

Impact Of Telenursing Rehabilitation Program On Home-Based Self-Care Among Patients With Acute Coronary Syndrome

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Abstract:

Background: Acute Coronary Syndrome (ACS) presents significant challenges in management and patient outcomes globally. Effective self-care practices in the home setting are crucial for mitigating complications and improving prognosis. Telehealth interventions, like Telenursing Rehabilitation Programs, offer promising avenues for supporting ACS patients in their self-care endeavors. This study aimed to assess the effectiveness of the Telenursing Rehabilitation program on home-based self-care among Acute Coronary Syndrome patients.

Material and Methods: In this study, quasi-experimental two group posttest design was adopted. 80 participants who met inclusion criteria were selected by purposive sampling technique at the cardiology department of tertiary care hospital, Lucknow, U.P. After obtaining Institutional Ethical clearance and administrative permission, data collection was initiated using Demographic data, Clinical profile and Self-Structured Tool on home based self-care practices used to assess the effectiveness of self-care practices. Throughout the program the participants received the telenursing rehabilitation program on home based self-care through video call for 3 consecutive days in a week with an average call duration of 15 minutes and reminder follow up calls for 3 weeks. After completion of Telenursing Rehabilitation Program, participants were called in OPD for follow up and data collected. The control group received instruction as per hospital routine and after 4 weeks they were also called for follow up in OPD and data was collected. The reliability of tools was calculated by using Cronbach's Alpha method is 0.81 respectively. Data were analysed by using SPSS version 20. Descriptive and inferential statistics was used for analysis like Mean, Frequency percentage, t-test and Chi – Square test.

Results: In this study, result highlighted that, the mean posttest score for the study group was 80.73 (± 5.454), whereas for the control group, it was 70.60 (± 9.265). t-test revealed a statistically significant difference between the two groups ($t = 5.956$, $df = 78$, $p = 0.001$), indicating that the program had a significant positive effect on home based self-care scores of participants in the study group compared to those in the control group.

Conclusion: The researcher provides valuable insights that there was significant effect of Telenursing Rehabilitation Program on home-based self-care of patient with Acute Coronary Syndrome, therefore due to its reliability and cost effective strategy this method can be used in patients care and follow up.

Key Words: Acute Coronary Syndrome, self-care, telehealth, Telenursing Rehabilitation Program, home-based care.

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I. Introduction

Coronary Artery Disease involves the narrowing or blockage of coronary arteries due to atherosclerosis, leading to myocardial ischemia or necrosis. It's a major contributor to morbidity, mortality, and long-term disability in developed and some developing nations^{1,2}. Acute Coronary Syndrome (ACS) remains a significant health concern globally, posing considerable challenges in terms of management and patient outcomes. ACS encompasses a spectrum of conditions, including unstable angina, non-ST-segment elevation myocardial infarction (NSTEMI), and ST-segment elevation myocardial infarction (STEMI), all of which necessitate prompt intervention and ongoing care to mitigate complications and improve prognosis³.

Acute coronary syndrome is a coronary heart disease (CHD) responsible for one-third of deaths in people aged 35 and is a leading cause of death in US. An estimated report by The American Heart Association shows that every 41 seconds heart attack takes place and is the leading cause of death in the United States. The reason for a visit to the emergency department is Chest pain⁴.

According to WHO, an estimated 17.9 million people lost their lives from CVDs in 2019, representing 32% of all global deaths. The reason for 85% deaths were due to heart attack and stroke. In India, cardiovascular

disease has one of the leading disease burdens worldwide. In India from 2.26 million (1990) to 4.77 million (2020) annual deaths from CVD are projected to rise⁵.

Despite advancements in medical management and interventions, the management of ACS extends beyond acute hospitalization, emphasizing the importance of effective self-care practices in the home setting⁶. Self-care encompasses a range of behaviors, including medication adherence, lifestyle modifications, symptom recognition, and seeking timely medical assistance, all of which play a pivotal role in secondary prevention and overall for cardiac health⁷. Telehealth interventions, particularly Telenursing Rehabilitation Programs, have emerged as promising avenues for supporting patients with ACS in their self-care endeavors. Leveraging technology to deliver education, monitoring, and support remotely, these programs offer a means to bridge the gap between hospital discharge and ongoing care, empowering patients to actively engage in their recovery and management^{8,9}.

This study seeks to evaluate the effectiveness of a Telenursing Rehabilitation Program on home based self-care among patients with ACS. Understanding the efficacy of such telehealth interventions holds implications not only for individual patient outcomes but also for healthcare systems grappling with the burden of ACS management. By elucidating the potential benefits of integrating telehealth into cardiac rehabilitation programs, this study aims to contribute to the broader discourse on optimizing care delivery and improving outcomes for patients with ACS.

II. Material And Methods

In this study, quasi-experimental two group posttest design was adopted. This study was carried out between January to March 2023. 80 participants who met inclusion criteria were selected by purposive sampling technique at the cardiology department of tertiary care hospital, Lucknow, U.P. the inclusion criteria were: admitted patient who had diagnosed with Acute Coronary Syndrome primarily and admitted to the Department of cardiology, in tertiary care hospital, patient who can understand Hindi or English language, patient/relatives those who were using smart phone. Exclusion Criteria were those who are having severe disabling systemic disease, having severe cognitive impairment.

Sample size calculation: Sample size was calculated based on previous study. In this study Cochrane formula was used $n = Z^2 P (1 - P) / d^2$ Where: n = sample size Z = Statistic for a level of confidence (1.96) P = estimated proportion d = Absolute precision. Hence, $n = 72.03$. Where 10 % is added then $n = 79.06$. So, the required sample size is $n = 80$ participants. Participants were divided into two groups: 40 in the study group and 40 in the control group.

Research Hypothesis: There will be a significant effect of the Telenursing Rehabilitation Program on home-based self-care of patients with Acute Coronary Syndrome.

Procedure methodology: After obtaining Institutional Ethical clearance and administrative permission, data collection was initiated. Data were collected using Demographic data which included age (in years), Sex, Address, Education qualification (as per Kuppaswamy scale 2021¹⁰), Marital status, Religion, Occupation (as per Kuppaswamy scale 2021¹⁰), and Place of residence, WhatsApp number. Clinical profile included family history, other comorbidity, personal habits, blood pressure monitor. Self-Structured Tool on home based self-care practices used to assessed the effectiveness of self-care practices, with scores indicating the frequency and effectiveness of these practices. Self-Structured Tool comprised 23 items measured on a 5-point Likert scale, ranging from (never effective = 1) to (always effective=5). The reliability of tools was calculated by using Cronbach's Alpha method is 0.81 respectively.

The Telenursing Rehabilitation Program was provided through video calls to the participants who discharged from hospital. The contents of the telenursing program were finalized after taking guidance from the expert of cardiology department, physical medicine and rehabilitation (PMR) department and dietician's department. The Telenursing Rehabilitation Program consisted aspects of Diet, Physical Activity, Medication Therapy, Lifestyle Modification (smoking cessation, weight reduction, sleep pattern, blood pressure, and blood glucose monitoring), and Psychological Support.

Throughout the program the participants received the telenursing rehabilitation program on home based self-care through video call for 3 consecutive days in a week. On the first day researcher had instructed about diet, on second day physical activities and medication and on third day researcher had instructed about lifestyle modification and psychological support. Thereafter, follow up video calls as a reminder calls were done twice a week i.e. on Monday and Friday for 3 weeks.

Data collection procedure: Participants were selected who met the inclusion criteria and scheduled for discharged. All the procedure was explained and written consent was collected from the participants.

Demographic profile or clinical profile filled by the participants after obtaining consent form. The telenursing rehabilitation program was initiated when patient reached to their home through video calls Throughout the program the participants received the telenursing rehabilitation program on home based self-care through video call for 3 consecutive days in a week with an average call duration of 15 minutes and reminder follow up calls for 3 weeks. after completion of Telenursing Rehabilitation Program, participants were called in OPD for follow up and data collected by using self-structured Likert scale on home based self-care practices. The control group received instruction as per hospital routine and after 4 weeks they were also called for follow up in OPD and data was collected.

Statistical analysis: Data were analyzed by using SPSS version 20. Analysis of the data was based on the basis of objectives, research hypothesis testing. In present study descriptive and inferential statistics was used for analysis like Mean, Frequency percentage, t-test. The Chi – Square test was also used for correlation with p value < 0.05.

III. Result

This study highlighted that majority of participants in both the study and control groups were aged 45 to 55 years (45% and 37.5%, respectively). Most participants were male (52.5% in the study group and 67.5% in the control group) and married (87.5% and 82.5%, respectively). A significant portion of participants in both groups were unemployed (60% and 57.5%, respectively), and a substantial number had completed middle school education (25% and 37.5%, respectively).

The clinical data revealed that higher percentage of participants in the study group had a family history of Acute Coronary Syndrome (40%) compared to the control group (22.5%). Similarly, a higher percentage of participants in the study group reported 12.5% had diabetes mellitus, 35.0% had hypertension, 2.5% had hypercholesteraemic, 60.0% had no any personal habits. 20.0% in the group were smokers, 7.5% had alcoholism, 12.5% engaged in tobacco chewing. Among control group 15.0% had diabetes mellitus, 27.5% had hypertension, 7.5% had hypercholesteraemic, and 2.5% had more than one disease. Furthermore, regarding personal habits, 37.5% in the group were smokers, 2.5% had alcoholism, 6 participants 15.0% engaged in tobacco chewing, and 2.5% had multiple personal habits. Furthermore, 17 participants 42.5% had no any personal habits.

Table no 1: Level of effectiveness of Telenursing Rehabilitation Program on home based self-care practices among both study and control groups

S. N.	Level of effectiveness	Study group		Control group	
		Frequency (f)	Percent (%)	Frequency (f)	Percent (%)
1	less effective	0	0.0	0	0.0
2	Moderate effective	31	77.5	35	87.5
3	Highly effective	9	22.5	5	12.5

The above table shows that majority of participants in both groups found the program to be moderately effective, with 77.5% in the experimental group and 87.5% in the control group reporting moderate effectiveness. However, there were differences in the perception of high effectiveness, with 22.5% of the experimental group considering the program highly effective compared to only 12.5% in the control group.

Table no 2: Mean and Standard Deviation of Self-care score in both study and control group

Group Statistics							
	group	N	Mean	Std. Deviation	Std. Error Mean	t	P-value
Posttest scores	Study	40	80.73	5.454	0.862	5.956	0.001
	Control	40	70.60	9.265	1.465		

The above table showed that the mean score for the study group was 80.73 (± 5.454), whereas for the control group, it was 70.60 (± 9.265).

The result highlighted that t-test revealed a statistically significant difference between the two groups ($t = 5.956, df = 78, p = 0.001$), indicating that the program had a significant positive effect on home based self-care scores of participants in the study group compared to those in the control group.

IV. Discussion

The purpose of the study was to assess the effectiveness of the Telenursing Rehabilitation program on home-based self-care among Acute Coronary Syndrome patients. In the present study, findings suggest a positive

trend in self-care behaviours among participants, the majority (97.5%) reporting "often effective" practices. Some similar studies show the positive impact of telenursing on patient's self-efficacy^{11,12,13}.

The participants in both the study and control groups were male (52.5% in the study group and 67.5% in the control group), same findings have been reported in other studies^{14,15}. These results are consistent with prior research examining self-care in patients with coronary artery disease (CAD) or acute coronary syndrome (ACS)^{16,17}.

In terms of age findings in present study revealed that the average age of participants in both control and study group were between 45 to 55 years. Since aging is an unmodifiable risk factor for heart disease^{18,19}. The result showed that 60% of participants are unemployed, this may due to increase in age and activity intolerance. This result agreed with the findings of other studies²⁰.

According to the result of the present study, the mean self-efficacy score was significantly higher in the study group as compared to control group. The Telenursing Rehabilitation Program on home based self-care had positive impact and effectively increase the self-care of patients with acute coronary syndrome. This aligns with previous findings indicating a low prevalence of knowledge (30.5%) among ACS patients, which was associated with various socio-demographic factors and negative health outcomes^{21,22}. However, a study reported that a significant association between higher education levels and better self-care behaviours, highlighting the need for further investigation into this discrepancy²³.

Considering clinical profile, the present study clarified that a higher percentage of participants in the study group reported 12.5% had diabetes mellitus, 35.0% had hypertension, 2.5% had hypercholesteraemic. In the same context other study findings indicates that study subjects had history of other comorbidity^{20,24}.

Similarly, while personal habits like smoking and alcohol consumption were not significantly associated with self-care practices in our study, interventions targeting the modification of these habits have shown promise in improving self-care practices among ACS patients²⁵.

The t-test analysis in this study revealed a substantial difference between the means of the intervention and control groups, suggesting that the Telenursing Rehabilitation program had a significant impact on improving home-based self-care among ACS patients. This aligns with previous research indicating significant differences between experimental and control groups in similar interventions^{26,27}.

V. Conclusion

The findings of the study showed that there was significant effect of Telenursing Rehabilitation Program on home-based self-care of patient with Acute Coronary Syndrome in the terms of self-care practices, which facilitates patients to take care of themselves while at home and salutary to reduce the hospital readmission rate and convenient method for providing care to those lived in rural areas. Therefore, it is recommended to take Telenursing Rehabilitation Program into consideration in health care centres for continuing follow up care.

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