RESEARCH ARTICLE

The impact of Orem self-care theory on health behaviours modification among myocardial infarction patients: a quasi-experimental study

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Abstract

Objective: To determine the effectiveness of Orem self-care theory intervention on health behaviours modification among myocardial infarction patients.

Method: The quasi-experimental study was conducted at the Cardiology Ward of Saidu Group of Teaching Hospital, Swat, Khyber Pukhtankhwa, Pakistan, from August to November 2022, and comprised patients of either gender aged 50-70 years who were admitted with diagnosed myocardial infarction and spent at least four days at the cardiac unit who were found eligible to be enrolled by on-duty doctors. The patients were divided into intervention group A and control group B through systemic sampling technique. Pre-test was conducted within 48 hours of admission in both the groups. The intervention in group A, based on the Orem self-care theory, consisted of two sessions of 30 minutes. Those in group B received routine care. The post-test was conducted after eight weeks. Data was collected through a valid and reliable health behaviours checklist. Data was analysed using SPSS 22.

Results: Of the 60 patients, 30(50%) were in group A; 15(50%) males and 15(50%) females with mean age 61.53±5.5 years. The other 30(50%) patients were in group B; 16(53%) females and 14(47%) males with mean age 60.7±5.3 years. Intragroup difference in post-intervention overall score was significant ($p<0.05$), but group A showed more improvement compared to group B ($p<0.05$).

Conclusion: Orem self-care theory intervention could be more beneficial to myocardial infarction patients.

Key Words: Myocardial infarction, Coronary artery diseases, Health-related quality of life, Lifestyle behaviour, Pakistan, Lifestyle modification.

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Introduction

Myocardial infarction (MI), also known as heart attack, occurs owing to insufficient blood flow containing low oxygen levels which damage the heart muscle.[1] In MI patients, the most common symptom is chest pain, which radiates towards the jaws and the neck, and is associated with discomfort. High blood pressure (BP), smoking, diabetes mellitus (DM), lack of exercise, obesity, high blood cholesterol, poor diet, and excessive alcohol consumption are among the risk factors.[2] Cardiovascular diseases (CVDs) are among major health problems and leading causes of death and disability worldwide.[3] The Asian population is more susceptible to MI.[4, 5]

Lifestyle is one of the leading risk factors, but it is further divided into modifiable and non-modifiable factors. In 2019, an estimated 17.9 million people died from CVDs, accounting for 32% of all global deaths. Heart attacks and strokes accounted for 85% of these fatalities .[6] In 2021, >4 million people had non-ST elevation myocardial infarction (NSTEMI), and about 3 million people had ST elevation myocardial infarction (STEMI).[7] Pakistan is one of the most populated countries in the world, and the majority of its people belong to the middle class. The ratio of coronary artery disease (CAD) is falling in the developed countries due to spending on research, awareness or education programmes, and changes in treatment plans.[8] A study in Peshawar revealed CAD incidence of 28% in 2015, 35% in 2016, and 41% in 2017.[9]

Cardiac health behaviours play a vital role in the prevention and rehabilitation of a CAD patient, including physical activity, stress management, medication adherence, smoking cessation, diet and health responsibility.[10] Knowledge of health behaviours is critical for improving one's health status and overall wellbeing .[11] CAD patients engage in self-care practices to improve health behaviours that leads to effective health management.[12]

Self-care begins with activities like eating food, exercising and brushing teeth. Patients with CVDs are gradually unable to meet their own self-care requirements, and are regularly readmitted to hospitals for primary care services

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[13] Educational sessions based on Orem's self-care theory (OSCT) targets the restoration of normal activities in these patients, preventing long-term complications, and aggressively modifying lifestyle and health behaviours.[14]

The current study was planned to determine the effectiveness of OSCT intervention on health behaviours modification among MI patients.

Patients and Methods

The quasi-experimental study was conducted at the Cardiology Ward of Saidu Group of Teaching Hospital (SGTH), Swat, Khyber Pukhtankhwa (KP), Pakistan, from August to November 2022.

The SGTH is the only tertiary care hospital in nine districts of Malakand division. The Cardiology Department has three sections; the chest pain emergency where patients with acute complain are admitted and treated, the cath-lab where all the procedures are performed, such as angiography and angioplasty, and the cardiology ward where patients are admitted from the first two sections.

A total of 130 participants were recruited using a purposive sampling technique, either gender, having aged 50-70 years admitted with diagnosed MI and spent at least four days at the cardiac unit who were found eligible to be enrolled by on-duty doctors. After providing informed consent and agreeing to participate in the two-month follow-up, participants were assigned to either the intervention or control group using a systematic allocation method, whereby every first eligible participant was allocated to the intervention group (a) and every second to the control group (b).

The study was approved by the ethical review board of Khyber Medical University, while the sample size was calculated using G*Power calculator with power 90%, effect size 0.3 and alpha (α) value 0.05.[15] Permission was also obtained for data collection from the Ethical review committee (ERC) of Institute of Nursing Sciences at the Khyber Medical University, Peshawar.

The intervention was executed by two nurses having completed four-year degree programme, with the help of one intern nurse and a clinical instructor. The two nurses were trained for three consecutive days, and they were supervised throughout the study, including the intervention and follow-up assessment phases.

The pre-test was conducted within 48 hours of admission in both the groups. This was followed by the intervention in group A that consisted of two sessions of 30 minutes each. The post-test was conducted after 8 weeks.

During the follow-up, participants of both the groups were contacted once a week to get an update related to their activities. The post-test lasted approximately 30 minutes.

A simple chart was provided to the patients in Urdu language to keep them mobilized, while a checklist was provided to the patients to record their activities of each week.

In the first session, information was provided regarding MI, risk factors, symptoms, prevention, complications and management. The second session comprised education about health behaviour modification, such as physical activity, health responsibility and stress management.

For the evaluation of health behaviours, a questionnaire designed in 2000 was used after taking permission from the authors through email.[16] The questionnaire had two parts. The first section comprised demographic and clinical data, including gender, age, marital status, education, occupation, comorbidities, history of hospitalisation and surgery, family history, and body mass index (BMI). The second section had 21 items across five categories; health responsibility (5 items), physical activity (4 items), eating behaviours (6 items), stress management (3 items), and smoking habits (3 items). The items were scored on a four-point Likert scale, ranging from 1 = routinely to 4 = never. Total score 61-84 indicated good practices, 41-60 meant average practices, and <40 was a sign of poor practices. The instrument was validated by nursing experts, while Cronbach alpha value for reliability was 0.82.[17]

Data was analysed using SPSS 22. Mean and standard deviation were calculated for continuous variables, while frequency and percentages were calculated for categorical variables. Paired-sample t-test was applied for assessing differences in pre-test and post-test data. Chi-square test was used for exploring association with demographic variables. $P<0.05$ was considered significant.

Results

Of the 68 patients enrolled, 60 (88.23%) completed the study. There were 30 (50%) patients in group A; 15 (50%) males and 15 (50%) females with mean age 61.53 ± 5.5

Table-1: Demographic data of the participants.

Categories	Intervention group (n-30)	Control group (n-30)
Gender		
Male	15 (50%)	14 (47%)
Females	15 (50%)	16 (53%)

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Age groups		
50 -60 years	13 (43%)	15 (50%)
61 – 70 years	17 (57%)	15 (50%)
Mean age	61.53 ± 5.5	60.7 ± 5.3
Educational level		
Not educated	12 (40%)	17 (59%)
Matric	14 (46%)	9 (31%)
Intermediate	2 (7%)	1 (3%)
Graduation	2 (7%)	2 (7%)
Marital status		
Single	0	0
Married	30 (100%)	30 (100%)
Smoking status		
Never smoked	24 (80%)	23 (77%)
Stopped smoking	4 (13%)	7 (23%)
Currently smoking	2 (7%)	0
Co-morbid		
Hypertension (HTN)	20 (67%)	19 (64%)
Diabetes Mellitus (DM)	4 (13%)	1 (3%)
DM + HTN	1 (3%)	6 20%)
Others	No	No
No	5 (17%)	4 (13%)
Family history		
No	6 (30%)	4 (21%)
Yes	14 (70%)	15 (79%)
Hospitalisation history		
No	20 (67%)	21 (70%)
Yes	10 (33%)	9 (30%)
Body mass index (BMI)		
Healthy	19 (66%)	20 (67%)
Overweight	10 (33%)	10 (33%)
Obese	1 (3%)	Nil
Mean BMI score	23.85 ± 2.47	23.13 ± 2.48
Type of MI		
STEMI	18 (60%)	17 (57%)
NSTEMI	12 (40%)	13 (43%)

STEMI: ST elevation myocardial infarction, NSTMEI: Non-ST elevation myocardial infarction.

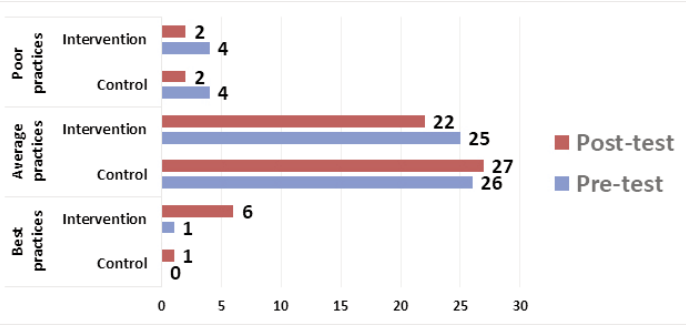

Figure: Pre-test and post-test intergroup comparison.

years. The other 30 (50%) patients were in group B; 16 (53%) females and 14 (47%) males with mean age 60.7± 5.3 years (Table 1).

There were significant differences in the domains of health responsibility, eating habits, and stress management in group A ($p<0.05$), while the difference was not significant in physical activity and smoking habits ($p>0.05$). In group B, significant difference was noted in the domain of health responsibility ($p<0.05$). Intra-group difference in overall post-intervention score was significant, but group A showed more improvement compared to group B (Table 2).

In the light of cut-off values, the number of group A patients with poor practices reduced, and that of patients with best practices increased in experimental group post-intervention (Figure 1).

Discussion

In the control group of the current study, the number of females was higher than the male participants, while in the experimental group, the number of males and females was the same. The findings are in line with a study that had 49% men and 51%women[17], while another study shows different findings that contains, 72% male and 28% female patients.[18]

In the current study, majority of the patients in the control group had chronic diseases (83%), while in the intervention group, 87% patients had chronic diseases. The

Table-2: Pre-intervention and post-intervention health behaviour score of the study groups.

Variables	Intervention group				Control group		
	Intervention	Mean ± SD	Paired-t	P	Mean ± SD	Paired- t	P
Health responsibility	Pre	9.83 ± 2.19	-2.887	0.007	9.90 ± 1.86	-2.901	0.007
	Post	11.43 ± 2.50			11.16 ± 1.91		
Physical activity	Pre	8.86 ± 1.94	-1.67	0.106	8.43 ± 1.33	-0.677	0.504
	Post	9.76 ± 2.09			8.66 ± 1.44		
Eating habits	Pre	13.53 ± 2.12	-1.976	0.058	13.00 ± 1.96	-1.095	0.283
	Post	14.73 ± 3.12			13.33 ± 2.68		
Stress management	Pre	6.30 ± 1.31	-3.627	0.001	6.80 ± 1.34	-0.203	0.841
	Post	7.83 ± 2.05			6.86 ± 1.52		
Smoking habits	Pre	6.80 ± 1.56	-1.424	0.165	6.33 ± 1.34	-1.898	0.068
	Post	7.50 ± 1.85			7.03 ± 1.35		
Overall	Pre	45.22 ± 4.65	-4.109	0	44.55 ± 3.94	-3.221	0.003
	Post	50.87 ± 6.54			47.34 ± 5.30		

SD: Standard deviation.

findings are similar to a study that had 64.7% patients having chronic diseases.[19]

In the present study, the overall control group mean score of health behaviours in the pre-test was 44.55±3.94, which increased in the post-test to 47.34±5.30. A study showed that the physical function mean score in the pre-test (35.97±5.44) increased (36.32±4.98) in the post-test. [20]

In the current study, health behaviour showed improvement in overall mean post-test score of intervention group compared to the pre-test score. The results are in line with an earlier study.[21] A study concluded that OSCT intervention not only improved the physical functioning mean score, but also enhanced the mental capability of the patients. There is also evidence that the intervention advanced health-related quality of life (HRQoL).[20]

Self-care practices improve as the patient health behaviours change with the passage of time. A study revealed that MI patients required support, advocating, and independent care skills, and OSCT was effective in reducing the risk of ineffective management and improving self-care abilities.[22] Another study demonstrated that OSCT education sessions developed the central component of self-care, i.e., the understanding and knowledge of patients.[23] One study revealed that OSCT intervention improved QOL.[24] A study showed that in decreasing fatigue among patients with multiple sclerosis, OSCT intervention was significantly effective.[25] Another study also concluded that mental health, physical activities and therapeutic measures were the three domains of self-care that improved through OSCT intervention among beta-thalassemia patients.[26]

In the current study, the results showed that the performance of the intervention group significantly improved than the control group. The results were similar to earlier findings.[21,22,24] Patients in the intervention group demonstrated significant improvements in overall cardiac health behaviours, which were sustained at both the 6–8 week and 6-month follow-up assessments.[27] According to Orem's Self-Care Theory (OSCT), individuals possess an inherent capacity for self-care; however, the development and effective implementation of self-care behaviours are enhanced through the provision of appropriate knowledge, motivation, and skills.[28]

The current study has several limitations. Due to the quasi-experimental design, there was no randomization in the selection of control and intervention groups. The study was conducted in one tertiary care public-sector hospital, so the results may not be generalisable to all MI patients. Moreover, data was self-reported, and the participants might have overstated their adherence to healthy behaviour. Finally, the post-test was conducted 8 weeks after the intervention, which means it did not capture the long-term effectiveness.

Conclusion

The OSCT intervention was highly significant in the intervention domains of health responsibility, eating habits, and stress management. Also, the difference in the intervention group was more significant compared to the control group.

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