cardiovascular diseases, food preferences, history of smoking, and history of alcoholism and exercise pattern.

Section B: Structured Knowledge Questionnaire
Structured Knowledge Questionnaire consists of 30 items to assess the knowledge of college students on early detection and prevention of cardiovascular risk factors. It includes questions related to general facts of cardiovascular diseases, modifiable and non-modifiable risk factors, diagnostic methods and the importance of early detection and prevention.

3.2 Scoring key

Each correct response carries a score of one and incorrect response with zero. The maximum possible score is 30. Based on the score obtained, the knowledge of young adults were categorized as:

1) Good: Score 21 to 30 (68 – 100%)
2) Average: Score 11 to 20 (34 – 67%)
3) Poor: Score 0 to 10 (0 – 33%)

Content validity of the tool:
The prepared tool, lesson plan, blue print of knowledge questionnaire, along with the objectives of the study and criteria check lists were given to seven experts from medical and nursing fields to ensure the content validity. The initial tool consists of 14 items in the baseline proforma and 30 items in the structured knowledge questionnaire. As per the recommendations given by the subject experts, modifications were made in the baseline proforma and structured knowledge questionnaire. Experts suggested reconstruction of seven questions which was based on various diagnostic procedures and treatment modalities of cardiovascular diseases and also replacing of two questions on medical management of cardiovascular diseases. The tool was finalized with the suggestions given by the experts and after the discussion with the guide. The finalized tool consists of 10 baseline variables and 30 items in the structured knowledge questionnaire.

Reliability of the tool:
The tool was administered to 20 college students to calculate the reliability. Guttmann split half method was used for estimating the reliability. Reliability for the knowledge questionnaire was r = 0.81.

Ethical considerations:
Approval for the present study was obtained from institutional ethical committee. The investigator sought permission from the Principal of the Mar Thoma College, Tiruvalla, Kerala to conduct the study. Based on the allotted date by the college authority, investigator went to college and explained the purpose and nature of the study to the selected samples and the informed that the consent was obtained prior to the data collection. Confidentiality was ensured and the participants had the liberty to leave the study at any point of time as desired. Also assured that there would be no physical or psychological harm to the participants.

Data Collection Process
Data collection process involves the following:

1) The researcher sought permission from the Principal of the Mar Thoma College, Tiruvalla, Kerala to conduct the study.
2) Based on the allotted date by the college authority investigator went to college and explained the purpose of the study to the study participants and the informed consent was obtained. Data was collected from 110 young adults belong to the age group of 19 - 25 years.
3) The pre-test was conducted using baseline Proforma and structured knowledge questionnaire. It took 30 minutes for them to complete it.
4) Following the pre-test, the teaching programme was given for 20 minutes.
5) Post-test knowledge assessment was done on 8th day followed by the structured teaching programme, with the same pre-test tool.
6) Descriptive and inferential statistics were used to analyze the collected data. For describing the baseline variables frequency and percentage were used.
7) The pre-test and post test scores were analysed by using frequency, percentage, mean and standard deviation.

8) Wilcoxon test was used to find out the association between pre-test and post-test scores.
9) Mann-Whitney U test was used to find out the association between pre-test scores and selected baseline variables. Paired t-test was used to find the mean difference in pre-test and post test scores.

4. Results

Table I: Distribution of young adults according to age, gender and educational status, n=110

Variables	Frequency(f)	Percentage (%)
Age in years		
19-21	96	87.3
>21-23	12	10.9
>23-25	2	1.8
Gender		
Male	31	28.2
Female	79	71.8
Educational status		
Under Graduate	99	90.0
Post Graduate	11	10.0

The table I shows that majority of the young adults belong to the age group of 19-21 years (87.3%), female gender (71.8%) and under graduate students (90%).

n=110

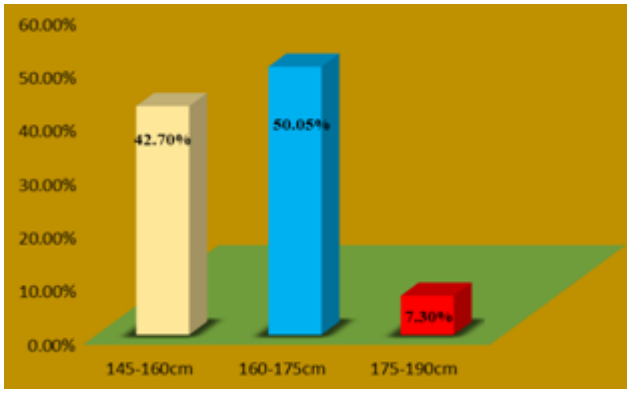

Figure 1: Distribution of young adults based on their height

This shows that 50.05% of the young adults belong to the height range of 160 to 175cm.

n=110

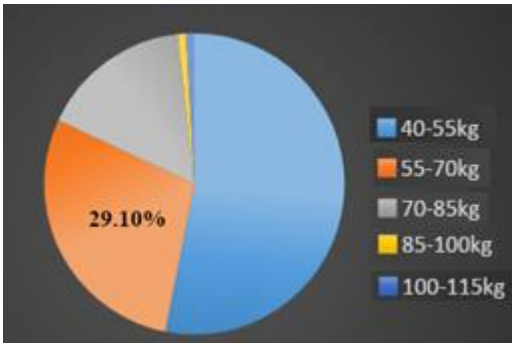

Figure 2: Distribution of the young adults according to their weight

This shows that majority of the young adults belong to the weight distribution of 40 to 55kg (53.60%).

n=110

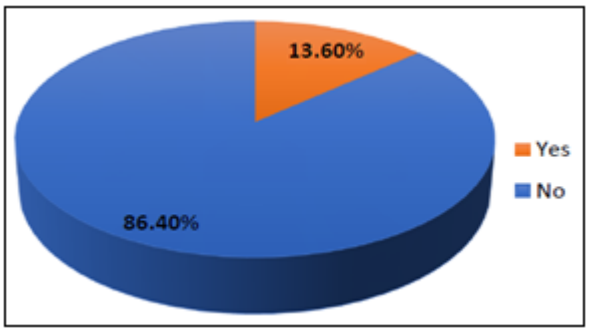

Figure 3: Distribution of young adults according to family history of cardiovascular diseases

This shows that 13.60% of young adults have family history of cardiovascular disease.

n = 15

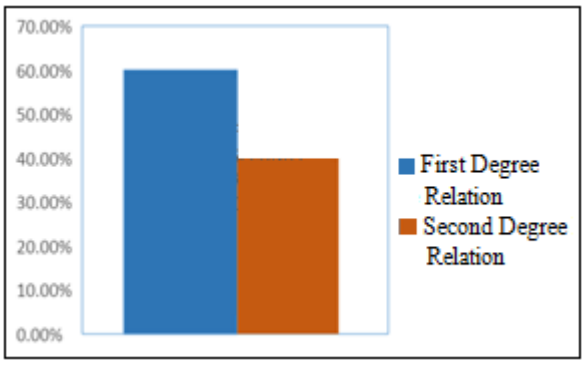

Figure 4: Distribution of samples based on relation of young adult to the affected person

This shows that, among samples with family history of cardiovascular disease, 60.00% are in first degree relationship with the selected young adults.

n=110

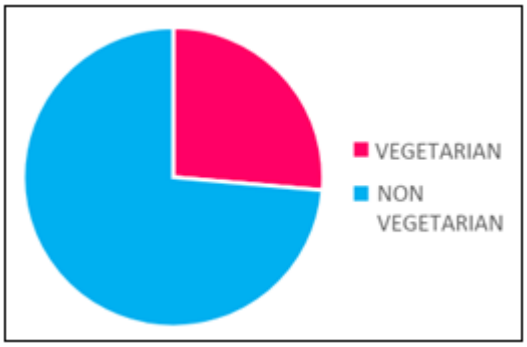

Figure 5: Distribution of samples on the basis of food habits

This shows that most of the samples 81(73.60%) belong to the category of non-vegetarian.

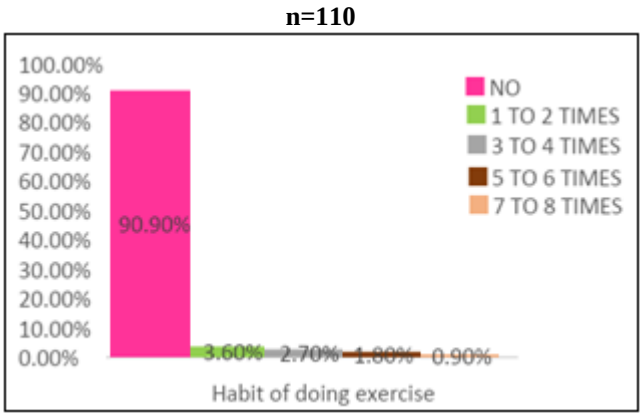

Figure 6: Distribution of samples according to their habit of doing exercise

This shows that 100(90.90%) of samples doesn't have the habit of doing exercise.

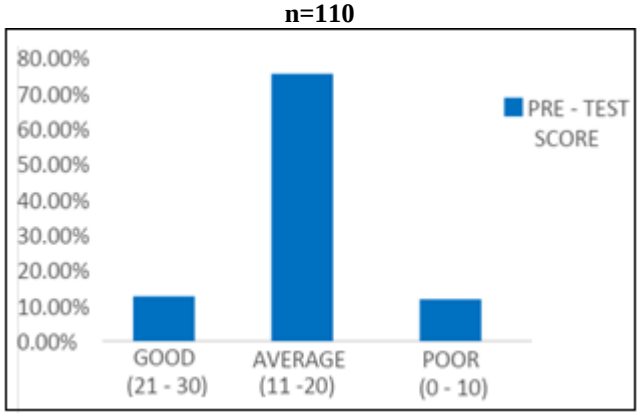

Figure 7: Distribution of samples according to their pre-test knowledge scores

This depicts that, only 12.70% of samples had good pre-test knowledge regarding the topic.

Table II: Comparison of pre-test and post-test knowledge of young adults
Wilcoxon Signed Ranks test, **n=110**

	Mean	Mean Difference	Median	Interquartile Range	Z value	p value
Pre-test	15.57	9.99	15.00	13.00 – 18.00	-9.02	0.001*
post-test	25.56		27.00	24.00 – 29.00		

(*p<0.05)

Table III (a): Association between pre-test knowledge scores and selected baseline variable; such as gender
Mann-Whitney U Test, **n=110**

Gender	No of samples	Mean	Median	Standard deviation	Mean Rank	U Value	p value
Male	31	14.06	14.00	4.89	43.39		0.012*
Female	79	16.16	16.00	4.18	60.25	849.00	

(*p<0.05)

Table III (b): Association between pre-test knowledge scores and selected baseline variable such as educational status
Mann-Whitney U Test, **n = 110**

Educational Status	No. of samples	Mean	Median	Standard deviation	Mean Rank	U Value	p value
UG	99	15.23	15.00	4.34	53.26		
PG	11	18.63	17.00	4.71	75.68	322.50	0.026*

(*p<0.05)

Table III (c): Association between pre-test knowledge scores and selected baseline variables such as family history of cardiovascular disease Mann-Whitney U Test, **n = 110**

Family History of CVD	No of Sample	Mean	Median	Standard Deviation	Mean Rank	U Value	P value
YES	15	17.86	19.00	3.13	75.83	407.50	0.008*
NO	95	15.21	14.00	4.56	52.29		

(*p<0.05)

Table III (d): Association between pre-test knowledge scores and selected baseline variable such as relationship between the young adult and the affected person Kruskal-Wallis Test, **n = 110**

Relation with sample	N	Median	Mean Rank	df	$\chi 2$ value	p value
NO	95	14.00	52.29			
First degree relative	9	19.00	75.11	2	7.11	*0.028
Second degree relative	6	18.50	76.92			

(*p<0.05)

Table III (e): Association between pre-test knowledge scores and selected baseline variable such as age
Kruskal-Wallis Test, n=110

Age	N	Median	Mean Rank	df	$\chi 2$ value	p value
19 – 21yrs.	96	15.00	55.58	2	0.193	0.908
>21 – 23yrs.	12	14.50	53.46			
>23 – 25yrs.	2	17.00	64.00			

The Kruskal-Wallis test shows there was no statistically significant association between the pre-test knowledge and age of sample ($\chi 2$ (df) = 0.193(2), p = 0.908).

5. Discussion

Through this study, the investigator found out that, during the pre-test 11.80% of the samples had poor knowledge, 75.50% of them had average knowledge and 12.70% of them had good knowledge. The comparison of overall mean of pre-test and post-test knowledge score shows that overall mean score 15.57 (pre-test) and 25.56 (post-test). This shows that the knowledge score of young adults on this topic is having statistically significant improvement in comparison of pre-test scores with post-test scores (Z= -9.02, p=0.001).

The result of the study was supported by a quantitative research study which was conducted among selected colleges of Dakshina Kannada district to evaluate the effectiveness of a planned teaching programme regarding the knowledge of risk factors of Coronary Artery Disease (CAD) among the administrative employees of selected colleges. Total no. of 60 samples was selected using simple

random technique, among this 30 each in experimental group and control group. Data was collected by using structured knowledge questionnaire and structured self-rating scale on CAD. On the first day, pre-tests were administrated to the experimental and control groups. Next day the planned teaching programme was conducted among the experimental group. On 8th day of planned teaching programme post-test was given to both the groups using the same tools. Most of the sample (experimental group-80%, control group-86.7%) had moderate knowledge regarding risk factors of CAD in the pre-test and there was significant difference between pre-test post-test knowledge scores only in experimental group. The effectiveness of planned teaching programme between experimental group and control group ($t58=12.179$, $p<0.05$) was highly significant. The study result reveals that, planned teaching program is an effective strategy which can help administrative employees to increase their knowledge and preventive health behaviour regarding risk factors of CAD.[6]

6. Conclusion

From this study, the investigator concluded that, knowledge score of young adults on this topic is having statistically significant improvement in comparison of pre-test scores with post-test scores ($Z= -9.02$, $p=0.001$). The analysis shows that there is a significant association between pre – test knowledge scores with gender [$U=849$, $p=0.012$], educational status [$U=322.50$, $p=0.026$], family history of cardiovascular disease [$U=407.50$, $p=0.008$] and relationship between the young adult and the affected person [$\chi2$ (df) = 7.11(2), $p=0.028$].Therefore the null hypothesis was rejected in favour of research hypothesis at $p<0.05$ and thus the alternative hypothesis H2 can be accepted. Hence it was found that a statistically significant association existed between the pre-test knowledge and some of the selected baseline variables.

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