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IMPACT OF PROTOCOL GUIDED PHASE I CARDIAC REHABILITATION ON KNOWLEDGE AND SATISFACTION AMONG PATIENTS WITH ACUTE CORONARY SYNDROME

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ABSTRACT

The aim of the present study was to evaluate the effect of Phase I cardiac rehabilitation on knowledge and satisfaction among patients admitted with ACS in a selected hospital at Ernakulam District in Kerala. The design was Quasi-experimental, one group pre-test post-test design. The sample included 32 patients admitted with ACS, selected by consecutive sampling. Pre-test was conducted on day one of admission using Socio-Demographic data and knowledge questionnaire. Phase I Cardiac Rehabilitation based on the validated intervention protocol was administered to patients over five days. Post-test was done on the fifth day using knowledge questionnaire and satisfaction scale. Paired 't' test demonstrated the mean difference for knowledge as significant between the pre and post-test ($p < .0001$***). Regarding satisfaction, 59.60% of patients were satisfied and 18.3% were highly satisfied with the Cardiac Rehabilitation. There was no significant association between the knowledge scores and the socio-demographic variables. The results support the need for further investigation of cardiac rehabilitation as a method to positively influence the knowledge and satisfaction among patients admitted with ACS.

INTRODUCTION

Non-communicable disease (NCD) continues to be an important public health problem in India. Four NCDs mainly responsible for the total mortality and morbidity are cardiovascular diseases, chronic respiratory disease, cancers and diabetes, contributing to about 82% of all NCD deaths [1]. Among the Cardiovascular diseases, Coronary Artery Disease (CAD) and Acute Coronary Syndrome (ACS) together account for approximately seven million deaths each year worldwide [2]. The term Acute Coronary Syndrome is used to describe the continuum of myocardial ischemia (unstable angina pectoris) or infarction (with or without concomitant ST segment elevation) [3]. India has the highest burden of ACS in the world. The CREATE registry has provided contemporary data on 20,468 patients from 89 centres from 10 regions and 50 cities in India [4].

The prognosis of ACS has much improved in recent years as a result of advances in the early initiation of anti-thrombotic therapies, early invasive management and the development of coronary care units. Nevertheless, the risk of recurrence of cardiovascular complications after an ACS remains as high as 15% at 12 months [5]. International guidelines recommend pharmacologic and lifestyle interventions to reduce recurrent events in

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patients with coronary and other atherosclerotic vascular disease. However studies have reported that 30% of patients stop their treatment either partially or totally within 30 days after hospital discharge with a significant increase in one year mortality [6].Of note, if treatment in secondary prevention of atherosclerosis after ACS is not initiated at the time of discharge, the likelihood of ever receiving treatment is low. On the other hand if medical therapy in secondary prevention after ACS is started early, most patients adhere to treatment on the long term [7, 8]. The benefit of in-hospital multidimensional interventions for patients after an ACS was demonstrated in a recent review and meta-analysis [9].

Therefore, cardiac rehabilitation programs are an important corner stone in the educational process of care after an ACS. The World Health Organization has defined Cardiac Rehabilitation as the sum of activities required to favourably influence the underlying cause of the disease, as well as the best possible physical, mental, and social conditions, so that they may, by their own efforts, preserve or resume, as normal a place as possible in the society [10]. Cardiac rehabilitation has been shown to reduce reinfarction, cardiovascular and non-cardiovascular readmission and death and to improve health-related quality of life, and to be cost-effective [11].

A study was conducted in 2018 to assess and compare the effect of cardiac rehabilitation on survival among patients with ACS. A total of 1159 patients undergoing cardiac rehabilitation were 1:1 matched with patients with ACS who did not undergo cardiac rehabilitation. Result showed that cardiac rehabilitation patients had 39% lower mortality than non-cardiac rehabilitation controls [12]. Another study was conducted to assess the level of knowledge regarding Cardiac Rehabilitation among 500 patients admitted with Coronary Artery disease. The mean score of knowledge was 44.00 ± 17.00 (score range: 0–93), and the mean level of awareness was 47.31% (awareness range: 0–100%). The study concluded that there is a need for health education to improve the awareness on cardiac rehabilitation among patients with CAD [13].

Phase-1 Cardiac rehabilitation involves the hospitalized period of the patient following an acute Myocardial infarction which is very important for helping the patient to recover and prevent further recurrence of disease. It includes medical evaluation, education, reassurance and exercise. This study intends to evaluate the beneficial effects of a protocol-guided, nurse led Phase-1 Cardiac Rehabilitation on knowledge and satisfaction among patients admitted with ACS.

Statement of the problem

A study to assess and evaluate the effect of Phase I Cardiac Rehabilitation on knowledge and satisfaction among patients admitted with Acute Coronary Syndrome (ACS) in a selected hospital at Ernakulam district, Kerala.

Objectives

Objectives of the study were to:

1. assess the pre-test and post-test knowledge score regarding Phase I Cardiac Rehabilitation among patients admitted with ACS.
2. evaluate the effect of phase I Cardiac Rehabilitation on knowledge among patients admitted with ACS.
3. assess the satisfaction regarding Cardiac Rehabilitation among patients admitted with ACS
4. find the association between the knowledge and selected demographic variables among patients admitted with ACS

Operational Definitions

1. Phase I Cardiac Rehabilitation

It refers to the sum of the activities that targets risk reduction by means of exercise training, providing education regarding medications, life style modification, diet and physical activity to patients admitted with ACS.

2. Knowledge

Knowledge refers to the ability of a patient with ACS, to give correct responses to the items related to questions regarding Cardiac Rehabilitation as measured by a structured questionnaire.

3. Satisfaction

The degree to which patients with ACS are gratified with the Cardiac Rehabilitation intervention as measured by a rating scale

4. Patient

It refers to the person who is male or female admitted in cardiac care unit and diagnosed as a case of either unstable angina or Non ST Elevated Myocardial infarction or ST Elevated Myocardial infarction

Hypotheses

H_1: The mean post-test knowledge score of patients with ACS after the administration of phase I Cardiac Rehabilitation is significantly higher than the mean pre-test knowledge score, at 0.05 level of significance

H_2: There is significant association of the knowledge with the selected demographic variables at 0.05 level of significance

Conceptual Frame Work

The conceptual framework was based on Imogene M. King's Theory of Goal Attainment [14].

MATERIALS AND METHODS

Design and sampling

The research approach used in this study was quantitative approach and the design was Quasi experimental, one group pre-test post-test study design. The setting of the study was Samaritan Heart Institute, Pazhanganad .The population in the study comprised of all patients admitted with ACS. The sample was 32 patients admitted with ACS who fulfilled the inclusion criteria and the sampling technique was consecutive sampling technique. Power analysis was done based on previous published research studies to estimate the sample size for study. The estimated sample size was 25. Considering attrition, 32 patients were selected for the study. Samples were selected based on the following inclusion criteria: Patients who are 1) admitted with ACS 2) able to read and understand Malayalam/ English 3) willing to participate in the study.

Instrument

The tools comprised of a socio-demographic proforma, knowledge questionnaire and a satisfaction rating scale. Validity and reliability of the tools were established.

Tool 1: Demographic data included age, gender, educational status, monthly income and occupation. Clinical variables included duration of CAD, family history of CAD and previous information regarding Cardiac Rehabilitation.

Tool 2 Knowledge questionnaire: A structured knowledge questionnaire with 24 multiple choice items was constructed to assess the knowledge. Each item had 4 alternative responses and had only one correct response. Maximum score was 24. The score was interpreted as follows: poor (0-6), average (7-12), good (13-18) and very good (19-24)

Tool 3: Satisfaction scale: It is a four point rating scale that consist of five items

Intervention

The cardiac rehabilitation protocol was prepared and opinions were obtained from the experts. The intervention was scheduled over five days. The protocol comprised of the following: reassurance, importance of bed rest, and breathing exercises on day one. On day two; education regarding CAD, providing or assisting the patient for partial bed rest and active range of motion exercises to wrist and ankle. Components of day three were gradual increase in the duration of exercises, upper limb flexion, assisting in standing and ambulating within room and education on dietary regimen. Walking outside the room and reinforcement of exercises were done on the fourth day. On the last day reinforced about the exercise schedule and education regarding control of dyslipidaemias, co-morbidities, adherence towards medication and the need to quit smoking, if any.

Pilot study

Pilot study was conducted from 28/05/2018 to 2/6/2018 among three patients in Samaritan Heart Institute, Pazhanganad. It was found to be feasible. There were no difficulties faced.

Data collection

After obtaining permission from the concerned authority, the study was conducted from 10/06/2018 to 28/06/2018 among 32 patients admitted with ACS in Samaritan Heart Institute, Pazhanganad. The sample were selected by consecutive sampling. The researchers met the participants and explained the purpose of the study. Informed consent was obtained from the participants. On the day of admission, after the patients were hemodynamically stable and free of pain (12 -14 hours after admission), pre-test was conducted using the socio-demographic proforma and the knowledge questionnaire. Cardiac Rehabilitation based on the prepared intervention protocol was started on the same day. The intervention was continued for five days. On day five, post-test was conducted using the knowledge questionnaire and satisfaction scale. At the end, researcher expressed gratitude to the sample for their co-operation. The data were analyzed using descriptive and inferential statistics such as mean, standard deviation, 't' test and Chi-square.

RESULTS

Section 1: Description of sample characteristics

Majority of the sample were in the age group above 60 years 19(59.3%) and were females 19(59.3%), Majority had secondary education 20(62.5%), were unemployed 11(34.37%) and had income 24(75%) more than Rs.20, 000. Regarding the clinical variables, majority of the sample had duration of CAD <1year13(40.6%), had family history 20(62.5%) and had no previous information regarding ACS 25(78.12%).

Section 2: Knowledge of patients with ACS regarding Cardiac Rehabilitation

Fig: 1 shows that 68.75% of patients have only average level of knowledge and none has very good knowledge in the pre-test. In the post-test 43.75% have good knowledge and 21.87% have very good knowledge

Section 3: Effect of phase I Cardiac Rehabilitation on knowledge of patients

Table 1 reveals that the post test knowledge score 61.7 is higher than the pre test knowledge score 36.19. The calculated 't' value 12.73 is found to be statistically significant at P <0.001. Hence the null

hypothesis H_{01} is rejected and the research Hypothesis H_1 is accepted. Cardiac rehabilitation is found to increase the knowledge of patients with ACS.

Section 4: Satisfaction of patients regarding Cardiac Rehabilitation

Fig:2 shows that majority of the sample (59.60%) are satisfied with cardiac rehabilitation.

Section 5: **Association between knowledge and the demographic variables**

Table2 reveals that the calculated chi square values are not statistically significant as the P value is >0.05.Hence the null hypothesis H_{02} is accepted and the Research Hypothesis H_2 is rejected. This reveals that there is no significant association between the knowledge and the selected socio-demographic variables.

Fig 1. Level of knowledge regarding Cardiac rehabilitation among patients admitted with ACS

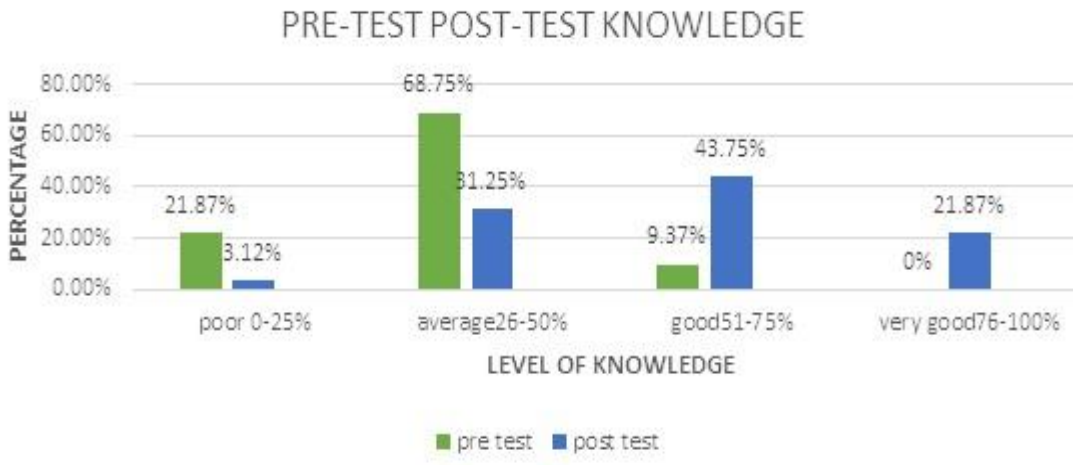

Fig 2. Bar diagram showing the level of satisfaction among patients with ACS regarding cardiac rehabilitation

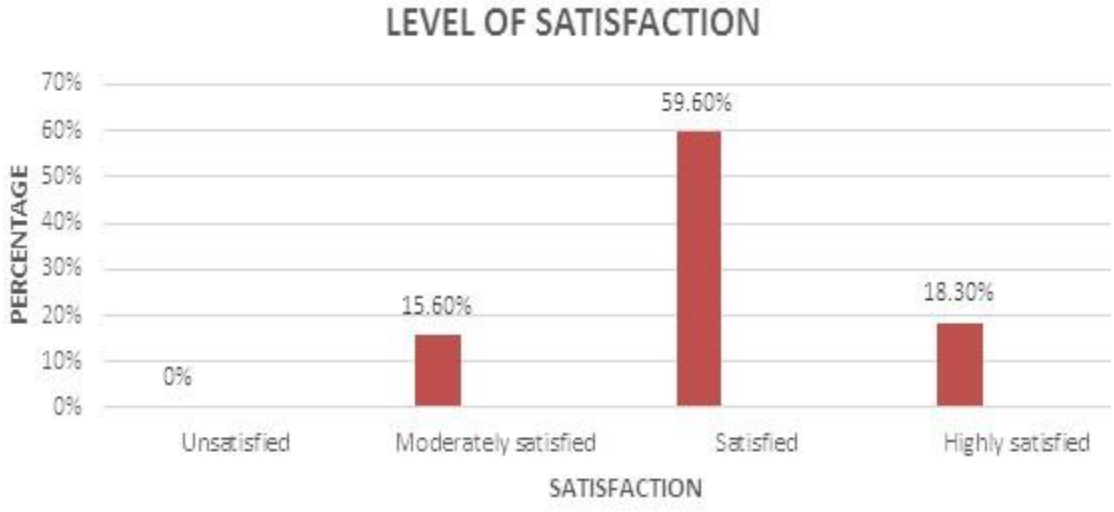

Table 1: **Comparison of pre-test and post-test knowledge score of patients regarding Cardiac Rehabilitation**

(N=32)

Knowledge	Mean	Standard deviation	't' value	P value
Pre-test	36.19	3.33	12.73***	<0.001
Post-test	61.7	4.44		

***significant level at 0.001**

Table 2: Chi square value showing association between pre-test knowledge score and selected demographic variables

(N=32)

Demographic variables	Chi square(cal)	Degree of freedom	Chi square (tab)
Age	7.75	12	21.03
Gender	5.27	3	7.82
Education	10.87	9	16.92
Income	2.24	6	12.59
Occupation	1.16	9	16.92
Duration of CAD	1.93	6	12.59
Family history	1.99	3	7.82
Previous information	0.853	3	7.82

Significant at 0.05 level

DISCUSSION

The present study found that cardiac rehabilitation is effective in improving the knowledge of patients with ACS (P<0.001).A similar finding of improved knowledge was observed in a study that was conducted in 2018 to assess the efficacy of an information booklet on knowledge regarding Cardiac Rehabilitation among 50 patients with CAD in India. The knowledge of the patients improved after receiving information (mean post-test knowledge score 22.02 was greater than mean pre-test value 12.36) [15].

In the present study majority of the sample (59.60%) were satisfied with cardiac rehabilitation. A study was conducted in 2017, to assess the satisfaction with cardiac rehabilitation programme among 411 patients in Toronto [16]. Result showed that patient satisfaction was significantly related to greater cardiac rehabilitation adherence (r = 0.22, P<0.01) and completion (t=2.63, P<0.01).This supports the present study findings. The demographic variables in the present study were found to have no significant association with the knowledge. A contradictory finding was observed in a study that was conducted in 2016 to assess the knowledge of Cardiac Rehabilitation in 100 patients with CAD. The results found significant association of duration of CAD with the knowledge(r=0.106, p<0.001) [13].

This study has important nursing implications that, nurses should actively participate in cardiac rehabilitation of patients admitted with ACS. This will help patients to lead a life with quality without further re-infarction. There is no doubt that cardiac intensive care is highly pronounced in India. But cardiac rehabilitation especially after ACS is far from reality. In Kerala, there are few tertiary care hospitals which provide cardiac rehabilitation after CABG, but many hospitals do not have facilities available to provide cardiac rehabilitation for patients after ACS. So nurses in Coronary care units must be knowledgeable and skilful in helping patients through phase I cardiac rehabilitation.

There are some limitations in this study. This is a single centre prospective study and thus suffers from inherent limitations, including the small sample size. Furthermore, the present study only included phase I of cardiac rehabilitation.

Recommendations

The study can be replicated on a larger sample including multiple settings. A true experimental study can be conducted on the same topic for the same population. A study can be conducted to evaluate the effect of all phases of cardiac rehabilitation on quality of life and satisfaction among patients with ACS.

CONCLUSION

In conclusion, phase I cardiac rehabilitation was found to increase the knowledge and satisfaction of patients admitted with ACS. Care provided by specialist nurses has been shown to improve outcomes in patients admitted with ACS. Therefore, to ensure that these patients life span is increased with quality years, cardiac nurses must take an extra mile to assist them with Cardiac rehabilitation.

Conflict of interest: There were no conflict of interest reported

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