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Original Article

Impact of Cardiac Rehabilitation on Patients with Myocardial Infarction

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ABSTRACT

Myocardial Infarction (MI) renowned as "Heart attack" is of 2 main categories ST-Elevation Myocardial Infarction(STEMI)which is symptomatic and Non-ST-Elevation Myocardial Infarction (NSTEMI) with no clear symptoms, killing silently. Cardiac Rehabilitation (CR) is a multidimensional standard of patient care individually tailored to specific needs of participants. **Objective:** To find out the impact of CR on cardiac abnormalities and associated malfunctions and promote awareness and facilitation of CR. **Methods:** A descriptive cross-sectional study was done via "The Minnesota Living with Heart Failure Questionnaire" (MLHFQ). Data was collected from 90 cardiac patients. **Results:** According to MLHFQ, 7.8% of the population had good QOL, 71.1% had moderate QOL, and 21.1% had poor QOL from age 45 to 60 with MI. **Conclusion:** 71.1% of total participants with MI who followed CR observed enhanced energy levels, managed symptoms effectively, prevented progression, and boosted up confidence level hence results showed positive impact of rehabilitation. Factor affected results were age, cooperation, duration of diagnosis before participating in CR and duration of rehabilitation. Whereas, it had almost similar impact for both male and female of age 45 to 60.

INTRODUCTION

The term Myocardial Infarction (MI) also called Heart Attack, reflects hypoxic death of cardiac tissues. Symptomized by pain in chest, upper extremity, jaw, epigastric discomfort, dyspnoea, diaphoresis, nausea, and syncope.[1] Typically diagnosed by patient's history, ECG, echocardiography, and serum analysis. Perfusion imbalance between supply and demand can have multiple reasons such as atherosclerotic disease, thrombus, embolus, bacterial or viral infection, blood pressure instability, and other systemic disorders. [2] It is managed by Cardiac Rehabilitation (CR) that addresses every aspect of a patient's condition such as specific diet plan, energy conservation, daily activity modifications, stress management and maximising potential of patient/client [3]. Rehabilitation refers to a holistic treatment approach aimed to restore a balanced health condition through rejuvenating homeostasis, while CR is oriented specifically on the cardiopulmonary system. This multidisciplinary approach makes the patient/client go through different phases of treatment to achieve his maximum potential of health While each of the phases are time and goal specific[4]. CR is the combination of ongoing education, psychological and physiological interventions which includes interval health monitoring, dietary regime, BMI, BP, and diabetes management, counselling, physical activity guidelines training[5]. Short term goals of

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rehabilitation aim to control cardiovascular malfunctioning, augment functional activities, turn down detrimental outcomes of cardiovascular events and strengthen psychosocial performance[6]. CR is based upon 4 phases and patient specific set of goals are determined through CR program periodically Phase 1 is in-hospital phase also called clinical phase, having one-week duration consisting upon bed mobility training, vital monitoring, psychological counselling, nutritional guide, and risk factor assessment. Phase 2 is post-discharge phase having 3 – 6 weeks after discharge and consists of more diligent patient-centred sessions based on three categories; information/counselling, exercise training program, and a relaxation program. [7]Phase 3 is called post-cardiac rehab having 6 – 12 weeks focused on upgrade flexibility, strength, and aerobic conditioning. Patients need to visit CR unit 2 to 3 times in a week for a structured exercise program[8]. Phase 4 is the maintenance phase merely based on maintaining achieved functional status. After following all phases patient can manage himself independently or with minimum help[9]. Duration of rehabilitation lasts 2 – 3 months on average and Every detail is documented to evaluate the outcome of rehabilitation while the patient's cooperation is influential in the therapy[10]. In modern cardiology, CR has evolved as the integral part of standard care proving early ambulation to be of great importance in reduction of coronary events[11]While primary prevention aims at preventing the onset, CR is a secondary prevention category which relies on early detection of the disease [12]A chest pain more than 30 min is not enough information for exact diagnosis of MI.it has 2 types named ST elevation(STEMI)[13] which is symptomatic and easy to diagnose while the other type is non ST elevation(NSTEMI) with misleading overlapping symptoms[13] Among diagnostic tests for MI such as ECG, serum CK MB, CBC, renal function, Cardiac Imaging tests, Troponin stands out to be the most accurate and reliable test worldwide[14] Disruption of cardiac cells membrane causes the intracellular proteins to escape into the blood circulation and be detected in lab tests as markers of infarction. For the suspected and confirmed MI cases, studies showed that CR not only improves the condition but also prevents complications and recurrent instabilities. This inclination towards CR was evidence-based that different exercise regimes improve conditioning as well as prognosis, long term effects, reduce recurrences of cardiac events and extent of recovery depends upon the patient's pre-hospitalised condition, severity of complication, psychological status, and adherence to treatment[15]. Despite the clear recommendations, fewer people attend CR than diagnosed. Factors influencing low rates of participation may be the lack of awareness and facility, hospital anxiety, no referral to rehabilitation, depression, altered cognitive status, financial issues and in some cases, transportation problems for some patients [16].All of these barriers enhance the rate of recurrent symptoms, progression, and mortality. Besides this, CR programs are of 2 types, centre-based CR followed under supervision and home-based followed after educational sessions from therapists first[17]. If properly followed the plan of care at home, home-based programs have equal efficacy as the supervised centre-based programs [5]. Multiple studies have been published on CR focused on numerous program-associated mortality rate, quality of life, survival rate, obesity, long term effects of CR, expanded cardiac rehabilitation, other barriers, while most of them had males of older age >70 as their target population. Main objective of this study is to assess the influence of advanced cardiac therapies and secondly, awareness and follow up of CR should be promoted to enhance life expectancy by overcoming the obstacles and barrier of conservative therapies equally in all age groups regardless of gender.

METHODS

Study was conducted in 3 different settings of Lahore, Punjab Institute of Cardiology, General Hospital Lahore, and National Hospital. "The Minnesota Living with Heart Failure Questionnaire" (MLHFQ) along with a consent form was used to collect data. Non- probability convenient sampling technique was used for this study. 90 patients, both men and women, of 45-60 age, diagnosed with MI for >4months, attending at least 3 weeks of CR were included. Freshly diagnosed with cardiac conditions, multiple complications other than heart problems, and patients with unstable symptoms were excluded from the study. Complete data collected for and with the trial was analysed by SPSS version 26.0.

RESULTS

Results have been obtained by analysing the data collected from 90 MI patients. MLHFQ was used. It is prevailed that 71.1% of MI patients, without multiple diseases, going through CR for about a month or more had a moderately healthy lifestyle. Out of 90 sample sizes from 3 hospital settings 7 patients had good Quality of Life (QOL), 64 had moderately balanced conditions while 19 patients had poor lifestyle. 7 patients with good QOL had ages between 45-48, financially independent fairly social and properly following CR, 64 patients with moderate QOL had ages between 50 – 57and had balanced condition and were going through CR for about 5 – 6 weeks of duration. 19 patients having poor QOL had 58 – 60 age, had higher levels of depression, low socioeconomic status, dependent upon others for their medical expenses, and less follow-up duration of

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Ages	Frequency	Percent
45 – 50	33	36.6%
51 – 55	33	36.6%
56 – 60	24	26.8%
Gender	**Frequency**	**Percent**
Male	49	54.4%
Female	41	45.6%
Total	90	100%

Table 1: Age and gender frequencies of patients among total population

Duration of Diagnosis	Frequency	Percent
>4 months	50	55.6%
5 months	25	27.8%
6 months	7	7.8%
≈1 year	8	8.9%
Total	90	100%

Table 2: Duration of diagnosis of patients

Duration of CR	Frequency	Percent
4 – 6 weeks	38	42.2%
7 – 9 weeks	36	40%
10 – 12 weeks	16	17.8%
Total	90	100%

Table 3: Cardiac rehabilitation follows up duration of patients

QOL	Frequency	Percent
Good QOL	7	7.8%
Moderate QOL	64	71.1%
Poor QOL	19	21.1%
Total	90	100%

Table 4: Score of MLHFQ

DISCUSSION

Myocardial Infarction (MI) is one of the leading health concern in Pakistan, causing high rates of mortality with more than 30% in the 45 – 50 years of age regardless of gender while most prevailed type is ST-Elevation Myocardial Infarction (STEMI) for about 56% of all types of cardiovascular disorders which needs to be addressed seriously[18].Of many reasons, hypertension, type-II diabetes, less physical activity, unhealthy dietary practices, overweight, higher BMI, were considered the leading causative agents of MI in middle age population. Pakistan is a developing country and increasing burden of disease is compromising country's progress and influencing limited resources making it a great challenge for all stakeholders. It is always cost-effective to identify and address diseases at an early stage for better outcomes[20]. Current article is an observational study of CR in mental and physical dimensions for one of the major CHD affecting Pakistan's overall population, needing timely intervention to curtail the existing burden. According to results, out of 90 participants, 71.1% observed moderate quality of life after follow-up of CR which showed a positive impact of CR on CVS-related complications. On the other hand, 21.11% population out of 90 participants observed poor QOL affected by their socioeconomic status, age, irregular follow up, and onset of other health complications. While 7.71% people had good QOL. Some recent meta-analysis shows that physical activity improves the left ventricular function[21]. The limitation of the present study is its small sample size of MI patients from Punjab Province, Pakistan. There is a great need of well-targeted clinical interventions and awareness campaigns, aimed promotion of CR facilities, with a view to lessen the burden of CHD[22].

CONCLUSION

This study was conducted to observe the impact of Cardiac Rehabilitation (CR) on patients with Myocardial Infarction (MI). Results of this study indicated stabilisation of cardiovascular symptoms in more then two third of the participating population which is a positive impact, while psychological factors, age and socioeconomic status were the influential variables. Hence there is a need to promote awareness and facilitation of rehabilitation care centres to deal with such seriously burdensome diseases in Pakistan.

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