Effectiveness of Structured Computer Based Education Programme to Develop & Enhance the Knowledge on Coronary Artery Disease among Patients with Hypertension

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Abstract

Coronary artery disease is one of the major causes of morbidity and mortality all over the world. Here is a need to identify the gap in knowledge among public which is assumed as a reason for the high prevalence of the disease. An experimental study to assess the effectiveness of structured computer based education programme to develop and enhance the knowledge on CAD among Hypertensive population. A quantitative evaluative pretest post test design was adopted for the study. The study was conducted North & South Mahabalipuram in Kanchipuram District. The samples of the study were hypertensive patients who are fulfilled the sampling criteria between the age group of 35-65 years. The purposive sampling technique was used to select the 142 samples for the study. In that 71 samples were consider experimental group and 71 samples were control group. The data collection instrument was the structured questionnaire to assess the knowledge on CAD. The results revealed that in the post test of the experimental group, the overall mean and SD was 18.99 ± 1.56. In the control group, overall mean and SD was 9.08 ± 3.219. The t test value was t=28.408 which was greater than the table value and revealed that there was a high significant difference between the experimental and control group. So it depicts that the computer based education programme is effective.

Keywords: *Computer based education, Develop & Enhance knowledge, Coronary artery disease, Hypertension.*

Introduction

The heart is the engine of human life and it begins to beat automatically and rhythmically almost 1,00,000 times a day, more than 36 million times each year from the early embryonic life and beat until death[1] Coronary artery disease (CAD), also called heart disease or ischemic heart disease, results from a complex process known as atherosclerosis, fatty deposits (plaques) of cholesterol and other cellular waste products build up in the inner linings of heart's arteries. It is the failure of coronary circulation to supply adequate blood to cardiac muscles and surrounding tissues[2].

Department of Health Research and Director General ICMR 2018 reported that, "Hypertension or raised blood pressure is one of the leading causes for premature deaths in India. It is directly responsible for 29% of all stroke and 24% of coronary artery diseases in India. The study was conducted to assess the systematic review on the prevalence, risk factors and outcomes of coronary artery disease among Indian's from Jan 1969 to Oct 2012. Initial search yielded 3885 studies and after review 288 observational studies were included. The results of review stated that the prevalence of CAD in

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urban areas was 2.5%-12.6% and in rural areas, 1.4%-4.6%. The prevalence of risk factors was smoking (8.9-40.5%), hypertension (13.1-36.9%) and diabetes mellitus (0.2-24.0%).

A pilot study was conducted to assess the prevalence and risk factors for coronary artery disease in Nepal. Totally 140 adults selected by simple randomization from all wards in the community in Dharan, a small city located in the foothills in eastern Nepal, in that 119 subjects who were age ranged from 35 to 86 included for the final analysis. Results depicts that the prevalence of various risk factors for coronary artery disease was found to be hypertension **42(35.3%)**[5]. Public awareness programme is the best instrument in the prevention of occurrence of coronary artery disease by helping people to take care of their own health. Today, coronary artery disease is the most prevalent non-communicable disease; therefore educating the patients with hypertension will helps them to know about the risk factors which enhance their treatment follow up and life style modification the way to prevention of coronary heart disease[4].

A pre- experimental one group pre- test, post -test design study was conducted to determine the effectiveness of planned teaching programme on knowledge regarding risk factors of coronary artery disease and find out the association between pre-test knowledge score among patients with stable angina with their selected demographic variables (age, gender, education and residence).50 samples was selected by purposive sampling technique. Results of the study revealed that The Mean and SD of post-test knowledge score is (30.00±5.07) was greater than Mean and SD pre-test knowledge score is (21.24± 4.96) with Mean difference 8.76 which was highly significant ($p<0.001$). Therefore it is evident that planned teaching programme was effective in increasing the knowledge of patients with stable angina regarding risk factors of coronary artery disease[5].

Methodology

Research Approach: A quantitative evaluative research approach was used in the present study.

Research Design: An experimental, pretest post test control group design was used in this study.

Research Setting: The present study was conducted at North & South Mahabalipuram. North Mahabalipuram was selected for control group and South Mahabalipuram for experimental group. As per the census of India 2011, the population of both North & South Mahabalipuram is 15172 out of which 8,036 are males and 7,136 are females.

Population: The population comprises of patient with hypertension residing at North & South Mahabalipuram, Kanchipuram District, Tamil Nadu.

Sample Size: The estimated sample size was 142. Experimental and Control group were assigned 71 samples in each group respectively.

Sampling Technique: Purposive sampling technique was used for the present study.

Sampling Criteria:

Inclusion Criteria:

- Patients with hypertension age from 35 years to 65 years
- Patients with diabetes mellitus
- Patients with hypertension who are all willing to participate in this study and present at the time of data collection.
- Patients with hypertension who can read and understand Tamil or English.
- Both male and female patients.

Exclusion Criteria:

- Patients with uncontrolled hypertension.
- Patients with hypertension who are critically ill.
- Patients with hypertension diagnosed have complications.

Description of the Tool:

It Consists of Three Sections:

Section-A: Questionnaire to collect demographic details of the samples: The structured questionnaire consists of closed ended questions to elicit the information on demographic data such as age, gender, education, occupation, marital status, type of family, diet, smoking habits, alcoholism, tobacco chewing, high cholesterol, BMI, waist circumference, blood pressure, family history of heart diseases.

Section-B: Structured knowledge questionnaire regarding coronary artery disease: The structured questionnaire consists of closed ended questions to elicit

the knowledge on coronary artery disease among patients with hypertension. It consists of 20 questions. Out of which the first 10 consists of general aspects on coronary artery disease and next 10 questions on preventive aspects of coronary artery disease. Each question has one correct response and each correct response carries '1' mark and each wrong answer carries '0' mark.

SCORING AND INTERPRETATION

Level of Knowledge	Score Interval	Percentage
Adequate knowledge	16 – 20	76 – 100%
Moderate knowledge	11 – 15	51 – 75%
Inadequate knowledge	1 – 10	1 – 50%

Section-C: Computer based education programme on coronary artery disease: Computer based education programme was focused on educating the patients with hypertension for about 30 minutes with the help of computer. The teaching module consists of modifiable or non modifiable risk factors, symptoms of coronary artery diseases, preventive measures such as diet, exercise, yoga and life style.

Method of Data Collection: The study was conducted in Mahabalipuram at Kanchipuram District from 17.09.2018-17.10.2018. The data collection period were about four weeks. The pretest knowledge was assessed to experimental and control group by using structured knowledge questionnaire. Each individual was given 10 to 20 minutes to answer the questionnaire. After pretest experimental group participants made into small groups consisting 5 – 6 in a group. Computer based education was conducted separately for each group. Control group did not receive any intervention. On the 7th day handbook on coronary artery disease was given as reinforcement to the experimental group only .On 15th day post test was conducted to both the experimental and control group. After the post test to the control group imparted with computer based education on CAD as well as handbook on coronary artery disease was also given.

Statistical Analysis: A statistical software programme (SPSS) was used for data analysis. Descriptive statistics was used to analyze Frequency, Percentage and Mean in all the aspects such as demographic variables, level of knowledge among experimental & control group. Chi-square used to identify the association between the selected demographic and the level of knowledge.

Results

Among the experimental 44% and control group 45% hypertensive patients age group ranges between 46-55 years, most of the hypertensive patients are females in both the group (56%) (54%), Majority of the hypertensive patients (49%) (62%) were completed secondary/Higher secondary school, majority of the hypertensive patients are a self employed (47%) (61%), (86%) (89%) were not had a habit of smoking, (94%) (99%) of the patients were not having previous knowledge on CAD and there is no family history of heart disease (72%) (88%) in both groups. Also majority of the patients have hypertension for last 3-5 years in both the groups (50%) (49%), maintaining normal BMI (61%) (82%) and having mils hypertension (79%) (75%). The study revealed that there is significant association between selected demographic variables such as age, educational status and family history of heart disease, with the knowledge of the hypertensive patients. Majority of the hypertensive patients belongs to Nuclear family in both experimental (76%) and control group (83%), (24%)(17%) of the patients belongs to joint family. **(Figure-1).** In experimental group 94% of the samples are had adequate knowledge after structured computer based education on CAD and 7% of the samples in control group had adequate knowledge on CAD in post test **(Figure-2).**

Discussion

The study findings first of all suggest that the structured computer based education is very effective to improve the knowledge. The findings of the study are consistent with various previous studies [6,7,8,9.] In this study the knowledge is compared with the variables such as age, gender, education and habitat of the subjects. The pre experimental study found a non-significant difference in level of knowledge regarding prevention of CAD among males and females. The finding is similar to the findings of the study conducted by Almas (2008)[10] which showed no significant association between gender and knowledge. Over all knowledge pertaining to coronary artery disease concluded that only very few numbers of patients in both groups having the adequate knowledge in pretest (Experimental group 3% & Control group 4%). The overall posttest score on knowledge of coronary artery disease among hypertension patients shows that 94%adequate knowledge and 6% of them gained moderately adequate knowledge which suggests that structured computer based education was effective.

Also the results are highly significant at the level of P<0.005.

Conclusion

As coronary artery disease is growing as significant problem in developing countries. Thus identifying knowledge regarding coronary artery disease and its management, preventive measures, life style modifications has utmost importance to bring change in health behavior of people. The finding of the study proved that there was a significant improvement in the level of knowledge among hypertensive patients in the experimental group after the administration of computer based education.

Ethical Consideration: The Ethical Committee approval was received from IHEC, Chettinad Academy of Research and Education (CARE) on 13.04.2018 proposal No.102/IHEC/3-18. A formal written permission was obtained from the HOD of Community medicine department and Medical officer from Chettinad Rural health center. Individual permission obtained from the samples. Content validity was received from the MEDICAL & Nursing experts.

Confidentiality: Confidentiality and anonymity pledge was ensured.

Justice: The hypertensive patients of the control group were also given intervention after the posttest.

Source of Support: Nil

Conflict of Interest: None declared.

Results

Table 1: Comparison of level of knowledge in the pre and post test for experimental and control group N=142

Parameter	Group	Pre Test			Post Test			MD	t' Value
		Mean	SD	SE	Mean	SD	SE		
Level of knowledge on CAD	Experimental	6.31	3.49	0.41	18.99	1.56	0.18	12.68	28.408*
	Control	6.17	3.59	0.42	9.08	3.21	0.38	2.91	7.749

*Significant at P <0.05

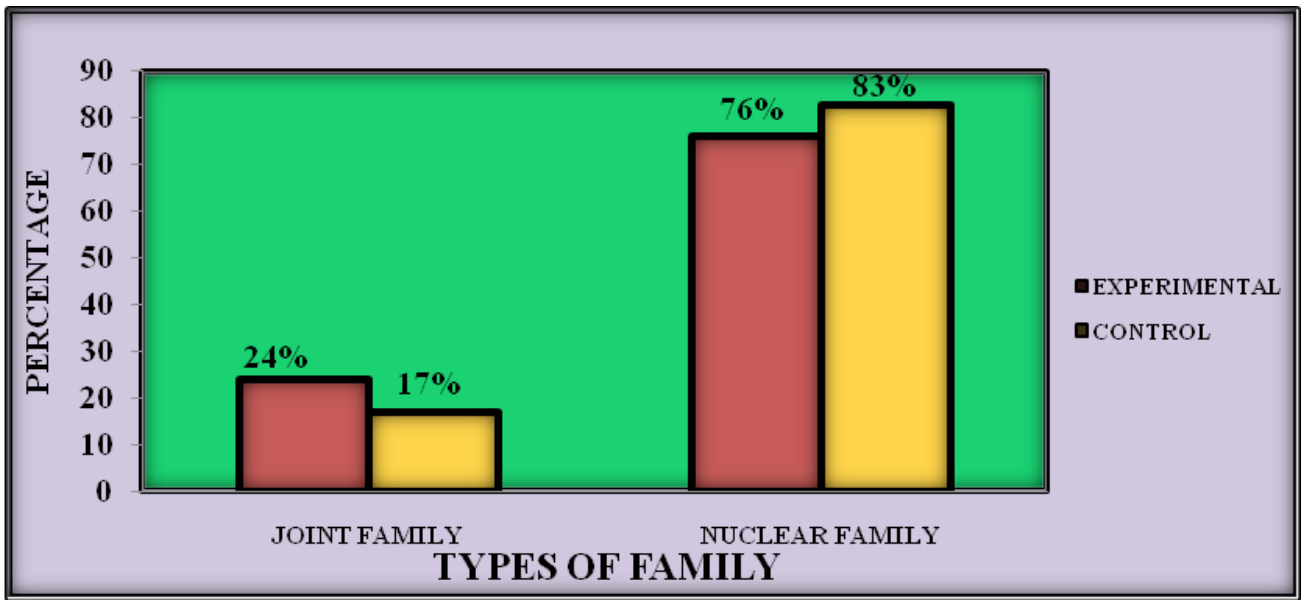

Figure 1: Percentage distribution of samples reference to Types of family

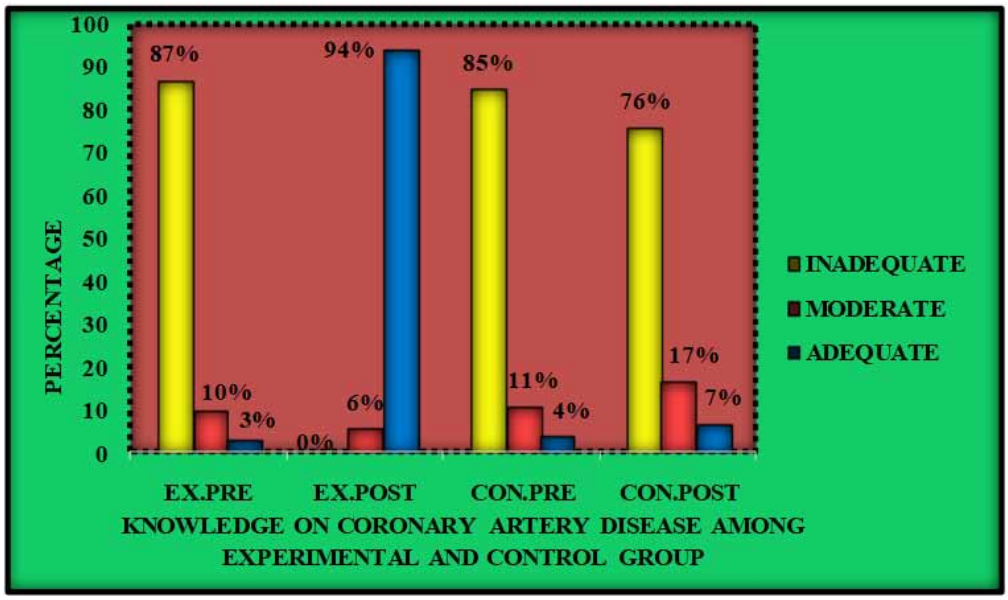

Figure 2: percentage distribution of sample according to the pre and post test level of knowledge on coronary artery disease among samples in experimental and control group.

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