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The relationship between hostility and anger with coronary heart disease in patients

Bahman Sadeghi, Hamideh Mashalchi¹, Sahar Eghbali², Mina Jamshidi³, Mina Golmohammadi⁴, Tayebeh Mahvar⁵

M.Sc Degree in Clinical Phycology, Kermanshah University of Medical Sciences, ³Nursing B.Sc, Student School of Nursing and Midwifery, Kermanshah University of Medical Sciences, ⁴M.Sc Degree in Clinical Phycology, Kermanshah University of Medical Sciences, ⁵BScN, MScN, Ph.D in Nursing Education, School of Nursing and Midwifery, Kermanshah University of Medical Sciences, Kermanshah, ¹M.Sc Degree in Nursing, School of Nursing and Midwifery, Dezful University of Medical Sciences, Dezful, ²M.Sc Degree in Nursing, Faculty of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran

Address for correspondence:

Dr. Tayebeh Mahvar,
School of Nursing and Midwifery,
Kermanshah University of Medical Sciences,
Kermanshah, Iran.
E-mail: mandanamahvar@yahoo.com

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Abstract:

BACKGROUND: Cardiovascular disease accounts for 40% of the world's fatality and after accidents and traumas, is the second leading cause of death in Iran. Given the role of psychological characteristics such as hostility and anger in the development of certain behaviors and habits affecting heart problems, this study aimed to investigate the relationship between hostility and anger with coronary artery disease.

METHODOLOGY: In this cross-sectional study, 320 patients referring to the hospital with coronary artery stenosis enrolled in the study and were available for angiography. Data collection tools included demographic and disease status questionnaires and aggression questionnaire. The data were analyzed by SPSS software version 16, and Spearman's correlation coefficient, Student's *t*, and one-way analysis of variance tests was used for the statistical analysis.

RESULTS: In this case, we have the following. Out of 302 cases, 183 were males and 119 were females. One hundred and ninety-seven patients with coronary artery disease and 105 patients with angiography had no coronary artery disease.

CONCLUSION: People with coronary artery disease and healthy controls had no significant differences in demographic characteristics, history of illness, and education. Furthermore, there was no statistically significant relationship between hostility and anger with vasoconstriction. Since there is no relationship between hostility and anger with coronary artery disease, further studies are needed to investigate the presence of mediating variables to design appropriate and preventive interventions.

Keywords:

Anger, coronary artery disease, hostility

Introduction

Coronary artery disease is one of the cardiovascular disorders caused by the lesion and the stenosis of the coronary arteries. In this disease, one or more coronary arteries of the heart are partially or permanently blocked due to atherosclerotic plaque formation and the blood supply to various parts of the heart is permanently or temporarily stopped.^[1] In recent decades, high mortality rates, years of active life, disability, reduced age and high financial

costs for the individual, society, and the chronic course and nature of the preventable nature of the disease have resulted in coronary artery disease that has received special attention.^[2] Cardiovascular disease is the second leading cause of death in Iran and the first leading cause of death in many parts of the world. Forty percent of all deaths worldwide are due to cardiovascular disease.^[3] According to the statistics obtained in 2007, coronary heart disease causes about 167 deaths/year out of every 100,000 population in the United States.^[4] Researchers found a relationship between mental stress and coronary artery

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disease. Furthermore, stressful life events are associated with increased blood pressure.^[5] In their research, Friedman and Rosen Man showed a significant relationship between cardiovascular disease and type A behavioral patterns, especially the components of competition, hostility, and tension.^[6] Most studies have focused on physiological factors such as blood lipids, blood pressure, body mass index, diabetes, thyroid, and health-related behaviors such as smoking, alcohol, and so on in the cause of coronary artery disease. However, psychologists believe that psychological factors such as stress, stress, anxiety, hostility, depression, anger, and hatred play a role in heart disease.^[7]

Anger is one of the variables that affect coronary heart health. Anger is an emotion that has different effects on human life. This excitement is beneficial for human survival and facilitating adaptive responses, especially war or flight responses, when faced with danger. However, unmanageable anger not only does not help human survival, but also it can threaten his/her life. Anger and inadequate management can lead to the destruction of property and communication problems, physical pain, substance abuse, problem-solving skills, increased risk of health-related problems, such as hypertension and cardiovascular disease, mental trauma, aggressive or violent behavior, and physical and psychological abuse, which are associated with children and spouses.^[8] Research has shown that people who are anxious, stressed, depressed, and violent are more at risk for diseases, especially cardiovascular disease.^[9] Hostility is another variable that affects the health of heart patients and is defined as a personality trait that is characterized by the harmful attitudes and negative evaluation of the events and individuals. This characteristic develops a hostile style in interpersonal relationships characterized by competition, struggle, and avoidance.^[10] Hostility affects coronary artery disease mortality. For the hostile man is always in the thought of strife and victory; therefore, he will be deprived of peace.^[11] In a study, Clark *et al.* showed that cardiovascular patients were more hostile. They also found that there were a negative correlation between cardiovascular disease and laughter and a positive correlation between cardiovascular disease and hostility.^[12] In a study by Jahangirpour *et al.*,^[13] it was found that group mindfulness training has a significant effect on reducing depression, hostility, and anxiety in men with coronary heart disease. Muranaka *et al.* and Manavuuk *et al.* found that high hostility provided the basis for vascular injury and found a significant relationship between negative emotions (such as anger and hostility) and risk for cardiovascular disorders.^[14] In a study,^[15] Vella and Friedman suggested that anger and hostility were among the risk factors for coronary heart disease, and hostility was also associated with hypertension. However, some studies have failed to

find a link between these features and coronary artery disease.^[16,17] Therefore, there is a need for further investigations in this field.^[18] Given that psychological traits such as hostility and anger can indirectly create harmful behaviors and habits that may cause heart problems or exacerbate or interfere with recovery, this study aimed to investigate the relationship between hostility and anger and coronary heart disease. The results of this study can be helpful for health system officials and planners to enhance life skills, especially communication and adaptation skills to control anger and hostility, to prevent the coronary artery disease.

Methodology

Population and sampling

In this cross-sectional study, hostility and anger were evaluated in patients with coronary artery disease. The study population consisted of all patients with coronary artery stenosis referred to Imam Ali Heart Hospital in Kermanshah from whom angiography was performed, and 302 specimens were selected by convenience sampling.

Instruments

The data collection tool consisted of two parts: the first part of a questionnaire including demographic information and disease status such as education, sex, angiographic results, and coronary heart disease risk factors (diabetes, hypertension, tobacco use, and positive family history) and the second part including the aggression questionnaire (AGQ). The questionnaire consists of 30 items measuring 14 items of anger, 8 items of aggression, and 8 items of hostility. The AGQ scale is a self-report scale in which the sample under study responds to one of three options, rarely, sometimes, and always, and is given 0, 1, 2, and 3, respectively. The overall score of this questionnaire is from 0 to 90, with the sum of the scores on the questionnaire, and those who score below the average will have low aggression and anger. The validity and reliability of this questionnaire were measured by Mahmoudi.^[19] The method of implementation of the project was that the researchers first explained the voluntary participation in the study, the confidentiality of the information received, and how the questionnaires were completed. Then, they were asked to carefully study the questionnaires and select the most appropriate answer. Data were analyzed by SPSS 16 software version 16, and Spearman and Student's correlation coefficient and one-way analysis of variance were used for the statistical analysis.

Results

Of the 302 patients studied, 183 were male and 119 were female. Furthermore, 197 patients had coronary

artery disease, 105 of whom had no coronary artery bypass angiography and were considered healthy. Vascular clotting was found in 132 (72.1%) men and 65 (54.6%) women. According to the angiographic results, 79 (26.2%) of the specimens had one-vessel occlusion, 55 (18.2%) had two clogged vessels, and 63 (20.9%) had three clogs. Patients were also evaluated for concurrent disease history and risk factors. Overall, 87 patients had hypertension, 25 had diabetes, 20 had tobacco use, 4 had a positive family history, 2 had drug use, and 151 had also chosen other options. In general, the history of the disease was similar in the two groups of healthy and cardiac patients, and there was no statistically significant difference between the two groups. The level of education in cardiac patients with coronary artery disease and normal controls was almost the same, with no significant difference between them, and most of them were illiterate [Table 1]. It was also observed that the mean score of hostility in men was higher than women and the mean score of anger in men and women was not significantly different [Table 2]. Furthermore, the results of Table 3 show that there is no statistically significant relationship between hostility and anger with vasoconstriction [Table 4].

Discussion

This study aimed to determine the relationship between hostility and anger with coronary heart disease in patients referred to Imam Ali Hospital in Kermanshah. The results of this study showed that there is no significant relationship between hostility and coronary artery disease, which is in contrast with the results of Heidari Pahlavi *et al.*,^[20] Clark *et al.*, and Houston *et al.* In the present study, there was no significant relationship between anger and coronary artery disease, which is different from the results of Zahed *et al.*^[14] and Vela and Friedman.^[15] Such differences may be due to the type of sampling, measurement tool, and research methodology; the AGQ questionnaire was used in the present study, whereas the Cook and Model questionnaire was used in the study of Zahid *et al.* Perhaps, another reason for the results of this study to be inconsistent with other studies is that a number of patients were treated with cardiovascular drugs, which may have lowered the level of emotion at the time of measurement. Furthermore, cultural and racial differences may influence the level of anger and hostility that may be the reason for the differences in the results of studies. For example, the present study was on Kermanshah patients with Kurdish minority, whereas Heidari Pahlavi study was on patients in Hamadan city. The role of anger and hostility in cardiovascular disorder is that anger and hostility can increase the heart rate and blood pressure, and overtime can damage

Table 1: Angiographic results

Artery	Abundance	Percent	The cumulative percentage
Eclipse of a vessel	79	26.2	26.2
Ecstasy	55	18.2	44.4
Eclipse of three vessels	63	20.9	65.2
No clogging	105	34.8	100
Total	302	100	

Table 2: Demographic data

		Artery		Demographic data	
	Have	Does not have			
132	Abundance	51	Abundance	Male	Sex
72.1	Percent	27.9	Percent		
65	Abundance	54	Abundance	Female	
54.6	Percent	45.4	Percent		
78	Abundance	38	Abundance	Under the diploma	Level education
67.2	Percent	32.8	Percent		
64	Abundance	33	Abundance	Diploma	
66	Percent	34	Percent		
46	Abundance	25	Abundance	Illiterate	
64.8	Percent	35.2	Percent		
9	Abundance	9	Abundance	Academic	
50	Percent	50	Percent		
64	Abundance	23	Abundance	Blood pressure	History sickness
73.6	Percent	26.4	Percent		
19	Abundance	6	Abundance	Diabetes	History sickness
76	Percent	24	Percent		
15	Abundance	5	Abundance	Tobacco use	
75	Percent	25	Percent		
2	Abundance	2	Abundance	A positive family history	
50	Percent	50	Percent		
2	Abundance	0	Abundance	Drug use	
100	Percent	0.0	Percent		
90	Abundance	61	Abundance	Others	
59.6	Percent	40.4	Percent		

Table 3: Mean and standard deviation of anger and hostility in men and women

Variable	Sex	n	Average	SD	Average SE
Anger	Male	183	25.3005	8.85300	0.65444
	Female	119	26.7899	7.69754	0.70563
Hostility	Male	183	9.2787	5.41406	0.4002
	Female	119	7.6050	4.53278	0.41552

SD=Standard deviation, SE=Standard error

the coronary artery wall and accelerate coronary artery dysfunction. Hostile states are associated with the release of catecholamines and corticosteroids, which can increase platelet density and coronary artery contraction, thereby increasing the possibility of blood clotting within the artery. In addition to potential physiological processes associated with hostility, it may impair certain behaviors such as smoking, eating a high-fat diet, and not exercising coronary artery function. Hence, it can be argued that these people behave in a hostile manner with inappropriate behaviors

Table 4: Correlation between hostility and anger and clogged arteries

	Artery	
Hostility	The correlation coefficient	-0.06
	The significance level	0.301
Anger	The correlation coefficient	-0.020
	The significance level	0.732

and health habits, as well as in situations of skepticism, mistrust, and a tendency to develop negative feelings, exposing their mental health status. They are threatened and harmed, and with poor behavioral habits such as alcohol consumption, smoking, and exercise, they are less likely to compromise their physical health, resulting in a combination of these behaviors that stimulate the sympathetic nervous system and consequently damage the wall. Coronary arteries are provided.^[21]

Conclusion

Given the characteristics of personality types, hostility and anger and as they are unstable and cannot be precisely correlated with cardiovascular disease, and given that the number of samples under study in the hospital in Kermanshah was limited, generalizing the data should be done by cautions in

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Conflicts of interest

There are no conflicts of interest.

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