

## Hostility among Coronary Heart Disease Patients and Healthy Groups in Iran

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**Abstract.Objectives:** This study examined the relation between hostility with coronary heart disease among cardiovascular disease patients and healthy groups in Iran.

**Method:**The study sample included 220 coronary heart disease patients and healthy groups, who completed the Manifest Hostility Scale (Kool 1980).

**Results:**Means and Standard Deviations were calculated for all the groups. A glance at evidence revealed that the CAD group scored was higher than the control group on Hostility ( $t=2.10$ ,  $p<0.05$ ). Analysis of variance for the variable Hostility revealed that the F-ratio for CAD patients verses Healthy control group was significant ( $F=4.41$ ,  $p<0.05$ ).

**Conclusions:** The most important features of this research work in the field of health psychology in Iran. Research has demonstrated a significant relationship between hostility and the risk of coronary heart disease. In summary high hostility is associated with increased prevalence of cardiovascular disease as well as a predictor of myocardial infarction and all-cause morbidity and mortality.

**Keywords:** Hostility, Mortality, Coronary Heart Disease, Atherosclerosis, Myocardial Infarction.

### 1. Introduction

Historically, anger, hostility, and aggressive qualities have been implicated often as predisposing factors in coronary heart disease and hypertension<sup>(1)</sup>. Over the past few decades, the concept of the Type A coronary-prone behavior pattern (TABP), developed by Friedman and Rosenman<sup>(2)</sup>, has generated considerable theoretical and empirical research into the relationship between behavior and coronary heart disease (CHD)<sup>(3)</sup>. Hostility is multidimensional and includes mistrustful attitudes, aggressive behavior, and frequent angry feelings<sup>(4)</sup>. Several studies have found that hostility, assessed by various measures, is associated with increased risk of cardiovascular morbidity and mortality and/or all-cause mortality<sup>(5-9)</sup>. Evidence indicates that hostility, or unexpressed anger, has been linked to a more than 5-fold increased risk of CAD events<sup>(10-14)</sup>. In fact, hostility has been associated with an increase in hypertension<sup>(15)</sup>, inflammatory biomarkers (interleukin 6<sup>(16)</sup> and tumor necrosis factor  $\alpha$ <sup>(17)</sup>, dyslipidemia, obesity<sup>(18)</sup> coronary atherosclerosis<sup>(19)</sup>, coronary calcium<sup>(20)</sup>, and peripheral atherosclerosis<sup>(21-22)</sup>. Many studies, in men, suggested that the association of hostility with myocardial infarction was age-dependent such that hostility was only a risk indicator for first MI in men younger than 50 years of age<sup>(23)</sup>. Some research showed that hostility was associated with long-term risk of hypertension, CHD and was also predictive of all-cause mortality in men and women<sup>(24-25)</sup>.

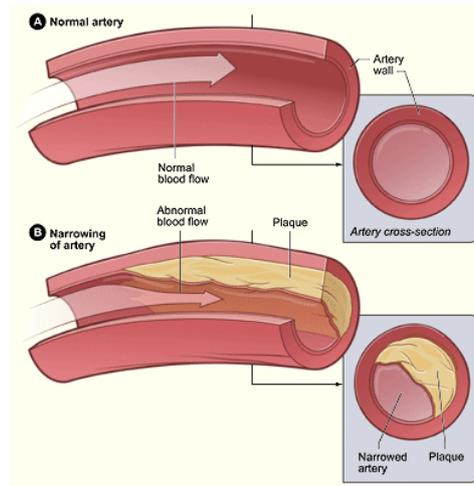


Fig. 1: The two cross-sections of a Coronary Artery Disease:

A) A normal opening without changes in the vessel walls

B) A partial occlusion due to thickening of the vessel wall at this point.

## 2. Methods

The primary aim of the present investigation was to study of Hostility and Social support among coronary artery disease patients in Iran. For this purpose, 220 participants were taken, who were categorized into two groups- Group 1 composed of 110 Coronary Artery Disease (CAD) patients selected from the biggest general heart hospital in Tehran, Iran, and group 2 composed of 110 healthy participants randomly selected from the general population of Tehran and other travelers residing in Tehran. The age range for the healthy control group was 22-30, 40-50, and 60+ years. The two groups were compared on the measures of Manifest Hostility Scale (Kool, 1980), and Social Support Questionnaire Sarason et al. (1983). All the subjects were explained about the nature and aim of the investigation and their role in the study and informed consent was obtained from all of them before they enlisted as subjects.

Table 1 Means, SDs and t-ratios Comparing Coronary Artery Disease Group and Healthy Groups

Variables	CAD Group (n=110)		Healthy Group (n=110)		t-ratios	Level of significance
	Mean	SD	Mean	SD		
Hostility	7.82	2.22	7.85	1.85	2.10	p<.05

Table 2 Analysis of variance of Hostility

Sources of variance	Sum of Squares	df	Mean Sum of Squares	F- ratio	Level of Significance
CAD & Healthy	18.62	1	18.62	4.42	p<.05
Gender	3.56	1	3.56	.84	ns
CAD & Healthy x gender	2.62	1	2.62	.62	ns
Error	910.94	216	4.22		

Total	15926.00	220			
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### 3. Results and Discussion

Means and Standard Deviations were calculated for all the groups. A glance at Table 1 revealed that the CAD group scored was higher than the control group on Hostility ( $t=2.10$ ,  $p<0.05$ ). Analysis of variance for the variable Hostility (Table 2) revealed that the F-ratio for CAD patients verses Healthy control group was significant ( $F=4.41$ ,  $p<0.05$ ), F-ratio for gender was insignificant and F-ratio for interaction effect was also insignificant.

Hence the above results clearly show that the hypothesis regarding Hostility in both the groups upheld. The results are corroborated by the following studies. Dembroski et al. (1985) in study on components of type A, hostility, and anger in relationship to angiographic findings found that hostility and anger were significantly and positively associated with the disease severity, including angina symptoms and number of myocardial infarctions<sup>(26)</sup>. Sherwood et al. (2004) reported that higher levels of hostility and low levels of social support are associated with blunted  $\beta$ -adrenergic receptor responsiveness in middle-aged women<sup>(27)</sup>. Caska et al. (2009) in study on anger expression and sleep quality and patients with coronary heart disease showed that Anger suppression is associated with poor sleep quality in patients with coronary heart disease<sup>(28)</sup>.

### 4. Conclusions

The most important features of this research work in the field of health psychology in Iran. Research has demonstrated a significant relationship between hostility and the risk of coronary heart disease. In summary high hostility is associated with increased prevalence of cardiovascular disease as well as a predictor of myocardial infarction and all-cause morbidity and mortality. The governments in Asia, Africa and South America should be accepted their responsibility for expanding social support networks to helping their population in crisis and disease especially in treatment of coronary heart disease.

### 5. References

- [1] Everson, S. A., Kauhanen, J., Kaplan, G. A., Goldberg, D.E., Julkunen, J., Tuomilehto, J., Salonen, J. T. (1997). Hostility and Increased Risk of Mortality and Acute Myocardial Infarction: The Mediating Role of Behavioral Risk Factors. *American Journal of Epidemiology*, 146(2): 142-152.
- [2] Siegman, A. W. Demberoski, T. M. and Ringet, N. (1987). Components of Hostility and the Severity of Coronary Artery Disease. *Psychosomatic Medicine*, 49(2): 127-135.
- [3] Matthews, K. A. (1982). Psychological perspectives on the type A behavior pattern. *Psychol Bull* 91: 293-323.
- [4] Miller, T. Q. , Smith, T. W., Turner, C. W., et al. (1996). A meta-analytic review of research on hostility and physical health. *Psych Bull*, 119:322–348.
- [5] Dembroski, T. M., MacDougall, J. M., Costa, P. T., J. R. (1989). Components of hostility as predictors of sudden death and myocardial infarction in the Multiple Risk Factor Intervention Trial. *PsychosomMed* ;51:514-522.
- [6] Hecker ML, Chesney MC, Black GW. (1981). Coronary-prone behaviors in the Western Collaborative Group Study. *PsychosomMed* : 50:153-64.
- [7] [Barefoot, J. C., Dahlstrom, W.G., Williams, R. B. (1983). Hostility, CHD incidence and total mortality: a 25-year follow-up study of 255 physicians. *PsychosomMed* ;45:59-63.
- [8] Almada SJ, Zonderman AB, Shekelle RB, et al. Neuroticism and cynicism and risk of death in middle-aged men: the Western Electric Study. *Psychosom Med* 1991 ;53:165-75.
- [9] Barefoot JC, Larsen S, von der Lieth L, et al. Hostility, incidence of acute myocardial infarction, and mortality in a sample of older Danish men and women. *Am J Epidemiol* 1995; 142:477-84.
- [10] Lavine, C. J. Millani, R. V. (2005). Prevalence of Hostility in Young Coronary Artery Disease Patients and Effects of Cardiac Rehabilitation and Exercise Training. *Mayo Clinic Proceedings*, 80(3): 335-342.

- [11] Rosenman RH, Brand RJ, Jenkins D, Friedman M, Straus R, Wurm M.( 1975). Coronary heart disease in Western Collaborative Group Study: final follow-up experience of 81 /2 years. *JAMA*, 233: 872-877.
- [12] Jenkins, C. D. (1976). Medical progress: recent evidence supporting psychologic and social risk factors for coronary disease (first of two parts). *N Engl J Med*. 294: 987-994.
- [13] Lavie, C. J., Milani, R. V. (1999). Effects of cardiac rehabilitation and exercise raining programs on coronary patients with high levels of hostility.*Mayo ClinProc*. 74:959-966.
- [14] Lavie, C. J., Milani, R. V.(2004). Impact of aging on hostility in coronary patients and effects of cardiac rehabilitation and exercise training in elderly persons.*Am J GeriatrCardiol*.13:125-130.
- [15] Yan, L. L., Liu, K., Matthews, K. A., Daviglus, M. L., Ferguson, T. F., Kiefe, C. I. (2003). Psychosocial factors and risk of hypertension: the Coronary Artery Risk Development in Young Adults (CARDIA) study. *JAMA*. 290:2138- 2148.
- [16] Suarez, E. C. (2003). Plasma interleukin-6 is associated with psychological coronary risk factors: moderation by use of multivitamin supplements. *Brain Behav Immun*. 17:296-303.
- [17] Suarez, E. C., Lewis, J. G., Kuhn, C.(2002). The relation of aggression, hostility, and anger to lipopolysaccharide-stimulated tumor necrosis factor (TNF)- $\alpha$  by blood monocytes from normal men. *Brain Behav Immun*,16:675-684.
- [18] Rutledge, T., Reis, S. E., Olson, M., et al.(2001). Psychosocial variables are associated with atherosclerosis risk factors among women with chest pain: the WISE study. *Psychosom Med*, 63:282-288.
- [19] Williams, R. B. Jr., Haney, T. L., Lee, K. L., Kong, Y. H., Blumenthal, J. A., Whalen, R. E.(1980). Type A behavior, hostility, and coronary atherosclerosis. *Psychosomatic Med*, 42:539-549.
- [20] Iribarren, C., Sidney, S., Bild, D. E., et al.(2000). Association of hostility with coronary artery calcification in young adults: the CARDIA study. *JAMA*. 283:2546-2551.
- [21] Knox, S. S, Adelman, A., Ellison, R. C. (2000). Hostility, social support, and carotid artery atherosclerosis in the National Heart, Lung, and Blood Study. *Am J Cardiol*. 86:1086-1089.
- [22] Julkunen, J., Salonen, R., Kaplan, G. A., Chesney, M. A., Salonen, J. T. (1994). Hostility and the progression of carotid atherosclerosis. *Psychosomatic Med*, 56:519- 525.
- [23] Meesters, C. M., Smulders, J. (1994). Hostility and myocardial infarction in men. *J Psychosomatic Res*, 38:727–34.
- [24] Yan, L. L., Liu, K., Matthews, K. A., Daviglus, M. L., Ferguson, T. F., Kiefe, C. I. ( 2003). Psychosocial factors and risk of hypertension. *JAMA*, 290: 2138–48.
- [25] Barefoot, J. C., Dahlstrom, W. G., Williams, R. B. Jr.(1983). Hostility, CHD incidence, and total mortality: a 25-year follow-up study of 255 physicians. *Psychosomatic Med*,45:59–63.
- [26] Dembroski, T.M., MacDougall, J.M., Williams, R.B. Jr., Haney, T.L., and Blumenthal, J.A. (1985). Components of Type A, hostility, and anger in: Relationship to angiographic findings. *Psychosomatic Medicine*, 47, 219-233.
- [27] Sherwood, A., Hughes, J. W., Kuhm, C., and Hinderliter, A. L. (2004). Hostility is related to blunted B-adrenergic receptor responsiveness among middle aged women. *Psychosomatic Medicine*, 66, 507-513.
- [28] Caska, C.M., Hendrickson, B.E., Wong, M.H., Ali, S., Neylan, T., and Whoodly, M. (2009). Anger expression and sleep quality and patients with coronary heart disease. *Psychosomatic Medicine*, 71, 280-285.