Quality of Life and Mental Disorders in Patients after Coronary Artery Bypass Grafting

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Abstract: The purpose of this study is to examine the mental disorders, Quality of life and their relationship among patients undergoing CABG. 135 patients (101 men and 34 women) are randomly selected from the population of patients undergoing CABG at 3 medical centers in Tehran, Iran between December, 2008 and May, 2009. SCL-90-R and SF-36 are used to assess the mental disorders and Quality of life, respectively. A structured interview is used to gather and investigate personal data and history of patients. Data analysis using Pearson correlation coefficient and t-tests are done. This study demonstrated that the prevalence of GSI (General Severity Index) in CABG patients is estimated to be 22.96%, (38.34% for women and 17.6% for men). Depression with 44.22% prevalence is the most prevalent mental disorder followed by sensitivity, paranoia, hostility, anxiety, obsession, somatization, phobia and psychosis. There is a significant, inverse association between Quality of life and GSI (r=-0.4, P<0.01). Even after controlling such variables as age, history of heart disease, gender, marital status, stroke, smoking, diabetes, hypertension and hyperlipidemia, GSI can still explain about 10% of variance of Quality of life. It was concluded that the prevalence of psychological distress is generally high among patients after CABG and indicate importance of evaluation and treatment of psychological distresses after CABG to prevent the decline of Quality of life.

Key words: Coronary Artery Bypass Grafting • Mental disorders • Quality of life

INTRODUCTION

Cardiovascular diseases, especially ischemic heart diseases, are the cause of large amount of premature mortality and incapacity across the world, especially in developed countries [1]. Coronary artery bypass grafting (CABG) is an established treatment procedure for patients suffering intractable angina and life-threatening ischemic heart disease [2]. The Center for Disease Control and Prevention (2000) suggests that due to medical advances having led to improved treatment of disease and a delay in mortality, measuring health outcomes with interventions needs to not only focus on how many lives have been saved, but also on how an individual's life has been improved in terms of quality [3]. Quality of life (QOL) outcomes have become a major focus for coronary artery bypass grafting (CABG), a common and effective treatment for coronary artery disease [4].

In recent years, there has been an increasing proliferation of interest in long-term psychological adaptation and in different aspects of Quality of life after CABG [2] despite the well-documented low mortality rates...
of CABG and its proven relief of signs and symptoms of angina, many patients are anxious about the procedure [5]. CABG patients may experience difficulty with depression, anxiety, physical functioning and Quality of life problems post-surgery the CABG procedure [6]. Depression and anxiety are well-recognized cardiovascular risk factors, similar in importance to smoking and hypertension and must be detected and treated [7]. These psychological disorders can affect the outcomes of cardiovascular disease by numerous pathophysiological mechanisms [7]. More than 40 per cent of CABG patients are anxious after discharge [8, 9]. Increased anxiety is correlated with postoperative pain, (1) less long-term relief of cardiac signs and symptoms, more readmissions and poorer Quality of life [1, 8, 7]. Thornton et al. concluded, changes in levels of anxiety, reflect the mental health and emotional role changes [10]. Anxiety exerts profoundly negative effect on QOL and adversely influences the outcomes of ischemic heart disease from many standpoints, an increased incidence of ischemic events [8] and higher mortality' [8, 9] worst post surgical complications [11] adverse outcomes [12, 9] anxiety is a significant independent predictor of both length of hospital stay and no routine discharge for patients receiving CABG surgery [9].

Depression may be the most studied psychosocial variable in investigations with individuals undergoing surgery the CABG procedure [6]. Depending on the population studied and the instrument used, the prevalence of major depression, as defined by the American Psychiatric Association’s Diagnostic and Statistical Manual (DSM-IV) has been estimated to be between 16% and 23% and the prevalence of high levels of depressive symptoms between 31.5% and 60% [7]. Depressive symptoms generally increase soon after hospital discharge, subsequently declining to below preoperative levels [4]. Pre-surgical measures of major depression disorder or subclinical depression have been related to subsequent morbidity and mortality [4], as well as to lesser improvement in postoperative QOL [4, 6, 7, 12, 13]. Patients’ fears before surgery were examined by Koivula et al. (2002). Koivula et al. found that the highest scores were for fears related to pain, poor or uncertain surgical outcome and having the surgery [14]. Moreover, the pre-operative psychological state was associated not only with short-term evolutions (till discharge) but also with long-term evolution [1]. Perski and associates monitored 171 CABG patients for 3 years. Among the 33 subjects with a high level of emotional distress before surgery (symptoms of anxiety, depression, asthenia), 16% experienced cardiac events during follow-up, as compared with 5% in the patients with no evidence of psychological distress. In addition, these symptoms had a significant negative relationship with the Quality of life 1 year [15].

The purpose of this study is to examine the mental disorders, Quality of life and their relationship among patients undergoing CABG.

**MATERIALS AND METHODS**

135 patients (101 men and 34 women) are randomly selected from the population of patients undergoing CABG at 3 medical centers in Tehran, Iran between December, 2008 and May, 2009.

The study was approved by the ethic committee in research the Tehran University of Medical Sciences; potential patients for the study were identified through the primary interview according to structured research scheme. Each patient gave written informed consent to participate. The patients were screened for study inclusion and exclusion criteria. Inclusion criteria were included ability to understand Persian, ambulatory before surgery, ability to respond to an interview situation and exclusion criteria included history of a major co morbidity (e.g., cancer, renal failure, major neurological disorder), no indication of receiving treatments for Psychiatric problems and emergency CABGs. First of all patients who came to be visited after 6 weeks of coronary artery bypass surgery for medical checkup, declared their consent by filling consent forms, then their personal information and medical history (including age, gender, level of education, marital status, date of surgery, time of diagnosis cardiac disease, Diabet mellitus, hypertension and other disease, History of psychiatric visit and psychiatric medication consumption, renal failure and corton consumption) was obtained from medical file and study questionnaire. Then in order to determine mental health, 90-item Symptom Check List (SCL-90-R) was provided for each participant which they were asked to fill it accurately. Participants, who could not fill the questionnaire by any reason, were asked to answer questions orally. 36item short form health survey (SF36) was filled using telephone after six month of surgery to determine Quality of life.

Also, validity and reliability of the SCL-90-R assessed in previous studies. In Mirzayi study in 1979 on 2241 people suffered from mental disorders, results were similar to those conducted in USA and validity of tests in all aspects was higher than 0.8 except aggression (hostility), phobia and paranoia [16]. In this study
sensitivity, significance and efficacy for SCL-90-R obtain 81%, 98.07% and 59.3% respectively. For assessing status domains on QOL in patients, we used SF -36. The SF -36 questionnaires has been extensively used to assess QOL in a variety of cardiac populations. Standard SF-36 has been translated to different languages and utilized in different studies around the world, so the reliability has been approved. In a study conducted by Dehdari which aimed to determine effect of education on Quality of life of coronary artery bypass patients and other cardiac disease, the test was reexamined (after 3 weeks) with reliability, r=0.82 and certain coefficient counted as more than 0.75 in all cases (8. (The relationships between mental health and QOL were evaluated with P-value < 0.05 was considered statistically significant. Data were analyzed using SPSS software (English version).

**RESULTS**

SCL-90-R was utilized in order to assess mental health in patient’s undergone CABG surgery and as shown in the Table 1, highest rate goes to depression, then respectively further questions, paranoia, interpersonal sensitivity, aggression, anxiety, somatization, obsession, psychosis and phobia will come next.

To assessment Quality of life and it’s dimensions, Quality of life questionnaire was applied and as shown in Table 2, means of Quality of life after 6 months of surgery determined 63.47 with 18.41 SD. in Quality of life subscales, the highest score belongs to physical functioning and respectively others go to bodily pain, social functioning, emotional and physical role functioning (role limitations caused by physical problems and emotional problems), vitality and mental health and the lowest rate goes to general health.

As shown in Table 3, Quality of life and GSI invert correlation. (P-value< 0.00, r=-0.40). Higher scores in SCL-90-R mean that patient suffers more from mental disorder and lower scores show higher mental health.

**DISCUSSION**

For there is no exact normal in SCL-90-R, scores should be interpreted carefully considering cultural and social variables. Generally mean 1 and above considers as suspicious and mean 2 and above shows psychosis. Due to determined means, patients with CAGB, considered suspicious to have depression and further questions. Sadok & sadok (2005) reported that almost one third of CABG patients experienced mild to moderate depression which can be recovered after some weeks to some months and also almost 40% of CABG patients would have depression symptoms after 6 month [17]. In this study, depression prevalence determined 42.22% (regarding sample size, depression prevalence determined 45%) which is very similar to sadok & sadok reports. Also in other studies, different rates of depression have been reported. Rymaszewska, kienja and hadrys (2003) reported that 32% of patients before the surgery, 28% immediately after CABG and 26% at fallow up were depressed [18].

<table>
<thead>
<tr>
<th>Mental health subscales</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
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<tr>
<td>Depression</td>
<td>135</td>
<td>1.17</td>
<td>0.75</td>
</tr>
<tr>
<td>Somatization</td>
<td>135</td>
<td>0.76</td>
<td>0.55</td>
</tr>
<tr>
<td>Psychotic</td>
<td>135</td>
<td>0.53</td>
<td>0.37</td>
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<tr>
<td>Anxiety</td>
<td>135</td>
<td>0.81</td>
<td>0.65</td>
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<tr>
<td>Obsessive-compulsive</td>
<td>135</td>
<td>0.65</td>
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<td>Interpersonal sensitivity</td>
<td>135</td>
<td>0.94</td>
<td>0.74</td>
</tr>
<tr>
<td>Phobic anxiety</td>
<td>135</td>
<td>0.51</td>
<td>0.65</td>
</tr>
<tr>
<td>Aggression</td>
<td>135</td>
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<td>0.73</td>
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<tr>
<td>Paranoid idea</td>
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<td>0.97</td>
<td>0.86</td>
</tr>
<tr>
<td>Further questions</td>
<td>135</td>
<td>1.13</td>
<td>0.73</td>
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<td>GSI</td>
<td>135</td>
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<th>Subscales</th>
<th>Mean</th>
<th>SD</th>
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<tr>
<td>Quality of life</td>
<td>63.47</td>
<td>18.41</td>
</tr>
<tr>
<td>Physical functioning</td>
<td>77.22</td>
<td>17.95</td>
</tr>
<tr>
<td>Role limitation caused by physical problems</td>
<td>65.00</td>
<td>23.26</td>
</tr>
<tr>
<td>Role limitations caused by emotional problems</td>
<td>65.43</td>
<td>26.73</td>
</tr>
<tr>
<td>Energy/vitality</td>
<td>54.31</td>
<td>19.48</td>
</tr>
<tr>
<td>Mental health</td>
<td>54.04</td>
<td>17.28</td>
</tr>
<tr>
<td>Social functioning</td>
<td>68.43</td>
<td>26.18</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>70.69</td>
<td>21.39</td>
</tr>
<tr>
<td>General health perception</td>
<td>52.67</td>
<td>30.58</td>
</tr>
<tr>
<td>Health consumption physical</td>
<td>63.98</td>
<td>18.34</td>
</tr>
<tr>
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<td>20.00</td>
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<th>P-value</th>
<th>r</th>
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<tr>
<td>0.00</td>
<td>-0.377**</td>
<td>depression</td>
</tr>
<tr>
<td>0.00</td>
<td>-0.330**</td>
<td>somatization</td>
</tr>
<tr>
<td>0.00</td>
<td>-0.331**</td>
<td>psychotic</td>
</tr>
<tr>
<td>0.00</td>
<td>-0.364**</td>
<td>anxiety</td>
</tr>
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<td>obsessive-compulsive</td>
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<tr>
<td>0.00</td>
<td>-0.351**</td>
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<tr>
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<td>phobic anxiety</td>
</tr>
<tr>
<td>0.0005</td>
<td>-0.239**</td>
<td>aggression</td>
</tr>
<tr>
<td>0.24</td>
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<td>paranoid idea</td>
</tr>
<tr>
<td>0.018</td>
<td>-0.203*</td>
<td>further questions</td>
</tr>
<tr>
<td>0.00</td>
<td>-0.402**</td>
<td>GSI</td>
</tr>
</tbody>
</table>

P<0.01 **P<0.0.5**
Stroobant and vingerhoets (2008) wrote that one third of the CABG patients showed mild-to-moderate cognitive-affective symptoms of depression before surgery. After the operation, approximately one-fourth of the patients still showed mild-to-moderate symptoms of depression. And patients classified with Moderate depression remained moderately Depressed throughout the follow-up study [19] some differences in these results may be due to differences in assessment methods (diagnostic tools, subjectivity of replies to self-administered questionnaires) and to the short duration of follow up.

As results of this study shows, after depression, highest rate goes to further questions which don’t count as part of the test but considered part of total discomfort. Content of questions include appetite (have or not have appetite), preoccupation with death, problems in sleep cycle (late falling sleep or waking up early) and guilt feelings. A high depression score with symptom like waking up early and not having appetite can interpret differently when this symptom does not exist. It should be noted that problems in sleep and appetite are common after CABG and considering that patients in this study still spent their recovery period (6 weeks after surgery) high prevalence rate can be counted for both somatic depression criteria and side effects of CABG. Somatic depression symptoms (fatigue, decreased appetite, decreased sexual desire and psycho-motor effects) are similar to other medical conditions which makes the diagnosis difficult. So the important thing is to pay enough attention to cognitive symptoms of depression (as hopelessness, anhedonia, worthlessness and guilt feeling) which are significant in diagnosis of depression.

High rates of prevalence in interpersonal sensitivity and paranoia interpreted regarding bio-psycho-social pattern and it has been concluded that after discharge due to process patients went through, they feel scared and insecure and face many consequent problems such as dependency to others, financial problems and etc. also CABG patients can suffer more from psychopathologies especially interpersonal sensitivity and paranoia if they had kind of personality as aggressive or paranoid or low social support and they can experience weakening social position and difficulty in mental adjustments due to Rimazeska and et al. (2003). They believed patients with preoperative depression and anxiety symptoms can suffer more from postoperative problems like emotional problems [18]. Shen and et al. (2006) found that Cardiac patients with higher hostility, lower perceived social support and engaging in more maladaptive coping appear more likely to show more severe depressive symptoms [13].

While high rates of hostility in CABG patients has been proved in many studies, so it can be predicted high too, especially in men in this study.

Although expressed anxiety in this study did not consider as disorder, but Gallagher and Sharon McKinley (2007) believed despite the generally low anxiety levels, many patients in their sample had clinical levels of anxiety before and after surgery and therefore intervention is warranted in individual patients undergoing CABG [5].

To answer the question if there is a significant relation between mental health and Quality of life, findings showed that there is a significant and invert relation between GSI and Quality of life and by 99% certainty it can be said that total coefficients indicator will explain 0.16% variance of Quality of life. Variables as age, gender, marital status, stroke history, smoking, hyperlipidemia has been controlled and still total coefficients indicator mental health can explain Quality of life significantly with 10% variance.

There is significant and invert relationship between mental health subscales (except phobia and paranoid) and QOL. Anxiety and depression with highest correlation coefficients and then respectively hypochondria, psychosis, interpersonal sensitivity, obsession and aggression had significant and invert relation to Quality of life.

Results of Goyal and et al. (2005) studies indicate that the course of depressive symptoms following heart surgery has effects on post-operative QOL above and beyond the effect of pre surgical levels of depressive symptoms. The severity and course of depressive symptoms may undermine QOL despite successful cardiac surgery [4]. Depression is not only associated with QOL cross-sectionally, but also predicts decrement in follow-up QOL independent of baseline QOL, demographic background and medical risk profiles [13].

Findings also showed other mental variables related to Quality of life and it’s dimension and among them somatization, psychosis, interpersonal sensitivity and obsession had significant and invert relation to Quality of life, although no study found in this area which means more research should be done to prove it, but some studies conducted among general population, somehow confirmed findings of the study. (Quilty and et al. [20], Eisen and et al. [21]).

In our study, the prevalence of psychological distress is generally high among patients after CABG. There is a significant, inverse association between mental health and Quality of life. Anxiety, depression and sensitivity have the most significant inverse associations with Quality of life. The result of this study shows the
importance of evaluation and treatment of psychological distresses after CABG to prevent the decline of Quality of life.

REFERENCES


