Psychological symptoms predicted chest pain intensity and discomfort in cardiac rehabilitation patients

Dear Editor,

Cardiac chest pain or angina is an annoying condition that about one-third of patients complained of it even after successful revascularization and they expressed powerless to control its severity and duration.[1] This situation led to investigate the role of different treatment methods in reducing angina by researchers, and the results have shown that many treatment methods failed to control cardiac chest pain and angina recurrence.[1] Cardiac rehabilitation is a secondary prevention measure,[2] which is expected to be effective in reducing the pain severity and discomfort caused by angina. However, it seems that its role as one of the traditional cures is influenced through nonphysical factors of pain such as beliefs associated with angina[1,3] and psychological symptoms. According to the results of a report,[3] beliefs associated with angina are effective in psychological and functional status of patients so that patients with maladaptive beliefs about chest pain showed more anxiety and poorer physical performance. Irrational beliefs and psychological symptoms as factors influencing the experience of chest pain by noncoronary patients[4-7] could be raised in cardiac patients. Thus, given that the pain intensity and discomfort and their distress may lead to an annoying situation for the patients,[7] it is clear that exploring the psychological factors associated with pain in the stage of cardiac rehabilitation can help to early control of pain, improve the quality of life, and return to work.[3]

Based on these considerations, a study conducted to investigate the predictive role of psychological symptoms in pain intensity and discomfort of cardiac rehabilitation patients. During April–August 2015, 231 cardiac patients (30–80 years, mean and standard deviation of 58.7 ± 9.4 years) in the initial stage of outpatient cardiac rehabilitation were invited to participate in the study in Imam Ali hospital of Kermanshah city (Western part of Iran). According to the formula ($n > 50 + 8$ m) which is used to determine the sample size in regression analysis, the sample size for this study must be at least 74 people.[8] Thus, the number of 231 patients is suitable. After written informed consent to participate in the study, demographic data and medical histories of the patients were evaluated and recorded by an expert cardiologist. Then, depression, anxiety, stress scale[9] and brief pain inventory,[10] and pain discomfort scale of Jensen *et al.*,[11] as appropriate validated scales, provided to patients by a clinical psychologist and were the patients after receiving the necessary explanations completed forms. Descriptive statistics and linear regression analysis were used to evaluate the linear relationship between psychological symptoms and pain intensity and discomfort and the predictive role of psychological symptoms. All statistical analyses were performed using SPSS ver. 21.0 for Windows (IBM SPSS, Armonk, NY, USA) software.

According to the results, 64.1% of patients were male, 85.3% married, 70.6% under diploma, 17.7% high school diploma, and 11.7% with academic education. In terms of job status, 35.5% were self-employed, 8.2% employees, 33.8% housewives, and 22.5% retired. In relation to the main analysis, the correlation between psychological symptoms with pain intensity and discomfort can be seen in Table 1. As you can see, there is a significant relationship between depression, anxiety, and stress with pain intensity and discomfort ($P < 0.001$). Of course, in the regression model related to pain discomfort, the P value is significant simply to anxiety ($\beta = 0.360$, $P < 0.001$) and stress ($\beta = 0.229$, $P = 0.003$). Hence, the most predictive power for pain discomfort is the responsibility of anxiety and stress and these two variables are strongest predictive for pain discomfort. In addition, in the regression model related to pain intensity, the P value is significant simply to anxiety ($\beta = 0.354$, $P < 0.001$). Hence, the most predictive power for pain intensity is the responsibility of anxiety and this is the strongest predictive variable for intensity discomfort. In general, the model summary shows that psychological symptoms significantly can predict pain discomfort ($F = 45.189$, $P < 0.0005$) and pain intensity ($F = 26.681$, $P < 0.0005$) and these symptoms in general can express 37.4% of the pain discomfort variance and 26.1% of the pain intensity variance.

In line with the results of several studies regarding the relationship between psychological symptoms and pain severity and

Table 1: The correlations and liner regression model for pain intensity and discomfort

Psychological symptoms	Pain discomfort		Summary of the model	*B*	β	*t*	*P*
	r	*P*					
Depression	0.453	0.001	R=0.611	0.191	0.111	1.589	0.114
Anxiety	0.565	0.001	R^2=0.374	0.718	0.360	5.169	0.001
Stress	0.525	0.001	F=45.189 P<0.0005	0.330	0.229	3.039	0.003
Psychological symptoms	**Pain intensity**		**Summary of the model**	***B***	**β**	***t***	***P***
	r	***P***					
Depression	0.371	0.001	R=0.511	0.046	0.098	1.286	0.200
Anxiety	0.487	0.001	R^2=0.261	0.191	0.354	4.670	0.001
Stress	0.411	0.001	F=26.681 P<0.0005	0.050	0.127	1.554	0.122

discomfort in patients with noncardiac chest pain,[4-7] our results showed that psychological symptoms are an important factor in the pain severity and discomfort experienced by cardiac patients. According to the results, anxiety is the most important factor in the pain severity and discomfort experienced by patients. In addition, stress is one of the effective factors in the discomfort of pain. It seems that stress and anxiety often cause confusion and distortions in perception of time and space, each person's perception, and importance of events. These distortions can interfere with the proper understanding of events by reducing the concentration, reducing recall power, and disrupt power of linking things together. Anxious people often report thoughts and ideas that indicate with a feeling high risk in the existing conditions and it seems that this anxiety is an understandable response to distorted perceptions of them. Anxiety caused by the distorted perceptions can eventually lead to an escalation of chest pain and discomfort caused by it among these patients.[6] Hence, given that it is said to evaluate and control psychological factors can be effective in reducing chest pain and illness complications,[6] we recommend that health professionals during cardiac rehabilitation programs pay attention to the patients' symptoms of angina as well as psychological symptoms at the same time - especially stress and anxiety and provide strategies to treat them.

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Conflicts of interest

There are no conflicts of interest.

Saeid Komasi, Ali Soroush[1], Mozhgan Saeidi[2]

Clinical Research Development Center, [1]Life Style Modification Center, Imam Reza Hospital, [2]Cardiac Rehabilitation Center, Imam Ali Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran

Address for correspondence: Dr. Mozhgan Saeidi, Cardiac Rehabilitation Center, Imam Ali Hospital, Kermanshah University of Medical Sciences, Shahid Beheshti Boulevard, Kermanshah, Iran.
E-mail: m_saeidi20@yahoo.com

References

1. Moattari M, Adib F, Kojuri J, Tabatabaee SH. Angina self-management plan and quality of life, anxiety and depression in post coronary angioplasty patients. Iran Red Crescent Med J 2014;16:e16981.
2. Komasi S, Saeidi M, Montazeri N, Masoumi M, Soroush A, Ezzati P. Which factors unexpectedly increase depressive symptom severity in patients at the end of a cardiac rehabilitation program? Ann Rehabil Med 2015;39:872-9.
3. Furze G, Lewin RJ, Murberg T, Bull P, Thompson DR. Does it matter what patients think? The relationship between changes in patients' beliefs about angina and their psychological and functional status. J Psychosom Res 2005;59:323-9.
4. Bahremand M, Moradi G, Saeidi M, Mohammadi S, Komasi S. Reducing irrational beliefs and pain severity in patients suffering from non-cardiac chest pain (NCCP): A comparison of relaxation training and metaphor therapy. Korean J Pain 2015;28:88-95.
5. Bahremand M, Saeidi M, Komasi S. Non-coronary patients with severe chest pain show more irrational beliefs compared to patients with mild pain. Korean J Fam Med 2015;36:180-5.
6. Bahremand M, Saeidi M, Takallo F, Komasi S. Comparison of depression, anxiety, and stress between mild and severe non-cardiac chest pain. Thrita 2016;5:e32752.
7. Bahremand M, Saeidi M, Komasi S. How effective is the use of metaphor therapy on reducing psychological symptoms and pain discomfort in patients with non-cardiac chest pain: A randomized, controlled trial. J Cardiothorac Med 2016;4:444-9.
8. Pallant J. SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS for Windows (Version 12). 2nd ed. Australia: Allen & Unwin; 2005. p. 142-52.
9. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the beck depression and anxiety inventories. Behav Res Ther 1995;33:335-43.
10. Mirzamani SM, Sadidi A, Salimi SH, Besharat MA. Validation of the Persian version of the brief pain inventory. Acta Med Iran 2005;43:425-8.
11. Jensen MP, Karoly P, Harris P. Assessing the affective component of chronic pain: Development of the pain discomfort scale. J Psychosom Res 1991;35:149-54.

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