The relationship between Illness perception and quality of life in Iranian patients with coronary artery bypass graft

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Abstract

Background: Patient’s illness perception is formed base on Patient’s beliefs and perceived information about their conditions and it may influence the individual’s mental health and how the patients deal with the medical conditions. The aim of this study was to determine the relationship between illness perception and quality of life in patients with coronary artery bypass graft (CABG).

Methods: For this purpose, 82 patients (51 men and 31 women) who underwent CABG from October 2010 to May 2011 in four different hospitals in Tehran were selected as sample. The patients were evaluated with the brief illness perception questionnaire (Brief IPQ) and after three months follow up were assessed with 36-item Short-Form quality of life questionnaire (SF-36). Data was analyzed by Pearson correlation and multiple variable regression models.

Findings: A relationship between illness perception and quality of life in patients with CABG was observed ($r=0.445$, $p<0.01$). The results showed that 31% of variation in quality of life is predicted by illness perception components ($R$ Square=0.31, $p<0.01$). Regression model showed that the identity, concerns about illness, ability of illness awareness and emotions components of illness perception can predict quality of life variation.

Conclusion: This study showed that there is a relationship between illness perception and quality of life in patients with coronary artery bypass graft. These results can be helpful in devising proactive policies, identifying high risk patients and planning for psychological interventions.

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1. Introduction

Coronary artery diseases are the most important cardiovascular dysfunction and a worldwide health problem. It is predicted that by 2020, the number of cardiovascular disease-related deaths would reach about 25 million each year. Today, open-heart surgery technique is one of the effective and reliable methods in the treatment of cardiovascular diseases [1].

The main purpose of open-heart surgery is to relief from angina and increasing life expectancy of the patients. According to the findings of this study, bypass surgery increased the main factors of quality of life in patients. There are various dimensions in the structure of life quality which all of them are interrelated to each other. Three important aspects of quality of life are the physical, mental and social aspects. One of the aspect of quality of life in
recovery period of bypass surgery is mental condition of the patients and it plays a pivotal role in the condition of other aspects including social performance and continuing work and activities [2].

The studies on the quality of life in patients with coronary diseases were mostly focused on some factors such as demographic conditions, illness severity, medical intervention and artery improvement and a few studies are performed about the effect of psychological factors including illness perception and its role in life quality of these patients [3].

Patients’ illness perception or cognitive representation of illness by the patient is formed based on their beliefs and perceived information about their conditions and this factor can influence the individual’s mental health and how the patient deal with the illness [4]. When an individual is diagnosed with an illness or when a person is injured, tries to form a cognitive schema of the illness to interpret the illness for himself. This illness perception is important in guiding adaptability methods and special behaviors related to the illness including patient adherence to treatment. Generally, cognitive schema of the disease or illness perception has five aspects including patient’s beliefs about the identity of the illness, causes of illness, timeline, control, treatment and consequences of the illness. Some of the studies showed that generally in patients with negative perceptions and attitudes about their illness, this perception is associated with more inability in future, decreasing recovery speed and more use of medical services independent from the real severity of the illness [5-7].

In physical illnesses including cardiovascular diseases, illness perception determines difference in illness outcomes to considerable amount [8]. Also, the patients with equal conditions and symptoms have different perception of their illness affecting the behavior, performance and life quality of patients [9]. Considering the importance and role of illness perception in quality of life of the patients who underwent Coronary Artery Bypass graft, it seems that the relationship between illness perception and quality of life is not clear well.

Therefore, the present study was aimed to determine the relationship between illness perception and quality of life in patients with coronary artery bypass graft (CABG) surgery.

2. Methods

As the present study was aimed to determine the relationship between illness perception and quality of life in patients with coronary artery bypass graft (CABG), the research plan was of correlation type and regression analysis was used in it. 82 patients who underwent CABG from October 2010 to May 2011 in four different hospitals in Tehran were selected as sample.

These patients were selected by convenience sampling method and considering inclusion and exclusion criteria. Inclusion criteria: 1- Undergoing CABG surgery, 2- 4 to 6 weeks should be passed from their CABG surgery to have a stable condition of the patient, 3- Patients informed consent to participate in the research. Exclusion criteria: 1- Heart disease history, 2- history of CABG surgery, 3- Another serious physical illness reducing hope to living, 4- Having an important psychological disorder, 5- Being under the psychological treatments, 6- Cognitive impairment or weakness in cognitive functioning of the patient.

For data collection, the following instruments were applied: The questionnaire of demographic and medical information of the patients: Demographic and medical data of the patients were collected by a questionnaire that was arranged to collect these data. Medical information of the patients was collected from their medical file.

Health-related quality of life: The Short-Form Health Survey 36 (SF-36) was used to assess HRQL [10, 11]. The SF-36 is a generic measure consisting of 36 items that are divided into eight HRQL subscales (i.e. physical functioning, role limitations due to physical functioning, role limitations due to emotional functioning, mental health, vitality, social functioning, bodily pain, and general health). The score range for each subscale is converted into a score from 0 to 100; a high score indicates good HRQL, with a high score on the bodily pain subscale representing
the absence of pain. The SF-36 is a reliable measure, as indicated by Cronbach's alphas ranging from 0.65 to 0.96 for all subscales [12]. The SF-36 was administered at 3 months.

Brief illness perception questionnaire (Brief IPQ): The patients were evaluated with the brief illness perception questionnaire (Brief IPQ) in terms of cognitive and emotional representations of illness. The Brief IPQ has nine subscales (except the causal question) all items are rated with a 10-point (1 to 10) response scale. Each subscale assesses one component of illness perception. Each Five of the subscales assess cognitive illness representations: consequences (Item 1), timeline (Item 2), personal control (Item 3), treatment control (Item 4), and identity (Item 5). Two of the items assess emotional representations: concern (Item 6) and emotional response (Item 8).

One subscale assesses illness understanding (Item 7). Assessment of the causal representation is by an open-ended response (item 9), which asks patients to list the three most important causal factors in their illness. It should be said that as investigating the cause of this disease was not the objective of the study, question 9 was excluded from the questionnaire.

Reliability coefficient of this questionnaire by test-retest method for each of subscales was from r=0.48 (understanding) to r=0.70 (consequences) [13].

Persian version of Cronbach’s alpha was 0.84 and its correlation coefficient with R-IPQ Persian version was 0.71. Generally, the extracted results of evaluation of Persian version of this scale indicated its good and satisfactory validity [14].

This research was designed using multiple variable regression models to determine some of psychological risk factors to predict quality of life in these patients.

At first, demographic and medical data were collected from the patients who underwent CABG 4 to 6 weeks ago and attending cardiovascular clinics for medical case, then quality of life of the patients were assessed by B-IPQ questionnaire.

In follow up stage (3 months after surgery), quality of life of patients was assessed using SF-36 questionnaire by phone interview. Later, the collected data were analyzed at base-line stage and follow up stage by multiple variable regression analysis.

3. Findings

The present study was done in a sample with 82 participants. The mean score of age in participants was 59.00 ± 2.05. Frequency distribution and the percentage of the sample group in terms of demographic variables are shown in Table 1.

| Gender | Marital status | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) |
|--------|----------------|------------------------|------------------------|------------------------|
| Male   | Single         | 1 (1.2)                | 50 (61.0)              | 51 (62.2)              |
| Female | Single         | 10 (12.2)              | 21 (25.6)              | 31 (37.8)              |
| Male   | Married        |                        |                        |                        |
| Female | Married        |                        |                        |                        |
| Total  |                | 11 (13.4)              | 71 (86.6)              | 82 (100)               |

The mean score of illness perception in participants based on Brief Illness Perception Questionnaire was 6.43 ±0.33. The mean of each of subscales of illness perception was calculated separately and its results are summarized in Table 2.

The mean score of quality of life using SF-36 was 64.16 ± 3.82.
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Table 2. The mean scores of illness perception subscales in the sample

| Subscale       | Confidence interval of population average (p) | variations range |
|----------------|----------------------------------------------|------------------|
| Consequences   | 5.80 ± 0.55                                  | 1-10             |
| Timeline       | 3.32 ±0.53                                   | 1-10             |
| Personal control| 6.54 ± 0.56                                 | 1-10             |
| Treatment control| 8.89 ± 0.36                               | 3-10             |
| Identity       | 4.13 ± 0.61                                  | 1-10             |
| Concern        | 4.50 ± 0.75                                  | 1-10             |
| Understanding  | 4.54 ± 0.75                                  | 1-10             |
| Emotional response| 5.73 ± 0.76                               | 1-10             |

Correlation coefficient between illness perception and quality of life in patients 3 months after CABG surgery was significant (r=0.445, p<0.01). Correlation coefficient between each of subscales of illness perception with quality of life is summarized in Table 3.

Table 3. Correlation between subscales of illness perception with quality of life in the sample

| Subscale     | Correlation coefficient |
|--------------|-------------------------|
| Consequences | -0.236 *                |
| Timeline     | -0.249 *                |
| Personal control | 0.327 **              |
| Treatment control | 0.049                 |
| Identity     | -0.371 **               |
| Concern      | -0.103                  |
| Understanding| -0.260 **               |
| Emotional response| -0.250 **             |

* P<0.05, ** P<0.01

Predictability and the effect of each of illness perception subscales on the quality of life in patients with CABG were tested by multiple variable Regression test and its results are shown in Table 4. About 31% of variation in quality of life in patients with CABG were predicted by illness perception components (R Square=0.305, R=0.552). As it is indicated in Table 4, regression coefficients showed that predictability was dedicated to four subscales of identity, concern, understanding and emotional response, and other subscales did not have any influence in this prediction.

Table 4. Regression analysis in predicting quality of life of sample

| Quality of life | Predictor variables |
|-----------------|---------------------|
| Residual (α) b  | Consequences | Timeline | Personal control | Treatment control | Identity | Concern | Understanding | Emotional response |
|                 | 65.946             | -0.207   | -0.934           | 0.85              | 0.430    | 2.119   | 1.169        | 0.993               | -1.372               |
| Beta            | -0.030             | -0.129   | 0.124            | 0.040             | -0.335   | 0.229   | 0.193        | -0.272              |
| t               | 5.698**            | -0.249   | -1.104           | -1.040            | 0.377    | 2.929** | 1.837*       | 1.934*               | -2.219*              |

* P<0.05, ** P<0.01

4. Discussion and conclusion

The regression analysis results showed that with 99% confidence interval, illness perception variables determined about 31% of the quality of life variance. In other words, the results indicated that the quality of life is affected by illness perception of an individual.
Evidences showed that in a wide range of diseases (acute and chronic illnesses including Multiple Sclerosis, Huntington and diabetes), the individual’s belief about the nature of disease, consequences, control, timeline and causes influenced the determination of healthy behaviors and the quality of life [15, 16].

Generally, the findings of the present study were consistent with the results of studies conducted by Petrie et al. [17] about the illness perception and recovery in patients with heart disease; studies of Murphy et al. [18] about the pain, disability and illness perception in patients with Rheumatoid arthritis and finally with the findings of Dempster et al.’s study about mental health in patients with Oesophageal cancer [19].

Negative perception of disease symptoms can raise the severity of symptoms and altering these behaviors or perceptions or both can treat the symptoms. Indeed, any belief and cognition of the patient about disease and some behaviors such as fear and concern about disease can be effective on the symptoms.

It is interesting that even by targeting illness perception in psychological interventions, symptoms can be reduced. For example, Petrie et al. in their study showed that the interventions designed to change patients’ perceptions about the illness can result in an improved functional outcome following myocardial infarction (MI). In this study, at the 3-month follow-up period, patients in the intervention group reported a significantly lower rate of angina symptoms than control subjects. Indeed, they could reduce the symptoms of patients in long-term period by intervention in illness perception [20].

Furthermore, in recent studies which were performed on 749 patients with irritable bowel syndrome (IBS), it was shown that patient’s level of concern about the disease has significant association with the disease severity [21].

Here the studies of Ruston et al and Horne et al on the patients with myocardial infarction showed that the patients who searched medical aid later were those their experience about cardiovascular symptoms was not consistent with their perception of myocardial infarction [22, 23].

Generally, people with chronic diseases form some cognitive representations of disease in their cognitive system that external and internal variables such as attachment styles and personality factors, social environment and demographic factors have crucial role in their formation. These factors with illness threat, affect the perception of the patient about the illness identity, causes, treatment or control, and its consequences [24].

Thus, a person with positive cognition of his illness can understand and analyze realistically the symptoms and other dimensions of the illness. Positive illness perception that is with perception of illness control, symptoms and emotions, results into suitable treatment. And so the recovery of illness leads into more positive perception. Therefore, it is expected that a person with positive perception about the illness has high quality of life.

By considering such studies and focusing on the fact that in the present study, the effect of illness perception on the quality of life of patients with CABG was supported, it can be expected that considering different aspects of illness perception in therapy protocols of these patients can be useful to improve the quality of life. Therefore, in psychological interventions, considering the negative perception of patients, to reduce symptoms and negative outcomes of the illness, increasing patient admission and improving the quality of life are proposed.

The present study has certain limitations that need to be taken into account when interpreting the conducted experiments’ findings.

Since the population size of these experiments is relatively low, the current study had some limitations in this regard, thus, the new studies with bigger sample sizes are recommended.

Also, the data were collected by self-report instruments and probable bias of this method is one of the limitations of the study.

The results of the current study can be helpful in devising proactive policies, identifying high risk patients and planning for psychological interventions.

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