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Quality of Life in Post Myocardial Infarction Patients with or Without Cardiac Rehabilitation

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Abstract: Quality of Life (QOL) has been considered as one of the major factors in the evaluation of medical interventions. This experimental study assessed effects of cardiac rehabilitation in terms of QOL in post Myocardial Infarction (MI) patients and compared it with non-rehabilitated patients by 2 types of questionnaires; MacNew questionnaire that is Quality of Life after Myocardial Infarction (QLMI) instrument and the other is world WHOQOL-BREF, an abbreviation version of WHOQOL100. The number of participants in each group (with or without rehabilitation) was 70, who were selected randomly from Isfahan cardiovascular research center and cardiologists private office, respectively. Both questionnaires were completed for each participant and their quality of life scores and demographic characteristics amongst the tow groups were compared. Data were analyzed by SPSS ver.10 and independent t-test, ANOVA and chi-square test, used for comparing differences between 2 groups' scores and demographic variables. According to our study, these 2 groups were similar in all of their demographic variables except for participation in rehabilitation program. According to MacNew questionnaire, the rehabilitated patients had a significantly higher QOL, especially in physical dimension but WHOQOL-BREF did not show the same results. About other dimensions (mental, social and environmental) there was no significant differences. According to Persian version of MacNew questionnaire, patients who participate in cardiac rehabilitation program have a higher QOL.

Key words: Myocardial infarction, cardiac rehabilitation, quality of life, macnew questionnaire, WHOQOL-BREF

INTRODUCTION

Without any shadow of doubt, discussing quality of life in post Myocardial Infarction (MI) patients have been considered as one of the major breeding factors to be involved in the assessment of medical interventions. One of the most important interventions is Cardiac Rehabilitation (CR). CR after MI improves exercise tolerance, coronary risk factors and health-related quality of life (Kennedy *et al*., 2003; Marchionni *et al*., 2003).

After such a major disease, symptoms of depression and anxiety are prevalent (Forrester *et al*., 1992; Lane *et al*., 2001). Physical and social disability is very common in post MI patients (Kincey and Wade, 1984) and some of patients delay in communication and environmental adjustment (Lane *et al*., 2001). In sum up, many aspects of life and its qualities are subject to change in these individuals, such as physical and mental as well as social and environmental dimensions (Ashworth, 1984).

A wide range of instruments have been used in health related quality of life (HRQOL) assessment of patients with coronary artery disease (De *et al*., 2004). One of the most recognized, valuable and specific instrument for assessing quality of life in patients with coronary artery disease is MacNew questionnaire (De *et al*., 2004; Hofer *et al*., 2004). It is revised, disease-specific, health-related quality of life questionnaire (Dempster *et al*., 2004; Oldridge *et al*., 1991). This quality of life after myocardial infarction (QLMI) instrument demonstrates a high degree of reliability (Hillers *et al*., 1994). The other famous instrument is world health organization quality of life study assessment and WHOQOL-BREF, an abbreviation version of WHOQOL100. It is a generic English version and should

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not be used as it stands, nor just be translated. Language/cultural versions suitable for use in a limited number of populations are available from respective listed field sites that pilot tested the instrument (Min *et al*., 2002; Saxena *et al*., 2001).

The purpose of this study was to compare the quality of life in rehabilitated and non rehabilitated post MI patients based on Persian version of MacNew QLMI and WHOQOL-BREF and to identify the research gap in Iran. In addition, the study was concerned with the effects of CR in different dimensions of quality of life.

MATERIALS AND METHODS

Patients: We studied 121 patients who experienced an acute MI in past 6-12 months (All patients ≥30 years) and settled in Isfahan city. The condition for selection was due to CR program which was started 2 months after acute MI and each program period was 2-3 months long. Also, it needed 6-12 months time to complete adjustment of patients with new life conditions.

The diagnosis of MI was confirmed by their medical records in the cardiologist private offices or CR unit of Isfahan Cardiovascular Research Center. Electrocardiography changes and serum creatine kinas elevation were the markers for diagnosis of MI. We sampled randomly 70 patients (57 individual responded) that had been referred to above CR unit as a Rehabilitated Group (RG) and also we sampled 70 patients (64 individual responded) from cardiologist private offices, who had no hospital or home CR, as a non-cardiac rehabilitated group (NRG). RG had been referred to CR unit and completed CR programs in this center or at home. All patients received some information about this study and then 2 questionnaires (MacNew QLMI and WHOQOL-BREF) were completed for each individual.

CR program: Isfahan Cardiovascular Research Center guidelines were used for CR program. The Hosp-CR program consisted of 40 exercise sessions; 3/week (5-20 min warm up, 20-25 min workload and aerobic exercise, 5 min cool down and 10-15 min relaxation techniques).

At first, in CR unit for each patient a medical folder was completed, that includes; patients' history, physical examination, internist and cardiologist consultation, blood tests (lipid profiles, blood sugar) and demographic characteristics (height, weight). Then, they started hospital cardiovascular rehabilitation (Hosp-CR). In each session, electrocardiography (ECG) and blood pressure monitored by instruments and exercise intensity was set at 75-80% of heart rate or baseline symptoms and ECG change-limited (exercise test). During this program patients received cardiova-scular risk factor management and counseling regularly with dietitian, psychologist, physiotherapist and general practitioner. Then, they were trained home-CR and cardiovascular risk factors prevention and control.

QOL questionnaire: MacNew questionnaire: This is a quality of life after myocardial infarction (QLMI) instrument. The original QLMI items were generated through interviews with physicians, nurses, allied health professionals, patients with MI and by reviewing the literature. This questionnaire is a self-administered modification of the original QLMI instrument (Hillers *et al*., 1994) that was revised to Persian language (Farsi) (Asadi-Lari *et al*., 2003). The Persian version consists of 27 items which falls into three dimensions (emotional, physical and environmental). The maximum possible score in any item is 7 (high HRQL) and the minimum is 1 (poor HRQL). The reliability in this study was 92%.

WHOQOL-BREF: This questionnaire items obtained as a part of WHOQOL100. The Persian version consists of 26 items which fall into four dimensions (physical, psychological, social and environmental). The maximum mean in any item is 5 (high QOL) and the minimum is 1 (poor QOL). The reliability in this study was 89%.

Statistical analysis: Data was analyzed with SPSS version 10 for Windows with a 2 sided $p<0.05$ considered statistically significant. The relationship between demographic variables and rehabilitation (reported as number and percent) were measured by χ^2 test and the means of questionnaire scores (total and dimensions) were compared by independent t-test and one-way ANOVA.

RESULTS

Of 140 screened patients for eligibility criteria, 121 individuals (64 NCRG; 57 CRG and 68.8% males; 31.2% females) were enrolled. Seventy three percent and 79% of NCRG and CRG were more than 50 years old, respectively. More than 50% of CRG attended to jobs.

Their demographic variables are shown in Table 1. There was no significant difference between 2 groups (CRG and NCRG) in demographic and characteristics variables; sex, age, education, work status and number of children ($p>0.05$). Therefore, these 2 groups were similar except for participation in CR program. In Table 2, significant differences can be seen in QOL scores according to MacNew questionnaire and non-significant differences with WHOQOL-BREF. The Table 3 shows

Table 1: Demographic variables of post myocardial infarction patients with or without rehabilitation

	CRG +		NCRG ++		
Variable	No	(%)	No	(%)	p-value*
Sex					
Male	46	80.7	44	68.8	0.196
Female	11	19.3	20	31.2	
Age groups (years)					
30-40	5	8.8	4	6.3	
41-50	7	12.3	13	20.3	0.547
51-60	31	54.4	23	35.9	
>6	14	24.6	24	37.5	
Education					
Illiterates	16	28.1	18	28.1	
<secondary	32	56.1	38	59.4	0.568
>secondary	9	15.8	8	12.5	
Work status					
Working	16	52.6	23	34.9	
Not working	14	24.6	19	29.7	0.309
Retirement	13	22.8	22	34.4	
Number of children					
0	11	19.3	12	18.8	
1-2	10	17.5	13	20.3	0.173
3-4	15	26.3	18	28.1	
5-6	12	21.1	10	15.6	
>7	9	15.8	11	17.2	
Total	57	100.0	64	100.0	

+CRG; Cardiac Rehabilitation Group, ++NCRG; Non-Cardiac Rehabilitation Group, *p<0.05 is Significant, measured by χ^2 test

Table 2: Quality of life score (mean, SE) comparison between CRG and NCRG according MacNew questionnaire

	CRG +		
Questionnaire	No.	Mean	SE**
Mac New	60	205.780	46.48
WHOQOL-BREF	57	3.205	0.67

	NCRG ++			
Questionnaire	No.	Mean	S.E	p-value*
Mac New	62	175.890	53.21	0.001
WHOQOL-BREF	64	3.020	0.58	0.109

+CRG; Cardiac Rehabilitation Group, ++NCRG; Non-Cardiac Rehabilitation Group, *SE; Standard Error, **p<0.05 is significant, measured by independent t-test

Table 3: Dimensions of quality of life scores (Mean, SE) and comparing CRG and NCRG according to MacNew questionnaire and WHO QOL-BREF

	CRG +	NCRG ++	
Diminution	Mean (S.E*)	Mean (S.E)	p-value**
Mac new			
Emotional	66.47(17.73)	60.45(18.03)	0.066
Physical	73.10(16.79)	59.13(20.20)	<0.050
Social	66.22(15.30)	56.31(18.33)	<0.050
WHOQOL			
Physical	3.51(0.55)	2.94(0.78)	<0.050
Psychological	3.30(0.77)	3.48(0.74)	0.358
Social	2.87(1.14)	3.15(0.96)	0.145
Environmental	3.13(0.87)	2.81(0.72)	<0.050

+CRG; Cardiac Rehabilitation Group, ++NCRG; Non-Cardiac Rehabilitation Group, *S.E; Standard Error, **p<0.05 is significant, measured by independent t-test

differences in dimension scores according to the 2 questionnaires, between CRG and NCRG.

In addition, demographic variables were stratified to subgroups (Table 1) and then the scores were compared between these subgroups (ex. sex; male and female) and there were not any significant differences. Although, males had higher scores in QOL in physical and mental dimensions than female (male; 3.32±0.69 and 3.30±0.75 vs. female 2.88±0.77 and 3.02±0.72, respectively) but it was not significant.

In a glance, age group of 30-40 years were more satisfied about psychological and social domain of QOL than other groups and age group of 41-50 years were the least in QOL scores. Individuals with higher secondary education had highest score in physical and environmental dimension and the least in social score. The people who work had a minimum score in social dimension. Parents with 3-4 children had a high score in all domains but the ones with more children (Forrester *et al*., 1992; Schleifer *et al*., 1989) had the least QOL scores.

DISCUSSION

Major diseases such as cardiovascular diseases especially MI cause many disabilities in patients. Therefore, it will reduce quality of life in such individuals (Mazeika, 2000; Suzuki *et al*., 2005). There exists many ways to promote QOL in patients. Interventions in life and habits may create constant changes in QOL. Dugmore *et al*., (1999) showed that, there exists a significant relationship between QOL and participation in rehabilitation program. Meyer and Laederach-Hofmann (2003) suggested that in patients with stable chronic heart failure, significant improvements in both generic and disease-specific quality of life related to improved exercise tolerance can be achieved within 12 weeks of comprehensive rehabilitation.

Also, progress in physical and mental dimension is seen in rehabilitation post MI patients (Dugmore *et al*., 1999).

In this study, we showed a promotion in QOL and physical dimensions. Both of questionnaires, which we used, showed physical promotion and it is very similar to Dugmore study. Therefore, it seems that CR program promote physical domains of QOL in post acute MI. Also, MacNew questionnaire showed that QOL in CRG is better than NRCG. The MacNew questionnaire is a reliable and valid method of assessing changes in health-related quality of life among populations (Dempster *et al*., 2004) and Farsi version of this questionnaire in our study and another study had a good reliability (Asadi-Lari *et al*., 2003) and this subject conducts us to adhere to this opinion: CR programs cause a higher QOL.

In this study we found that, there are no significant changes in mental, emotional dimensions of QOL. It may be due to translation to Persian language (Farsi) or cultural diversity.

Min *et al.* (2002) in Korea, suggest that the Korean version of WHOQOL and WHOQOL-BREF are valid and reliable in the assessment of quality of life and that physical domain is contributing most and social and spiritual factors are contributing least to the quality of life in Koreans. In the present study, we had a similar result about validity and physical domain and social and psychological domain as well, but we did not have significant differences in total score by WHOQOL-BREF. Saxena *et al.* (2001) in Department of Mental Health and Substance Dependence, World Health Organization, mentioned that Significant differences on mean (WHOQOL-BREF scores) were found between centers, but rank orders of item for their importance showed highly significant correlations between centers. Based on these results more studies with bigger sample size are need for measuring of validity and reliability of Farsi version of WHOQOL-BREF questionnaire.

On the other hand, this study indicates that the grouping of items in this questionnaire may be modified and improved to provide more useful indicators of health-related quality of life based on Persian culture and Iranian definition of QOL.

CONCLUSION

In conclusion, CR promotes physical domain of QOL in post MI patients and it is recommended to use specific instruments for this kind of studies.

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