

## ORIGINAL ARTICLE

# Effectiveness of Video-Assisted Teaching Programme on Knowledge Regarding Risk Factors Contributing to Coronary Artery Disease Among Hypertensive Patients at a Selected Hospital in Bangalore

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### Abstract

**Background:** Hypertension is not the only significant risk factor for the development and progression of Coronary artery disease (CAD). By being aware of the risk factors associated with CAD and consistently adhering to preventive measures, it is possible to mitigate these risks effectively.

**Objective:** To assess the effectiveness of video assisted teaching programme on knowledge regarding risk factors of coronary artery disease (CAD) among hypertensive patients at a selected hospital in Bangalore.

**Methods:** This evaluative research study included 60 hypertensive patients admitted at a selected hospital in Bengaluru. Demographic details of all the patients were collected. A structured knowledge questionnaire was used for collecting baseline data from the hypertensive patients on their knowledge and practice regarding risk factors of CAD. An intervention through a video-assisted teaching programme regarding risk factors of coronary artery disease was administered to all the patients. Pre-and post-knowledge data were compared using various descriptive and inferential statistics.

**Results:** The majority of hypertensive patients were 35 to 45 years old (50%) and were admitted to special ward (48.3%). Regarding prior information about CAD, 83.3% reported to have prior information, out of which 41.7% of patients reported to have received the information from others. 46.7% of patients had hypertension for < 1 year. The level of knowledge increased from inadequate to adequate up to 93.3% post-intervention. The average level of practice increased from 26.7% to 91.7% post-intervention.

**Conclusion:** The result revealed that the video-assisted teaching programme was effective and appropriate in improving knowledge regarding the risk factors of CAD among hypertensive patients.

**Keywords:** Knowledge, Video assisted teaching programme, Risk factors contributing to coronary artery disease and its prevention

## Introduction

WHO defined health as a state of complete physical, mental, and social well-being and not merely the absence of disease or disability. Illness is defined as a state in which a person's intellectual, physical, social, spiritual, and emotional function is diminished or impaired in comparison to their previous experience. Health and illness lie along a continuum. It is the harmony of ten interactive systems that work together as a unit to ensure that the body keeps functioning for the maintenance of haemostasis. Some of the main systems of the body are the circulatory system, nervous system, respiratory system, digestive system and the genitourinary system.<sup>1</sup>

Heart is one of the most important muscular organs of human circulatory system. The heart begins to beat automatically and rhythmically during early embryonic life and continues to beat until death occurs. Survival, growth, and production of the human organism depends on the balance between movement of nutrients to the cell and waste products away from the cells. Therefore, the main function of the heart is to circulate blood, supply oxygen and required nutrients to our body.<sup>2</sup>

Coronary artery disease (CAD) is a major cardiovascular disease and is the most common cause of death globally in the past 15 years. The more readily identifiable fundamental pathophysiological process is coronary atherosclerotic disease caused by coronary artery blockage, a plaque from inside the arteries, gradually grows to form a thrombosis that fills the lumen. When the coronary artery that carries oxygen and blood to myocardium is narrowed or blocked, the area of heart muscle the artery supplies becomes ischemic and damaged. Hence it is also called as ischemic heart disease.<sup>3</sup>

According to WHO, ischemic heart disease is the first major leading cause of death worldwide in the recent 10 years, rising from 7.96 million deaths in 2006 to 9.48 million deaths in 2016. In 2017, it was noted that ischemic heart disease (IHD) impacted approximately 126 million people worldwide, translating to a rate of 1,655 cases per 100,000 individuals. This represents approximately 1.72% of the global population. Approximately nine million deaths were ascribed to ischemic heart disease (IHD), establishing it as the primary cause of mortality on a global scale.<sup>4</sup>

According to General Register of India, CAD caused 17% of adult deaths in 2010-2013 and increased to 23% of total deaths in 2010-2013. The prevalence and

incidence studies indicate that coronary heart disease as assessed both by clinical and by ECG criteria is of a magnitude that makes it a major public health concern. The incidence of CAD is known to be very high both among migrant Asian Indians and also among people within the Indian subcontinent. Moreover, CAD in Asian Indians tends to occur prematurely i.e. at least a decade or two earlier compared to Europeans.<sup>5</sup>

A press release from Centre for Disease Control on March 1st, 2000 reported that the yearly deaths from sudden cardiac arrest in individuals aged between 15 and 34 years rose by overall 10% in the past decade. Although the numbers appear small, alarmingly the sudden cardiac death rate increased by 30% in young women. It further needs to be emphasized that the magnitude of coronary heart disease in women has been underestimated. The incorrect notion that coronary heart disease is less common in women must be dispelled from the minds of everyone including physicians. The American Heart Association has labeled coronary heart disease in women as "the silent epidemic" because it affects one in nine women over the age of 45 years. In women above 65 years, it affects one in three women.<sup>6</sup>

Coronary artery disease results from non-modifiable and modifiable risk factors. Non-modifiable risk factors include hereditary, age (more than 45 years), gender (common in females than males) and race. Modifiable risk factors include individual daily life style, habits, smoking, hypertension, elevated serum cholesterol level, environmental factors, diabetes mellitus, obesity, lack of exercise, stress, increased risk after menopause in women.<sup>7</sup>

Recent clinical research indicates that individuals with CAD have the potential to lower their risk of future cardiovascular events by adopting effective secondary prevention measures. This not only diminishes mortality rates but also enhances overall quality of life. Consequently, the initiation and sustained practice of risk factor modification play a pivotal role in reducing the likelihood and impact of coronary artery disease.<sup>8</sup> Finding a current research education is compulsory and significant to recognize and implement the changes necessary to update the knowledge levels regarding disease condition to build the self-care ability among patients.<sup>8</sup> The main objective of this study was to evaluate the efficacy of a video-assisted teaching program in enhancing knowledge about the risk factors of CAD among hypertensive patients at a specific hospital in Bangalore.

## Methodology

In this current study, the efficacy of a video-assisted teaching program in enhancing knowledge about risk factors contributing to coronary artery disease among hypertensive patients was assessed at a chosen hospital in Bangalore.

A non-probability convenient sampling technique was implemented for the study with a sample size of 60 hypertensive patients who were admitted to the selected hospital. The study employed a pre-test and post-test research design. Data were gathered from hypertensive patients through a structured knowledge questionnaire.

### Data analysis

The data collected was carefully elicited, recorded, and analyzed by means of descriptive and inferential statistics. Demographic variables were described using frequency and percentage distribution. The levels of knowledge regarding risk factors for coronary artery disease among hypertensive patients were assessed using range, mean,

standard deviation, and mean percentage. To compare pre-test and post-test knowledge, a paired t-test was employed. The correlation between knowledge and risk factors of coronary artery disease among hypertensive patients was determined using a correlation coefficient. Additionally, the association between pre-test knowledge levels regarding risk factors and selected demographic variables was analyzed using the Chi-square test.

## Results

Majority of hypertensive patients were 35 to 45 years old (50%) and were admitted in the special ward (48.3%). Regarding prior information about CAD, 83.3% reported to have prior information, among which 41.7% of patients reported to have received information from others. About 46.7% of patients had hypertension for < 1 year. Post-intervention, the levels of knowledge increased from inadequate to adequate up to 93.3%. The average levels of practice increased from 26.7% to 91.7% post-intervention.

**Table 1:** Frequency and percentage distribution according to demographic variables of hypertensive patients

S. No	Demographic characteristics	Categories	Frequency	Percentage
1.	Age	≤ 35years	10	16.7
		35-40 years	30	50.0
		Above 45 years	20	33.3
2.	Religion	Hindu	24	40.0
		Muslim	21	35.0
		Christian	11	18.3
		Others	4	6.7
3.	Years of suffering with hypertension	< 1 yr	28	46.7
		1-3 yrs	20	33.3
		4-6 yrs	2	3.3
		> 6 yrs	10	16.7
4.	Department of admission For treatment	General ward	2	3.3
		Emergency ward	8	13.3
		ICU	21	35.0
		Special ward	29	48.3
5.	Previous information regarding CAD	Internets	1	10.0
		Newspapers	2	20.0
		TV news	29	48.3
		Secondary source of information by others	25	41.7

Table 1 shows the frequency and percentage distribution according to the selected demographic variables such as age, religion, professional qualification, years of experience with hypertension. Regarding age, 10 (16.7%) hypertensive patients were aged  $\leq 35$  years, 35 (50.0%) belonged to 35-45-year age group, and 20 (33.3%) were above 45 years. Regarding religion, 24 (40.0%) hypertensive patients belonged to Hindu religion, 21 (35.0%) were Muslims, 11 (18.3%) were Christians, and 4 (6.7%) belonged to other religions. In terms of years of experience with hypertension, 28 (46.7%) having less than 1 year 20 (33.3%) having less than 3 years, 2 (3.3%) having 4-6 years, 10 (16.7%) having more than 6 years. Regarding the admission for treatment, 2 (3.3%) were admitted in general ward, 8 (13.3%) were

admitted in emergency ward, 21 (35.0%) were admitted in ICU, 29 (48.3%) were admitted in special ward. When enquired about previous information regarding CAD, only one (10.0%) hypertensive patients reported to have obtained information from internet, 2 (20.0%) obtained information from Newspapers, 29 (48.3%) from TV news, 25 (41.7%) received general information from others.

The data in Table 2 shows that in the pre-test, 56 (93.3%) patients demonstrated inadequate knowledge while 4 (6.7%) patients showed moderate knowledge. In post-test, 4 (6.7%) patients showed moderate knowledge while 56 (93.3%) patients demonstrated adequate knowledge.

**Table 2:** Distribution of hypertensive patients according to pre-test and post-test levels of knowledge regarding coronary artery disease

S. No	Levels of knowledge	Pre-test		Post test	
		Frequency	Percentage	Frequency	Percentage
1.	Inadequate (<50%)	56	93.3%	-	-
2.	Moderate (50-75%)	4	6.7%	4	6.7%
3.	Adequate (>75%)	-	-	56	93.3%
4	Over all	60	100.0	60	100.0

**Table 3:** Range, Mean, SD and Mean % of pre- post-test knowledge levels regarding coronary artery disease among hypertensive patients

S. No	Aspects of Knowledge	Max score	Pre-test Knowledge				Post-test Knowledge			
			Range	Mean	SD	Mean %	Range	Mean	SD	Mean %
1.	Meaning, causes, signs and symptoms of coronary artery disease	5	1 - 4	2.48	0.94	49.6	3 - 5	4.03	0.55	80.5
2.	Recognition of coronary artery disease	4	0 - 4	1.50	0.83	37.5	2 - 4	3.27	0.51	81.7
3.	Meaning and risk factors of coronary artery disease	8	0 - 7	2.75	1.46	34.3	5 - 7	6.27	0.68	78.4
4.	Precautions to be taken during controlling risk of CAD prevention	5	0 - 5	1.50	1.03	30.0	3 - 5	3.87	0.50	77.4
5.	Complication of CAD	5	0 - 4	1.52	1.01	30.4	2 - 5	3.80	0.63	76.0
6.	Complication of HTN	4	0 - 3	1.27	0.71	31.8	1 - 4	2.93	0.53	73
7.	Patients and family's responsibilities in prevention of risk of CAD	5	0 - 3	1.75	0.65	35.0	2 - 5	3.97	0.66	79.4
Overall		36	7-22	12.77	2.56	35.5	24-31	28.12	1.29	78.1

Table 3 shows the range, mean, standard deviation and means score percentage of knowledge levels regarding coronary artery disease among hypertensive patients before and after video assisted teaching programme.

Regarding the meaning, causes, signs and symptoms of CAD, out of a maximum score of 5, a score range of 1-4 was found in pre-test while the post-test scores ranged from 3-5. The mean score in pretest was 2.48 and a score of 4.03 was observed post-test, with standard deviation of 0.94 in pre-test and 0.55 in post-test. The mean score percentage was 49.6% in pretest and 80.50% in post-test.

About the recognition of cardiac arrest, out of a maximum score of 4, a score ranged between 0-4 was noted in pre-test and a score range of 2-4 was found in post-test. The mean score was found to be 1.50 in pretest and 3.27 in post-test, with a standard deviation of 0.83 in pre-test and 0.51 in post-test. The mean score percentage was 37.5% in pretest and 81.7% in post-test.

Regarding the meaning and definition of CAD, out of a maximum score of 8, a range of 0-7 was noted in pre-test while a score range of 5-7 was observed in post-test. The mean score was found to be 2.75 in pre-test and 6.27 in post-test, with a standard deviation of 1.46 in pre-test and 0.68 in post-test. The mean score percentage was 34.3% in pretest and 78.4% in post-test.

About the precautions to be taken for preventing risk factors of CAD, out of a maximum score of 5, pre-test scores were found to be in a range of 0-5 and while the post-test scores were found to be in a range of 3-5. The mean score in pre-test was 1.50 and 3.87 in post-test, with a standard deviation of 1.03 in pre-test and 0.50 in post-test. The mean score percentage was 30.0% in pre-test and 77.4% in post-test.

Regarding the prevention of complications of CAD, out of a maximum score of 5, the pre-test scores were in the range of 0-4 and post-test scores were in the range of 2-5. The mean score in pre-test was 1.52 and 3.80 in post-test, with a standard deviation 1.01 in pre-test and 0.63 in post-test. The mean score percentage was 30.4% in pre-test and 75.0% in post-test.

About the prevention of complications of hypertension, out of a maximum score of 4, the pretest scores ranged between 0-3 and post-test scores ranged between 1-4. The mean score in pre-test 1.27 in and 2.92 in post-test, with a standard deviation of 0.71 in pre-test and 0.53 in post-test. The mean score percentage was 31.8% in pre-test and 65.5% in post-test.

Regarding the patients' responsibilities in prevention of risk factors of CAD, out of a maximum score of 5, pre-test scores were in the range of 0-3 and post-test scores were 2-5. The mean score in pre-test was 1.75 in and 3.97 in post-test, with a standard deviation of 0.65 in pre-test and 0.66 in post-test. The mean score percentage was 35% in pre-test and 79.4% in post-test.

Regarding overall care of CAD and complications of hypertension, out of maximum score of 36, pre-test scores ranged between 7-22 and a score range of 24-31 was noted in post-test. The mean score in pre-test was 12.77 and 28.12 in post-test, with a standard deviation of 2.56 in pre-test and in post-test. The mean percentage was found to be 35.5% in pre-test and 78.1% in post-test.

In the pre-test, 44 (73.3%) had poor knowledge while 16 (26.7%) had average knowledge. However in post-test, 55 (91.7%) showed average knowledge and 5 (8.3%) showed good knowledge (Table 4).

**Table 4:** Distribution of hypertensive patients according to pre- and post-test knowledge levels of risk factors of CAD

S. No	Levels of knowledge	Pre-test		Post test	
		Frequency	Percentage	Frequency	Percentage
1.	Poor (<50%)	44	73.3	-	-
2.	Average (50-75%)	16	26.7	55	91.7
3.	Good (>75%)	-	-	5	8.3
4.	Overall	60	100	60	100

**Table 5:** Analysis of difference between pre-test and post-test knowledge levels regarding coronary artery disease among hypertensive patients using paired t-test

Sl. no.	Groups	Max score	Mean difference	SD of difference	% of increase	Paired t- value	P-value
1.	Meaning, causes, signs and symptoms of CAD	5	1.55	0.94	31.0	12.68*	<0.001
2.	Risk factors of CAD	4	1.76	0.89	44.5	15.37*	<0.001
3.	Meaning and causes of CAD	8	3.51	1.72	43.8	15.81*	<0.001
4.	Precautions to be taken during prevention of risk factors of CAD	5	2.36	1.10	47.2	16.60*	<0.001
5.	Complication of CAD	5	2.28	1.13	45.6	15.56*	<0.001
6.	Complication of hypertension	4	1.65	0.86	41.3	14.85*	<0.001
7.	Complications and patients responsibilities in prevention of CAD	5	2.21	0.88	44.2	19.40*	<0.001
Overall		36	15.35	3.03	42.6	39.17*	<0.001

Note: \*-significant at ( $P < 0.001$ ), NS-Not significant ( $P > 0.001$ ).

Table 5 shows the outcome of paired t test analysis regarding the difference in knowledge scores

Regarding meaning, causes, signs and symptoms of CAD, the maximum score was 5, mean difference was 1.55, SD was 0.94, the mean percentage increase was 31.0% and paired t-test value was 12.68. Regarding recognition of CAD, the maximum score was 4, mean difference was 1.76, SD was 0.89, mean percentage increase was 44.5%, paired t-test value was 15.37. Regarding meaning and definition of CAD, maximum score was 8, mean difference was 3.51, SD 1.72, mean percentage increase was 43.8%, and paired t-test value was 15.81. Regarding precautions to be taken for preventing the risk factors, maximum score was 5, mean difference was 2.36, SD was 1.10, mean percentage increase was 47.2%, paired t-test value was 16.60. Regarding complications of CAD, maximum score was 5, mean difference was 2.28, SD of difference was 1.13, mean percentage increase was 45.6%, and paired t-test value was 14.85. Regarding complications and patients' responsibilities in CAD, maximum score was 5, mean difference was 2.21, SD was 0.88, percentage increase was 44.2%, paired t-test value was 19.40.

The overall maximum score was 36, mean difference was 15.35, SD was 3.03, mean percentage was 42.6% and paired t test value was 39.17. Thus the effect of

video assisted teaching programme in improving the knowledge regarding coronary artery disease among hypertensive patients was statistically significant.

## Discussion

The primary aim of the study was to assess the impact of a video-assisted teaching program on the knowledge of hypertensive patients concerning risk factors associated with coronary artery disease. Data were gathered from 60 hypertensive patients admitted to KC General Hospital in Bangalore, utilizing a knowledge questionnaire and a non-observational checklist.

In terms of levels of knowledge and practice regarding risk factors contributing to coronary artery disease among hypertensive patients, in pre-test, 56 (93.3%) patients had inadequate knowledge, 4 (6.7%) had moderate knowledge, while none had adequate knowledge and 44 (73.3%) had poor knowledge, 16 (26.7%) respectively. However, post the intervention, 56 (93.3%) patients demonstrated adequate knowledge, 4 (6.7%) demonstrated moderate knowledge, while none showed inadequate knowledge and 55 (91.7%) average knowledge, 5 (8.3%) had good knowledge respectively.

The paired t-test revealed that the maximum score was 36, mean difference was 15.35, SD was 3.03, mean % was 42.6 and paired t- test value was 39.17 in knowledge

and the maximum score of 88, mean difference of 24.28, SD 7.68, mean % of 24.5 and paired t- test value of 24.463 was observed for practice.

## Conclusion

The findings indicated that the video-assisted teaching program proved to be effective and suitable for enhancing knowledge about the risk factors of coronary artery disease among hypertensive patients.

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