General Health Variations, in patients with MI, Longitudinal Case-Control Nested Design Study.

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Abstract: Studying the status of general heath in patients suffering from heart failure is crucially important taking the increasing prevalence of this disease and its impacts on total lifestyle of the patient and his/her family. This study aims at comparing the general health of patients with acute heart failure with control group during the outbreak of failure and three months after the failure. This study was conducted based on a linear case-study comprising subjects of control and den-like respondents over 83 patients suffering from heart failure and 83 people as the accompanies or neighbors of patient who are consistent with him/her in terms of gender and age were selected as the control group. From the beginning of patient's admission and three months later, they were studied with the GHQ28 Standard questionnaire. The data was analyzed using SPSS software and the core indices, scatter and student x^2 and t tests. 78 percent of patients and 22 percent of control group had difficulties with respect to general health. The general health of patients had a significant difference in the beginning and three months later. However, this difference was not significant in the controls. During three months follow up, the patients had a lower general heath in comparison with the control group. This difference increased after three months. The probability of incidence of heart failure in patients having general health problem was 4.85 times more than other individuals. General health problems are considered as the effective risk factors for the incidence of heart failure and exacerbating it. It is necessary to take the trainings about how to control mental pressures and promotion of general health into consideration in order to prevent from MI and also its better recovery.
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1. Introduction

Cardiovascular diseases are amongst the most common mortality reasons in the majority of the world's countries; more than 30 percent of fatalities happen in the industrial countries of the world caused by these types of diseases. Studying general health conditions of the patients suffering from heart failure has a high significance considering the increasing prevalence of this disease and its impacts on the patient's lifestyle and his/her family. The person affected by this disease may be faced with total changes in his/her family relations, job, values, physical and social ability and also his/her own self care; namely, his/her general health will deteriorate (1). The cardiovascular diseases not only have included a high rate of mortality, it has also brought about some constraints in the long-term in people's lives due to having a disabling nature accompanied by developing some disorders in patient's general health and also it will result in patient's shorter lifetime(2). According to report given by World Health Organization in 1996, it has included around 20 percent of the mortality reasons and this amount reaches 50 percent of the total mortalities rate in developing countries. The American Heart Association also estimates that about half of the people who survive are fired from their works because of having a low level of general health and they impose the maximum possible medical costs to their societies(3). Conducting a study with the objective of determining the clinical results of general health improvement resulting from lifestyle moderation program in patients suffering from arteriosclerosis, Rutledge et al. demonstrated that taking part in the lifestyle change program which includes exercise, pharmacotherapy, consultation and diet and stress reduction techniques play a highly major role in reducing weight, increasing capacity for exercising and reducing risk factor and enhancement of the satisfaction level in the patients(4). In Iran, the total rate of mortality caused by heart failure has exceeded from 24.4 percent in 1979 to 38 percent in 1990. The majority of the deceased have died with the incidence of the first heart failure and/or with the second failures during the first 28 days after the attacks (5). Reducing the age of death caused by

cardiovascular diseases imposes great expenses upon the society, as in 2006, the average age of the patient has amounted to 57 years the majority of which consist of male patients(6). New supporting treatments in order to control heart failure will result in increasing the number of patients survived from heart failure. The study showed that the quality of the life in patients have been decreased from six to thirty month after the first acute heart failure. This reduction in physical scales was more than that of mental ones. In addition, quality of life was reduced by aging and also in female patients it was lower in comparison with male patiants (7).

Thus, in light of the aforesaid discussion, the present study was designed and implemented with the objective of identifying changes of the general health in patients suffering from acute heart failure compared with control group within a three month follow-up period.

2. Material and Methods:

This is a longitudinal case- control study. The patients with diagnosis of heart failure who were hospitalized at the cardiac intensive care unit as the case group and individuals consisting of the associates, the relatives and/or his/her neighbors who had not have any cardiac disease records became consistent with the patient in terms of gender and age group and were followed up and studied as the control group within three months in terms of their general health. This study from month of May 2007 began within the framework of a research plan and ended after two years. The general health measuring tools has been a questionnaire containing 28 questions (GHQ-28) standardized and localized for I.R. Iran. This questionnaire is considered as the best and simplest general health measuring tool. Goldberg obtained 84 percent of sensitivity and 84 percent of specificity while assessing the questionnaire (8). This questionnaire has also been translated in form of various samples. In a study conducted by Noorbala et al, this questionnaire has had 84.2 percent of sensitivity, 94.4 percent of specificity and 7.8 percent of error (9).

The scoring of questionnaire including 28 general health questions is in Likert's grading containing 4 options and having values (0, 1, 2, and 3). The questions 1 to 7 which evaluate bodily disorders, questions 8 to 14 evaluate level of anxiety and sleep disorder, questions 15 to 21 ask about the zone of disorder in social function and questions 22 to 28 evaluate zone of depression. The range of scoring of each zone was from zero to 21 and the total score was placed between zeros to 84. Higher scores indicate having general health problems or its areas. The cut-off point of probability of existence of

disorder in each one of four areas score 6 or more was considered, and as per total score for level of general health, being scored higher than 21 for the females and higher than 22 for the males were considered (6, 10-14). General health in total and in separation of the zones was calculated in the beginning and end of study in both subject and control groups and it was compared. The sampling was based on accessible sample, objective-oriented and all patients who were diagnosed as having acute heart failure and hospitalized in cardiac intensive cares ward of Imam Sajjad hospital were questioned until the time of completion of sample size. The size of sample was estimated by considering the main goal of the research and the research type and considering the maximum sampling error of α=0.05 and maximum estimation error: d =0.1 and by taking the difference of existence of problems in general health of the patients suffering from heart failure into account and the control group: p=0.70. Considering the similar studies, the value of 5 was estimated equal to 88 persons for every group considering 10 percent of loss during follow-up process of 92 people.

In this study, 92 patients diagnosed heart failure and 92 people as controls were studied. During the follow-up, six people of the patients died and 3 controls were inaccessible during the study and the relative patients were also removed from the study. In addition, six controls whose patients had died were omitted from the study. In total, 83 patients and 83 controls were completely followed up for three months. The data gathered using SPSS software, version 16 was analyzed. In order to describe data, core indices and data scatter and the frequency distribution table and flowcharts were used and for data analysis, student x2 and t tests were used; Also, in terms of having health problem at each level, the ratio of the total general health to probability with about 95 percent of confidence interval was evaluated and reported.

3. Results:

In this study, 83 patients and 83 controls consistent with the patients were studied and followed up. Among the patients, 32 persons (39%) were female and 51 persons (61%) were male. The average age of the controls was 61.7 years and the cases were 61.1 years without having any significant difference. The patients' ages during the incidence of failure was 66.5±1 in females and 56.2±1 in males which had a significant difference (p = 0.002). In the present study, the epidemiologic factors like age, gender, economic status, education, place of living based on city and village and marital status did not have a significant relationship with general health status. 59 percent (49 persons) of patients had general

health problems, namely, 45 percent (14 persons) were female and 74 percent (38 persons) were male. The level of disorders of general health in the subject group during the first step of the study was 59 percent (49 persons) and three months later, it reached 63 percent (52 persons) which had a significant difference (P=0.012). While, the level of general health problems did not show any significant difference for the controls at the start of the study (23 percent for 19 persons) and three months later (24 percent for 20 persons) (p>0.05). The level of general health disorder at the start of the study showed a significant difference with controls (Fig 1). Probability ratio and 95 percent of confidence interval of incidence of heart failure in those individuals suffering from disorders (8.08 and 1.62) had been 4.85 times more than those individuals with no general health disorders. The probability ratio and related confidence interval within areas of general health have been presented in (table 1).

4. Discussion:

The objective of this study is to identify the changes of general health status and its zones in patients diagnosed having acute heart failure and comparing it with status of general health in healthy individuals being consistent with them within three follow-up months. The findings showed that the status of the total general health of patients and also within the first three zones: bodily complaints, symptoms of anxiety and insomnia, social malfunctions have had a significant difference at the start of heart failure's incidence. It can be concluded that those suffering from general health problems or its zones have had a significantly more chance or probability of taking the heart failure. The similar studies have also shown that the status of general health of individual relate to the diseases (7-9, 15), in addition, the incidence of disease and its continuance will result in the severity of disorder in general health status and vice versa (16-19). This chain of severities exacerbates and this leads toward higher patients' sufferings and ultimately ends in their deaths. The normal health status of controls as compared with the normal status of the society achieved by research conducted by Noorbala et al. 6.8 has better conditions; while the status of general health of patients has been worse than in comparison with the normal status of the society. These days, in developed countries, the training courses related to life skills and specific behaviors in order to prevent from incidence of diseases is held prior to incidence of diseases in terms of vulnerability, taking the epidemiological conditions into account, for the society individuals (2,

11, 13, 17 and 20-21). Furthermore, for the patients suffering from various diseases, some consultants have been planned, have active presence and render services in order to render mental, societal and rehabilitation supports (2, 14). While, this matter has not been witnessed or existed in our country yet.

During the study, the general health status of the patients significantly exacerbated after three months. Whereas, the general health status of the controls have not significantly changes in the start and after three months. It may be concluded that after passage of three months, the patients' general health has suffered from disorders and has made them prone to getting other diseases or the second failure. In the present study, epidemiological factors like age, gender, economic status, education and place of living (city and village) did not have a significant relationship with the general health status. It seems that one of the main elements of incidence of any disorder in general health is how the individual thinks about the principle of life and this issue results in some enormous changes being made in his/her behavior and will result in outbreak of many diseases including the heart failure. This behavior did not have a significant relationship with factors like age, gender, marital status, economic conditions and other factors. Whereas, according to study of Tofighian et al, women who had gotten heart failure were more in danger of disorders of general health 7. These results were consistent with the other similar studies (5, 16, 19-23).

The necessity of more attentions paid by the healthcare affaires authorities and trustees in regards with the mental health category and general health of the people of society, planning for training necessary skills to patients and their families in relation with the importance of mental health and introducing elements affecting the incidence of heart failure. Making use of the mass media in line with making the society widely informed about the aforesaid items.

Table 1: Comparison of general health variations in MI patients with their control person's within three months follow up.

| Zone	Time of study	Controls	Cases	Sig , RR *, 95%CI
General Health Disorder	Begin of study	17(21%)	49(59%)	$x2= 40.21$ df=1 p<0.001 RR= 4.85, 95%CI=(1.62, 8.08)
	3 months latter	16(19%)	52(63%)	$x2= 41.91$ df=1 p<0.001
First Zone bodily disorders	Begin of study	17(20%)	51(61%)	$x2= 41.51$ df=1 p<0.001 RR=5.76 , 95%CI=(1.87, 9.65)
	3 months latter	17(20)	58(70%)	$x2= 44.66$ df=1 p<0.001
Second Zone anxiety and sleep disorder	Begin of study	7(7%)	41(49%)	$x2= 32.01$ df=1 p<0.001 RR=4.78, 95%CI=(1.92, 7.92)
	3 months latter	6(7%)	57(69%)	$x2= 41.1$ df=1 p<0.001
Third Zone disorder in social function	Begin of study	17(21%)	35(42%)	$x2= 20.18$ df=1 p<0.001 RR= 2.83, 95%CI=(1.16, 4.57)
	3 months latter	16(19%)	41(49%)	$x2= 22.03$ df=1 p<0.05
Forth Zone Depression and Suicide thinking	Begin of study	17(20%)	11(13%)	$x2= 7.01$ df=1 p<0.05 RR=1.66, 95%CI=(0.65, 2.74)
	3 months latter	17(20)	13(16%)	$x2= 7.99$ df=1 p>0.05

* RR: Relative Risk
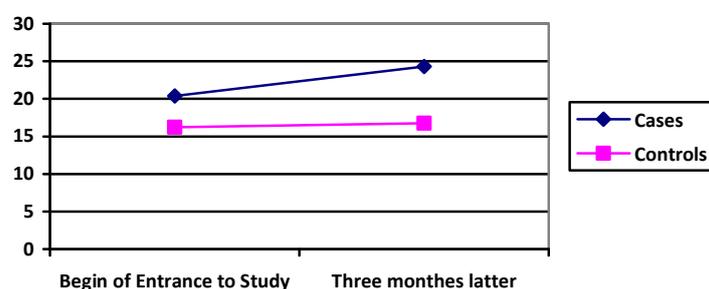
Fig 1: Illustration of general health variations in MI patients with their control person's within three months follow up.

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