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Predicting Psychological Well-Being Based on Life Expectancy in Patients with Heart Failure in Karaj, Iran

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A B S T R A C T

In people with heart failure, psychological problems secondary to the disease are very common that directly affect their psychological well-being; In the meantime, the feature of life expectancy can moderate this effect favorably. The aim of this study was to predict psychological well-being based on life expectancy in patients with heart failure in Karaj. The method of the present study was descriptive of correlation and predictive equation. The present study population included all patients with heart failure referred to Hospitals in Karaj in the first quarter of 2018, of which 265 were selected using the available sampling method and according to the entry and exit conditions of the study and completed the Reef (1989) Psychological Well-Being Questionnaire, Schneider et al.'s (1991) Life Expectancy Questionnaire. The obtained data were analyzed using Pearson correlation coefficient and multiple regressions. Findings showed that there is a positive and significant relationship between the total score of life expectancy and some of their subscales with psychological well-being of patients with heart failure ($P < 0.05$). Also, the results of regression analysis showed that factor thinking and spiritual effects positively predict a total of 23% of psychological well-being changes in patients with heart failure ($R = 0.228$). Based on this, it can be concluded that life expectancy variable is related to psychological well-being of patients with heart failure and is able to predict it to some extent.

Keywords: Psychological Well-Being, Life Expectancy, Heart Failure.

INTRODUCTION

Today, there is no doubt that psychological states can affect physical illnesses, and the prevailing view is that almost all physical illnesses are potentially related to stress (Ghasemipour & Ghorbani, 2010; Kader, 2020). In the meantime, one of the topics that has always been studied from the past to the present in the field of relationship between physical diseases and psychological variables is the relationship between cardiovascular disease and psychological factors. As William Harvey put it in the seventeenth century, "any effect on the mind that is accompanied by pain or pleasure and fear or hope stimulates the heart." Before him, Ibn Sina, an Iranian physician, stated in "Law in Medicine" that psychological reactions affect the heart as much as possible leading to death (Konstam et al., 2018; Shirafkan, Salehi, Rabie, & Pakdaman,

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2003). Studies in recent years also show that psychological factors are associated with the pathology of cardiovascular disease (Kubzansky et al., 2018; Pedersen, Von Känel, Tully, & Denollet, 2017; Rozanski, Blumenthal, & Kaplan, 1999; Stuart-Shor, Buselli, Carroll, & Forman, 2003). On the other hand, physical illnesses can also affect a person's psychological state. Therefore, the relationship between physical illnesses and psychological states is necessarily two-way (Hernandez et al., 2018). Meanwhile, heart failure is a complex clinical syndrome that due to ventricular dysfunction, the heart is unable to pump blood in accordance with the metabolic needs of the body (Shirafkan et al., 2003). Heart failure is a very debilitating and permanent clinical symptom that occurs due to an inherited or acquired structural disorder or heart function. Heart failure is a growing shortcoming that affects more than 20 million people worldwide. Heart failure is common in Iran and its increasing incidence reaches 3,500 people per 100,000. Heart failure is the cause of at least 20% of hospitalizations in patients over 65 years of age and in the last decade the rate of hospitalization due to heart failure has increased to 159% (Assadianrad et al., 2014). Heart failure is one of the costliest diseases for national health services. And most of the costs are spent on hospital expenses (Saqlain, Hussain, Saqib, & Khan, 2016). The disease affects many aspects of life and health, apart from poor prognosis, limitations in physical activity (Borland, Rosenkvist, & Cider, 2014; Oka, Stotts, Dae, Haskell, & Gortner, 1993), cessation of social tendencies (Chew, Sim, & Cao, 2019), psychological distress (Pelle et al., 2010), decreased vitality (Humphrey & Milewicz, 2017), increased attachment styles (Navidian, Moradgholi, Kykhaee, & Saeedinegad, 2015), early retirement and a negative impact on Imposes quality of life (Audi et al., 2017; Rabelo, Aliti, Domingues, Ruschel, & Brun, 2007; Riedinger et al., 2001).

Increasing the life expectancy of people has created the expectation in them to spend more years in health and activity, so that this issue has led those in charge to use the word life expectancy in the sense of hope for a healthy life. "Not In the sense of the absence of disease, but in the sense of living without functional limitations." The new issue of quality of life today is hope for life. Although the idea of hope has existed since the creation of man, its scientific study has a short history in human life and they spend their childhood (Choi, Lee, Lee, & Jung, 2017; Sanai, Zartoshtian, & Nowruz, 2013). Life expectancy at birth represents the average number of years an infant is expected to survive if the current mortality rate remains constant (Xu, Kochanek, Murphy, & Arias, 2014).

Life expectancy can simply be defined as the average number of years a person is expected to live in a country. This index is one of the most important summary indicators that is the result of various economic, social, environmental and ... factors and is referred to as the main indicator of a community's health (Bazkhaneh, Karimzadeh, & Tahsili, 2015). Life expectancy is a statistical indicator that shows the average life expectancy in a society, or in other words, how many years each member of that society can expect to live. As health and medical indicators improve, life expectancy will increase, and therefore this index is one of the indicators for measuring the progress and backwardness of countries. Women's life expectancy in all societies is a few years (four and a half years worldwide) higher than men. Life expectancy at birth is a key indicator of human development that is affected by factors such as income and education, health and nutrition. This index can be used to evaluate the services provided (Fisher et al., 2017).

METHODOLOGY

The statistical population of the present study included all patients with heart failure referred to Hospitals in Karaj in the first quarter of 2018.

From the research community, 266 people are selected as a sample according to the Cochran's formula with $d = 0.06$ and the background of research related to the research topic and using the available sampling method. It should be noted that due to the fact that some of the research questionnaires may be distorted and incomplete, this number was increased to 270 samples. After completing the questionnaires, it was found that 5 of them were distorted, which were excluded from the research process, and the data related to the questionnaires of 265 people were analyzed.

Inclusion criteria: having literacy, heart failure for at least six months, no history of mental illness and the use of neuropsychiatric drugs and not suffering from other physical illnesses at the same time. Exclusion criteria: Incomplete completion of questionnaires. The tools used in this research are:

Reef Psychological Well-Being Scale (1989): This scale is used to measure an individual's mental health. Reef has developed this test in long (84 questions), medium (54 questions) and short (18 questions) forms (Reef, 1989) in order to speed up the sampling and prevent laxity of patients with heart failure in the present study. The short form was used. This scale has six sub-scales (self-acceptance, positive relationships with others, autonomy, mastery of the environment, purposeful life, personal growth) and is scored based on the Likert of six factors (with a score of 1 to 6) and for each Sub-scale There are three questions and the minimum score in each subscale is 3 and the maximum is 15. The internal consistency of this test was reported by Reef by Cronbach's alpha method between 0.65. Evidence for the convergent validity of this test suggests that six factors of psychological well-being are positively related to the scales of life satisfaction, self-esteem, and negatively related to depression, belief in luck, and the source of external control. In the present study, the reliability of this questionnaire was obtained by Cronbach's alpha method for a total psychological well-being score of 0.78.

Schneider et al.'s Life Examination Questionnaire (1991): The life expectancy questionnaire of a self-report scale has 12 questions and two subscales of strategic thinking and factor thinking. The questions are in the form of four options and in a 4-degree continuum (completely false = 1 and completely true = 4). Scores range from 8 to 32. 4 questions are related to the subscale of strategic thinking, and 4 questions are related to the subscale of factor thinking, and 4 questions are deviant and are not graded. A low score means low hope and high scores indicate high hope. The sum of the scores of the operating and transit subscales determines the total score of hope. Preliminary evidence for the validity and reliability of this test has been provided by Schneider et al. Cronbach's alpha was obtained between 0.74 and 0.84 and its retest reliability in a 10-week period was 0.80. The Hope Scale is highly correlated with scales that measure similar psychological processes. For example, the scores of the Hope Scale, which range from 0.50 to 0.60, are correlated with the Shear and Carver Optimism Scale. In the present study, the reliability of the life expectancy questionnaire was calculated by Cronbach's alpha method of 0.79, which indicates the optimal reliability of this tool in the present study.

The aim of this study was to predict psychological well-being based on life expectancy in patients with heart failure in Karaj. For this purpose, the resulting inferential findings are presented.

RESULTS

Hypothesis 1: There is a relationship between life expectancy and psychological well-being in patients with heart failure.

To test this hypothesis to investigate the relationship between life expectancy and psychological well-being in patients with heart failure, Pearson correlation coefficient was used,

the results of which are presented in the table below.

Table 1. Pearson correlation coefficient Relationship between life expectancy and psychological well-being in patients with heart failure (n = 265)

| variable | Factor thinking | Strategic thinking | Total life expectancy score |
|---|-----------------|--------------------|-----------------------------|
| | r | r | r |
| Accept yourself | 0.170 | 0.023* | 0.123 |
| Purpose in life | 0.357 | 0.366 | 0.405 |
| Mastery of the environment | 0.086 | -0.003** | 0.055 |
| Relationships with others | 0.128 | 0.027* | 0.097 |
| Personal growth | 0.372 | 0.097 | 0.291 |
| Autonomy | 0.409 | 0.345 | 0.430 |
| Total score of psychological well-being | 0.425 | 0.250 | 0.396 |

$p \leq 0.05^*$, $p \leq 0.01^{**}$

As can be seen in Table 1, there is a positive and significant relationship between the total score of life expectancy and the subscales of factor thinking and strategic thinking with the total score of psychological well-being and subscales of purpose in life, and autonomy. Has ($P < 0.01$). Also, between the total score of life expectancy and the subscale of factor thinking with the subscales of self-acceptance and personal development of psychological well-being; And there is a positive and significant relationship between the subscale of life expectancy factor thinking and the subscale of relationships with others psychological well-being ($P < 0.05$). In other cases, no significant relationship was observed ($P < 0.05$). In other words, patients with heart failure who have a higher life expectancy; they have higher levels of psychological well-being and vice versa.

Hypothesis 2: Psychological well-being based on life expectancy in patients with heart failure is predictable.

To test the third hypothesis of the study of predicting psychological well-being based on life expectancy (factor thinking and strategic thinking) in patients with heart failure as predictor variables and psychological well-being as criterion variables into the multiple regression equation by stepwise method. Before presenting the regression results, Table 2 reports the results related to the study of the linearity of the relationship between predictor variables and the criterion variable (psychological well-being).

Table 2. Results of the linear study of the relationship between life expectancy and patients' psychological well-being

| Psychological well-being | F being linear | Sig. | F | Sig. |
|--------------------------|----------------|-------|-------|-------|
| Factor thinking | 80.830 | 0.001 | 2.012 | 0.061 |
| Strategic thinking | 32.823 | 0.001 | 1.477 | 0.216 |

According to Table 2 of Statistics F, deviation from linearity is not significant for the relationship between life expectancy (factor thinking and strategic thinking) and psychological well-being of patients with heart failure. Whereas the statistic f being linear is significant for this relation. Therefore, it can be concluded that the relationship between life expectancy and psychological well-being of patients with heart failure is linear. Then, in order to investigate the assumption of error independence (difference between actual values and values predicted by regression equation) from the camera-Watson test and to investigate the presence or absence of multiple alignment between predictor variables of the coefficient of variance (VIF) the results are presented in Table 3.

Table 3. Camera-Watson test results and variance inflation factor

| Variable | Durbin - Watson | Variable | Factor of variance inflation |
|---|-----------------|--------------------|------------------------------|
| The relationship between life expectancy and patients' psychological well-being | 2.312 | Factor thinking | 1.037 |
| | | Strategic thinking | 1.493 |

According to Table 3, the Durbin-Watson test value (2.312) is in the range of 1.5 to 2.5, which indicates the assumption of error independence. Also, the coefficient of variance (VIF) for all variables is below 10, which indicates the absence of multiple alignments between the predictor variables. According to the above, there is a license to use regression analysis, the results of which are presented in Table 4.

Table 4. Summary of regression model, analysis of variance and statistical characteristics of patients' psychological well-being regression based on life expectancy

| Step | Model | Sum squares | Df | Mean squares | F | P | R | R2 | ΔR2 |
|------|------------|-------------|-----|--------------|--------|-------|-------|-------|-------|
| 1 | Regression | 2656.589 | 1 | 2656.589 | 58.029 | 0.001 | 0.425 | 0.181 | 0.178 |
| | Left Over | 12040.150 | 263 | 45.780 | | | | | |
| 2 | Regression | 3349.383 | 2 | 1674.691 | 38.667 | 0.001 | 0.477 | 0.228 | 0.222 |
| | Left Over | 11347.357 | 262 | 43.311 | | | | | |

Step 1: Predictive Variable: Factor Thinking.

Step 2: Predictive Variable: Factor Thinking, Spiritual Impacts.

The results of regression analysis showed that in the final step, among the predictor variables, two variables were able to predict changes in patients' psychological well-being separately. In order of factor thinking, spiritual effects are able to significantly anticipate changes in patients' psychological well-being, among which the share of factor thinking is 18% and spiritual effects, is 5%. In total, these variables are able to predict 23% of the rate of change of the criterion variable ($R^2 = 0.228$). Also, the observed F value is significant for the predictor variables at the level of 0.001. This finding shows that these two variables are able to predict the psychological well-being of patients with heart failure. Table 5 also shows non-standardized and standardized regression coefficients and a significant study of these coefficients is reported.

Table 5. Stepwise regression coefficients of patients' psychological well-being on predictor variables

| | B | Standard error b | β | t | P |
|-------------------|--------|------------------|-------|-------|-------|
| Fixed number (a) | 64.205 | 3.079 | | 20.85 | 0.001 |
| Factor thinking | 0.596 | 0.086 | 0.383 | 6.93 | 0.001 |
| Spiritual effects | 1.494 | 0.373 | 0.221 | 3.999 | 0.001 |

According to Table 5, the effects of factor thinking and spiritual effects are $38 = 38 \cdot 0.383$ and $22 = 0.221$, respectively, which positively predict the psychological well-being of patients with heart failure; That is, by increasing the levels of factor thinking and spiritual influences; The psychological well-being index of patients with heart failure will improve.

CONCLUSION

The results of the first hypothesis using Pearson correlation coefficient showed that there is a relationship between the total score of life expectancy and subscales of factor thinking and strategic thinking with the total score of psychological well-being and subscales of purpose in life, and autonomy. Also, between the total score of life expectancy and the subscale of factor thinking with the subscales of self-acceptance and personal development of psychological well-being; And there is a positive and significant relationship between the subscale of life expectancy factor thinking and the subscale of relationships with others psychological well-being. While in other cases no significant relationship was observed. In other words, patients with heart failure who have a higher life expectancy; they have higher levels of psychological well-being and vice versa.

Hope is a person's desire for their future. Hope shows people's perception of their ability to develop strategies to achieve the goal and maintain motivation to achieve the goal. Hope involves people's perceptions and attention to the future, and with the idea that positive results are likely to be achieved, it makes one strives. Each conceptualization of hope reflects its

multidimensional, dynamic, forward-looking, and process-specific characteristics. In general, hope is the main asset of human life. One who has peace and hope for the future feels that he has everything? True happiness and eternal bliss are summed up in contemplation, peace, and hope for the future, and that which does not benefit from peace of mind and hope for the future, with mental insecurity, anxiety, and exaggerated temptations at the height of material power. Shows an emotional hope of optimism and foresight and a cognitive, emotional and motivational state towards the future; therefore, having hope in patients makes them hopeful for the future despite the challenges. Pay attention to the clear side of issues and be confident in the outcome of their practice. This style makes the person more motivated to work. In contrast, people with psychological well-being are always optimistic about the future and its events, and formulate their life plans based on a desirable future. It therefore makes sense for patients with heart failure to have a higher life expectancy; Have higher levels of psychological well-being.

The results obtained from the second hypothesis using stepwise multiple regression analysis showed that factor thinking and spiritual effects positively predict 23% of psychological well-being changes in patients with heart failure; That is, by increasing the levels of factor thinking and spiritual influences; The psychological well-being index of patients with heart failure will improve.

Also, the results of regression analysis showed that hope for the future can significantly predict the psychological well-being of the sample. Spirituality and its effects on psychological well-being have always been significant. One of the components of a healthy life is paying attention to spiritual needs; Spirituality can enhance a person's lifestyle and gradually reduce harmful behaviors. In this regard, spirituality is a sense of meaning and mission in life, a sense of sanctity in life, a balanced appreciation of material values and a vision for the betterment of the world. Research has shown that religion and spirituality affect the physical and mental health of individuals; To the extent that the World Health Organization has introduced the spiritual dimension as one of the main dimensions of well-being in different countries and the spiritual needs of human beings are considered as one of the components of a healthy life and not paying attention to the spiritual dimension and self-knowledge can hinder human growth and prosperity. And endanger their mental health. Accordingly, the spiritual beliefs of patients with heart failure have positive effects on their resilience to the stresses caused by their disease and directly improve their psychological well-being compared to other patients. It therefore seems logical that with increasing levels of factor thinking and spiritual influences; Improve the psychological well-being index of patients with heart failure.

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