

Emotional intelligence, spiritual intelligence and perception of God in association with coronary heart disease

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Abstract--- *The aim of the present research was to compare coronary heart disease patients and those without the disease in the scales of emotional intelligence, spiritual intelligence and perception of God. The present study is a case-control study. The statistical population of this research is all adults aged 45 years and older who are candidates for coronary angiography referred to Shahid Rajaei Cardiovascular Hospital in Tehran who have been selected by sampling method at convenience. The sample consisted of 68 patients (36 coronary heart disease patients and 32 non-coronary heart disease patients). We used Questionnaires of Bradbury and Greaves's emotional intelligence, King's spiritual intelligence and Lawrence's perception of God to measure the scales. Findings showed that two groups of coronary heart patients and non-coronary heart patients in all subscales of emotional intelligence (self-awareness, self-management, social awareness and relationship management), all subscales of spiritual intelligence (critical existential thinking, personal meaning production, Transcendent awareness and expansion of consciousness) and the total score of spiritual intelligence are significantly different ($P < 0.05$). This is while there was no significant difference in the total score of perception of God and all subscales of perception of God except the challenge subscale ($P > 0.05$). Differences in the results of the two groups of coronary heart patients and non-coronary heart patients show that emotional intelligence and spiritual intelligence can be effective in the health and recovery of coronary heart patients.*

Keywords--- *Emotional intelligence, Spiritual intelligence, Perception of God, Coronary heart disease.*

I. INTRODUCTION

Coronary heart disease is one of the most important public health issues due to its rapid prevalence and increasing mortality (Chrisanthy, et.al, 2013). According to the American Heart Association, cardiovascular disease is predicted to be one of the top three causes of death in the world by 2030 (Bagheri, Farahani & Hassanabadi, 2019, quoted by Mozaffarian et al., 2015). Coronary artery disease is a major cause of death in most parts of the world, including Iran, and imposes high costs on society. Researches in Iran show that the rate of coronary artery disease has increased between 20 and 45% in recent years (Hadayegh et al., 2009, quoted by Aghayousafi and Shahandeh, 2012). These disorders are caused by the deposition of fats called plaque on the walls of blood vessels that carry blood and oxygen to the heart muscle (Abraham et al., 2010), which is associated with impaired mental health and psychological distress (Mommersteeg et al., 2017); they are the leading cause of death in the world, 82% of which occurs in developing countries. Iran is no exception to this rule

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and ranks first in the mortality rate (45.3% of the total mortality rate) of people over 35 years old (Biranvand et al., 2011, quoted by Shoja al-Dini et al., 2012). Many studies have shown that negative thoughts and emotions, along with other risk factors, can cause illness. However, positive thoughts and emotions can promote health and eliminate diseases (Kones, 2011). Many studies have shown that intense emotions, especially negative emotions, such as anger, hostility, depression, and stress can predict the occurrence of coronary heart disease (Tunstall-Pedoe, 2001, quoted by Chrysanti et al., 2013). The scientific study of the role of emotions in the development of cardiovascular disease in the form of systematic researches began when Friedman and Rosenman, cardiologists, observed the Type A behavior pattern in cardiovascular patients. They examined competitiveness, sensitivity to time urgency, and hostility as fundamental personality traits in this type (Friedman & Rosenman, 1974, quoted by Alipour et al., 2012). Therefore, openness of experience and ability to solve emotional problems, the ability to cope with stress and shocks, and a person's capacity to accept the facts that are defined as emotional intelligence (Goleman, 2000) have a high correlation with readiness for a variety of diseases (Bradberry et al., 2007; Quoted by Mokhtari et al., 2013). Researches have confirmed the association between emotional intelligence and health-related variables (Saklofske et al., 2003). High emotional intelligence is also systematically related to symptoms derived from self-reports and physical complaints about physical health, so that researchers have always tried to predict the role of emotional intelligence in causing physical diseases such as heart and vessels failure (Dawda & Hart, 2000). In addition to emotional intelligence, some researches have shown that there is a positive relationship between people's spiritual beliefs and their mental health (Kashdan & Nezlek, 2012). Spirituality and spiritual growth in humans and its role in various parts of life, in recent decades has increasingly attracted the attention of psychologists and mental health professionals (Koolae et al., 2013). In a research, Nadi and Sajjadian showed that meaning-orientation in purposeful life and behavior is based on spirituality (Nadi and Sajjadian, 2012, quoted by Golipour et al., 2014). King defines spiritual intelligence as a set of abilities and capacities of spiritual resources. By applying them in daily life, a person can increase his adaptability (King, 2008, quoted by Abdollahzadeh et al., 2015). Studies have shown that people with spiritual tendencies respond better to the situation they are in when faced with trauma, better manage the stress-producing situation, and have better health (Bayrami et al., 2014, quoted by Nouri Saeed et al., 2014). Studies on the relationship between spirituality and cardiovascular disease have also shown that higher levels of spirituality have been associated with less progression of cardiovascular disease (Nekouei et al., 2014). Spiritual intelligence is used to solve problems and issues related to the meaning of life and values. In fact, this intelligence is more about asking than answering; this means that the person asks more questions about himself and life and the world around him (Ghobari Bonab et al., 2007). In addition to spiritual intelligence, perception of God is one of the important components of spirituality. Many scholars believe that the notion of God is an internal psychological pattern of one's perception of God (Lawrence, 1997). From a psychological point of view, perception of God is a cognitive-emotional pattern that is formed through the child's first contacts with important people of his caregivers in life and is renewed over and over throughout life as a person grows and matures. This pattern guides one's orientation, behavior, and feelings about God. Therefore, the perception of God is a direct set of the last level of perception of the individual in abstract and transcendent matters. If we are talking about knowing people and their personalities and we want to choose a psychological structure to understand many of the psychological characteristics of people through examining it, then the person's perception of God and the image he has achieved is very important (Gattis, 2001). Accordingly, in the present research, we compared emotional intelligence, spiritual intelligence and perception of God in coronary heart patients and non-coronary heart patients.

II. RESEARCH METHOD

The present study is a case study. The statistical population of this research consisted of all adults aged 45 years and older who are candidates for coronary angiography with the ability to read and write and who have referred to the health promotion clinic of Shahid Rajaei Cardiovascular Hospital in Tehran. Sampling method in this research is sampling at convenience. In this research, coronary heart disease patients and non-coronary heart disease patients were separated according to the angiographic result. The sample consisted of 68 patients (36 coronary heart disease patients and 32 non-patients). We applied the questionnaires of Bradberry and Greaves emotional intelligence, King spiritual intelligence and Lawrence perception of God to the patients referred to Shahid Rajaei Cardiovascular Hospital in Tehran for coronary angiography (the examiner read questions for participants). After determining the result of angiography and diagnosis by a specialist, one group was diagnosed as coronary heart patients and the other group as non-patients. Finally, the data were analyzed by statistical methods.

Research Tool

Bradberry and Greaves Emotional Intelligence Questionnaire

The term *emotional intelligence* has been defined as the ability to perceive emotions and feelings, to achieve constructive emotions; it evaluates a person's thoughts, understanding of emotions, and emotional knowledge, and makes it possible to cultivate feelings and develop intelligence. In other words, emotional intelligence is a social competence, the ability to cope effectively with individuals, controlling arousals and resolving conflicts (Corsini, 2003, quoted by Alipour et al., 2012). To measure emotional intelligence, we can use the Bradberry-Greaves emotional intelligence test. This test has 28 items with four subscales: Self-awareness (self-expression, self-esteem, independence and self-fulfillment), self-management (flexibility, happiness and optimism), social awareness (realism) and interpersonal relationship management (empathy and social responsibility). The test scoring method is performed using the Likert six-point scale (Bradberry and Greaves, 2005 translated by Ganji, 2005). For scoring, if the subject scored above 71 for the self-awareness scale, above 75 for the self-management scale, above 74 for the social awareness scale, above 83 for the interpersonal relationship management scale, and above 79 for the overall scale, his/her condition will be considered good. To determine the reliability of this test, two groups of students (36 people) and (284 people - 145 boys and 139 girls) were the subject of evaluation. The reliability coefficients obtained between the scores of two runs and for the four skills of emotional intelligence and the total score in the first group are 0.73 for self-awareness, 0.87 for self-management, 0.78 for social awareness, 0.76 for relationship management and the total score of emotional intelligence is 0.90; they have significant at the level of 0.99. Examination of the data obtained from the second group using Cronbach's method shows that all questions have a significant positive correlation with the whole test and the omission of any of the questions does not significantly increase the reliability of the whole test. The results show that the reliability coefficient (consistency) of Bradberry-Greaves emotional intelligence test for the whole group is equal to 0.8313. The reliability coefficient of the test with Cronbach's alpha formula is equal to 0.822 (243 people) for boys and 0.839 (297 people) for girls. In general, the reliability coefficient of the test for both the whole group and the group of girls and boys is desirable and is stronger compared to the reliability coefficient of similar tests (Ganji et al., 2006).

King Spiritual Intelligence Questionnaire

Spiritual intelligence is a set of abilities from which benefit the individuals to apply, shape, and incorporate spiritual resources into values and qualities in a way that they achieve good daily functioning and psychological well-being (Amram and Dryer, 2007). Due to its action in integrating intellectual intelligence and emotional intelligence, the spiritual intelligence should be developed after these two intelligences. This integrating action of spiritual intelligence facilitates the interaction between the processes of logical thinking and emotion, and also has the ability to completely change the result

of their interaction, thereby leading to personal growth and transformation (Zohar & Marshall, 2000, quoted by Afrooz et al., 2009). In this research, we used the King Spiritual Intelligence Questionnaire, designed and developed by King in 2008, to measure spiritual intelligence. This questionnaire has 24 items and has four subscales: critical existential thinking (critical capacity oriented to the nature of existence, reality, world, space, time, reflection and other existential issues such as metaphysical existence, and the capacity to think about non-existential issues in relation to Self-existence), the personal meaning production (the ability to extract personal meaning and purpose from all physical and mental experiences, including the capacity to create and cite the purpose of life), transcendent awareness (capacity to identify transcendent dimensions) and the development of consciousness (ability to enter to higher levels of consciousness (such as complete consciousness, cosmic consciousness, unity). The higher is the score in this questionnaire, the higher the spiritual intelligence (King, 2008). In their research, Hamidi and Sedaghat obtained the validity and reliability of this questionnaire by split-half and Cronbach's alpha method by 0.79 and 0.87, respectively (Hamidi and Sedaghat, 2012). In the research of Raqib et al. (2010), the reliability of this scale was estimated to be 0.88 using Cronbach's alpha coefficient. To estimate the validity of convergence, we used simultaneously the Ghojari Bonab Spiritual Experience Questionnaire. The correlation coefficient of these two questionnaires was 0.66. We used exploratory factor analysis and first-order confirmatory factor analysis to calculate the validity of the scale structure. The results showed that this scale is a reliable tool for measuring spiritual intelligence; due to its validity and reliability, we can use it in educational and research settings like universities.

Lawrence Perception of God Questionnaire

Many scholars believe that the notion of God is an internal psychological pattern of one's imagination of God. In fact, it is a process of combining memories and organizing a large number of memories from different sources and in relation to God (Lawrence, 1997). The Imagination of God Scale is a reconstruction of Lawrence's 72-item scale, which was translated into Persian by linguists. Lawrence constructed the scale as a subset and abbreviated form of the God Imagination Questionnaire. It includes 72 items and 6 components of impression (how much do I influence God and His will?), Divine providence (how much can God influence me?), Presence (is God here and now for me present?), Challenge (does God want me to grow and prosper?), Benevolence (does God want what is best for me?), Acceptance (do I deserve to be loved by God?). Its purpose is to evaluate the mental image of people towards God. The scoring of this questionnaire is in the form of a 4-point Likert scale from *I strongly agree* to *I strongly disagree*. To score this questionnaire, a score between 72 and 116 indicates a low perception of God in a person, a score between 116 and 160 indicates a moderate perception of God in a person and a score between 160 and 216 shows a high perception of God. Lawrence (1997) reported a Cronbach's alpha coefficient that indicates the internal consistency of the test questions for each component by 92% -92% -94% -86% -90% and 91%, respectively. In 1991 (quoted by Sadeghi et al., 2008), Lawrence administered the 156-item, 8-item Imagination of God Questionnaire on a sample of 1,580 American adults and standardized it. In his research, Manock obtained the reliability of this scale by Cronbach's alpha coefficient (0.82) (Manock, 2003). Sadeghi also reported the validity of this scale in a pilot study conducted on 30 students by Cronbach's alpha of 0.86. The validity of this scale was calculated using the content validity method and then the validity of the test was measured by the re-implementation method. Pearson correlation coefficient for calculating the correlation between the scores of the two tests was 0.87. In addition, the validity of the questionnaire in the final research was obtained through Cronbach's alpha coefficient (0.89) (Sadeghi et al., 2008).

Data analysis method

We used Kolmogorov-Smirnov test to evaluate the normality of the data. Due to the abnormality of the data distribution, the mean, mode, quartile domain and frequency percentage were used to describe the qualitative data. Using

SPSS software, we used Man-Whitney test to compare the two groups of coronary heart patients and healthy participants in terms of emotional intelligence, spiritual intelligence and perception of God. We have used also linear regression to investigate the effects of demographic characteristics on subscales.

III. FINDINGS

Underlying findings

Due to the lack of normal distribution of data, we used the indices of frequency, mean, mode and quartile domain to investigate descriptive statistics. Descriptive findings indicate that the group size of patients is 36 and that of healthy individuals is 32. The median age is 56 years in the patient group and 45 years in the healthy group. According to Table 1, the findings show that age, gender, marital status, family history of heart disease, blood pressure, alcohol consumption, history of diabetes and smoking have a significant difference between the two groups ($p < 0.001$).

Table 1- Comparison of underlying characteristics in the two groups under study

Variable	non-coronary heart disease group (n=32)		Coronary heart disease group (n=36)		Significance level
Age	Median (quartile domain): (45-53.75)45	Mode:45	Median (quartile domain): (50.25-64-75)56.50	Mode:45	001.0<
Weight	Median (quartile domain): (59.50-78.50)71	Mode:80	Median (quartile domain): (68-85)80	Mode:80	410.0
Gender	Frequency (frequency percentage): Female: 23 (71.9%) Male: 9 (28.1%)		Frequency (frequency percentage): Female: Male:		001.0<
Marital status	Frequency (frequency percentage): Single: 13 (40.6%) Married: 19 (59.4%)		Frequency (frequency percentage): Single: Married:		001.0<
Family history of heart disease	Frequency (frequency percentage): With history of heart disease: Without history of heart disease:		Frequency (frequency percentage): With history of heart disease: Without history of heart disease:		001.0<
Blood pressure	Frequency (frequency percentage): With Blood pressure: Without Blood pressure:		Frequency (frequency percentage): With Blood pressure: Without Blood pressure:		001.0<
Alcohol consumption	Frequency (frequency percentage): Alcohol consumption: Without Alcohol consumption:		Frequency (frequency percentage): Alcohol consumption: Without Alcohol consumption:		001.0
Blood fat	Frequency (frequency percentage): With Blood fat: Without Blood fat:		Frequency (frequency percentage): With Blood fat: Without Blood fat:		234.0
History of diabetes	Frequency (frequency percentage): With History of diabetes: Without History of diabetes:		Frequency (frequency percentage): With History of diabetes: Without History of diabetes:		084.0
Use of neuroleptics	Frequency (frequency percentage): Use of neuroleptics: Without Use of neuroleptics:		Frequency (frequency percentage): Use of neuroleptics: Without Use of neuroleptics:		723.0
Smoking	Frequency (frequency percentage): Smoking: Non-Smoking:		Frequency (frequency percentage): Smoking: Non-Smoking:		084.0

Comparing the scores of the scales of emotional intelligence, spiritual intelligence and perception of God in two groups of coronary heart patients and non-patients

According to Table 2, the results of the Mann-Whitney test showed that there was a significant difference between the coronary heart disease group and the non-coronary heart disease group in all subscales of emotional intelligence (self-awareness, self-management, social awareness and relationship management) ($P < 0.05$). The non-coronary heart disease

group has higher scores in these subscales. This is while there is no significant difference between the group of coronary heart patients and the non-coronary heart group in the total score of emotional intelligence. The results of the Mann-Whitney test showed also that there was a significant difference between the coronary heart disease group and the non-coronary heart disease group in all subscales of spiritual intelligence (critical existential thinking, personal meaning production, transcendent consciousness, expanded consciousness) and total spiritual intelligence score ($P < 0.05$). The non-coronary heart disease group has higher scores in all subscales and total scores. The results of the Mann-Whitney test showed that there was no significant difference between the coronary heart disease group and the non-coronary heart disease group in some subscales of God perception (presence, acceptance, benevolence, influence, providence) and the total score of God perception ($P > 0.05$). The coronary heart disease group and the non-coronary heart disease group were significantly different in the challenge subscale ($P < 0.05$) and the non-coronary heart disease group had higher scores. According to Table 3, the results of linear regression show that demographic characteristics that are significantly different in the two groups of coronary heart patients and non-patients, including age, gender, marital status, family history of heart disease, hypertension, Alcohol consumption, history of diabetes and smoking are not effective in significance of the differences between the two groups. Only two characteristics of blood pressure and age can be effective in the significance of the difference between the two groups in the relationship management subscale (emotional intelligence scale component) and critical existential thinking subscale (spiritual intelligence scale component).

Table 2- Comparison of questionnaire scores in the two groups

Variable	non-coronary heart disease group (n=32)		Coronary heart disease group (n=36)		Significance level
	Median	Mode	Median	Mode	
self-awareness	76/67	76/67	50	43/33	0/000
self-management,	60	60	42/22	42/22	0/062
social awareness	72	68	48	64	0/004
relationship management	130	130	85/56	85/56	0/001
Total emotional intelligence	126	126	92	87	0/024
Presence	56/94	50	52/78	52/78	0/192
Challenge	58/33	58/33	55/56	50	0/063
Acceptance	54/17	50	58/33	52/78	0/107
Benevolence	56/94	50	55/56	55/56	0/995
Effect	47/22	47/22	50	47/22	0/375
Providence	56/94	50	58/33	52/78	0/591
Total perception of God	49/07	49/07	49/30	47/22	0/922
Critical existential thinking	78/57	82/14	17/85	17/86	0/000
Personal meaning Production	80	85	17/50	15	0/000
Transcendent awareness	69/64	82/14	3/57	0	0/000
Expanded consciousness	55	65	0	0	0/000
Total spiritual intelligence	69/79	77/08	10/41	8/33	0/000

Table 3- Investigation of the effect of demographic characteristics on the significance of differences between the two groups using linear regression

Variable	Significance level							
	Age	Gender	Marital status	Family history of heart disease	Blood pressure	Alcohol consumption	History of diabetes	Smoking
self-awareness	0/075	0/049	0/323	0/865	0/015	0/658	0/918	0/361

self-management,	0/030	0/133	0/792	0/918	0/040	0/193	0/543	0/466
social awareness	0/047	0/942	0/982	0/919	0/199	0/419	0/254	0/470
relationship management	0/019	0/038	0/906	0/835	0/003	0/400	0/549	0/570
Challenge	0/050	0/044	0/073	0/420	0/340	0/093	0/352	0/059
Critical existential thinking	0/008	0/238	0/021	0/991	0/012	0/670	0/844	0/772
Personal meaning Production	0/170	0/111	0/150	0/506	0/111	0/688	0/809	0/835
Transcendent awareness	0/201	0/322	0/186	0/638	0/104	0/788	0/181	0/740
Expanded consciousness	0/689	0/997	0/698	0/380	0/459	0/637	0/163	0/720
Total spiritual intelligence	0/068	0/195	0/083	0/604	0/046	0/665	0/516	0/949

IV. DISCUSSION AND CONCLUSION

The results showed that the coronary heart disease patient group and the non-coronary heart disease patient group had significant differences in all subscales of emotional intelligence including self-awareness, self-management, social awareness and relationship management. This is while the two groups did not have a significant difference in the total score of emotional intelligence. The results show that healthy people are better in terms of the ability to be aware and understand their feelings, the ability to express emotions, self-acceptance and self-esteem, the ability to direct thoughts, the ability to understand potential, the ability to control their emotions, the ability to adapt thoughts and behavior to the change of the environment, enjoying oneself and others, reinforcing positive attitudes, the ability to recognize and define problems, the ability to create and maintain satisfying relationships, the ability to be aware and understand the feelings of others, and the ability to express oneself as a member of a group. These results are in line with the findings of Bradberry and Greaves based on which emotional intelligence skills allow a person to contribute to his/her health by managing his/her mood against stress before his/her emotions become uncontrollable. The direct relationship between emotional intelligence and a good and healthy life shows how important it is to pay attention to emotions, to be aware of them, and to use them to guide behavior (Bradberry and Greaves, 2007, translated by Gangi, 2005). Researches have shown that patients with heart attack experience high levels of emotional distress such as anxiety and depression, which has a significant impact on their health-related quality of life (Abu et al., 2018). The results of some existing researches on the relationship between emotional intelligence and mental health have also shown that emotional intelligence is associated with the components of mental health and physical health (Dulewicz, 2003 and Tsaousis, 2007), general health, well-being, self-control, excitability and social ability (Greven, 2008). Meta-analytic studies have shown the effectiveness of psychosocial interventions in reducing the risk of death and recurrence of heart disease in patients (Van Dixon, 2007 & Koertge, 2008). Emotional intelligence plays an important role in physical and mental health. Studies have shown that the physical effects of emotional intelligence are so great that researchers have shown by imaging the brain that along with changes in emotional intelligence, physiological changes are formed in the brain. Emotional intelligence skills also accelerate the return to health (Bradberry et al., 2007). The results also showed that the two groups of coronary heart patients and non-patients were significantly different in all subscales of spiritual intelligence including critical existential thinking, personal meaning production, transcendent awareness, expanded state of consciousness and total spiritual intelligence score. These results show that healthy individuals are better in terms of the capacity to think about non-existential issues related to their existence, the ability to extract personal meaning and purpose from all physical and mental experiences, the capacity to identify transcendent dimensions and the ability to enter higher levels of awareness. These results are in line with Thoresen's (1999) research which states that strengthening spirituality can reduce and improve many diseases such as coronary heart disease and hypertension. Many researches show that heart patients can improve their quality of life (Berry et al., Delgado, 2007), their physical condition (Bekelman, 2007 Blumenthal, 2007,

Delgado, 2007) and prevent recurrence of heart disease by increasing their level of spiritual intelligence (Villagomez, 2006). The two groups of coronary heart patients and non-patients are not significantly different in their perception of God and all its subscales except the challenge subscale. In fact, the image that patients with coronary heart disease and non-patients have on God in their minds is not different. This is while the results showed that non-patients are in a better position than the coronary heart disease patients on the challenge subscale. This shows that healthy people see life's challenges as opportunities for growth and development more than coronary heart disease patients. Quoted by Ghanbari Hashemabadi et al. (2012), Gorsuch (1968) believes that the mental image of God is much more complex and psychologically more meaningful than what can be obtained by repeated assessments of the degrees of religious belief. Accordingly, the study of individuals' perception of God can show, rather than the variable of the degree of religiousness, the degree of their mental and psychological maturity (Benson, 1996, quoted by Ghanbari Hashemabadi et al., 2012). Childhood perception of parents predicts self-image and image of God (Patrick and Shaver, 1990, quoted by Nejat et al., 2011). Krejcie also stated that the idea of God is part of the religious schema of people about God, which is used as a cognitive basis for people to think of God (Krejcie, 1998, quoted by Nejat et al., 2011). According to the results, we can infer that the image of God in the minds of people, those of sample of coronary heart disease patients or non-patients, is similar due to the initial foundation of the parents; this type of conception is less likely to make a difference in their perception of God between a coronary heart patient and a non-coronary heart patient. This indicates the need to create a constructive image of God in the minds of people so that people with coronary heart disease can use it to help improve their disease, and non-coronary heart patients can continue to use it for preventing from various diseases including heart disease.

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