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NURSE-LED CARDIAC REHABILITATION AND BEHAVIORAL HEALTH CHANGES IN MYOCARDIAL INFARCTION PATIENTS

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ABSTRACT

This study investigates the role of nurse-led cardiac rehabilitation in promoting health behavior changes among patients recovering from myocardial infarction. It highlights how structured rehabilitation programs, facilitated by nursing professionals, can enhance patient outcomes by fostering lifestyle modifications such as improved diet, increased physical activity, and better medication adherence. The research employs a mixed-methods approach, combining quantitative assessments of health behavior changes with qualitative interviews to gather patient experiences. Findings indicate that nurse-led interventions not only support physical recovery but also empower patients to take an active role in their health management. This study emphasizes the importance of integrating nursing expertise into cardiac rehabilitation programs to optimize recovery and long-term health for myocardial infarction patients.

Keywords: *Nurse, cardiac, health, myocardial.*

INTRODUCTION

A Cardiac disease that includes ischemic heart disease, stroke, heart failure and myocardial infarction are the most common cause of estimated 13 million deaths worldwide in 2020.Mmyocardial infarction is the major component of cardiovascular disease (CVD) and ranks sixth in terms of health loss (after falls, low back pain, and chronic obstructive pulmonary disease). MI comes in second to IHD as the national top cause of mortality(Wilson, Cleghorn, Nghiem, & Blakely, 2023).

A quarter of all fatalities and one in every five deaths 20 years earlier occur due to coronary thrombosis disease (Mc Namara, Alzubaidi, Jackson, & practice, 2019). An estimated 580,000 American adults have a myocardial infarction (MI) each year, and 86% of these people recover from the condition. Patients having a history of MI are more likely than the general population to experience another MI or another cardiovascular (CV) illness.

American Heart Association recommendations advise MI survivors to take evidence-based drugs and outpatient cardiac rehabilitation (CR) to lower their risk of further CV occurrences (Bush et al., 2020).According to AHA exercise-based cardiac rehabilitation improves exercise capacity and lowers mortality in individuals with acute myocardial infarction (AMI). Additionally, it may enhance quality of life, cardiovascular functional capacity, and psychological profile (Kirolos et al., 2019).

To overcome mortality, morbidity, and unexpected hospital admissions rate Nurse assisted CR interventions have shown effectiveness to control unhealthy health behaviors by increasing the exercise capacity, dietary behavior modification, smoking cessation, psychological well-being and medication adherence. Nurse assisted Cardiac rehabilitation is currently considered mandatory in worldwide guidelines. Initiation of cardiac rehabilitation intervention after acute myocardial infarction will

decrease 90% of repeated cardiac events and mortality (Ögmundsdóttir Michelsen et al., 2022) .

In light of this context, our study's goal was to rank the CVD risk factor domains first, taking into account both the possible health benefits and health-related costs of preventative measures, in addition to the extent of the health loss(Wilson et al., 2023).

The risk factors of myocardial infarction (MI) reveal a multifaceted landscape with both modifiable and non-modifiable contributors. Established non-modifiable factors include age, gender (with males generally at higher risk), and family history of cardiovascular diseases. Modifiable risk factors, on the other hand, play a crucial role in prevention. Extensive evidence links cigarette smoking to a significantly increased risk of MI. Smoking cessation emerges as a pivotal intervention. Elevated blood pressure remains a key risk factor, emphasizing the importance of regular monitoring, lifestyle modifications, and pharmacological interventions. Elevated levels of LDL cholesterol and reduced levels of HDL cholesterol contribute to atherosclerosis and subsequent MI. Lipid-lowering therapies play a central role in risk reduction(Medicine, 2023)

The association between diabetes and MI is well-established. Glycemic control and lifestyle modifications are essential in managing this risk factor, amplifying the risk of MI Sedentary lifestyles contribute to cardiovascular risk. Regular physical activity is protective and integral in preventing MI.

Diets high in saturated fats, trans fats, and sodium, along with low intake of fruits and vegetables, contribute to atherosclerosis and MI risk. A heart-healthy diet is crucial to MI prevention. Interventions targeting both non-modifiable and modifiable risk factors, along with patient education and community-wide initiatives, are essential for reducing the incidence of myocardial infarction(Espinosa-Salas & Gonzalez-Arias, 2023).

Nurse assisted cardiac rehabilitation interventions is the application of critical thinking in patient care with collaboration of a rehabilitation team to help patients to improve, maintain and regain their health, achieving the highest standard of life, secondary prevention, behaviour modifications like involve in physical activity, healthy diet and tobacco cessation, stress management and medication adherence to enhance healthy year of life, reduce mortality and readmission rates (Gutenbrunner, Stievano, Nugraha, Stewart, & Catton, 2022).

MATERIAL AND METODS:

The design used in this study was a quasi experimental pre and post. The present study was carried out at Bahria International Hospital Lahore.because this hospital has cardiac rehabilitation center. A non-probability convenient sampling technique were used to select a sample size on 3rd day of admission after myocardial infarction. Sample size of 105 cases was calculated with 95% confidence interval, 20% margin response rate was added to control drop off rate and the final sample was 111 with desire precision 0.05 ,health behaviours modification (physical activity) among myocardial infarction patients(Arjunan, D'Souza, & Health, 2021).In Nurse assisted cardiac rehabilitation interventions nurse works in a collaboration with a team of cardiologist, dietitian and physiotherapist. Nurse as a primary researcher coordinate with team for facilitating the cardiac rehabilitation of Myocardial infarction patients about the health behavior modifications like.

- Level of physical activity
- Diet chart approved by dietician and cardiologist
- Medication adherence to control blood pressure

The SPSS version 26 was used to analyse the data. Frequency, percentage, mean and standard deviation were used to measure the data. descriptive analysis and paired T-test were carried out whereby the mean differences between measurements were analysed for pre and post both the interventional findings.

RESULTS

Introductory paragraph

This chapter includes the results of demographic characteristics of study participant, overall results of health behavior modification and individual results of health behavior modification in physical activity, dietary habits and medication Adherence.

There were 88 males and 23 females in the control group, aged from 18 to 60 years, with an average age of (39 ± 8) years. There was no significant difference in gender, age and other data between the two groups ($P < 0.05$).

According to the study shown in Table 1, there were more male patients with myocardial infarction (MI) admitted to Bahria International Hospital (BIH), Lahore (79.2% of n-88 patients with a standard deviation of 0.407 and 20.7% of female patients (n-23 patients with a standard deviation of 0.407). Male MI incidence was highest among admission ratios for those between the ages of 36 and 45. 35.5% (n=39) with SD 1.216 had graduated from high school, which was followed by female.

Patients who were admitted to the cardiac rehabilitation unit and those who had finished a four-month rehabilitation program were examined for this study. The following variables pertaining to alterations in health behavior specific to a given disease were measured. This measure has 21 items that span three domains: medication adherence (six items), dietary habits (fourteen items), and physical activity related to myocardial infarction (MI) (seven items).

The overall findings of this study on the use of nurse-assisted cardiac rehabilitation to modify the health behaviors of patients who have experienced a myocardial infarction are shown in Table 3. The pre- and post-date frequency percentage comparison demonstrates the changes in low behavior and average behavior modification practices, with 35 (31.5%) becoming 0% and 75 (67.5%) becoming 101 (91%) respectively. The percentage of people who modified their behaviors for optimal health went from 0.9% to 9%.

According to the analysis of Table 3, weekly intense physical activity results in significant changes in health-related behavior. Pre data showed that just 2 patients (1.8%) engaged in weekly intense physical activity, but post data showed that 90 patients (81.1%) did so.When myocardial infarction patients follow weekly dietary recommendations, their dietary habits improve significantly. Before the intervention, 0(0%) of patients followed the recommended serving sizes; shortly after the, 99(89%) of patients followed the recommendations. To control Blood pressure among myocardial infarction patients who never took their medications as prescribed was 74 (66.7%) in the pre-data and significantly improved in the post-data with a decrease in the number of patients 2(1.8%). The Nurse-Assisted Cardiac Rehabilitation Intervention has resulted in notable improvements in health behavior modification among myocardial infarction patients, particularly in areas such as physical activity, dietary habits, and medication adherence. These findings suggest the intervention's effectiveness in fostering positive changes in patient behavior for better health outcomes.

Subsequently in table 04 presented data of MIPDM (myocardial infarction, physical activity, dietary habits and medication adherence) shows distribution of pre and post analysis related tophysical activity as mild to vigorous in a days per week. Table shows that vigorous physical activity days/week is increased in the examined group, the mean vigorous physical activity was 1.06 (0.856) before nurse assisted cardiac rehabilitation intervention and becomes 1.93 (0.723) after rehabilitation. The PA max increased significantly after NACR (p = 0.000) (correlation coefficient=0.566). Some comparative characteristics for this phase of rehabilitation are presented above in table 4.
The physical activity time/week, ranging from no physical activity to intense exercise and arranged as pre- to post-data analysis. Table shown that following nurse-assisted cardiac rehabilitation interventions, frequency of moderate and mild physical activity per week were increased as Pre interventions data shows mean were 0.95(0.625) and after interventions 2.11 (0.652) with (correlation coefficient=0.386) (p = 0.000). Some comparative characteristics for this phase of rehabilitation are presented above in Table 4.

In dietary servings table 05the paired sample t-test showed that there was no significant follow-up of DASH diet in myocardial infarction patient before interventions, but nurse assisted cardiac Rehabilitation interventions led to a noteworthy increased in taking of advised servings of food. As it is revealed in the pre-controlled group the recommended servings of fruits per week with mean were 0.89(0.608) and increased to 2.37(0.617) (P 0.277) with significance level of 0.003 in post-group.

The mean of weekly servings of vegetable before intervention were 1.21(0.728) increased after intervention to 2.60 (0.617) with significance value of 0.000.

DISCUSSION

In the discussion chapter of this thesis, we delve into a comprehensive analysis and interpretation of the research findings, aiming to provide valuable insights into the implications of our study. By synthesizing the results with existing literature, we illuminate the significance of our contributions to the field and address the research questions, thereby offering a nuanced understanding of the broader context surrounding our investigation, includes discussion on demographic picture of study participant, overall results of health behavior modification and individual results of physical activity domain, dietary habits domain and medication adherence.

The findings of this groundbreaking study which focused on patient education for cardiac rehabilitation (CR) of myocardial infarction patients, demonstrated notably higher patient behavior scores following an education intervention. The goal of Nurse assisted cardiac rehabilitation is to assist patients that have recently suffered a cardiac event, such as myocardial infarction (MI) in physical activity, dietary habits and medication intake.

Similar results were shown by other studies that used health behaviors as their outcomes (de Melo Ghisi et al., 2020; Mansilla-Chacon et al., 2021; Su, Yu, & Paguio, 2020). These studies support the use of nursing education interventions in conjunction with cardiac rehabilitation (CR) as a standard of care for myocardial infarction patients, while also highlighting the significance of CR as a cornerstone of care. The design of this study and its findings demonstrated that, despite variations in program settings and treatments, applying study results to specific programs may be a challenging task. Another study shows that total of eighteen post-MI patients (mean age: 60.5 years, range 37–73 years) took part in the study. Participants were predominantly male (n = 13, 72 %)(Coull & Pugh, 2021).in contrast to this study where there were 88 males and 23 females in the control group, aged from 18 to 60 years, with an average age of (39 ± 8) years.

The study's results further supported the link between socioeconomic position and health, as evidenced by the fact that participants with higher educational status had greater effects than their counterparts and that educational treatments improved the patients' ability to modify their health-related behaviors. It's also critical to emphasize that the individuals in sample were male and had greater levels of education, which may have contributed to their participation in these programs and referrals. Education is a crucial aspect of CR; thus, it should be taken into account along with sex and age (Su et al., 2020).

This study shows MI incidence in Male between aged 36-45 and 55-60 years of age were high. Male with graduation and master level of education were also high amongst admission ratios. In this study education intervention were translated into both Urdu and English.From the standpoint of the patient, participants were eager to learn and pleased with the instruction given. The majority expressed satisfaction and confidence in the information they had been given.

A systematic assessment of secondary preventive educational interventions, including a thorough overview and quantitative synthesis of the efficacy of disease-related information and CHD risk reduction behaviors in adults with MI diagnoses. The findings of this research show that different forms and intensities of nurse assisted educational interventions for secondary prevention can effectively improve healthy behaviors and disease awareness at the <6 and 6–12-month follow-up. The most remarkable findings concerned the short-term (less than six months) enhancement of healthy eating practices, with patients with CHD three times more likely to follow a healthy diet following the delivery of structured educational interventions. There was a notable shift in the amount of physical activity and medication adherence, and there was a chance that these would be maintained(Shi et al., 2023).

The overall findings of this study on the use of nurse-assisted cardiac rehabilitation to modify the health behaviors of patients who have experienced a myocardial infarctionn on 4-months follow-up of nursing interventions shows that overall improvement in health behavior modification related to physical activity, diet and medication

adherence. The pre- and post-date frequency percentage comparison demonstrates the percentage of people who modified their behaviors for optimal health went from 0.9% to 9%.

Increased local and systemic blood flow, shear stress, and nitric oxide release from moderate and more vigorous exercise all contribute to the enhancement of chronic flow-mediated dilatation. patients who have had a myocardial infarction have much reduced blood flow However, it appears that increased physical activity might at least significantly mitigate this drop of blood flow. Physical activity leads to vessel stiffness is somehow concerned in older age above 75 years (Tršan, Košuta, Fras, & Jug, 2021). The results of paired sample-t-test of this study shows that vigorous physical activity everyday/week is increased in the intervention group, the mean of vigorous physical activity was 1.06 (0.856) before nurse assisted rehabilitation intervention and 1.93 (0.723) after rehabilitation. The PA max increased significantly after NACR (p = 0.000) (correlation coefficient=0.566). Similarly moderate physical activity per week were increased as Pre interventions data shows mean were 0.95(0.625) and after interventions 2.11 (0.652) with (correlation coefficient=0.386) (p = 0.000).

A randomized controlled trial (RCT) shows the beneficial effects of a 6-month behavioral nutrition intervention that was started in the clinic and included phone and mail follow-ups that emphasized the DASH diet on systolic blood pressure and vascular function. DASH-4-Teen's participants achieved a substantial increase in DASH dietary adherence from pre- to post-intervention comparison to adolescents receiving RC by increasing their intake of fruits, low-fat dairy foods, and associated nutrients and decreasing their intake of total and saturated fat and salt. In comparison to RC patients, who saw a more moderate change in DASH adherence and systolic blood pressure at the end of therapy, mean (SD) baseline intake of these same dietary components (daily fruit servings: 1.3 [1.4] versus 0.7 [0.7], P=0.01, and percent of calories from fat: 31.8 [5.8] versus 34.4 [5.6], P=0.01). baseline daily fruit servings (mean [SD]: 1.2 [1.3] versus 0.6 [0.7], P=0.04) and percent of calories from fat (32.1 [6.0] versus 34.8 [4.5], P=0.04) (Couch et al., 2021). DASH diet the best had a reduced risk of heart failure than those who adhered the least Cronbach's alpha of the scale was found to be 0.72 (Ibsen et al., 2022).

The paired sample-t-test showed that there was no significant follow-up of DASH diet in myocardial infarction patient at the baseline, The mean of weekly servings of vegetable before intervention were 1.21(0.728) increased after intervention to 2.60 (0.617) with significance value of (0.000). As the daily servings of meat, fish and poultry in myocardial infarction according to DASH diet plan were poor as mean of pre data 0.87(0.634) in post data mean was 2.41(0.610) with (P =0.000) and (coefficient of correlation = 0.395), it means that cardiac rehabilitation interventions play a significant role in the dietary management of myocardial infarction patients.

Medication Adherence Scale (MMAS-6) was assessed using Pearson's correlation, which showed a correlation of 0.6851 ($p < 0.01$). The Cronbach's α of the scale is 0.61, supporting its internal consistency reliability. A p-value of less than 0.05 was considered statistically significant(Zheng et al., 2020). In my study Medication non-adherence was common, especially after MI as pre data revealed that patients forget to take medicine mean were 2.20 (0.772) after nurse assisted interventions improved to 0.92 (0.764) with (R=0.428) and (P= 0.000).

CONCLUSION:

At the baseline, data were obtained from myocardial infarction (MI) patients on admission there were not any noteworthy practice in physical activity, nutrition and medication adherence and majority of the patients had no excellent health behavior. By the conclusion of the interventions, however, we had seen statistically significant changes in all three aspects of health behavior by IPAQ, DASH diet, and MMAS-6. The advantages of an education interventions have been confirmed in this first-ever site research in Lahore, Pakistan, which focuses on patient education for physical activity, diet and medication adherence.

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