

# Knowledge and Perceived Health Benefits of Percutaneous Transluminal Coronary Angioplasty among Patients with Coronary Heart Disease

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## ABSTRACT

**Introduction:** The determination of the knowledge and perceived health benefits of Percutaneous Transluminal Coronary Angioplasty (PTCA) from the patient's view of understanding helps to develop a holistic approach to health care.

**Aim:** The study aimed to assess the knowledge and perceived health benefits of PTCA and to find the association of knowledge with the perceived health benefits and demographic variables among the patients with Coronary Heart Disease (CHD).

**Materials and Methods:** A descriptive survey design was used and data were collected from 130 participants of cardiac wards of a tertiary care hospital, Karnataka, using structured knowledge questionnaire about PTCA and post-PTCA health benefits scale. Later a leaflet about PTCA was given to the participants. Subjects diagnosed with CHD and on the first

post procedural day of PTCA were included in the study and patients with psychiatric disorders and medical disorders except diabetes mellitus and hypertension were excluded. Descriptive statistics was used to describe the sample characteristics, Chi-Square was used for association.

**Results:** The mean age of the sample was 54 years, the mean knowledge score was  $7.35 \pm 2.855$  and 15.4%, 69.2% and 15.4% of the participants had good, moderate and poor knowledge respectively. The PTCA procedure was perceived as highly beneficial by 79.2% of participants and association was not found between knowledge and perceived health benefits of PTCA ( $p > 0.05$ ).

**Conclusion:** The study highlights the need for planning programs for continuing individualised health education on PTCA for the patients and their families to make changes in the patient's wrong perception of health benefits after PTCA.

**Keywords:** Angioplasty, Health benefits, Knowledge

## INTRODUCTION

Coronary Heart Disease (CHD) is the prime cause of mortality in the Indian population. Cardiovascular mortality in Asian Indian population is increasing rapidly [1]. CHD accounts for 1 in 7 deaths in the US, killing over 360,000 people a year [2]. The American Heart Association for Heart Disease and Stroke Statistics updated the fact in 2010 that United States has the highest population (17.6 million) of CHD, including myocardial infarction (8.5 million) and angina pectoris (10.2 million). As per the Global Burden of Disease Study 2013 estimate, about 17.3 million deaths worldwide were related to CHD [3]. Prevalence of CHD in some of the Indian states is, 7.58% in Karnataka and 12.5% in Kerala. The overall prevalence rate of CAD is 11.0% in Chennai and 7.54% in Kashmiri population. The overall rural and urban prevalence was 6.70% and 8.37% respectively, higher in males, and slightly lower in females. The prevalence of CHD in Vellore was 3.4% among rural men, 7.4% among rural women, 7.3% among urban men, and 13.4% among urban women in 2010-2012 [4-8].

A study to assess the perceived urgency and benefits of the elective Percutaneous Coronary Intervention (PCI) showed that the benefits the participants were expecting from PCI were more than the actual [9]. A qualitative study was conducted to identify the understanding and beliefs influencing behaviour change among post-angioplasty patients. One of them derived was "failure in behavioural change related to physical limitations" that "nothing helps," and the false belief that angioplasty "cures" CHD. The study concluded that insufficient knowledge is responsible from patients' perspective that PTCA is curative procedure for CHD [10]. A study conducted to evaluate the effectiveness of pre-procedural counseling program on knowledge regarding coronary risk factors revealed that participation in the intervention did not find any difference in knowledge improvement

or reduction in risk factor prevalence [11]. Above studies shows that there is a gap between actual and perceived benefits.

The present study was conducted to assess the knowledge and perceived health benefits of PTCA in order to prepare information leaflet on PTCA detailing the possible benefits, risk, medication, follow up, lifestyle modification after PTCA among the patients with CHD which may help to know actual benefits and prepare themselves for the future care.

## MATERIALS AND METHODS

A descriptive survey approach was used with the objective to assess the knowledge and perceived health benefits of PTCA and to find the association between the knowledge and perceived health benefits of PTCA with the demographic variables among the patients with CHD. The setting of the study was cardiac wards of a tertiary care hospital, Karnataka. Data collection was done from 10<sup>th</sup> January 2016 to 6<sup>th</sup> February 2016.

The sample size calculation was done by estimation of proportion using the formula,

$$n = z^2_{(1-\alpha/2)} \times p(1-p) / d^2$$

where  $z_{(1-\alpha/2)} = 1.96$ ,  $p = 8.3\%$

Total 130 subjects diagnosed with CHD and on first post procedural day of PTCA were included in the study by purposive sampling technique. Patients with any psychiatric disorders and medical disorders except diabetes mellitus and hypertension were excluded from the study. The tools used for the study were demographic proforma, structured knowledge questionnaire about PTCA and perceived post-PTCA health benefits scale. The structured knowledge questionnaire consisted of 18 questions related to the risk factors, treatment, diet and complications of CHD and PTCA.

Each question had four options and the correct option was scored '1'. The total score was 18, which was arbitrarily divided as good knowledge level (>10), moderate knowledge level (5-10) and poor knowledge level (<5) [Appendix-1] [12-14].

Perceived post-PTCA health benefits scale is a five point Likert scale which consisted of 24 items. The items were related to the subject's physical limitation, disease perception and treatment satisfaction of PTCA. The options were 'strongly agree', 'agree', 'uncertain', 'disagree', 'strongly disagree' which were given a score of five (5), four (4), three (3), two (2), and one (1) respectively. Item number 3, 4, 5, 6, 7, 8 and 9 had reverse scoring as they were negative questions. The total score was 120, which was arbitrarily divided into low, moderate, and high benefits as 30-59, 60-89 and 90-120 respectively. The reliability of structured knowledge questionnaire about PTCA was checked by Split-half technique (r=0.83) and "perceived post-PTCA health benefits scale" was obtained by Cronbach's alpha (r=0.80) [Appendix-2] [12-14].

Ethical clearance was obtained from the Institutional Ethics Committee of research setting (IEC 723/2014) and written informed consent was taken from the participants of the study. The data was collected by administering the tools to the patients during January 2016-February 2016. After knowing patients' views about PTCA, leaflets were prepared to detail the possible benefits, risk, medication, follow up and lifestyle modification after PTCA and distributed to the patients attending cardiac outpatient department.

### STATISTICAL ANALYSIS

Collected data for each patient was entered in Statistical Package for Social Sciences (SPSS 16 version). Descriptive statistic was used to describe the sample characteristics, Chi-Square was used for association between the knowledge and perceived health benefits and selected variables of PTCA among the patients with CHD [15,16].

Sample characteristics	Frequency (f)	Percentage (%)
<b>Age in years</b>		
40-50	41	31.5
51-60	62	47.7
61 and above	27	20.8
<b>Gender</b>		
Male	99	76.2
Female	31	23.8
<b>Education</b>		
Graduate	17	13.1
Pre university course	46	35.4
High school	45	34.6
Primary school	20	15.4
No formal education	2	1.5
<b>Religion</b>		
Hindu	107	82.3
Muslim	8	6.2
Christian	15	11.5
<b>Current medication</b>		
Antiplatelet	22	16.9
Lipid-lowering drug	36	27.7
Diabetic drug	26	20
Nitroglycerin	3	2.3
Anti-hypertensive	43	33.1
<b>Health insurance</b>		
Yes	62	47.7
No	68	52.3

[Table/Fig-1]: Frequency and percentage distribution of sample characteristics of patients with CHD (n=130).

### RESULTS

The data presented in [Table/Fig-1] shows that among 130 subjects (47.7%) were in the age group of 51-60 years having mean age of 54 years, majority (76.2%) were males, 35.4% had completed Pre university course level education, 27.7% of the subjects had their own service, most of them (87.7%) were married and 82.2% belonged to Hindu religion, 46.2% were suffering from hypertension and 33.1% were taking antihypertensive drugs, 52.3% of the subjects did not have health insurance. The data presented in [Table/Fig-2] shows that the mean scores of knowledge were 7.35±2.855 and 15.4%, 69.2%, and 15.4% were having good, moderate and poor knowledge. The [Table/Fig-3] shows that the mean percentage of knowledge in the area of treatment of PTCA was 43.72% and less in the area of complications of PTCA (36.9%).

Knowledge	f	%	Maximum possible score	Mean	SD
Good	20	15.4			
Moderate	90	69.2	18	7.35	2.855
Poor	20	15.4			

[Table/Fig-2]: Frequency and percentage distribution of knowledge score of patients who underwent PTCA (n=130).

Area	Maximum possible score	Mean	SD	Mean percentage
PTCA-risk factor and causes	5	1.907	1.08	38.14
PTCA-treatment	7	3.061	1.64	43.72
PTCA-diet	4	1.600	1.04	40
PTCA-complications	2	0.738	0.59	36.9

[Table/Fig-3]: Area wise description of mean, standard deviation and mean percentage (n=130).

[Table/Fig-4] shows that 103 (79.2%) patients perceived high benefits and 27 (20.8%) patients perceived moderate benefits of treatment and no statistically significant association between knowledge and perceived health benefits of PTCA (p=0.429). [Table/Fig-5] shows an association between education and knowledge of PTCA (p<0.005). [Table/Fig-6] shows an association between education and perceived health benefits of PTCA (p<0.043).

Variables	Good	Moderate	Poor	Df	χ <sup>2</sup> (Fisher exact)	p-value
<b>Perceived health benefits</b>						
High benefits	18	70	15	2	1.684	0.429
Moderate benefits	2	20	5			

[Table/Fig-4]: Association between knowledge and perceived health benefits of PTCA among CHD patients (n=130).

Variables	Good	Moderate	Poor	df	χ <sup>2</sup> (Fisher exact)	'p' value
<b>Age in years</b>						
40-50	7	25	9			
51-60	11	43	8	4	3.889	0.42
61 and above	2	22	3			
<b>Gender</b>						
Male	15	67	17	2	0.932	0.66
Female	5	23	3			
<b>Education</b>						
Graduate and above	3	11	3			
Pre University Course	10	25	11			
High school	4	40	1	8	22.019	0.005
Primary school	3	13	4			
No formal education	0	1	1			

[Table/Fig-5]: Association between knowledge and selected variables of CHD patient (n=130).

Variables	High	Moderate	df	$\chi^2$	p-value
<b>Age in years</b>					
40-50	34	7			
51-60	50	12	2	1.704	0.42
61 and above	19	8			
<b>Gender</b>					
Male	82	17			
Female	21	10	1	3.265	0.07
<b>Education</b>					
Graduate and above	10	7			
P.U.C	38	8			
High school	40	5	3	11.48	0.043
Primary school	14	6			
No formal education	1	1			

**[Table/Fig-6]:** Association between perceived health benefits of PTCA and selected variables of CHD patients (n=130).

## DISCUSSION

Results of the present study showed that 15.4% of participants had good knowledge about PTCA and 79.20% and 20.80% of the patients perceived high and moderate benefits after PTCA respectively. There was no association between the knowledge and perceived health benefits of PTCA.

The findings of the study done by Fernandez R showed that 46% of the participants had adequate knowledge to identify the risk factors of CHD who underwent PTCA [17]. The study conducted by Ozkan O et al., to determine the expected treatment benefits from the patient's perspective before and after PTCA revealed that the patients had the wrong understanding of complete recovery from the diseases, before PTCA it was 88.3% and after PTCA was 48.3% [18]. Another study to assess the patient expectations of the benefits of Percutaneous Coronary Revascularization (PCR) shows no significant correlation between age and the belief that PCR would prolong life or help to prevent myocardial infarction [19].

## CONCLUSION

The knowledge about the risk of coronary heart disease was not adequate but they are overestimating the benefits of PTCA. The information leaflet detailing possible benefits, risk, medication, follow up and lifestyle modification after PTCA given will help in the proper understanding of PTCA procedure.

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## APPENDIX 1

### Structured Knowledge questionnaire about PTCA

Kindly read each item of the questionnaire and carefully indicate your response by placing a tick mark against the correct answer of your choice. There is one correct answer to each of these questions.

1. What is the cause of chest pain?
  - a. regurgitation of blood back into the heart
  - b. block in the coronary artery
  - c. eating fat rich foods
  - d. lack of exercise
2. What is the purpose of the angioplasty procedure (PTCA)?
  - a. to remove block in coronary artery by placing a stent or balloon
  - b. to coat the artery with a substance that prevents blockage
  - c. to bypass the blockage with a hollow tube
  - d. to scrape the plaque until it has all been removed
3. What is the purpose of blood thinning drugs used in the angioplasty procedure?
  - a. to keep the blood pressure low by keeping the blood thin
  - b. to make the catheter slippery, so it can be moved easier in the artery
  - c. to make the plaque small so it is easier to flatten with the balloon
  - d. to prevent clot from forming in the coronary artery at the PTCA site/stent
4. What is the non-modifiable risk factor of heart disease?
  - a. smoking
  - b. familial history
  - c. increased cholesterol
  - d. obesity
5. The following are the modifiable risk factors of heart disease EXCEPT
  - a. HTN
  - b. stress
  - c. osteoporosis
  - d. diabetes mellitus
6. It is important that you immediately report any chest pain to your doctor during this hospital stay because
  - a. it takes a long time for the medications to help relieve the pain
  - b. it helps to modify his treatment plan based on symptoms
  - c. it takes a while for the doctor to get to the hospital
  - d. it is required to take a chest x-ray
7. Which among the following leads to narrowing of coronary artery?
  - a. accumulation of cholesterol
  - b. doing vigorous exercise
  - c. watching movie
  - d. eating too much salt
8. Among the following, the most common cause of death in India is:
  - a. asthma
  - b. diabetes mellitus
  - c. heart attack
  - d. hypertension
9. The habit that can precipitate complications after PTCA is:
  - a. eating sweets
  - b. chewing gum
  - c. drinking tea
  - d. smoking
10. Which type of diet to be followed after PTCA procedure?
  - a. Normal diet
  - b. Low fat diet
  - c. Low salt diet
  - d. Liquid diet
11. What is the possible complication of PTCA?
  - a. loss of elasticity of the artery
  - b. blood clotting at the balloon site
  - c. dilatation of the artery
  - d. stricture of the artery
12. What instruction you need to follow after discharge?
  - a. take medication advised by the doctor
  - b. perform vigorous exercise
  - c. do everything as you were doing before
  - d. take complete rest for 1 year
13. What is needed to prevent heart attack?
  - a. doing more activity
  - b. taking alcohol regularly
  - c. discontinuing medication
  - d. developing healthy nutritious diet
14. What should be avoided in diet?
  - a. fruits
  - b. green leafy vegetables
  - c. red meat
  - d. whole grain
15. While preparing food you should consider:
  - a. using less oil
  - b. frying the food well
  - c. boiling the food properly
  - d. using more spices
16. It is necessary to keep the following in every day's meal:
  - a. animal protein
  - b. salt
  - c. more spicy food
  - d. green leafy vegetables
17. Tablet Sorbitrate should be taken by the following method during chest pain:
  - a. keep below the tongue
  - b. chew the medication
  - c. swallow with water
  - d. dissolve in water and drink
18. The remedy to be followed if there is chest discomfort:
  - a. taking rest
  - b. drinking plenty of water
  - c. calling visiting doctor immediately
  - d. waiting till it resolves

## APPENDIX 2

### Perceived Post PTCA Health Benefits scale

Kindly answer the following questions in relation to the health benefits and health status you perceived about after effects of PTCA. Read them carefully and put a tick mark (✓) against appropriate column that explain your best response.

Sl. No	Questions	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1.	I consider that heart disease is very serious					
2.	I feel more afraid while experiencing chest pain					
The following activities that people often do during the week... tick the option about the limitation you have had due to chest pain, chest tightness or angina over past 4 weeks.						
3.	I could shower					
4.	I could walk indoors on level ground					
5.	I could climb stairs without stopping					
6.	I could carry groceries					
7.	I could run					
8.	I could lift heavy objects					
9.	I could participate in strenuous sports (e.g., swimming, tennis)					
After PTCA						
10.	I will completely recover after PTCA					
11.	My disease will not aggravate any more					
12.	There will be repeat PTCA if necessary					
13.	I will not have chest pain any more					
14.	I will not have heart attack					
15.	I will not have a fear of death					
16.	I will not have dyspnoea					
17.	I will not have sleep disorder					
18.	I will not feel fatigue					
19.	I will not panic					
20.	I will not be stressed					
21.	My previous energy will return					
22.	I will return to my previous work					
23.	I will be able to make plans about the future					
24.	My life will be prolonged					