

## Enneagram of Personality as an Effective Model in the Prediction of the Risk of Cardiovascular Diseases: A Case-Control study

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### ABSTRACT

**Introduction:** Studies on behavioral patterns and personality traits play a critical role in the prediction of healthy or unhealthy behaviors and identification of high-risk individuals for cardiovascular diseases (CVDs) in order to implement preventive strategies. This study aimed to compare personality types in individuals with and without CVD based on the enneagram of personality.

**Materials and Methods:** This case-control study was conducted on 96 gender-matched participants (48 CVD patients and 48 healthy subjects). Data were collected using the Riso-Hudson Enneagram Type Indicator (RHETI). Data analysis was performed in SPSS V.20 using MANOVA, Chi-square, and T-test.

**Results:** After adjustment for age and gender there is a significant difference between two groups (and male) in term of personality types one and five. In CVD patients, score of personality type one ( $F(1,94)=9.476$ ) ( $P=0.003$ ) was significantly higher, while score of personality type five was significantly lower ( $F(1,94)=6.231$ ) ( $P=0.014$ ), compared to healthy subjects. However, this significant difference was only observed in the score of personality type one in female patients ( $F(1,66)=4.382$ ) ( $P=0.04$ ).

**Conclusion:** Identifying healthy personality type one individuals before CVD development, providing necessary training on the potential risk factors of CVDs, and implementation of preventive strategies (e.g., anger management skills) could lead to positive outcomes for the society and health care system. It is recommended that further investigation be conducted in this regard.

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## Introduction

Cardiovascular diseases (CVDs) are considered significant risk factors for mortality among men and women across the world. It is predicted that a quarter of the American people will experience CVD by 2030 (1). The mortality rate associated with

CVDs has been estimated at 17,000,000 cases per year, and about 80% of these cases occur in underdeveloped countries (2).

According to statistics, approximately 15 million Iranians are diagnosed with CVDs, and the

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reported mortality rate accounts for 167 cases per a 100,000 population (3). Recent studies have denoted the role of several risk factors in the occurrence of cardiac events, including biological, environmental, behavioral, and psychological factors (4). Psychological and psychosocial parameters are among the major risk factors for the etiology and prognosis of CVDs. Such examples are poor socioeconomic status, lack of social support, social isolation, occupational and family stress, depression, anxiety and stress, anger and hostility, and personality traits (5).

Personality traits could variably affect overall health; however, detailed information is lacking regarding the exact mechanism of these effects (6). According to the literature, neuroticism is more prevalent among cardiac patients compared to matched healthy individuals (7). Furthermore, CVD patients have higher level of extroversion, as well as lower emotional consistency and tolerance (8-10).

In this regard, findings of Jokela et al. (6) and Shipley et al. (11) have been indicative of a significant association between personality traits and CVD mortality. In the mentioned studies, personality traits were evaluated using the NEO five-factor inventory and Eysenck Personality Questionnaire.

Enneagram of personality is a reliable, applicable approach used to infer a comprehensive plan of psychological structures (12, 13). In this model, psychological functions are studied through the assessment of various personality types (14).

Enneagram of personality consists of nine personality types, which explain the basic characteristics and dominant personality type of an individual (15). Dominant personality is derived from the self-awareness of an individual. For the most part, self-awareness is formed based on childhood experiences and hereditary factors.

Basic personality is composed of adaptive and defensive aspects toward the environment. Individual personality is divided into nine types based on these aspects. Moreover, individual identity encompasses eight other personality types, which are less developed throughout life and involve individual talents. These aspects form a significant part of personal identity (14).

Each personality type has special mechanisms to cope with stress and anxiety (16); as such, it is likely that some personality types are more prone to developing cardiac disorders. On the other hand, studies on behavioral patterns and personality traits play a critical role in the prediction of healthy and unhealthy behaviors and identification of high-risk individuals for CVDs, who could benefit from preventive strategies (8).

This study aimed to compare the personality types of individuals with and without CVDs based on the enneagram of personality model.

## Materials and Methods

### *Study design and procedures*

This case-control study was conducted to compare and evaluate the personality types of healthy subjects and CVD patients admitted in the Cardiac Surgery Department of Imam Ali Hospital of Kermanshah, located in the west of Iran, in September 2014. This referral hospital is a governmental cardiology center in western Iran offering treatment services to the residents of this region. This study was registered in the research center of Kermanshah University of Medical Sciences and approved by the Ethics Committee of this university (ID: 94274).

### *Inclusion criteria*

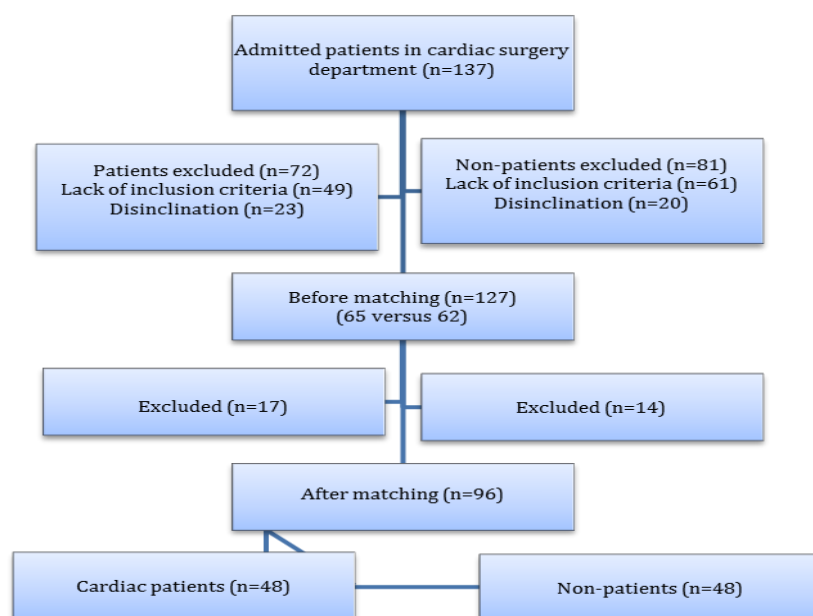
Inclusion criteria of the study were as follows: 1) age of 30-75 years; 2) education level of higher than primary; 3) confirmed diagnosis of CVD by a cardiologist for the patient group and disapproval of CVD by a physician for healthy subjects; 4) no underlying disorders associated with CVDs (e.g., hypertension or diabetes for healthy subjects) and 5) written informed consent for participation.

### *Participants and data collection*

Study population consisted of 137 CVD patients admitted in the Cardiac Surgery Department of Imam Ali Hospital of Kermanshah and 143 healthy participants selected from the relatives of these patients. Sampling was performed via complete enumeration due to time constraints and number of samples. All patient relatives (with the exception of in-laws) who took care of the hospitalized patients were enrolled in the study as controls.

All patients and their relatives were visited by a cardiologist. Despite the confirmed diagnosis of CVD in the patient group by a cardiologist, examination of healthy relatives during the visits by the same cardiologist indicated that 36 cases were suspected for CVDs. Therefore, these individuals were excluded from the study due to the presence of some CVD symptoms, such as persistent chest pain or dyspnea. In addition, 45 candidates who did not meet at least one inclusion criterion or were unwilling to participate were excluded from the study (total: 81).

Moreover, 72 CVD patients were excluded due to the age or education limitations or the absence of other inclusion criteria. Finally, 65 CVD patients and 62 healthy subjects were asked to provide written consent and complete the demographic questionnaire. Demographic forms were completed



**Diagram 1.** Participant replacement method

individually in the presence of a clinical psychologist at the hospital. After collecting the demographic and clinical data of the participants, the two groups were matched in terms of gender.

At this stage, 17 CVD patients and 14 healthy subjects were excluded, and sample size was reduced to 96 participants (48 subjects in each group) (Diagram 1).

Riso-Hudson Enneagram Type Indicator (RHETI) was completed by 96 participants. Each patient and his/her relative simultaneously completed RHETI, and the questionnaires were collected for data analysis.

#### ***Riso-Hudson Enneagram Type Indicator (RHETI)***

This questionnaire was developed by Rizo and Hudson in 1999 and is composed of 144 items replied with two options (I Agree, I Disagree) to explain the personality traits of the respondent. RHETI assesses nine main personality types, and each personality type is graded within the score range of 1-9.

Validity and reliability of this questionnaire has been confirmed by Newgent with the internal consistency estimated at 0.70-0.82, and its concurrent validity with NEO inventory was obtained at the significance level of 0.01 (17). In addition, validity and reliability of the Persian version of RHETI has been confirmed (18).

#### ***Statistical analysis***

Data analysis was performed in SPSS V.20 using MANOVA, Chi-square, and independent T-test. Moreover, numeral and classified demographic variables were compared using Chi-square, and

distance variables were compared using the independent T-test. MANOVA was used for the comparison of the scores of study groups in terms of dependent variables. Additionally, effects of age and gender were controlled in variance analysis, and P value of less than 0.05 was considered significant.

#### **Results**

In total, each study group consisted of 34 women and 14 men. Mean age of female subjects was  $57.61 \pm 10.51$  and  $54.35 \pm 5.04$  years in CVD and control groups, respectively. Mean age of male subjects was  $57.86 \pm 8.69$  and  $55.43 \pm 7.28$  years in CVD and control groups, respectively. Demographic characteristics of the participants are presented in Table 1. According to the information in this table, study groups had no significant difference in any of the baseline characteristics.

Comparison of CVD patients and control subjects is shown in Table 2. According to the information in this table, study groups had a significant difference in personality types one and five. Correspondingly, score of personality type one was significantly higher in CVD patients ( $F(1,94)=9.476$ ) ( $P=0.003$ ), while score of personality type five was significantly lower, compared to healthy controls ( $F(1,94)=6.231$ ) ( $P=0.014$ ).

Comparison of personality traits of study groups in terms of gender is presented in Table 3. According to the information in this table, female CVD patients and control subjects had a significant difference in personality type one, so

**Table 1.** Comparison of patients with cardiovascular diseases (CVDs) and healthy controls in term of demographic data

Variable	CVD Patients (n=48)	Non-patients (n=48)	Test	P-value
Gender <sup>a</sup>				
Female	34 (34.7)	34 (34.7)	0.000	1.00
Male	14 (15.3)	14 (15.3)		
Education Level <sup>a</sup>				
Secondary	35 (35.7)	24 (24.5)	5.324	0.07
High School Diploma	8 (8.2)	15 (15.3)		
Academic	5 (5.1)	9 (9.2)		
Employment Status <sup>a</sup>				
Housewife	33 (33.7)	29 (29.6)	1.379	0.71
Clerk	5 (5.1)	8 (8.2)		
Marketing	6 (6.1)	8 (8.2)		
Retired	4 (4.1)	3 (3.0)		
Marital Status <sup>a</sup>				
Married	41 (41.9)	40 (40.8)	2.089	0.35
Widowed/Divorced	7 (7.1)	8 (8.2)		
Age <sup>b</sup>	57.69±9.92	54.67±5.72	1.828	0.07

a=n (%): Chi-square; b=  $\bar{X} \pm SD$ : T-test; \*P<0.05

**Table 2.** Comparison of CVD patients and healthy controls in terms of personality types

Personality Types	CVD Patients Mean±SD	Non-patients Mean±SD	F(1,94)	P-value
Type 1 (Perfectionist)	18.56±3.34	16.29±3.86	9.476	0.003**
Type 2 (Giver)	18.58±3.44	18.81±3.39	0.108	0.74
Type 3 (Achiever)	17.21±2.59	17.37±2.62	0.098	0.76
Type 4 (Romantic)	13.75±2.36	14.06±3.07	0.313	0.58
Type 5 (Observer)	12.02±3.71	13.85±3.48	6.231	0.014*
Type 6 (Loyal skeptic)	17.54±2.71	18.06±2.56	0.938	0.34
Type 7 (Epicure)	10.88±4.11	10.31±2.90	0.599	0.44
Type 8 (Protector)	14.50±3.51	15.35±3.49	1.430	0.24
Type 9 (Mediator)	18.98±4.25	18.21±4.93	0.673	0.41

\*P<0.05; \*\*P<0.01

**Table 3.** Comparison of CVD patients and healthy controls in terms of personality types based on gender

Personality Types	CVD Patients Mean±SD	Non-patients Mean±SD	F(1,66/1,26)	P-value
Female (n=68)				
Type 1 (Perfectionist)	18.38±3.43	16.59±3.63	4.382	0.04*
Type 2 (Giver)	18.85±3.72	19.26±3.41	0.227	0.64
Type 3 (Achiever)	17.38±2.39	17.09±2.43	0.254	0.62
Type 4 (Romantic)	13.65±2.63	13.91±3.08	0.145	0.70
Type 5 (Observer)	12.32±3.96	13.53±3.58	1.736	0.19
Type 6 (Loyal skeptic)	17.32±2.81	17.94±2.64	0.871	0.35
Type 7 (Epicure)	11.03±3.66	10.50±2.97	0.430	0.51
Type 8 (Protector)	14.53±3.59	15.59±3.39	1.559	0.22
Type 9 (Mediator)	18.59±4.54	18.41±4.74	0.025	0.88
Male (n=28)				
Type 1 (Perfectionist)	19.00±3.21	15.57±4.43	5.494	0.03*
Type 2 (Giver)	17.93±2.67	17.71±3.20	0.037	0.85
Type 3 (Achiever)	16.78±3.09	18.07±3.02	1.237	0.28
Type 4 (Romantic)	14.00±1.57	14.43±3.13	0.210	0.65
Type 5 (Observer)	11.29±3.02	14.64±3.22	8.073	0.01*
Type 6 (Loyal skeptic)	18.07±2.43	18.36±2.44	0.096	0.76
Type 7 (Epicure)	10.50±5.20	9.86±2.80	0.166	0.69
Type 8 (Protector)	14.43±3.41	14.78±3.79	0.069	0.79
Type 9 (Mediator)	19.93±3.41	17.71±5.54	1.623	0.21

\*P<0.05

that the score of this personality type was higher in female CVD patients compared to healthy controls (F(1,66)=4.382) (P=0.04).

Findings of this study were indicative of significant differences between male CVD patients and healthy controls in personality types one and five. Mean score of personality type one was significantly higher in male CVD patients F(1,26)=5.494 (P=0.03), while the mean score of personality type five was significantly lower, compared to healthy controls (F(1,26)=8.073)

(P=0.01).

## Discussion

The present study aimed to compare different personality types based on the enneagram of personality model between individuals with and without CVD. According to our findings, CVD patients and healthy control subjects had significant differences in personality types one and five. In cardiac patients, score of personality type one was significantly higher and score of

personality type five was significantly lower compared to healthy controls. This finding is in congruence with the results of some studies, which suggested significant differences between CVD patients and healthy individuals in terms of personality traits (7-10, 19).

The most important finding of the current study indicated that the score of personality type one was significantly higher in CVD patients compared to non-patients. According to the literature regarding the enneagram of personality, individuals with personality type one are perfectionists, with accurate, clear, restricted judgment strongly reacting to opposite beliefs. Moreover, these individuals are aggressive and impatient, and their rigid and formal body language might aggravate negative emotions in others (20).

On the other hand, individuals with personality type one desperately effort to control their anger since they assume it could prevent the negative judgment of others (21). As the underlying emotion of personality type one, this anger control is manifested in different conditions throughout life, shifting to hostility and irritability over time. As proposed by previous studies conducted on cardiac patients, anger and hostility are among the contributing factors for cardiovascular problems (22, 23). As such, levels of basic traits in personality type one are expected to be higher in cardiac patients compared to healthy individuals.

According to the results of the present study, traits of personality type five were significantly lower among CVD patients in general, as well as male patients, compared to healthy individuals. Therefore, it could be concluded that individuals with personality type five characteristics commonly act based on logics rather than feelings. Furthermore, they are very cautious and refrain from emotional attachment to others in order to protect themselves against psychological complexities (20). In fact, they try to combat their fear of communication through rationalizing their emotions and emotional dissociation (21). Therefore, these individuals are risk-averse owing to their basic personality traits. They avoid objective or subjective threats and disconnect with others rapidly (24). Moreover, personality type five individuals pursue knowledge persistently and are principally researchers and observers (14). This trait helps them enhance their knowledge of various diseases and their negative consequences, which urges them to become actively involved in physical and psychological self-care.

In the current research, unlike male patients, no significant difference was observed between female CVD patients and healthy controls in terms of type five personality traits although the obtained scores were higher among controls compared to CVD

patients. This could be due to the dominant emotional state in female personality.

In general, women have more negative emotions and emotional incompatibility compared to men (25). Furthermore, they have more intense emotions and express their feelings more frequently than men (25). In the present study, this issue might have manifested independent of personality traits, preventing the differences between the two groups and undermining the regional dimension of personality type five.

### **Strengths and limitations**

The main strength of this study was the assessment of CVD patients using the enneagram of personality model, which has received insufficient attention in the field of health care. Moreover, we controlled the effects of some confounding variables through the case-control study design.

On the other hand, one of the limitations of our study was the length of questionnaires, which might have exhausted the respondents. Although the questionnaires could have been completed in two stages, the researchers allocated only one session for data collection due to the possible sample loss and lack of access to patients (especially control subjects). Therefore, it is recommended that shorter questionnaires be used in future studies. Although we controlled the effect of age differences, matching of samples in term of age may increase the accuracy of future studies. Another limitation of our study was the use of self-report data about cardiac health and comorbidities for healthy controls and brief assessment by the cardiologist.

Finally, since the present study was conducted on Iranian CVD patients and healthy subjects, the results should be carefully generalized to similar groups in other communities. It is suggested that future studies be performed on similar groups so as to compare the current findings.

### **Conclusion**

According to the results of this study, the enneagram of personality type one with anger as the basic emotion and type five with fear as the basic emotion showed the highest and lowest risk for CVDs, respectively. Therefore, identification of healthy individuals with personality type one before the development of CVDs, providing necessary training on the potential risk factors of CVDs, and implementation of preventive strategies (e.g., anger management skills) could lead to positive outcomes for the society and healthcare system. It is recommended that further investigation be conducted in this regard.



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## Authors' contributions

All authors contributed equally to this research project.

## Conflict of Interest

The authors declare no conflict of interest.

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