RESEARCH ARTICLE

The effect of educational interventions by nurses through Orem's self-care theory on the ability of self-care in myocardial Infarction patients in public sector hospital: A quasi-experimental study

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Abstract

Objective: To assess the impact of educational intervention by nurses guided by Orem's theory to reinforce the self-care abilities of patients experiencing myocardial infarction.

Method: The prospective, quasi-experimental case-control study was conducted from September 2020 to April 2021 at Dr. Ruth K.M. Pfau Civil Hospital, Karachi, and comprised myocardial infarction and heart failure patients with co-morbidities diabetes mellitus and hypertension. The patients were randomised into experiment group A and control group B. Group A received educational intervention one day before and one day after discharge in line with the American Heart Association guidelines. Two 30-45-minute sessions of seven modules were conducted. Group B received routine information from ward staff. Assessment was done at baseline and first month and second month post-intervention using the Heart Failure Self-Care Index version 6.2. Data was analysed using SPSS 21.

Results: Of the 80 patients, 40(50%) were in group A; 27(76.5%) males and 13(32.5%) females. The remaining 40(50%) patients were in group B; 20(50%) males and 20(50%) females. The overall age of the sample ranged 36-65 years and 48(60%) had a previous history of heart failure. The mean score of maintenance, management, confidence and overall self-care were significantly higher in group A compared to group B ($p<0.05$).

Conclusions: Nursing self-care educational intervention based on Orem's theory was found to be highly effective among patients of myocardial infarction and heart failure with respect to their self-efficacy ability.

Keywords: Orem's self-care deficit nursing theory, Self-care ability, Patient's education, Myocardial infarction, Self-efficacy, Quality of life. (JPMA 74: 1617; 2024) **DOI: https://doi.org/10.47391/JPMA.10396**

Introduction

Myocardial infarction (MI) was considered a major health concern worldwide because it is a leading cause of mortality and morbidity, including disability and other complications.[1,2] Patients suffering from an excruciating heart attack generally face serious illnesses in the rest of their lives, with their quality of life severely affected.[3]

According to data from the Global Burden of Disease (GBD), around 126 million individuals globally are affected by ischaemic heart disease (IHD), which accounts for 1.72% of the total population of the world.[4] IHD causes 9 million deaths worldwide, and, according to World Health Organisation (WHO) data, published in 2020, 16.49% of total deaths in Pakistan occurred due to cardiovascular disease (CVD).[5]

Owing to advancements in treatment and preventive measures, the number of survivors with non-fatal IHD has increased, with the patients being vulnerable to developing chronic disabilities and impaired QOL.[6]

The epidemiological transition in the 20th century has placed CVD as the principal cause of global disability. In the United Stated, 0.5% of all hospitalisations in 2006 were due to acute MI (AMI), and the number increased to 0.6% in 2017.[7] Chronic diseases, like MI, can adversely affect the QOL and physical and mental wellbeing of patients which can limit routine activities of the affected individuals. Self-care knowledge and confidence significantly and directly affect self-care maintenance and management, and mediate the relationships of factor-depressive symptoms, social support and HF knowledge with self-care maintenance and management.[8]

One of the most significant and effective methods to manage disabilities is self-efficacy. Also, due to the growing burden on the healthcare system, self-care has immense importance and the main goal of healthcare is to make their patients independent in their healthcare.[1]

Regular physical exercise, cessation of smoking and compliance with cardiovascular medication regimen are effective self-care actions that may minimise mortality and risk of re-infarction.[9]

Self-care health behaviours can prevent complications and

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hospital readmission, and improve the QOL of patients.[10] Healthcare education is effective in improving patients' self-efficacy, increasing the functional independence, enhancing confidence in performing self-care behaviour activities and efficacious management of stress, and reducing the complications associated with the disease.[11] Therefore, MI patients must be regularly assessed, and necessary actions should be taken to encourage self-care behaviours. Nurses must reassess the current plan with the patient and family to ensure that the plan continues to meet the patient's needs. Finally, nurses must continually re-educate patients about their plan of care, their plan for self-management, and strategies to prevent hospital readmission for heart failure.[12] Moreover, healthcare education is established as one of the strategies for enhancing the QOL in chronic patients.[13] One of the methods for teaching patients is peer education. It is classified as the exchange of information, behaviour and attitude by those who have not received professional training, but they have shared experiences.[14] In 1971, American nursing scientist Orem proposed a theory regarding the significance of self-care in patients. Orem's self-care theory projected that individuals are supposed to be responsible for their own health[15] and must accomplish their own self-care needs. In the perspective of current escalating healthcare costs and rising number of individuals suffering from disabilities from chronic diseases, it is more enduring and effective for the nurses to improve the patients' awareness about disease and self-care efficacy through health education and training.[16] The objective of the self-care theory is to increase self-awareness among patients, which encourages them to take an active part in nursing plans and medical activities related to their disease.[17]

According to the self-care theory developed by Orem, the only way is a supportive educational system for patients who require assistance or care in respect of their knowledge, behaviour control and decision-making for performing daily activities.[18] MI patients are mostly in need of counselling, support and education of self-care. Therefore, healthcare teams, especially nurses, have to intervene at an active level to develop the ability of self-care. Moreover, it is evident that education based on Orem's theory, if provided to the patients, may develop better abilities of self-care.[1]

The current study was planned to assess the impact of educational intervention by nurses guided by Orem's self-care theory to reinforce the self-care abilities of MI patients.

Patients and Methods

The prospective, quasi-experimental case-control study was conducted from September 2020 to April 2021 at Dr Ruth K.M. Pfau Civil Hospital, Karachi. After approval from institutional ethics review board as well as the Board of Advance Studies and Research (BASR) of the Dow University of Health Sciences (DUHS), Karachi, the sample size was calculated using Power Analysis and Sample Size (PASS) V-11.[19] Independent samples t-test was used with 99% confidence interval (CI) and 80% power, while mean self-care management score of cases was taken as 61.1±18.5 and that of controls as 28.2±17.4.[20] The calculated sample size was inflated by >100% to cover for dropouts and to increase the validity of the findings.

The sample was raised using non-probability consecutive sampling technique. Those included were adult patients of either gender aged <80 years with MI and heart failure (HF), confirmed by cardiologists based on ST segment elevation in electrocardiogram (ECG), and positive trop t test who had diabetes mellitus (DM) and hypertension (HTN). Patients with previous history of hospitalisation in the preceding 1 year were excluded, and so were those having any physical or mental disability.

After taking informed consent from the patients, they were randomised into experiment group A and control group B. The experimental group was assigned odd-numbered patients, while the control group was assigned even-numbered patients. Group A received educational intervention, while group B received routine information from ward staff.

The Self-care Heart Failure Index (SCHFI) v-6.2 was used which is a reliable, validated and culturally acceptable tool for estimating the process of symptoms monitoring, treatment adherence and its implementation.[21] The scale is composed of three subscales with 22 questions, containing 10 questions for self-care maintenance, with scores ranging 10-40. Score 1-16 indicates poor/weak self-care maintenance, score 17-24 indicates average, score 25-32 indicates good, and score 33-40 indicates excellent self-care maintenance. There are 6 items for management of self-care with a total score of 24. Score 1-10 indicates poor self-care management, score 11- 15 indicates average, score 16-20 indicates good, and score 21-24 indicates excellent self-care management. The last 5 items of the scale relate to confidence regarding self-care, with a total score of 6-24. Score 1-10 indicates poor/weak self-care confidence, score 11-15 indicates average, score 16-20 indicates good, and score 21-24 indicates excellent self-care confidence.

Demographic data of all the patients was noted on a predesigned proforma. Following pre-assessment, patients in group A received educational intervention one day

before and one day after discharge. The intervention was given by the principal investigator. A senior female nurse was trained to give educational intervention to the female patients, when needed, due to cultural values. Group B controls received routine teaching / information from ward staff.

Teaching materials were prepared based on the Educational Intervention for Heart Attack Patient guidelines adopted by the American Heart Association (AHA), the American College of Cardiology (ACC), and the Heart Failure Society of America (HFSA).[22]

Two 30-45-minute sessions comprising 7 modules of educational interventions were conducted over the 2 days. Teaching sessions were conducted face-to-face. The first teaching session covered the first four modules; Definition of heart attack, Causes / risks factors, Recognition of signs and symptoms of heart attack, and Medications. The second session covered the remaining 3 modules; Diet and salt, Rest and exercise, and Fluids and weight monitoring.

Teaching was conducted through discussion with the patients in groups of 2-3 patients or individually at bedside in Urdu, Punjabi or Sindhi language as per understanding of the participants. Pamphlets and booklets were prepared and were given to the patients for reading and consulting regarding the teaching modules.

During the first 15 days after the educational sessions, phone calls were made to the patients in group A on the 2nd, 4th and 6th days of each week to ask about the self-care practice, and to answer any query that they might have. The patients were informed that they could make calls or contact the primary researcher personally for discussion of any related matter.

In addition to the baseline, assessment was carried out at first month and second month post-intervention in the presence of the clinical supervisor.

Data was analysed using SPSS 21. Continuous data was expressed as mean ± standard deviation, while categorical data was expressed as frequencies and percentages. Chi-square test was used to assess the association between demographics and MI-related characteristics. Moreover, independent samples t-test was applied for intergroup comparison, while paired t-test was used for intragroup comparison between baseline and post-intervention scores. P<0.05 was considered statistically significant.

Results

Of the 96 patients assessed initially, 80(83.3%) were included (Figure). There were 40(50%) patients in group A; 27(76.5%) males and 13(32.5%) females. The remaining 40(50%) patients were in group B; 20(50%) males and 20(50%) females. The overall age of the sample ranged 36-65 years, 48(60%) had a previous history of HF, and 77(96.25%) were married (Table 1).

There was no significant difference between the groups in terms of maintenance, management, confidence and overall self-care scores at the baseline (p>0.05), while significant difference was there at 1st and 2nd month follow-up (p<0.001) (Table 2).

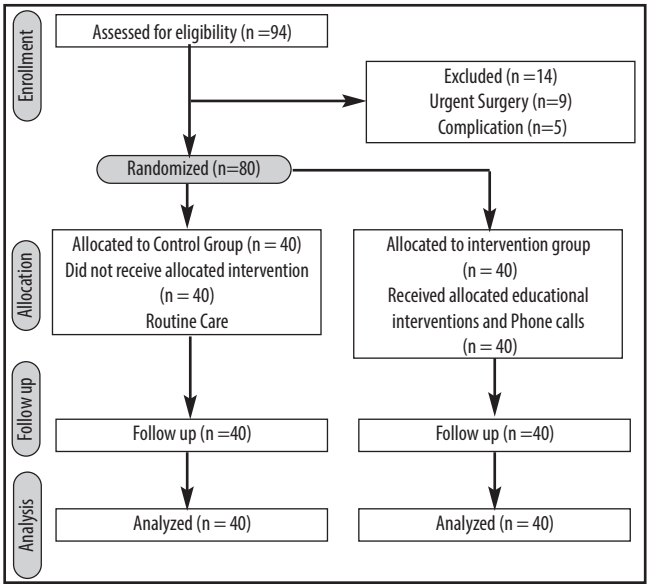

Figure: The Consolidated Standards of Reporting Trials (CONSORT) diagram showing the flow of participants through each stage of the study.[31]

Table-1: Baseline demographics and MI-related characteristics in the study groups.

Characteristics	Control n (%) (n=40)	Experimental n (%) (n=40)	Total	*p*-value€
Age (years)				
36-45	9 (22.5)	8 (20.0)	17	0.703
46 – 55	17 (42.5)	13(32.5)	30	
56 – 65	9 (22.5)	13(32.5)	22	
>65	5 (12.5)	6 (15.0)	11	
Gender				
Male	20((50.0)	27 (76.5)	47	0.112
Female	20 (50.0)	13(32.5)	33	
Marital Status				
Married	39 (97.5)	38 (95.5)	77	0.556
Unmarried	1 (2.5)	2 (5.0)	3	
Heart Failure				
Yes	25 (62.5)	23 (57.5)	48	0.648
No	15 (37.5)	17 (42.5)	32	
History of Previous MI				
Yes	3 (7.5)	6 (15.0)	9	0.288
No	37 (92.5)	34 (85.0)	71	
Family History of MI				
Yes	8 (20.0)	9 (22.5)	17	0.785
No	32 (80.0)	31(77.5)	63	

€Chi-square test for association, MI: Myocardial infraction.

Table-2: Baseline and first and second post-intervention follow-up comparison of values in the study groups.

Self-care	Control Mean±SD	Experimental Mean±SD	Mean difference *p*-value€	Control Mean±SD	Experimental Mean±SD	Mean difference *p*-value€	Control Mean±SD	Experimental Mean±SD	Mean difference *p*-value€
Maintenance	15.9± 3.9	15.1± 3.9	1.1	21.6± 4.6	28.1± 4.0	-6.831	21.6± 5.1	30.2± 3.8	-8.366
	Poor	Poor	0.308	Average	Good	< 0.001	Average	Good	<0.001
Management	9.6± 3.5	9.0±± 3.5	0.689	11.5± 3.0	15.9± 2.2	-7.298	13.6± 5.1	20.3±3.8	-6.721
	Poor	Poor	0.493	Average	Above Average	<0.001	Average	Good	<0.001
Confidence	9.5± 3.1	10.0 ±3.4	-0.681	12.8 ±5.3	19.4± 4.3	-6.047	13.1± 4.9	19.5± 5.1	-5.710
	Poor	Poor	0.498	Average	Good	<0.001	Average	Good	<0.001
Total score	35.0±9.1	34.1± 9.4	0.470	46.0± 10.9	63.5± 7.2	-8.418	48.3±13.3	70.0±10.4	-8.089
			0.640			0.001			<0.001

€Two independent sample t test. SD: Standard deviation.

Table-3: Intergroup comparison of baseline and post-intervention first and second follow-up.

Group	Control (n=40) Mean difference (*p*-value)€		Experiment (n=40) Mean difference (*p*-value)€	
Self-care Sessions	Baseline & 1st Month follow-up	1st Month & 2nd Month Follow-up	Baseline & 1st Month follow-up	1st Month & 2nd Month Follow-up
Maintenance	-5.7 (<0.001)	0.0 (0.924)	-13.1(<0.001)	2.0 (0. 029)
Management	-2.0 (<0.003)	-2.1 (0.024)	-6.92 (<0.001)	4.4(<0.001)
Confidence	-3.3 (<0.001)	-0.3 (0.794)	-9.40 (<0.001)	0.05(0.964)
Total score	-11.0 (<0.001)	-2.3(0.293)	-29.4 (<0.001)	-6.50 (<0.004)

€Paired sample t test.

There was a significant difference in maintenance, management, confidence and total self-care scores in both the groups (p<0.05). However, the mean scores at one-month follow-up in all three categories and overall mean self-care scores were higher in group A compared to group B (p<0.05). The scores at the 2nd follow-up, when compared to the 1st follow-up, in all categories were higher in group A, especially in management (p>0/001) and overall self-care scores(p<0.004) (Table 3).

Discussion

The current study revealed that the study group did not differ significantly from the control group with regard to variables, like age, gender, marital status, and history regarding HF and MI. At the time of discharge, self-care scores for maintenance, management and confidence variables did not differ significantly between the groups. The self-care ability scores were low in both groups. However, at the time of first follow-up, there was significant improvement in scores of all variables of self-care and total self-care score in the experimental group compared to the control group. The scores were significantly higher in the experimental group compared to the control group.

The finding implies that the nursing educational intervention, based on the Orem's self-care model, was effective in increasing the patients' self-care ability, which was in line with a study conducted in Iran.[23]

A study indicated that the level of self-care behaviours in HF patients was moderate. Therefore, it is required to train and educate patients with chronic HF, which significantly enhance abilities in self-care that considerably improve QOL in such patients.[24]

A quasi-experimental study in Iran revealed that designing and implementing self-care educational programmes based on Orem's self-care theory, according to patient's need, can effectively improve the QOL in these patients.[25]

The current findings showed that for the experimental group, there were higher mean scores for all variables of self-care, and overall scores were also higher compared to the control group at the first follow-up, indicating that the educational intervention was crucial in improving awareness regarding self-care and enhancing self-care abilities and skills that help individuals to adapt to a healthy lifestyle and effectively combat risk factors. Thus, nursing training based on Orem's self-care theory was an effective approach to promote health status and to improve QOL.

An earlier study assessing the impact of Orem's self-care theory on improving self-care abilities and QOL of coronary artery disease (CAD) patients reported similar findings.[26]

A study in Malaysia showed that education improved HF patients' self-care practices and attitudes towards their treatment.[27] Several other studies have supported the effectiveness of Orem's self-care theory in refining patient outcomes.[28-30]

Limitations: The current study had limitations as it was conducted at a single centre, and follow-up data had potential for recall bias.

Conclusion

Nursing educational intervention based on Orem's theory was found to be highly effective among patients of MI and HF for their self-care ability. Healthcare facilitators and nurses should enthusiastically intervene to refine the self-care ability of the patients.

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Author Contribution:

MS: Idea, study design, writing, SPSS data entry and data interpretation.
SM: Critically reviewed it for significant intellectual content.
NL: Data collection and patients follow-up.
WAF: Data analysis and writing.