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EFFECT OF CARDIAC REHABILITATION ON MENTAL STRESS IN PATIENTS WITH ACUTE CORONARY SYNDROME

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Abstract:
Objective: Myocardial infarction patients suffer anxiety which hampers early recovery and puts negative impact on disease course. Impact of cardiac rehabilitation on mental stress is the main objective of this study.
Methodology: Quasi experimental study was conducted by taking study sample of 120 diagnosed patients of myocardial infarction admitted in cardiac care unit of cardiology department of Jahrom University of Medical Sciences. Stratification of study population into two groups comprising of 60 patients each was done, case and control. Control group was prescribed usual treatment while other group was prescribed a special rehabilitation program for 3 months. Spielberger anxiety inventory and data collection proforma was designed. Anxiety inventory about all patients was filled at the start and end of study. Chi square, t- test, independent t test were applied and data analysis was done on SPSS version 19. Mean, SD of mean and variance were used for data analysis.
Results: There was significant reduction in level of mental stress in patients with myocardial infarction, by using cardiac rehabilitation program (p- value 0.001). The start and end of study mental stress level in control group was also studied, it was not significantly reduced. P value was 0.12 **Conclusion:** *Cardiac rehabilitation can effectively reduce the mental stress in patients with MI and help in early recovery and has positive impact on disease course.*
Conclusion: Cardiac rehabilitation can effectively reduce the mental stress in patients with MI and help in early recovery and has positive impact on disease course.
Key Words: *Myocardial infarction, rehabilitation, mental stress, anxiety.*

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*Please cite this article in press Hassan Khalid et al., **Effect of Cardiac Rehabilitation on Mental Stress in Patients with Acute Coronary Syndrome,** Indo Am. J. P. Sci, 2018; 05(05).*

INTRODUCTION:

Acute coronary syndrome is a group of acute ischemic cardiac events, including stable angina, unstable angina, non ST elevation MI, ST elevation MI. The understudy topic covers patients with diagnosis of Myocardial infarction, who were admitted in the cardiac care unit. Ischemic heart disease is the commonest cause of death in the world. Patients who once suffer MI, are more likely to suffer future complications than those who did not. This thought is cause of depression and anxiety amongst individuals leading to altered disease course and outcome[1]. Besides IHD, depression itself is a common disease in European and south Asian countries. The major illnesses are widely under study and measures are in search to be applied for prevention and proper treatment of both diseases. The disease burden and mortality reduction is the basic aim behind all this research work [3,4]. Expanded cardiac rehabilitation program was conducted by Hald K, et al in University Hospital of Denmak, in which patients were followed up for 10 years and long term benefits of the under study trial were noticed. It was observed that this program not only has positive preventive role in 1 year follow up but is also fruitful in long term health and well being of individuals suffering from MI[2].

MATERIALS AND METHODS:

A quasi- experimental study was done on population of 120 myocardial infarction patients, admitted in cardiac care unit of hospitals affiliated with Jahrom University of Medical Sciences. Random Stratification into two groups of 60 patients each was done, one group was given usual therapy while other was prescribed rehabilitation program for 3 months. Selection criteria was diagnosed MI case from any consultant cardiologist, absence of any cognitive, speech, psychiatric disorder, no history of anti-psychotics, antidepressants or anxiolytics intake, absence of any acute severe pain during study. Patients were withdrawn from study on basis of loss to follow up or reluctance to participate. Confidentiality about the information provided by all participants was insured to whole study population. Purpose of study was elaborated to all patients before getting consent form signed from them.

The division into two groups was random. The patients were admitted and biodata along with spielberger anxiety inventory was filled at the beginning and end of study. After allocation into intervention group, patients were put on 3 months rehabilitation program. This program had 2 parts, aerobic training and aerobic exercises. The training session consisted of face to face 2 hours teaching session after they were stable, during hospital stay and at the time of discharge. Educational material related to causes, signs and symptoms of myocardial infarction were explained to the participants.

The training was in accordance with guidelines given by American Heart Association for rehabilitation of MI patients. Treatment options, signs symptoms, complications and lifestyle modifications including weight reduction, exercises, dietary restrictions, smoking cessation etc. were main part of training program. A take home booklet containing all points taught during training session was provided to patient at the time of discharge. Follow up was done after 4 weeks and evaluation for any further training or modification in program implementation was guided to the patients. Aerobic exercises were the other part of rehabilitation program.

5th week after discharge, exercise session was done lasting for 50 minutes, three times in a week. Exercise was 10 minutes warm up, 30 minutes isometric exercise or walk, 10 minutes gym. The video was shown to all patients and their attendants about how to exercise properly. Spielberger anxiety inventory questionnaire was again filled after 12 weeks and results were analysed. Data collection during study was biodata and spielberger anxiety inventory. Spielberger anxiety inventory had two parts, apparent anxiety test i.e. mental state at the moment, and common sense analysis. Anxiety score was from 20 to 80. A re-survey was also conducted.

Reliability coefficient was calculated, measuring instrument was applied on 10 member patients group amd after 2 days it was re-applied under similar conditions. R was found to 0.91 and alpha 0.825. Reliability was confirmed.

RESULTS:

Data analysis was done on SPSS 19 version. Descriptive and inferential statistics were applied for data analysis. 8.75% patients were male while all others were females. 93.3% individuals were married and mean age group was 33.56 years. Frequency of illiterate patients wad quite high (65.5%) on average income were (56.6%) easily accessible to hospital and family were 56.6% and 5.88%. Chi square test was applied and comparison between both groups on basis of gender, living condition, marital status, income, literacy status, hospital accessibility was done. No significant difference was found between both groups. Mean age of patients was compared in both groups by applying independent t test. No significant difference in age was found between both groups.

Anxiety level comparison was done after calculating it by applying spielberger anxiety calculator, both state and trait anxiety was measured. It shows no significant difference between anxiety level was between both groups was noticed when applied in the start of study. While comparison done at the end of treatment showed statistically significant difference between both (p value 0.001). t- test was applied to compare the stress level between both groups. The comparison of mental stress level in control group was done in beginning and end of study and no significant difference was found. P value 0.12.

Table: 1 Demographic details of patients.

P value	Control group		Test group			
	percentage	frequency	percentage	frequency	Classification	
.09	68.7	38	89.1	51	Male	Gender
	31	22	16/8	9	Female	
.73	0	0	0	0	single	Marital status
	95	54	95	55	Married	
	1	1	1	1	Divorced	
	4	4	4	4	Widower	
.47	56	34	52	32	illiterate	Education
	25	16	23	14	Under matric	
		7	11.5	7	matric	
	8.7	5	8	4	college	
	5.2	2	6.7	3	university	
.55	59	34	51	30	easy	Hospital accessibility
	26.4	22	28	24	difficult	
	12.1	4	16	6	Very difficult	
.92	24.5	14	22.5	12	low	Income
	58.3	36	60	38	middle	
	19.5	10	19.5	10	upper	

Table: 2 comparison of anxiety with admission and after 12 weeks.

P value	Test group	Control group	Variable
.14	36.0+4.8	34.9+2.9	Acceptance
.001	35.7+4.8	33+4.8	12 weeks after discharge

Table: 3 state and trait anxiety comparison after three of discharge in control group.

P value	12 weeks after discharge	Acceptance time	variable
.12	35.4+4.2	38.9+5.1	State anxiety
.97	29.2+3.9	30.1+4.8	Trait anxiety

Table:4 Comparison of state and trait anxiety in test group after 12 weeks

P value	12 weeks after discharge	Acceptance time	variable
.001	3+1.4	34.5+2.8	state
.015	27.6+1.2	29.4+3.7	trait

DISCUSSION:

Liu T, et al conducted a meta-analysis on 13 researches and concluded that significant effect of Tai Chi based cardiac rehabilitation on aerobic endurance and psychosocial well being, a beneficial effect on cardiovascular disease risk reduction [5]. In a study conducted in Al-Qassim, Saudi Arabia, 6.4% individuals had memory loss, 23% had only depression while 6% had combined effect. Pressure of depression and memory loss were associated with poor disease course and high mortality [7].

A systematic review done by Verschueren S, et al in which exercise effect on anxiety and depression was studied and it was concluded that no significant effect was noticed due to paucity of data [8]. Results from SWEDEHEART registry were obtained by Norlund F, et al in 2018 to study factors associated with emotional distress in MI patients.. Results suggested

that depression symptoms were positive in 38% patients after 2 months of cardiac event and 33% of patients after 12 months [9].

Acute coronary syndrome is a group of acute ischemic cardiac events, including stable angina, unstable angina, non ST elevation MI, ST elevation MI. The understudy topic covers patients with diagnosis of Myocardial infarction, who were admitted in the cardiac care unit**.** Ischemic heart disease is the commonest cause of death in the world. Patients who once suffer MI, are more likely to suffer future complications than those who did not. This thought is cause of depression and anxiety amongst individuals leading to altered disease course and outcome[10,11]. This study aims in reducing depression associated with IHD in order to improve lifespan and reduce disease course.

CONCLUSION:
Cardiac rehabilitation can effectively reduce the mental stress in patients with MI and help in early recovery and has positive impact on disease course.

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