METHOD

The primary aim of the present study was to compare married male and female on recovery from bypass surgery and to further understand the relationship of Recovery Process with Psychological Well Being, Optimism, Marital Adjustment, Stress and Coping Styles.

LAYOUT OF THE SAMPLE

150 Married Coronary Bypass Surgery Patients

75 males

75 females

SAMPLE

The total sample comprised of 150 bypass surgery patients further grouped into two groups i.e. 75 married males and 75 married females. Chosen subjects were in the age range of 45 to 65 years. The following 4 hospitals, namely, Shahid Rajayi Hospital, Shohada Tajrish Hospital, Baghiyatollah Hospital and Imam Khomaini Hospital in Tehran were selected for collecting the sample. Consent was obtained from the participants and confidentiality of results was promised. To select the sample, purposive sampling technique was used.

Inclusion Criteria

- Patients having undergone bypass surgery at least 3 to 6 months ago were selected. This criteria was chosen after discussion with doctors.

- Keeping in view the prevalence figures of CHD patients requiring surgery, the age range was kept between 45-65 years.
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- Married individuals were selected because marital status is an important factor in recovery process.
- Only literate subjects were selected.

Exclusion criteria

- Patients with any other comorbidity or psychopathology were not included in the sample.

ETHICAL CONSIDERATIONS

1. Informed consent of the participants will be obtained.
2. The confidentiality of the information given by the participants will be ensured.

TESTS AND TOOLS

The following standardized tests were used:

2. Ryff’s Psychological Well-being Scale (Ryff, 1989).
3. Life Orientation Test-Revised (LOT-R) (Scheier, Carver, and Bridges, 1994)
5. Perceived Stress Scale (Cohen, Kamarck, and Mermelstein, 1983).
6. Tehran Coping Styles Scale (TCSS) - Farsi version of COPE (Besharat, 2007).

BRIEF DESCRIPTION OF TESTS

Lock-Wallace Marital Adjustment Test (LWSMAT; Lock and Wallace, 1959)

Based on the findings of a factor analysis of their 20-item Marital Adjustment Test, Locke and Wallace (1959) created a shortened version of the Marital Adjustment Test (LWSMAT) by eliminating duplicate items and selecting items that were considered most fundamental to measure marital adjustment. This short test has 15 items, including measures of the overall happiness in the marriage, the degree of
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agreement between the spouses in various matters, how they resolve conflicts, the choice of shared activities, and their expectations about the marriage.

The authors defined marital adjustment as “accommodation of a husband and wife to each other at a given time.” The instrument first requests the examinee’s general impression of marital happiness on a continuum from “Very Unhappy” to “Perfectly Happy”. Respondents are further asked to respond to questions related to their marriage. Sample items include: When disagreements arise, they usually result in: (a) husband giving in (b) wife giving in (c) agreement by mutual give and take.

The cut-off score for the MAT is 100. Scores above the cut-off indicate stability and satisfaction in the relationship. Scores below the cut-off indicate marital or relationship distress. The total scores are the sum of each item and can range from 2 to 158 (Locke and Wallace, 1959).

The reliability and validity of the LWSMAT was originally tested among 118 husbands and 118 wives (not related spouses) recruited from the Los Angeles area (Locke and Wallace, 1959). The sample was primarily young, white, well educated, and professional. Reliability was found to be .90 using the split-half technique and corrected by the Spearman-Brown formula, indicating that this scale has high internal consistency (Urbina, 2004). Validity was supported by a significant difference between well-adjusted and maladjusted groups. Spanier (1972) reexamined the reliability of the LWSMAT and did not get the same high reliability (Cronbach’s alpha = 0.77). The range of reliability has been reported between 0.72–0.83 (Spanier, 1972; White, Stahmann, and Furrow, 1994). Freeston and Plechaty (1997) confirmed the validity of the scale by illustrating a significant difference from the satisfied and dissatisfied marriage sample for both men and women.

Recently, Jiang, Terhorst, Donovan, Weimer, Choi, Schulz, Given, and Sherwood (2013) analyzed the psychometric properties of the scale among caregivers of persons with health problems. The LWSMAT was tested for factor structure, internal consistency reliability, and construct validity. 5 extracted factors explained 60.55% of the total variance. Four interpretable factors (Contentment and Communication, Leisure and Sociality, Intimacy, and Shared Philosophy) had
Cronbach’s alpha between 0.63 and 0.74. Convergent validity ($r = -.35$ and $r = -.43$, respectively, both $p < .0001$) and discriminant validity ($r = .07$, $p = .49$; and $r = -.04$, $p = .67$) were confirmed by comparing four factors with sub dimensions of the Caregiver Reaction Assessment (CRA).

Mazaheri (1997) provided the Persian translation of the Locke-Wallace Marital Adjustment Test and administered it on Iranian couples. Since then, this Persian version of LWSMAT has been used in various studies with Iranian samples (Sadeghi, Mazaheri, and Motabi, 2010). Cronbach's alpha for this device ranges from 0.81 to 0.83 in various studies. In a recent psychometric evaluation of the Persian version of the scale, Mazaheri, Sadeghi, Motabi, and Keivan (2012) reported cronbach’s alpha of 0.89. The scale has been used in India by Singhi, Goyal, Pershad, Singhi, and Walia (1990) and Madhumanti and Sathiyaseelan (2014). It has been used in Iran by Sadeghi, Mazaheri, and Motabi (2010) and by Ghoroghi, Hassan and Baba (2015).

**Ryff's Psychological Well-being Scale** (Ryff, 1989)

The 84-item instrument consists of six subscales: (a) Autonomy (b) Environmental mastery, (c) Personal Growth, (d) Positive relationships with others, (e) Purpose in Life, and (f) Self-Acceptance. Each subscale consists of 14 items. The *autonomy* dimension assesses self-determination, independence and internal locus of control. The *environmental mastery* subscale measures one’s ability to manipulate and control complex environments. The dimension of *personal growth* measures one’s needs to actualize and realize one’s potentials. The scale of positive relationship with others assesses the ability to love, trust, and establish deep relationships. The *purpose in life* dimension is used to measure one’s sense of directedness and goals in life. Finally, the *self-acceptance* subscale assesses positive attitude held towards the self. Participants respond on a 6-point scale that ranges from “strongly disagree” (1) to “strongly agree” (6). The total score is the sum of the 84 items. High scores indicate higher psychological well being within the respective dimension. The scale takes approximately twenty minutes to complete. The reliability and validity of the scale were assessed using a sample of 321 participants (Ryff, 1989). The figures are given in Table A.
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Table A: Reliability of the Ryff Scales of Psychological Well-Being

<table>
<thead>
<tr>
<th>Scales:</th>
<th>Internal consistency</th>
<th>Test-retest reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-acceptance</td>
<td>.93</td>
<td>.85</td>
</tr>
<tr>
<td>Positive Relations with others</td>
<td>.91</td>
<td>.83</td>
</tr>
<tr>
<td>Autonomy</td>
<td>.86</td>
<td>.88</td>
</tr>
<tr>
<td>Environmental Mastery</td>
<td>.90</td>
<td>.81</td>
</tr>
<tr>
<td>Purpose in Life</td>
<td>.90</td>
<td>.82</td>
</tr>
<tr>
<td>Personal Growth</td>
<td>.87</td>
<td>.81</td>
</tr>
</tbody>
</table>

321 men and women were used for obtaining the validity measures of the scale. PWB scores were correlated with affect balance, life satisfaction, self-esteem, morale, locus of control, and depression. Results revealed that positive relations with others, autonomy, purpose in life, and personal growth were not strongly tied to prior assessment indexes, thereby supporting the claim that key aspects of positive functioning have not been represented in the empirical arena before. Furthermore, age profiles revealed a more differentiated pattern of well-being than is evident in prior research (Ryff, 1989). Therefore, the scale measures something entirely different from the measures of subjective well-being. This scale has been successfully used in India by Mohan, Sehgal and Tripathi (2007), Sehgal and Yadav (2010), Kumar and Subramaniam (2012). In Iran, it has been used by by Sehgal and Hanachi, Ali, Rezayi, and Latiff (2010) and Gholamzadeh, Hamid, Basri, Sharif and Ibrahim (2014).

**Life Orientation Test-Revised (LOT-R)** (Scheier, Carver and Bridges, 1994)

The Life Orientation Test (LOT) - Revised was developed to assess individual differences in generalized optimism versus pessimism. LOT and its successor the LOT-R have been used in a good deal of research on the behavioral, affective, and health consequences of this personality variable. The test consists of 10 items. Three items (1, 4, and 10) assess optimisms, three items (3, 7, and 9) assess pessimism, and four items act as fillers. On a 5-point Likert scale, response categories ranged from *strongly agree* to *strongly disagree*. The scores of the optimism and pessimism sub-
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Scales are the sum of the scores of the corresponding items. A total score can be calculated, adding the optimism and the inverted pessimism score.

Glaesmer, Rief, Martin, Mewes, Brahler, Zenger, and Hinz (2012) did psychometric evaluation of the scale and the Cronbach’s alpha coefficients of reliability were 0.70 (optimism), 0.74 (pessimism), and 0.68 (total score). The Pearson correlation between the sub-scales optimism and pessimism in the total sample came out to be −.20. The correlations to the total score were .73 (optimism) and −.82 (pessimism). In the sub-sample of females, the correlation between the sub-scales was −.25, while the sub-group of males showed a coefficient of −.15. Indications for convergent validity were demonstrated with depression, satisfaction with life, subjective state of health and health care utilization.

The scale showed Cronbach’s alpha of .78 in a study done by Carver, Scheier, and Segerstrom (2010), suggesting that the scale has an acceptable level of internal consistency. Jameson, Britton and Conner (2010) examined the validity of LOT-R. Criterion validity was strong; the LOT-R was significantly negatively correlated with hopelessness (r = -.65, p <.001) and depression (r = -.60, p < .001). The scale has been used in India by Hooda, Sharma, and Yadav (2010) and Mohan, Sehgal and Ghorishi (2014), and been used in Iran by Tankamaniand Haghighat (2014).

Stress Symptoms Rating Scale (Heilbrun and Pepe, 1985)

The authors selected 25 symptoms of stress from a list given by Selye (1976). It is in the form of a checklist. The subject is required to rate the frequency of each stress symptom (for the previous year) along a five-point scale ranging from “Not at all” (0) to “more than one per day”(5). The stress score is the summation of scores obtained against each symptom. The scores range from 0 to 125. Alpha Reliability for the scale was found out to be .93 (Heilbrun and Putter, 1986). Evidence for validity has come from different groups who are identified as more stressful. For example, it has been validated among depressed college women and among woman with anorexic characteristics (Heilbrun and Putter, 1986). The test has been successfully used in India by Mohan (1999,2002, 2003, 2004, 2005, 2006), Mohan, Sehgal, Bhatia and Kakkar (2000), Mohan, Sehgal and Shourie (2006), Mohan, Sehgal and Ghorishi (2014), Sehgal and Saini (2014), Singh (2014) and in Iran by Farokhzad (2014).
**Perceived Stress Scale** (Cohen, Kamarck, and Mermelstein 1983)

The Perceived Stress Scale (PSS; Cohen et al., 1983) is one of the more popular tools for measuring psychological stress. It is a self-reported questionnaire that was designed to measure “the degree to which individuals appraise situations in their lives as stressful” (Cohen et al., 1983). The PPS items evaluate the degree to which individuals believe their life has been unpredictable, uncontrollable, and overloaded during the previous month. The assessed items are general in nature rather than focusing on specific events or experiences.

Eun-Hyun Lee (2012) evaluated the psychometric properties of the scale. The original instrument is a 14-item scale (PSS-14) that was developed in English with 7 positive items and 7 negative items rated on a 5-point Likert scale. The test-retest reliability for the PSS-14 was assessed in three studies, all except one of which met the criterion of a coefficient value of >.70. In that study the test-retest reliability of the PSS-14 was evaluated only after a 6-week interval, while in the other two it was evaluated between 2 days and 4 weeks (Cohen et al., 1983).

The criterion validity of PSS was evaluated in a few studies, of which the PSS was strongly correlated with only the mental component of health status as measured by the Medical Outcomes Study- Short Form 36 (Ware, Snow, Kosinski, and Grandek, 1993). Hypothesis testing revealed that the PSS was either moderately or strongly correlated with the hypothesized emotional variables, such as depression or anxiety, as measured using the Center for Epidemiologic Studies Depression Scale (Radloff, 1977), Beck Depression Inventory (Beck, Steer and Garbin, 1988), Hospital Anxiety and Depression Scale (Zigmond and Snaith, 1983), State-Trait Anxiety Inventory (Spielberger, 1983), General Health Questionnaire (Goldberg and Williams, 1991), and Depression Anxiety Stress Scale-21 (Lyrakos, Arvaniti, Smyrnioti, and Kostopanahiotou, 2011).

Tehran Coping Styles Scale (TCSS)- Farsi version of COPE (Besharat, 2007)

The 60-item test is based on the scale developed by Carver, Scheier and Weintraub (1989). The inventory measures three broad coping styles – Problem Focused Coping, Positive Emotion Oriented Coping and Negative Emotion Oriented Coping. Items are conceptually grouped into three scales with 20 items in each scale. Each item is answered on a 4 point rating scale ranging from ‘I usually don’t do this is at all’ (1) to ‘I usually do this a lot’ (4). The scores on each of the scales may range from 10 to 40. The dimensions are shown in Table B

Table B: Showing three dimensions of Coping as measured by Tehran Coping Style:

<table>
<thead>
<tr>
<th>Problem Focused Coping</th>
<th>Positive emotion-oriented coping</th>
<th>Negative emotion-oriented coping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumental social support</td>
<td>Positive reinterpretation and growth</td>
<td>Behavioral disengagement</td>
</tr>
<tr>
<td>Active coping</td>
<td>Turning to religion</td>
<td>Mental disengagement</td>
</tr>
<tr>
<td>Restraint</td>
<td>Humour</td>
<td>Focusing on and venting of emotions</td>
</tr>
<tr>
<td>Suppression of competing activities</td>
<td>Emotional social support</td>
<td>Denial</td>
</tr>
<tr>
<td>Planning</td>
<td>Acceptance</td>
<td>Drug abuse</td>
</tr>
</tbody>
</table>

Tehran Coping Styles Scale, which was administered on a sample of 457 students from the University of Tehran, yielded Cronbach’s alpha coefficients of problem-oriented coping style, positive emotion-oriented coping style and negative emotion-oriented coping style to be 0.93, 0.91 and 0.89, respectively (Azarivand, 2012). This revealed good internal consistency reliability of the scale. Test-retest reliability came out to be 0.71, 0.65, and 0.59 for problem-oriented, positive emotion-oriented and negative-oriented coping styles, respectively. Concurrent validity of the Tehran Coping Styles was calculated through simultaneous administration of interpersonal problems and mental health scales on participants. The results revealed a significant correlation between the test scores problem-oriented coping style and
intrapersonal problems \( (r=-0.47) \); psychological well-being \( (r=0.60) \) and psychological distress \( (r=0.47, \ p<.001) \) (Azarivand, 2012). Azarivand (2012) examined reliability and validity of this scale. Test-retest reliability coefficient ranged from .66 to .79 for different scales. Convergent validity and differential validity of the scale was confirmed on the basis of correlations between subscales of the questionnaire and optimism, self-esteem, hardiness, Type A and anxiety. Tehran Coping Style has been used only in Iran by Besharat, Jabbari, Semnani, Keshtkar, and Marjani (2008).

**Recovery Process Questionnaire (RPQ) (Pourang, 2008)**

RPQ assesses patient’s recovery indices after heart surgery. It obtains medical records of patients by contacting medical officials who specialize in the area of coronary heart disease. This questionnaire has 10 items that address two scales including perceived recovery and objective recovery. Perceived recovery consists of items related to pre and post surgery pain severity, post surgery fever, sternum condition, hard-breathing, and improvement felt by the patients. The minimum score in this scale can be one and the maximum can be eleven. Objective recovery covers questions regarding the functioning of lungs, hearing, fever, sound of heart, abdominal evacuation, and wound examination. It also asks questions related to patient’s job activities and daily life functioning. The minimum score on this scale is 1 and the maximum is 10. Content validity of this questionnaire has been strongly established by some heart disease specialists (Pourang, 2008).

This questionnaire has been recommended for wide usage by the cardiologists of Shahid Rajaie Heart Center in Tehran and Shahid Beheshti University of Medical Sciences. Pain severity and dyspnea have been studied according to the table of function given by New York Heart Association and Canadian Heart Association. There are 4 classes that have been studies: Class 1: The patients suffering from cardiac disorder, but without any limitation in doing physical activities. Physical activity does not usually cause fatigue, palpitations, dyspnea or angina pain. Class 2: The patients, who have no problem during rest. However, physical activity leaves the said patients with fatigue, palpitations, dyspnea or angina pain. Class 3: The patients suffer from cardiac disorder, which causes physical inability with no agitation. The
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symptoms of cardiac failure with angina syndrome may even appear during rest. Any type of physical activity will aggravate agitation. Class 4: The patients suffering from cardiac disorder who have no physical ability and their symptoms of cardiac failure and angina pectoris may also appear during their rest.

Wound examination, coming back to life duties, coming back to work activities and abdominal evacuation were also assessed by the physician concerned.

Feeling of recovery is evaluated by the patient himself and patient recovery is assessed by asking the patient certain questions about his life conditions, life environment and career prior to surgery (Pourang, 2008). Test retest reliability of the scale has come out to be .87 (Pourang, 2008). This scale has been used in Iran by Besharat, Jabbari, Semnani, Keshtkar, and Marjani (2008).

PROCEDURE

The session started with establishing a rapport with the subjects. A general information schedule was given to obtain their demographic information. General medical report information was obtained from the doctors. The questionnaires were given in the form of a booklet. Clear instructions were given before administering every test. The subjects were assured that their results would be kept confidential and will only be used for research purpose.

INSTRUCTIONS FOR THE QUESTIONNAIRES

The following instructions were given for the tests used in the study:

1. Locke Wallace Marital Adjustment Test (MAT)

Following instructions were given for Marital Adjustment Test:

Part (A):“Circle the dot on the scale line which best describes the degree of happiness of your present marriage. The middle point, “happy,” represents the degree of happiness which most people get from their marriage. The scale gradually ranges from those who are very unhappy on one side to those few who experience extreme joy or felicity in marriage on the other side.”

Part (B):“State the approximate extent of agreement or disagreement between you and your mate on the following items. Please check each column.”
2. Ryff’s Psychological Well-being Scale (PWB)

Following Instructions were given for Ryff’s Psychological Well-being Scale:

“Below are the statements that you may agree or disagree with. Using the 1-6 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item (1-strongly disagree; 2-slightly disagree; 3-Disagree; 4-slightly agree; 5- Agree; 6-strongly agree).”

3. Life Orientation Test-Revised (LOT-R)

Following Instructions were given for Life Orientation Test-Revised:

“Please be as honest and accurate as you can throughout. Try not to let your response to one statement influence your responses to other statements. There are no "correct" or "incorrect" answers. Answer according to your own feelings, rather than how you think "most people" would answer. Choose form the following options: A = I agree a lot, B = I agree a little, C = I neither agree nor disagree, D = I disagree a little, E = I disagree a lot.”

4. Stress Symptoms Rating Scale (SSRS)

Following instructions were given for the Stress Symptoms Rating Scale:

“Rate the frequency with which you’ve experienced each of the items listed below. Take the last two weeks as your time frame. Use the following rating scale:

0- Not at all, 1 – Less than once per month, 2 – between once per week and once per month, 3 – About once per day, 4 – Between once per day and once per week, 5 – more than once per day. Indicate your answer by circling a number for each item. Be sure to answer every time. All your responses will be kept strictly confidential.”

5. Perceived Stress Scale (PSS)

Following instructions were given for Perceived Stress Scale:

“Given below are 10 statements. Please circle any one number to describe the situations. The response alternatives are: (0) Never, (1) Almost Never, (2) Sometimes, (3) Fairly often, (4) Very often.”
6. **Tehran Coping Styles Scale (TCSS)- Farsi version of COPE.**

**Following instructions were given for Perceived Stress Scale:**

“Given below are 60 statements. “Rate your responses for each item along with the following 4 point rating scale: (0) Don’t do it all, (1) Rarely do it, (2) often do it (3) Usually do this a lot”.

7. **Recovery Process Questionnaire (RPQ)**

**Following instructions were given to the doctors and medical experts:**

“This scale is divided into 2 parts. Part (A):“Dear patient please answer about your pain, dyspnea and feeling of recovery after surgery.” Part (B) (Instructions for the doctors and medical experts):“Please fill the following information about the patients which involves- Visual recovery, Lung auscultation, Fever Level, Heart sound, Lesion Examination, and Patient Recover. Assess them on a two-degree basis, such as, 1 for satisfied and 0 for dissatisfied. Assess the ventricular drain ratio that on a four-degree basis.”

**SCORING AND STATISTICAL ANALYSIS**

Scoring for all the tests was done with help of scoring keys and scoring manuals of the respective tests. Keeping in view the objectives of the study, Means, Standard Deviations and t-tests were employed. Intercorrelation analysis was done for the total sample, male and female CABG patients. Stepwise multiple regression analysis was done with three dependent variables: Total recovery process, Perceived recovery process and Objective recovery process for three groups viz. total sample, male and female CABG patients.