

Examination of the Possible Relationship of MBTI Personality Types among Cardiac Rehabilitation Patients— A Cross-Sectional Study

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Abstract

Introduction: The relationship between personality type and medical problems has been discussed widely in the literature, but empirical data on the relationship between heart diseases and personality types is lacking. In the current study, we aim to look at the connections (if there are ones) between Myer-Briggs Type Indicator (MBTI) personality types and Cardiac Rehabilitation Patients (CRPs) profiles.

Materials and Methods: The current cross-sectional study was conducted from October 2017 to February 2019. The study included five hundred fifty-two (male: 336, female: 216) CRPs referred to Tehran Heart Center via a convenient sampling. After acquiring a written consent form and obtaining demographic data (age, educational status, blood type, antigen type, BMI, risk factors) from the medical history database, we asked participants to answer to Persian version of the MBTI questionnaire. Finally, we assessed any existing (if there) relationship between MBTI subtypes and the abovementioned variables among CRPs.

Results: According to the current study, among 16 MBTI personality types, only four types were identified in cardiac rehabilitation patients. Accordingly, INTJ maintained the highest frequency of CRPs, followed by ISTJ, ESTJ and ISFJ, respectively. The current study demonstrated a significant difference between PCI and CABG interventions among four MBTI dichotomies. The study also shows no significant association between risk factors and MBTI personality types ($P < 0.05$).

Conclusion: The result of the study has a salient clinical implication, as it can be adopted in the screening and intervention phases of the clinical process. During the screening, a clinician can tailor the therapeutic procedures according to the specific needs of the patient's personality traits. Furthermore, clinicians may elevate patients' adherence to treatment by considering specific personality preferences.

Keywords: Cardiac Rehabilitation Patients, Diabetes, Personality, Myers-Briggs type indicator, MBTI

1. Introduction

Cardiovascular diseases (CVDs) are the leading causes of death worldwide. However, the number of people who live with CVDs and may need support to manage their symptoms and improve their prognosis has increased (Roth et al., 2021). Cardiac rehabilitation (CR) is a gold standard modality for patients with a broad spectrum of cardiac disease. It consists of three primary modalities: education, physical training, and psychological support (Taylor et al., 2022). According to recent literature, there is a strong link between personality traits and medical conditions such as coronary heart disease (CHD) and human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) (Denollet et al., 2000; Capitanio, 2008; Sutin et al., 2013). Until lately, personality study was accompanied mainly by psychiatric patients. As relationships between personality attributes and medical conditions become more apparent, scientists are progressively working on dynamics in which personality is a predominant factor concerning predisposition and the prognosis of psychiatric illnesses. Several scales and questionnaires have been fashioned so far regarding the assessment of personality, such as the Big Five Inventory

(BFI), Minnesota Multiphasic Personality Inventory (MMPI-2), Rorschach Inkblot test or Eysenck's Personality Questionnaire (EPQ-R) (2). In 1940, Isabel Myers and her mother proposed a psychometric test, Myers-Briggs Type Indication. This scale was based on Carl Jung's personality theory (Philip et al., 2009). MBTI assesses individuals according to their decision-making process, perception and understanding of the world and approaches/mechanisms they use in response to the external environment (The Myers and Briggs Foundation, 2013). The purposes of the current design were to (a) examine the possible relationship between MBTI and Cardiac Rehabilitation Patients' demographic data; (b) examine the possible relationship between MBTI and Cardiac Rehabilitation Patients' medical intervention approach (PCI, CABG); (c) examine the possible relationship between MBTI and Cardiac Rehabilitation Patients' risk factors. Results of the current study maintain clinical significance, as they may be helpful in the screening process of individuals prone to cardiac pathology and the prognosis of the treatment modality (PCI and CABG) among CRPs Patients considering their personality traits.

2. Materials and Methods

The cross-sectional study was conducted from October 2016 to February 2017. The study included 552 CRPs (male: 336, female: 216) referred to Tehran Heart Center via a convenient sampling method. The written consent form was obtained from all of them. Subsequently, demographic and clinical data were registered by referring to their medical history and interviewing them (age, educational status, blood type, antigen type, BMI, and risk factors). Penultimately, the participants were asked to answer the Persian version of the MBTI scale (concerning illiterate CRPs, a research associate helped them to answer the questions). And finally, via SPSS-19, data were analyzed to examine the possible relationship between MBTI and CRPs' demographic data; MBTI and CRPs' medical intervention approach (PCI, CABG); MBTI and CRPs' risk factors.

2.1 MBTI

The English version of MBTI consists of 93 questions, which take approximately 30 minutes to answer. There are four dichotomies regarding results presentation, which would offer 16 types of personality: Extraversion vs Introversion, Sensing vs Intuition, Thinking vs Feeling and Judging vs Perceiving. Since MBTI was initially created, it has been used as an assessment tool in numerous disciplines, such as business (recruiting, leadership and coaching), clinical psychology and psychiatry (The Myers and Briggs Foundation, 2013). The Persian version of MBTI was used in the current study. The translation process was conducted by applying the forward and back-translation methods. Ten psychometric professionals at the department of psychology of the university of Tehran confirmed adaptation and content validity. The psychometric testing was performed using factor analysis and Cronbach's alpha coefficient on a sample of 100 primary healthcare professionals at Sadr Psychiatric Hospital in Tehran. Finally, the Persian version consisted of 87 questions (the number of questions was reduced to comply with the Iranian cultural context).

3. Results

The current cross-sectional study included 552 cardiac rehabilitation patients (male: 336, female: 216) and Tehran Heart Institute. Concerning educational status, 93 participants were illiterate or had an academic level lower than a secondary school diploma; 144 participants (%26.1) had a secondary school diploma; 239 (%43.3) had a diploma, 48 (%8.7) had a bachelor's and 28 (%5.1) had master's degree. For blood type, participants were distributed as 297(%53.8) with A blood type, 114 (%20.7) with B blood type, 81 (%14.7) with AB and 36(%6.5) with O blood type (Table 1).

Table 1. Characteristics of participants included in the study

Demographic Variable		Number (%) / Mean \pm SD
Gender	Female	216 (39.1%)
	Male	336 (60.9%)
Age		63.33 \pm 6.45
Weight		73.10 \pm 7.71
Height		165.83 \pm 6.25
Educational Status	Illiterate	93 (16.8%)
	Secondary School Diploma	144 (26.1%)
	High-School Diploma	239 (43.3%)
	Bachelor	48 (7.8%)
	Master	28 (5.1%)
Blood Type	A+	274 (49.6%)
	A-	23 (4.2%)
	Total	297 (53.8%)
	B+	114 (20.7%)
	B-	12 (2.2%)
	Total	126 (22.8%)
	AB+	81 (14.7%)
	AB-	12 (2.2%)
	Total	93 (16.8%)
	O+	36 (6.5%)
	O-	0 (0.0%)
	Total	36 (6.5%)
	Antigen	+
-		47 (8.5%)
Risk Factors	DM	292 (52.9%)
	Hypertension	255 (46.2%)
	Smoking	259 (46.9%)
	Substance dependency	252 (45.7%)
	Hyperlipidemia	288 (52.5%)

Participants aged 45 to 94 years old; the mean weight was 73.10 ± 7.71 , and height was estimated at 165.83 ± 6.25 (Table 1). The current study assessed risk factors such as diabetes mellitus (DM), hypertension, smoking (nicotine cigarettes), substance dependency and hyperlipidemia. In Table 1, descriptive data of mentioned data is presented. As illustrated, % of 52.9 patients had DM, %46.2 had hypertension, %46.9 had a smoking habit, % 45.7 had substance dependency, and % 52.2 had hyperlipidemia.

Table 2. Frequency of MBTI dimensions among participants

MBTI dimensions	Number (%)	P-value
Extraversion	27 (4.9%)	<0.05
Introversion	525 (95.1%)	
Sensing	283 (51.3%)	0.55
Intuition	269 (48.7%)	
Thinking	533 (96.6%)	<0.05
Feeling	19 (3.4%)	
Judging	552 (100%)	-
Perceiving	0 (0.0%)	

The chi-square test showed that of 525 participants, extroversion and thinking were significantly higher than introversion and feeling dimensions ($P < 0.05$). There was also no significant difference between the sensing and intuition dimensions. Among 16 MBTI personality types, only four types were identified in cardiac rehabilitation patients. INTJ, ISTJ, ESTJ, and ISFJ frequencies were 48.7%, 42.9%, 4.9%, and 3.4%. Height, weight, age and educational level dimensions are presented in Table 3.

Table 3. Correlation between demographical variables with MBTI dimensions

Demographic Variable	Correlation test	Extraversion	Introversion	Sensing	Intuition	Thinking	Feeling	Judging	Perceiving
Height	Pearson	0.021**	0.23**	0.18**	0.17**	0.09*	0.10*	0.12**	0.07
Weight	Pearson	0.12**	0.10*	0.02	0.02	0.06	0.00	0.21**	0.12**
Age	Pearson	0.01	0.02	0.15**	0.18**	0.51**	0.53**	0.21**	0.02
Education	Spearman	0.00	0.12**	0.22**	0.24**	0.09*	0.07	0.02	0.07

* $P \leq 0.05$.

** $P \leq 0.01$.

The Chi-square test also showed no significant associations between blood groups and MBTI personality types.

Table 4. Chi-square test between blood group and MBTI personality types

Personality type	Blood - Type				P-value
	A	B	AB	O	
ISTJ	111	55	50	21	0.07
ISFJ	12	5	1	1	
INTJ	161	60	37	11	
ESTJ	13	66	5	3	
Total	297	126	93	36	

This study demonstrated a significant difference between PCI and CABG interventions in four thinking, emotional, judging, and perceiving dimensions. Individuals with CABG had higher Thinking and Judging dimensions and a lower score in emotional and perceiving dimensions. The analysis showed no significant association between risk factors and MBTI personality types ($P < 0.05$).

4. Discussion

Personality traits determine our daily life choices and predict our response and reaction to various aspects and

events of life. These choices and reactions influence risk and protective factors against several health conditions. It has been shown that the type D personality, known as tending to experience negative emotions and avoiding social contacts, correlates significantly with experiencing cardiovascular diseases (Denollet et al., 2000). Understanding the role of personality traits can help the health authorities to consider more specific public health policies, as well as the physicians and caregivers, to consider an empathetic approach to delivering the appropriate treatments.

The current study examines the MBTI personality types in patients referred to cardiac rehabilitation programs at Tehran Heart Center. Of 552 patients included in the study (60.9% male and 39.1% female), most of the population were introverts (95.1%), sensing (51.3%), thinking (96.6%), and judging (100%). The studies cautiously suggest that the Iranian CVD population is mainly extroverts, intuitive, thinking and believing. However, case-control studies on CVD patients have indicated that the patients are more likely to be Sensing and Feeling traits than the general population (Thorne et al., 2018). As the personality trait may change with age or any major life event, it is essential to compare people with restraint. Major life crises, such as being diagnosed with CVD and needing cardiac rehabilitation interventions, can affect the patient's mood and personality. Further cohort studies may help evaluate the personality traits and their changes before being diagnosed and after full recovery. However, the introversion and thinking personality trait was significantly more common in the studies population (p -values < .05). The personality trait correlated considerably with height, weight, age, and education level in most personality trait pairs.

There was no significant correlation between the personality trait and the measured CVD risk factors, including having DM, hypertension, substance abuse, hypertension, or smoking. In addition, a previous study on 2543 people from the general population has shown that the CVD risk factors, including obesity, tobacco use, and metabolic syndrome, have strong inter-correlations and correlate with having less conscientiousness. However, the researchers failed to correlate these indicators with personality traits (Thorne et al., 2018). According to the result of the current study, a significant correlation was found between the patient's personality traits and the intervention modality (PCI and CABG). Patients profiled for CABG treatment had higher judging and less emotional and perceiving scores.

5. Implications for Conducting This Project

The result of the current study maintains a significant clinical implication since it is the first study examining the possible role of MBTI personality types on the intervention modality among patients referred to a cardiac rehabilitation program. It is widely known that personality traits can affect our behaviours and various lifestyle aspects. However, there are multiple other contributing factors and personality traits variability. In the current cross-sectional study, patients were more introverted, thinking and judging. It was also found that those with higher judging and lower emotional and perceiving scores were more likely to be chosen CABG over PCI. There was no association between the personality trait and having CVD risk factors. Larger sample sizes are needed for more conclusive results. Longitudinal cohort studies can also evaluate personality changes while experiencing cardiovascular disease.

Ethical Considerations

The current phase will comply with the Declaration of Helsinki and the Good Clinical Practice (GCP) principles, an international ethical and scientific quality standard for designing, conducting, recording, and reporting trials involving human participation subjects (Vijayanathan and Nawawi, 2008).

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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