A COMPARISON OF PSYCHOLOGICAL STATUS OF PATIENTS PRE AND POST CORONARY ARTERY BYPASS GRAFT SURGERY

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Aim. Coronary artery bypass grafting (CABG) is a procedure used to help improve and save the lives of thousands of coronary artery diseases patients every year. Measuring psychological status of patients, significantly contributes to understanding patient perceptions of outcomes attributable to this surgery. The aim of this study was comparison of psychological status s of patients before and 3 months after CABG.

Material and methods. In this cross sectional study a total of 120 consecutive patients who submitted to CABG were examined a few days before and 3 months after CABG at the Ekbatan hospital in Hamadan/Iran in 2012. The SCL-90 Questionnaire was used to measure psychological dimensions pre and post CABG. Data analysis was performed using SPSS version 18. Paired t-tests were used to compare pre-operative and postoperative SCL-90 scores.

Results. Significant differences were found between before and after CABG in patients' scores of somatization, obsession-compulsion, interpersonal sensitivity, depression and Anxiety subscales ($p<0,001$) of the SCL-90 Questionnaire.

Conclusion. Preoperative assessment could identify patients at risk for clinical levels of postoperative psychological problems. Detection of psychological symptoms during the pre- operative evaluation was essential for diagnostic orientation and, if needed, counseling and therapeutic interventions could be instituted.

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Key words: coronary artery bypass, psychological status, anxiety, depression, somatization.

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СРАВНЕНИЕ ПСИХОЛОГИЧЕСКОГО СТАТУСА ПАЦИЕНТОВ ДО И ПОСЛЕ КОРОНАРНОГО ШУНТИРОВАНИЯ

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Цель. Аортокоронарное шунтирование (АКШ) — это вмешательство, используемое чтобы помочь улучшить и ежегодно сохранять жизни тысяч пациентов с ишемической болезнью сердца. Измерение психологического статуса пациентов значительно способствует пониманию восприятия пациентами результатов лечения. Целью данного исследования было сравнение психологического статуса больных до операции и спустя 3 месяца после АКШ.

Материал и методы. В это кросс секционное исследование вошли, в общей сложности, 120 последовательных пациентов, которые были обследованы за несколько дней до и 3 месяцев после выполнения АКШ в больнице Ekbatan в Хамадане (Иран) в 2012г. Использовался вопросник SCL-90 для измерения психологических измерений до и после АКШ. Анализ данных проводили с использованием пакета программ SPSS версия 18. В паре т-тесты были использованы для сравнения предоперационного и послеоперационного количества баллов вопросника SCL-90.

Результаты. Значимые различия были обнаружены между значениями баллов до и после АКШ у пациентов по значениям: соматизация, навязчивость-принуждение, межличностная чувствительность, депрессия и тревожность опросника SCL-90 ($p<0,001$).

Заключение. Предоперационная оценка может выявить пациентов с риском клинических уровней послеоперационных психологических проблем. Можно сделать заключение, что выявление психологических симптомов во время предоперационной оценки имеет большое значение для диагностической ориентации и, при необходимости, консультирования и терапевтических вмешательств.

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Ключевые слова: аортокоронарное шунтирование, психологическое состояние, тревожность, депрессия, соматизация.

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Coronary artery disease (CAD) and stroke are the first and second leading causes of death in middle-income countries [1]. Iran possibly has a higher burden than other countries in this region [2]. Coronary artery disease (CAD) is a leading cause of mortality, morbidity and disability with high healthcare costs in Iran. It accounts for nearly 50 percent of all deaths per year [3]. Coronary artery bypass graft (CABG) surgery is one of the CAD treatments [1]. And also, it is one of the most commonly performed surgical procedures worldwide, intended to treat ischemic heart disease and alleviate angina pectoris [4]. In Iran, 60% of the total open heart surgery is coronary artery bypass surgery [5]. The benefits of coronary artery bypass graft surgery with respect to survival, improved ventricular function, freedom from angina in coronary artery disease (CAD) populations are well

established [1], besides reducing the likelihood of future heart attacks and prolonging life-expectancy. Another goal is to improve health-related quality of life and psychological well-being. After successful surgery the majority of patients can have an improved everyday life, with increased performance in physical, social and sexual functioning and decreased levels of depression, anxiety, fatigue and sleep [6].

The negative emotional reactions are frequent among CAD patients [7, 8]. And also, CABG surgery is a major incident with a main psychological and emotional impact on patients and their families [9]. Numerous prospective cohort studies focus on the short and long term outcome of CABG surgery. CABG is a physical and psychological stress and the surgery is as a life- threatening incident for patients who are along with adapting problems and hospital schedules, they feel suffering and lack of control and hospitalization separates them from their relatives, friends and everyday life situation [10,11].

In a prospective study, 18,5% of MI patients were suffering from a depressive disorder, but depressive symptoms have been reported in as many as 47% of CAD patients [12]. Whooley (2006) reported that depressiveness is presented in 20% of CAD outpatients, and as 50% of patients recently hospitalized for CABG surgery [13]. And also, evidence suggests that between 30% and 40% of CABG surgery patients experience a form of depression (i.e., major, minor or dysthymia) immediately leading up to and after surgery [11, 14]. But other studies have identified positive changes in patient's physical health and mental health after CABG [15, 16]. Anxiety has similar consequences of depression in CAD patients and the prevalence of it is reported to be higher in these patients than in the general population [7, 8]. The role of anxiety as a prognostic factor in the development of adverse cardiac events among patients with CAD is not well understood [17]. anxiety has also been suggested as a potential predictor of negative outcome on post-CABG recovery, but results are inconsistent and the effects of anxiety are sometimes difficult to differentiate from the effects of depression [18].

Recent study has suggested that early identification of depression and anxiety initiating the treatment at an early stage is important in the prevention of new cardiac events after CABG surgery and to enhance the patient's quality of life [11]. A survey on 796 cardiovascular physicians determined 71,2% of respondents asked fewer than half of their patients with CAD about depression [19].

Systematic reviews have also identified depression as a predisposing factor to increase the risk for delirium among cardiac surgery populations [20]. In the hospitalized patient, a delirious state may manifest itself as a fluctuating course of disorientation to time, place and persons, perceptual disturbances and hallucinations. Delirium is the most common psychiatric disorder observed upon admission to healthcare settings [21]. A prognostic study on 158 CABG patients showed that even when diagnostic criteria for delirium is modified to reduce bias from overlapping delirium-depression symptoms, pre-operative major depression remained associated with incident delirium after CABG surgery [22].

It is believed nursing is a profession that provides comprehensive caring based on organized system and using nursing science. Nurses evaluate and take care of a patient along with health care team on the base of their knowledge, integrated presence planning, programming and management. Impact the illness and invasive producers on health is understandable by a patient's perspective, therefore, patients' perception of health and stressors is crucial for meaningful nursing and care programs [23]. Despite the importance of identifying patient needs and psychological stressors in developing strategies of coping and effectively managing psychological aspects by health professionals, few studies have been done in this connection. When the psychological aspects are identified by health professionals, they can deal with the stressors affecting the patient by manipulating the environment and provide the appropriate care. Therefore, this study was performed to determine patients' psychological status before and 3 months after coronary artery bypass surgery.

Materials and Methods

Study Population and Protocol: This is a cross — sectional study. A non-probability convenience sample of 120 women and man of various ages was obtained from the Ekbatan hospital in Hamadan/Iran and then followed three months after discharge from the hospital with the approval of the appropriate institution to assess the patients. The inclusion criteria included patients who: (a) were scheduled for an elective CABG, (b) had no prior CABG surgery, (c) had signed an informed consent form and (d) were able to read and write Persian. Exclusion criteria included emergency CABGs and the presence of any other major medical condition, such as neurological problems, or psychotic disorders.

Permission to conduct the study was provided by the local ethic committees. Patients receive detailed written information about the study. Written consent is obtained from the subjects. Anonymity of the data is ensured by using envelopes for the completed questionnaires. Patient data solely are encoded with individual anonymous key codes. At the time of informed consent the patient was asked to provide their address and phone number for contact postoperatively. While the patients were in the hospital awaiting an elective CABG in the hospital, data collection took place in a private room with no extraneous external distractions and confidentiality was ensured when completing the questionnaire. Psychological status assessed by the Symptom Checklist (SCL-90) pre-surgery. The postoperative questionnaires were mailed to the participants with a self-addressed stamped envelope there were no identifying information or markers on the packets and they were double enveloped to ensure confidentiality.

Table 1

Result of SCL- 90 Scores of Patients with CABG

Subscale	Pre CABGs, Mean±SD	Post CABGs, Mean±SD	T	P
Somatization	1,56±0,53	1,37±0,48	8,29	<0,001
Obsessive-compulsive	1,71±0,68	1,62±0,54	3,16	<0,001
Interpersonal sensitivity	1,36±0,64	1,15±0,61	3,19	<0,001
Depression	1,52±0,59	1,35±0,59	0,87	<0,001
Anxiety	1,46±0,54	1,29±0,43	1,91	<0,001
Hostility	1,61±0,66	1,59±0,55	5,89	0,06
Phobic anxiety	1,24±0,41	1,23±0,41	0,82	0,08
Paranoid ideation	1,45±0,58	1,43±0,57	0,77	0,4
Psychoticism	1,44±0,51	1,39±0,42	7,59	0,06

Measurement tools. The instrument chosen for this study was Persian version of "The Symptom Checklist 90". The SCL-90 consists of 90-item self-report symptoms inventory that designed primarily to reflect the psychological symptom patterns of psychiatric and medical patients. It is a measure of current, point-in-time psychological symptom status, not a measure of personality. Each item of the questionnaire is rated by the patient on a five-point scale of distress from 0 (none) to 4 (extreme). The SCL-90 consists of the following nine primary symptom dimensions: Somatization (This dimension reflects distress arising from bodily perceptions.

Complaints focused on cardiovascular, gastrointestinal, respiratory, and other systems with autonomic mediation are included), Obsessive-compulsive (The focus is on thoughts, impulses, and actions that are experienced as irresistible by the individual but are of an ego-alien or unwanted nature), Interpersonal sensitivity (This dimension focuses on feelings of personal inadequacy and inferiority in comparisons with others. Self-deprecation, uneasiness, and discomfort during interpersonal interactions are included here), Depression (Symptoms of dysphoric mood and affect as well as signs of withdrawal of life interest, lack of motivation, and loss of vital energy are represented. Feelings of hopelessness, thoughts of suicide, and cognitive and somatic correlates of depression are included), Anxiety (Nervousness, tension, and trembling as well as feelings of terror and panic are included. Some somatic correlates of anxiety are also included here), Hostility (Thoughts, feelings, or actions characteristic of the negative affect state of anger are reflected here. Qualities such as aggression, irritability, rage, and resentment are included), Phobic anxiety (Phobic anxiety is defined as a persistent fear response to a specific person, place, object, or situation which is characterized as being irrational and disproportionate to the stimulus), Paranoid ideation (Projective thinking, hostility, suspiciousness, grandiosity, centrality, fear of loss of autonomy, and delusions are viewed as primary reflections of this disorder) and Psychoticism (The scale provides a continuum from mild interpersonal alienation to dramatic evidence of psychosis. Items include withdrawal, isolation, and schizoid lifestyle as well as first-rank schizophrenia symptoms such as hallucinations and thought-broadcasting) [24].

Statistical analysis. Data were analyzed by using SPSS software version 13,0 (SPSS, Chicago, IL, USA) and presented as mean standard deviation. The normal distribution of the variables was analyzed with the Kolmogorov-smironov test. The difference between the two groups was tested via Independent Student's t-tests for normally distributed variables and Mann– Whitney U test was used for non-parametrically distributed variables. The difference between the categorical variables was determined by the X2-test. Significance was defined as $P< 0,05$.

Results

The majority of the subjects (69,4%) was male and ranged in age from 40 to 76 years. The overall mean age was 58±4 years. 83% of the subjects were married, 13,2% widowed and 6% single. When questioned about their health-related habits, 31,4% of the subjects reported that they still smoked and 65% had a history of cigarette smoking, 85% did not exercise regularly. Data analyses indicated that 46,0% of the patients before and 38,7% after CABG surgery were highly anxious. 39,8% of the patients were depressed two days before and 21,8% after CABG surgery, obsessive-compulsive was 23,3% before and 18,5% after surgery. Interpersonal sensitivity was 38,1% before and decreased to 21% after surgery. Somatization was 34,1% before and 28,6 after surgery. Hostility Phobic was 18,3% before and 16,9% after surgery. Paranoid ideation was 9,8% before and 10,6% after surgery. Psychoticism was 7,6% before and 6.8% after surgery. Therefore three months after CABG surgery, there were improvements in all nine primary symptoms of patients' psychological status.

There were significant differences in somatization ($p<0,001$), obsessive-compulsive ($p<0.001$), depression ($p<0,001$), anxiety ($p<0,001$), and interpersonal sensitivity ($p<0.001$) between pre- and post- CABG surgery, but no significant differences were observed for other subscales of SCL-90. The results showed that a larger proportion of

Table 2

The relationships between the scores of SCL-90 and Sex in patients after CABG

Subscale	Female, Mean±SD	Male, Mean±SD	T	P
Somatization	1,53±0,55	1,49±0,51	2,72	<0,001
Obsessive-compulsive	1,76±0,73	1,60±0,58	2,33	<0,001
Interpersonal sensitivity	1,61±0,67	1,49±0,58	2,44	<0,001
Depression	1,57±0,64	1,45±0,49	2,84	<0,001
Anxiety	1,49±0,59	1,16±0,44	1,91	<0,002
Hostility	1,63±0,68	1,55±0,61	1,21	0,2
Phobic anxiety	1,26±0,44	1,21±0,37	2,57	0,08
Paranoid ideation	1,45±0,64	1,33±0,47	3,32	<0,001
Psychoticism	1,51±0,56	1,368±0,43	1,18	0,2

cases had psychological symptoms than 3-months after coronary artery bypass. The detailed results are shown in Table 1.

The patients were divided into 4 age groups (<40; 40-49; 50-59; and ≥60), in order to investigation the statistical influence of age groups on psychological status. ANOVA demonstrated that there were no significant differences between patients' psychological status based on age. When participants were analyzed by gender, men had a poorer psychological status than women, especially in somatization ($p<0,001$), obsessive-compulsive ($p<0,001$), interpersonal sensitivity ($p<0,001$), depression ($p<0,001$) and anxiety ($p<0,001$), ideation the results are shown in Table 2.

Discussion

An overall favorable change in terms of psychological parameters was observed between the pre-operative measurement and the three months post-operative measurement. Three months of coronary artery bypass surgery, symptom somatization, obsessive-compulsive, depression, anxiety, interpersonal sensitivity, Hostility, Phobic, Paranoid ideation and Psychoticism were decreased than before it, but there was not totally unconcerned and carefree. It was the same of other study results. The study showed that. however after successful surgery, the majority of patients can have an improved everyday life, with increased performance in physical, social and sexual functioning and decreased levels of depression, anxiety, fatigue and sleep, but an unexpectedly great number of them display only minor recovery in the field of psychological functioning or they do not show it at all [22].

Several authors have analyzed the association between CABG and psychological disorders such as anxiety and depression. The results of those like the present. The present study showed that there were significant changes from preoperative anxiety and depression statue level to postoperative levels [25, 26]. Rymaszewska et al. showed that 55% of the patients pre-operation, 34% shortly after the surgery and 32% of them after 3 months had clinically relevant high level of anxiety [27].Furthermore, In a review of literature study that anxiety was examined before and after CABG, the results showed of that from 142 consecutive patients undergoing CABG, 34,7% were clinically anxious before their operation while 24,7% were anxious after that [28]. In study of Everard et al. the result was also shown that anxiety scores of patients undergoing CABGs was significant changed between before and after the 6-month follow–up [29]. Also Esmaeeli et al. reported significant positive association between pre and postoperative statue of anxiety and pre and post-operative mental health of patients [25]. The decline in anxiety scores from pre- to post- CABGs points to the fact that patients are under psychic stress before CABG surgery [30]. But decline in postoperative anxiety was may reflected, lessening of cardiac disease symptoms, improving activity and returning to approximately normal life.

In the study of Rymaszewska and et al, thirty-two percent of patients before the CABG surgery, 28% immediately after that and 26% at follow-up were depressed [27]. Mahoney et al. reported that prevalence of depression before and also after CABGs was about 20–25%. They claimed that presence of elevated level of depressive symptoms significantly increased overall risk of major cardiac events following cardiac surgery [31].

The other studies with same results of present study, also revealed that there were occurred the reduction in psychological symptoms from preoperative to early postoperative or after 3 and 6- month -follow up [32, 33]. When patients are confronted with the news that they have to undergo CABGs as part of their treatment for coronary artery disease, they may experience great psychological distress. Towell and Nel (2010) state that patients confronted with a life- threatening disease experience intense emotions such as depression, aggression, anxiety, frustration and fear which can cause them to behave irrationally. These emotions can also activate the stress response [33]. There is no doubt that, the aim of CABG surgery should not be limited to improving the cardiac condition. It should also intend to improve the psychological well-being of cardiac patients [30]. Conversely in some other researches, there were conflicting

results. Such as in a review of recent literature, Gallagher et al. reported that anxiety level did not change from before to after surgery and remaining low to moderate level [34]. Furthermore Gallo et al. had shown significant incidence of anxiety in patients undergoing CABGs before and also after that [35].

Many studies conducted over the last 10 years had documented that the prevalence of depression and anxiety in pre and post CABGs, but little has been discussed on other psychological aspects. In spite of those, the focus of present study was revealed all numerous psychological statue symptoms. According to results of the present study three months after CABGs, the mean of Somatization, Obsessive-compulsive and Interpersonal sensitivity scores were decreased from before it.

Poor psychological adjustment following surgery can increase the likelihood of new coronary events, further hospitalizations and even death. According to the study of Cser p et al 30% of patients had reduced health related quality of life without being clinically anxious or depressed. They were existing fear of activity, fear of excitement, and give up enjoyed hobbies/activities. The author based on evidence suggested that self-perceived health related quality of life, depressive symptoms and anxiety together influence the short and long term recovery following coronary bypass surgery [36]. The results of present study also were showed a less favorable impact of after CABGs in women than men. Women showed higher rates of psychological problems than men. Previous literature on sex differences in emotional outcomes after CABG surgery has yielded same results. A number of reports have described more symptoms and poorer functioning in women than men at various times after CABG surgery, from 3 months to 5 years after CABG surgery [37-38]. In contrast, other studies showed no significant sex differences in symptoms and functional outcomes during the first year after CABG surgery [39, 40]. Additional investigation reported more adverse outcomes among women in some dimensions of quality of. These conflicting results may be explained in part by differences in methodology. Many reports like present study were also based on convenience samples that may have been too selective to provide meaningful information. In addition, many studies, both positive and negative, did not take into account preoperative differences in health status between the sexes [40].

Conclusion

Monitoring and evaluation of psychological symptoms before CABG surgery could reduce the apprehension and emotional tension experienced by CAD patients after CABG surgery, might prevent adverse psychological effects on healthy recovery, facilitating postoperative recovery and thus reducing the cost of care. Detection of psychological symptoms during the pre- and post- operative evaluation is essential for diagnostic orientation and, if needed, pharmacological or psychotherapeutic interventions can be instituted.

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