ORIGINAL ARTICLE

Outcome of Cardiac Rehabilitation in Improving Quality of Life among Women Having IHD: A Randomized Controlled Trail

ALISHBA MUSTANSAR[1], RABIYA NOOR[2], SAJID MAHMOOD[1], TAYYABA YAQOOB[3], WAQAS LATIF[4].
TALHA LAIQUE[5*]
[1]Department of Physiotherapy, UHS, Lahore-Pakistan
[2]Department of Physiotherapy, Riphah University, Islamabad-Pakistan
[3]Department of Public Health, UHS, Lahore-Pakistan
[4]Department of Statistics, University of Health Sciences, Lahore-Pakistan
[5]Department of Pharmacology, Allama Iqbal Medical College, Lahore-Pakistan
Correspondence to Dr. Talha Laique; Email: talhalaique51@gmail.com Tel:+92-331-0346682

ABSTRACT

Background: Cardiac rehabilitation deals with optimizing function in patients with heart disease or current cardiac surgery.
Aim: To determine the outcome of cardiac rehabilitation in improving quality of life in women of ischemic heart disease. **Study design:** Randomized controlled trial.
Methodology: Patients (n=74) were enrolled in present study held at University Teaching Hospital, University of Lahore & Punjab Institute of Cardiology, as a reference placement for 6 months. Informed consent was taken from all of them. Data analyzed by SPSS 22.0v.
Results: The mean age of the patients was 49.11±3.96 years. The mean post back depression inventory score in cardiac rehabilitation group was 10.24±6.19 while in conventional group was 19.57±7.08 (p-value=<0.001). Among cardiac rehabilitation group the mean post SF 36 was 66.43±9.69 while in conventional group was 56.22±10.88 (p-value=<0.001).
Conclusion: This study concluded that cardiac rehabilitation greatly improves the quality of life of patients with ischemic heart disease following traditional rehabilitation compared to the conventional group.
Keywords: Cardiac Rehabilitation, Ischemic Heart Disease, Quality of life and SF-36.

INTRODUCTION

Cardiac rehabilitation deals with optimizing function in patients with heart disease or current cardiac surgery. The services of cardiac rehabilitation may be offered during hospitalization to the patients. They includes dietary therapy, diet & medication management for lipid disorder, weight loss plans, control blood pressure and diabetes and stress management[1,2]. Throughout the weeks of an acute coronary incident, patients usually undergo cardiac rehabilitation like, infarction, treatment of heart failure, coronary bypass procedure, repairing heart valve, coronary percutaneous intervention, pacemaker placement[3].

Normally patients who received cardiac rehabilitation in hospital since surgery will begin within one or two days[2]. Many patients who wish to participate in emergency cardiac rehabilitation will begin within four to six weeks of surgery[4]. The program duration differs from person to person and may vary from six months to many years[5].

Phases of cardiac recovery were divided into three phases. Phase 1 was initiated in clinic whereas the patient is immobile. Phase 2 included a three to six-month hospital supervised outpatient program controlled. Whereas Phase 3 involved a preventive process which emphasizes health and additional reduction of the risk factor[6].

The cardiac rehabilitation use in scientific community is well established. Cochrane analysis of 147 researches showed that exercised based cardiac rehabilitation helps to improve life quality & lowers the readmission rates for patients with myocardial infarction & heart failure. The authors were unable to estimate the impact on mortality or adverse events due to limited number of tests[7]. The study has outlined positive effects on medical psychological distress and life quality from cardiac rehabilitation.

Cardiac recovery/ rehabilitation includes short & long-term aims to also be attained by learning, training, and therapy[8]. The small targets of cardiac rehabilitation comprise repairing include physical, social & emotional state, whereas long-term targets include promoting healthy heart behaviors that allow individuals return to successful and happily work[9,10].

Due to the high incidence of Ischemic heart disease among Pakistani females with limited data available regarding the outcome of cardiac rehabilitation due to limited resources, we planned the current study to determine the outcome of cardiac rehabilitation in improving quality of life in women of ischemic heart disease.

The objective of the study was to determine the outcome of cardiac rehabilitation in improving quality of life in women of ischemic heart disease.

METHODOLOGY

Patients (n=74) were enrolled in present study held at University Teaching Hospital, University of Lahore & Punjab Institute of Cardiology, as a reference placement following Hospital's Ethical Committee approval for 6 months. Informed consent was taken from all of them. Enrolled patients were divided into 02 groups (37 patients in each group). In one group cardiac rehabilitation done and other was conventional group. Female patients with age ranging from 45-55 years having diabetes, hypertension, typical chest discomfort, electrocardiographic and significant rise in creatine phosphokinase (1.5 times normal upper limit or positive creatine phosphokinase

&enzymes) were included. Exclusion criteria included depresses or nervous patients or both or having inability to exercise due to uncontrolled dysrhythmias, heart failure or unstable angina. In one group cardiac rehabilitation done and other was conventional group. Pre quality of life and depression was noted using SF 36 and back depression inventory scale, similar findings were noted on follow up using the same scales. In cardiac rehabilitation each intervention was consisted of a 6-week program in which a group of 5–10 women met repetitions. weekly for a 2-hour session in setup for cardiac rehab.

Statistical analysis: Data analyzed by SPSS 22.0v. Mean±SD was used for age. The inferential statistics include Independent Sample t-test for total scores of scales to compare means between cardiac rehabilitation group and conventional group. Paired sample t test was used to compare means at pre-post level for Cardiac Rehab group and conventional group separately. The sample size was calculated at level of significance equal to 5%, keeping the margin of error equal to 5%.

RESULTS

Among 74 enrolled patients, age with mean ± SD was 49.11± 3.96 years. The descriptive statistics of pst SF-36 score were summarized in Table-1. Comparison of pre and post back depression & SF-36 score was made and presented as mean±SD in table-2 with significant p-value. Statistically cardiac rehabilitation group showed significantly better quality of life score as compared to conventional group patients i.e. p-value=<0.001 as shown in table-3. In our study there is weak positive correlation found between the pre-SF 36 score of the patients and pre back depression inventory score of the patients i.e. r=0.023 as shown in Fig-1. In this study there is weak negative correlation found between the post SF 36 score of the patients and post back depression inventory score of the patients. This study showed that with the improvement of the quality of life (SF-36) of the patients there is decrease in the back depression inventory score (depression level) of the patients i.e. r=-0.243 (Fig-2).

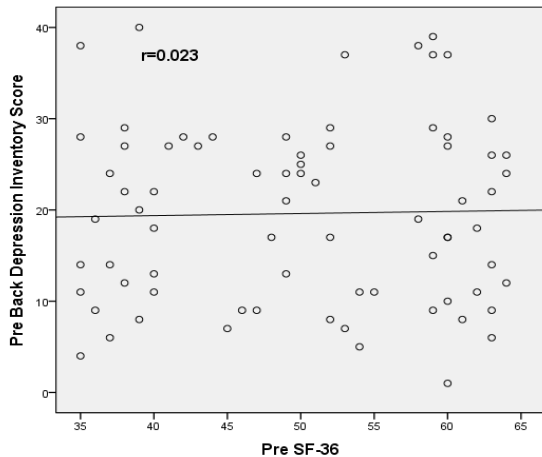Figure 1: Correlation between the pre-SF-36 & pre-Back depression

Table-1: Descriptive statistics of post SF-36 score (n=74)

Variables	Mean ± SD
General health	17.30 ± 2.87
Limited activities	25.17 ± 5.05
Physical health	6.19 ± 1.45
Emotional health	5.12 ± 1.02
Social Activity	2.19 ± 1.16
Pain	5.42 ± 3.09
Total score	61.32 ± 11.45

Table-2: Comparison of pre and post back depression & SF-36 score

Variables	Categories	Mean ± SD	p-value
Back Depression	Pre	19.61 ± 9.74	<0.001*
	Post	14.91 ± 8.11	
SF-36	Pre	50.15 ± 9.87	<0.001*
	Post	61.32 ± 11.45	

* Statistically Significant

Table-3: Comparison of post SF-36 score among study groups

Post-SF 36	Study Groups		p-value
	Cardiac Rehabilitation (n=37)	Conventional (n=37)	
General health	18.27±2.10	16.32±3.21	0.003*
Limited activity	27.43±3.86	22.70±5.04	0.000*
Physical health	6.84±1.07	5.54±1.50	0.000*
Emotional health	5.46±0.80	4.78±1.11	0.004*
Social activity	2.49±1.28	1.89±0.94	0.026*
Pain	5.92±3.35	4.92±2.76	0.165
Overall score	66.43±9.69	56.22±10.88	0.000*

Figure-2: Correlation between the post SF-36 & post Back depression
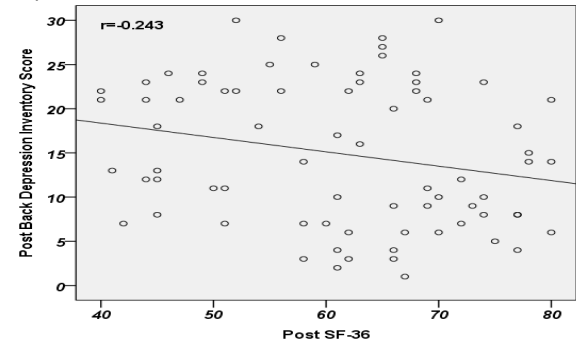
DISCUSSION

An estimated 23.6 million people will died of heart disease and stroke by either the end of 2030, based on WHO figures[11]. One of the methods used in cardiovascular disease treatment is cardiac recovery programs, which include a large number of studies, especially on the results of such programs worldwide[12]. Khalife-Zadeh et al., Conducted a study to assess the impact of cardiac reconstruction on quality of life in patients with cardiac disease. The results of the study concluded that perhaps the program of cardiac rehabilitation could improve quality of life in hospitals patients with coronary syndrome. A positive difference was observed in all aspects of life quality between the research and control groups except for basic social and health function (p< 0.05) in terms of the research group[13].

A randomized controlled multicenter study involved 140 patients with cardiac recovery, randomized (1:1) to a twenty four weeks tele rehabilitation/recovery program in addition to traditional cardiac recovery (intervention group)

or to conventional cardiac recovery alone (control group). Cochrane Analysis of six randomised trials in young people with fibrillation found that rehabilitation exercise-based may strengthen exercise capacity, but there were no effect on HRQoL[7].

Shabani et al. have reportef positive effects of rehabilitation of heart on QOL of patients following coronary bypass & vascular reconstructive surgery (P<0.05). A study done in Portugal, Bettecourt et al. showed that there had been no major change in QOL between rehabilitation & improvement of control groups comparable in the study group to control group. (14) Cieslik et al., revealed no difference in QOL between control and rehabilitation group in their study from Turkey (P > 0.05)[15].

More recent studies have used the SF-36 more & more, there are conflicting accounts about the impact of cardiac rehabilitation[16]. This study showed that with the improvement of the quality of life (SF-36) of the patients there is decrease in the back depression inventory score (depression level) of the patients i.e. r=-0.243

CONCLUSION

The programs of cardiac rehabilitation are recognized as a successful component for the management of ischemic heart disease patients. This study concluded that cardiac rehabilitation greatly improves the quality of life of patients with ischemic heart disease following traditional rehabilitation.

Limitations: In this study for cardiac rehabilitation static cycling was used to access the outcome for quality of life. For more improvement other rehabilitation program can be given as in other studies breathing exercises have been recommended along with static cycling. It was single centre study.

Conflict of interest: None
Funding: None

REFERENCES

1. Anchah L HM, Lim MSH, Ibrahim MIM, Sim KH, Ong TK. Health related quality of life assessment in acute coronary syndrome patients: the effectiveness of early phase I cardiac rehabilitation. Health and quality of life outcomes 2017;15(1):10.
2. Anderson L SG, Norton RJ, Dalal H, Dean SG, Jolly K, et al. . Home- based versus centre- based cardiac rehabilitation. Cochrane Database of Systematic Reviews 2017(6).
3. Blokzijl F DW, Keus F, Reneman MF, Mariani MA. . Cardiac rehabilitation for patients having cardiac surgery: a systematic review. The Journal of cardiovascular surgery 2018;59(6):817-29.
4. Gostoli S RR, Urbinati S, Rafanelli C. . Clinical and Subclinical Distress, Quality of Life, and Psychological Well- Being after Cardiac Rehabilitation. Applied Psychology: Health and Well- Being 2017;9(3):349-69.
5. Dolan LB BD, Petrella T, Davey L, Minnes A, Yantzi A, et al. . The cardiac rehabilitation model improves fitness, quality of life, and depression in breast cancer survivors. Journal of cardiopulmonary rehabilitation and prevention 2018;38(4):246-52.
6. Bjarnason-Wehrens B MH, Zwisler A-D, Piepoli MF, Benzer W, Schmid J-P, et al. . Cardiac rehabilitation in Europe: results from the European cardiac rehabilitation inventory survey. European Journal of Cardiovascular Prevention & Rehabilitation 2010;17(4):410-8.
7. Dalal HM DP, Taylor RS. . Cardiac rehabilitation. Bmj 2015;351:h5000.
8. Tessler J BB. Cardiac Rehabilitation. StatPearls [Internet]: StatPearls Publishing; 2019.
9. Milani RV LC, Cassidy MM. . Effects of cardiac rehabilitation and exercise training programs on depression in patients after major coronary events. American heart journal 1996;132(4):726-32.
10. Deedwania PC AE, Vagelos RH. . Evidence-based, cost-effective risk stratification and management after myocardial infarction. Archives of internal medicine 1997;157(3):273-80.
11. Dugmore L TR, Phillips M, Flint E, Stentiford N, Bone M, et al. Changes in cardiorespiratory fitness, psychological wellbeing, quality of life, and vocational status following a 12 month cardiac exercise rehabilitation programme. Heart 1999;81(4):359-66.
12. Pasquali SK AK, Coombs LP, Lytle BL, Peterson ED. . Effect of cardiac rehabilitation on functional outcomes after coronary revascularization. American heart journal 2003;145(3):445-51
13. Khalife-Zadeh A DS, Shafiee S. The effect of cardiac rehabilitation on quality of life in patients with acute coronary syndrome. Iranian journal of nursing and midwifery research 2015;20(5):588.
14. Zwisler A-DO SA, Rasmussen S, Frederiksen M, Abadini S, Appel J, et al. . Hospital-based comprehensive cardiac rehabilitation versus usual care among patients with congestive heart failure, ischemic heart disease, or high risk of ischemic heart disease: 12-month results of a randomized clinical trial. American heart journal 2008;155(6):1106-13.
15. Bettencourt N DC, Mateus P, Sampaio F, Santos L, Adao L, et al. . Impact of cardiac rehabilitation on quality of life and depression after acute coronary syndrome. Revista portuguesa de cardiologia: orgao oficial da Sociedade Portuguesa de Cardiologia= Portuguese journal of cardiology: an official journal of the Portuguese Society of Cardiology 2005;24(5):687-96.
16. Cieślik A S-SJ. The impact of early cardiological rehabilitation on life quality self-evaluation in patients after acute coronary syndrome. Kardiologia polska 2009;67(5):583-6.