RESEARCH ARTICLE

Effects of internalizing problems on quality of life among cardiac patients: mediating role of coping strategies

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Abstract

Objective: To study the effects of internalising problems on quality of life among cardiac patients and to explore the mediating role of coping strategies.

Method: The cross-sectional study was conducted at different government and private cardiac and diabetic care centres Multan, Pakistan, from September 2017 to December 2017. Quality of Life Scale, Novaco Anger Scale, Depression, Anxiety and Stress Scale and Brief Cope Inventory were used to collect data. The sample of the study was taken from different government and private cardiac care centres located in Multan city of Pakistan.

Results: Of the 300 subjects, 199(66.3%) were males 101(33.7%) were females. Internalized problems were significantly negatively associated with the quality of life ($p<0.01$). However, coping strategies except dysfunctional focused were significantly positively associated with the quality of life ($p<0.01$). A significant mediating effect of emotion focused coping, problem focused coping and dysfunctional focused coping was found between internalising problems and quality of life ($p<0.01$).

Conclusion: Internalised problems and coping strategies significantly influenced the quality of life among patients suffering from cardiac diseases.

Keywords: Anger, Depression, Anxiety, Stress, Coping strategies, Quality of life, Cardiovascular diseases.

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Introduction

Cardiovascular diseases (CVDs) have created an alarming situation throughout the world. They are the leading cause of death that take 17.7 million (31%) lives in the world every year. Besides, 7.4 million people die due to coronary heart disease (CHD) followed by 6.7 million from stroke.[1] In Pakistan, the death ratio of CVD patients is 30-40%.[2] Unfortunately, the ratio of deaths due to CVDs is 82% in the low-middle income countries (LMICs).[1] The causal factors involve in cardiac diseases are genetics, age, gender, cigarette smoking, low physical activity, high alcohol intake, unhealthy and inappropriate diet, plumpness, genetic predisposition and family history of CVD, hypertension (HTN), diabetes mellitus (DM), hyperlipidaemia, psychosocial factors, scarcity, low education and air pollution.[3]

Although, 90% of CVDs are preventable,[1] due to some other factors prevention is affected. These include psychological factors, like internalising problems such as depression,[4-6] anxiety,[5,7] stress[8] and anger.[5,7] These factors are not only prevailing causes of dissatisfaction and mortalities, but also predictors of detrimental heart issues in CVD patients.[9] Consequently, these issues negatively affect health-related quality of life (HRQOL),[10-12] and are considered the point of reference in measuring the effects of disease on health and judgment.[13]

Various studies have also reported the relationship of internalising problems such as depression, anxiety, stress and anger with inappropriate coping strategies,[14,15] which might have indirect impact on the QOL among CVD patients. However, most of the researches on CVDs have given attention to biological and lifestyle factors. However, the evidence has proved that psychological and social factors are playing a significant role in causes, growth and effects of the disease.[16] Although, it has become a difficult and complex phenomenon, no one can deny the presence of such factors.[17]

As CVDs have created an alarming situation globally, it is important to explore the psychological factors along with physical factors for their timely management and prevention. To the best of our knowledge, to date no study has explored the mediating (indirect) impact of coping

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strategies, such as emotional focussed coping (EFC), problem focussed coping (PFC) and dysfunctional focussed coping (DFC) between internalising problems, depression, anxiety, stress and anger, and QOL. The current study was planned to examine the mediating role of these coping strategies between internalising problems and QOL.

Subjects and Methods

The cross-sectional study was conducted at different government and private cardiac and diabetic care centres Multan, Pakistan, from September 2017 to December 2017. After approval was obtained from the ethics review board of the Department of Psychology, International Islamic University Islamabad, Pakistan, along with the approval of respective heads of the participating tertiary care centres, the sample size was determined to test the mediation effect on the basis of literature.[18] The sample was selected using purposive sampling technique.

Data was collected after taking informed consent from the subjects. Tools used for data collection included the translated Urdu version of the Quality of Life Scale (QOLS),[19,20] which is a 26-item scale rated from 1 (very dissatisfied) to 5 (very satisfied); the Navaco Anger Scale (NAS),[21,22] a 25-item scale rated from 1 (very low) to 5 (very high); the Depression, Stress and Anxiety Scale (DSAS),[23,24] a 21-item scale rated from 0 (Did not apply to me at all) to 3 (Applied to me very much or most of the time); and the Brief Cope Scale (BCS),[25,26] a 28-item scale rated from 1 (I haven't been doing this at all) to 4 (I've been doing this a lot).

Data was analyzed using SPSS 23. In order to explore the statistical association between different internalised problems, coping strategies and QOL, Pearson correlation coefficient test was performed.

To assess the mediation coefficients a, b, and c (c'), mediation analysis technique of Hayes[27] was used. The total effect is denoted by path c, which represents the effect of independent variable (internalised problems) on dependant variable (QOL) without any control / adjustment of mediating variable (coping strategies) in the model. The product of paths a and b represents the indirect effect of independent variables (internalised problems) on dependent variable (QOL) via mediators (coping strategies), while path c has the total effect of independent variables and the dependent variable. Further, path c' denotes the effect of independent variables on the dependent variable after controlling the variance of the mediator (path a,b = indirect effect) c-ab = c'. For examining the interval reliability of the indirect effect, the bootstrapping method[28] was utilised. In this analysis, 10,000 re-samples method was used and mediation analysis was carried out through the Process Macros.[27]

Results

Of the 300 subjects, 199(66.3%) were males 101(33.7%) were females. There was a significant association between QOL, internalised problems and coping strategies (p<0.05). Internalised problems, like depression, anxiety and stress, were significantly negatively associated with quality of life (p<0.01). In contrast, the coping strategies EFC and PFC were significantly positively associated with QOL (p<0.01). However, the association between anger and DFC with QOL was not significant (p>0.05). The association between coping strategies and internalised problems were significantly positive (p<0.01). However, the association of EFC with depression and anxiety was not statistically significant (p>0.05 each) (Table 1).

A significant mediating effect of EFC, PFC and DFC was found between depression, anxiety and stress (p<0.05 each). One unit of change in depression significantly created 0.09 units of change in EFC (p<0.01), and one unit of change in EFC significantly created 0.77 units of change in QOL (p<0.001) after controlling the variance accounted by depression in the model (Table 2).

In contrast, anger only significantly mediated the relationship between PFC and QOL (Table 3). The results for DFC were also noted (Table 4).

There was no significant effect of anger (direct effect/ path-c) on QOL after controlling for EFC and DFC (p>0.05). Change in one unit in anger led to a significant change of 0.07 EFC (p<0.001), but change in one unit in EFC led to non-significant change (p=0.68) in QOL, leaving non-significant effect of anger on QOL through EFC.

Table-1: Pearson correlation among variables.

	1	2	3	4	5	6	7	8
1. QOLS	1	-.02	-.48**	-.43**	-.38**	.29**	.16**	.04
2. NAS		1	.29**	.30**	.42**	.36**	.32**	.29**
3. Depression			1	.85**	.84**	.07	.17**	.31**
4. Anxiety				1	.81**	.10	.21**	.33**
5. Stress					1	.13**	.22**	.34**
6. EFC						1	.62**	.44**
7. PFC							1	.53**
8. DFC								1

Note. QOLS = Quality of Life Scale; NAS = Novaco Anger Scale; EFC = Emotion Focused Coping; PFC = Problem Focused Coping; DFC = Dysfunctional Coping.**p< .01; *p<.05.

Table-2: Summary of Mediation Analysis Predicting Quality of Life (QOL) from Anger, Depression, Anxiety and Stress via Emotion Focussed Coping (EFC).

		Consequent						
		M (EFC)				Y (QOL)		
Antecedent		**Coeff.**	**SE**	***p***		**Coeff.**	**SE**	***p***
X (Ang)	α	0.07	0.01	<0.001	ć	-0.06	0.04	.17
M (EFC)		-	-	-	b	0.57	0.19	<0.01
					c	-0.02	0.04	.68
		R^2= 0.10	R^2= 0.03					
		F(298, 1) = 34.33***	F(297, 2) = 4.62**					
X (Dep)	α	0.09	0.03	<0.01	ć	-0.82	0.08	<0.001
M (EFC)		-	-	-	b	0.77	0.16	<0.001
					c	-0.75	0.07	<0.001
		R^2= 0.03	R^2= 0.29					
		F(298, 1) = 9.08**	F(297, 2) = 60.46***					
X (Anx)	α	0.12	0.03	<0.001	ć	-0.88	0.09	<0.001
M (EFC)		-	-	-	b	0.81	0.16	<0.001
					c	-0.78	0.10	<0.001
		R^2= .05	R^2= .25					
		F(298, 1) = 14.04***	F(297, 2) = 48.64***					
X (Stress)	α	0.13	0.03	<0.001	ć	-0.78	0.09	<0.001
M (EFC)		-	-	-	b	0.79	0.17	<0.001
					c	-0.68	0.10	<0.001
		R^2= .05	R^2= .20					
		F(298, 1) = 15.10***	F(297, 1) = 37.63***					

Note. Ang = Anger; Dep = Depression; Anx = Anxiety; EFC = Emotion Focused Coping; QOL = Quality of Life; X = Predictor; M = Mediator; Y = Outcome.

Table-3: Summary of Mediation Analysis Predicting Quality of Life (QOL) from Anger, Depression, Anxiety and Stress via Problem Focussed Coping (PFC).

		Consequent						
Antecedent		M (PFC)				Y (QOL)		
		Coeff.	**SE**	***p***		**Coeff.**	**SE**	***p***
X (Anger)	α	0.06	0.01	<0.001	ć	-0.11	0.04	0.01
M (PFC)		-	-	-	b	1.45	0.25	<0.001
					c	-0.02	0.04	0.68
		R^2= 0.13	R^2= 0.01					
		F(298, 1) = 42.84***	F(297, 2) = 17.27***					
X (Dep)	α	0.02	0.02	0.26	ć	-0.78	0.07	<0.001
M (PFC)		-	-	-	b	1.37	0.20	<0.001
					c	-0.75	0.08	<0.001
		R^2= 0.003	R^2= 0.34					
		F(298, 1) = 1.28	F(297, 2) = 75.27***					
X (Anx)	α	0.04	0.03	0.08	ć	-0.85	0.09	<0.001
M (PFC)		-	-	-	b	1.43	0.21	<0.001
					c	-0.78	0.10	<0.001
		R^2= 0.01	R^2=0.30					
		F(298, 1) = 30.07	F(297, 2) = 62.80***					
X (Stress)	α	0.06	0.03	0.02	ć	-0.76	0.09	<0.001
M (PFC)		-	-	-	b	1.47	0.21	<0.001
					c	-0.68	0.10	<0.001
		R^2= 0.02	R^2= 0.26					
		F(298, 1) = 5.30*	F(297, 2) = 52.68***					

Note. Ang = Anger; Dep = Depression; Anx = Anxiety; PFC Problem Focused Coping; QOL Quality of Life. X = Predictor; M = Mediator; Y = Outcome.

Table-4: Summary of Mediation Analysis Predicting Quality of Life (QOL) from Anger, Depression, Anxiety and Stress via Dysfunctional Focussed Coping (DFC).

		Consequent						
		M (DFC)		Y (QOL)				
Antecedent		Coeff.	SE	*p*		Coeff.	SE	*p*
X (NAI)	α	0.10	0.02	<0.001	ć	-0.03	0.04	0.52
M (DC)		-	-	-	b	0.11	0.13	0.40
					c	-0.02	0.04	0.68
		R^2= 0.09	R^2= 0.003					
		F(298, 1) = 27.75***	F(297, 2) = 0.44					
X (Dep)	α	0.22	0.04	<0.001	ć	0-.85	0.08	<0.001
M (DC)		-	-	-	b	0.44	0.11	<0.001
					c	-0.75	0.08	<0.001
		R^2= 0.09	R^2= .27					
		F(298,1) = 30.75***	F(297, 2) = 54.77***					
X (Anx)	α	0.28	0.05	<0.001	ć	-0.90	0.10	<0.001
M (DC)		-	-	-	B	0.43	0.12	<0.001
					c	-0.78	0.10	<0.001
		R^2= .11	R^2= .22					
		F(298, 1) = 35.27***	F(297, 2) = 41.68***					
X (Stress)	α	0.28	0.05	<0.001	ć	-0.79	0.10	<0.001
M (DC)		-	-	-	b	0.40	0.12	<0.001
					c	0-.68	0.10	<0.001
		R^2= .11	R^2= .17					
		F(298, 1) = 38.43***	F(297, 2) = 31.31***					

Note. Ang = Anger; Dep = Depression; Anx = Anxiety; DFC Dysfunctional Coping; QOL Quality of Life, X = Predictor; M = Mediator; Y = Outcome.

Discussion

To the best of our knowledge, the current study is the first to evaluate comprehensively the mediating (indirect) effect of EFC, PFC and DFC strategies between internalising problems like depression, anxiety, stress and anger, and QOL in CVD patients.

There have been studies related to the association of internalising problems with QOL[10-12,14,15] but the current study is novel for two reasons. Firstly, in previous jurisdictions, the evaluation was made in other cultures whereas this study was done in Pakistani culture and the findings were found consistent with these studies. Secondly, this evaluation was a first step for complex analysis (mediation).

The most significant findings of the study are related to the mediating role of different coping strategies between internalising problems and QOL which distinguishes it from the rest. A significant mediating effect of EFC, PFC and DFC strategies were found between internalising problems and QOL. However, anger significantly predicted all the three coping strategies by affecting QOL. However, there was no evidence of independent effect (direct effect/ path-c) of anger on QOL regardless of the coping strategy. The current study has considerably contributed to the evaluation of indirect effect of inappropriate coping strategies. However, the use of positive emotions and appropriate coping strategies always help in reducing the severity of cardiac diseases, and improve cardiac functioning.[29] A study reported that appropriate cognitive adaptation strategies, such as reappraisal, leads to regulation of the negative emotional feelings.[14] Similarly, another study found that appropriate emotional regulation was correlated with good mental and physical health as well as interpersonal relations.[30] But despite the advances in psychological strategies to enhance lifestyle among CVD patients,[31] it has been felt that there is a lack of awareness regarding how to cope with psychological issues among such patients effectively. Knowledge of mental, psychological and emotional risk factors and their prevention or treatment will lead to a decrease in treatment cost and in improving QOL. Further, it will also help in decreasing the illness ratio.[32]

Keeping in view the discussion above, there is a dire need for continuous screening of psychological issues in CVD patients. While considering the under-reference issues, the American Heart Association (AHA) recommended that regular screening of internalised problems among cardiac patients should be made because, despite of the advances

in screening and treatment, depression mostly remained un-recognised and un-treated among CVD patients.[33] In addition, providing evidence-based psychological interventions, including cognitive behaviour therapy along with medical treatment, can significantly decrease these issues. A study[34] observed that after some sessions of cognitive behaviour therapy, a significant decrease in psychological distress, anxiety, depression and post-traumatic distress syndrome (PTSD) was revealed. Furthermore, family and social support were the supplementary elements to achieve the psychological outcome.[34] Past researches have revealed that family and social support improves the coping mechanism of individuals.[35] Therefore, the main goal of psychology is to treat the psychosomatic disease which will help in improving physical condition and QOL.[36]

Conclusion

CVD patients are mostly treated physiologically, but psychological aspects of these diseases are ignored even in the developing countries. There is a dire need for continuous screening of psychological issues in patients suffering from cardiovascular diseases.

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