

The Relationship between Personality Characteristics and Gastrointestinal Inflammation

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Received: January 27, 2015

Accepted: March 31, 2015

ABSTRACT

Introduction: Gastrointestinal disorders point to the importance of the biopsychosocial model in approaching diseases. As a psychological factor, personality characteristics seem to play an important role in the development or exacerbation of gastrointestinal disorders including gastrointestinal inflammation. Therefore, the objective of this study is to identify personality types prone to gastrointestinal inflammation in order to prevent or control this disease.

Methods: This study is conducted in the form of a correlational and cross-sectional research project. Data were collected from endoscopy records of 50 patients in Hasheminejad Hospital of Mashhad, Iran. Participants were selected by purposive sampling. Data collection instruments included a special endoscopy form - which was filled out by gastroenterologists and internists – and the NEO Five-factor Personality Inventory. Data were analyzed using multivariate analysis of variance.

Results: There were significant differences between healthy and patient groups in the variables of Neuroticism, Extroversion and Agreeableness ($p < 0.05$). In other words, there was a relationship between neurotic personality type and gastrointestinal inflammatory disease as well as between the variables of Extroversion and Agreeableness and the variable of physical health, i.e., no gastrointestinal inflammation.

Conclusion: Patients with intestinal inflammation are characterized by Neuroticism. Conducting appropriate psychological interventions can play a significant and timely role in preventing or controlling the pace of the disease, reducing the side effects, reducing treatment costs, and improving the physical and mental well-being of patients.

KEYWORDS: Gastrointestinal Inflammation, Neuroticism, Extroversion, Agreeableness, Openness, Conscientiousness

INTRODUCTION

Gastrointestinal disorders are one of the most prevalent medical conditions with symptoms similar to those of psychiatric disorders. Gastrointestinal disorders can lead to mental disorders or become worse by forms of psychological distress. Gastrointestinal symptoms are among the most common complaints in general internal medicine clinics and are more common in women than men. The treatment of mental disorders can sometimes reduce and improve gastrointestinal symptoms [1]. Stress and anxiety, for example, often manifest themselves in the form of indigestion, anorexia, or intestinal motility disorders (diarrhea or constipation) which can in turn cause inflammation of the gastrointestinal tract. Gastrointestinal inflammation is inflammation in the mucosal lining of the digestive system [2]. Preliminary studies have shown the role of psychological factors in the production of gastric ulcer. This effect can be triggered by increased acid secretion caused by psychological stress. Today, it is believed that stress cannot directly and by itself affect the physical and mental health of an individual; rather, it is the perception and evaluation of stress by a person and his/her adopted coping strategies against stress that are decisive [3]. It should be noted that a set of physical and psychological factors can have an impact on the status of gastrointestinal tract when examining and training a patient [2]. Gastrointestinal disorders point to the importance of the biopsychosocial model in approaching diseases. As a psychological factor, personality characteristics seem to play an important role in the development or exacerbation of gastrointestinal disorders including gastrointestinal inflammation [1]. Therefore, one of the fundamental concerns of psychologists is to find the main variables behind personality attributes or traits to diagnose and treat these patients [4]. This has led to the development of objective tools on the basis of factor analysis. In this line, psychologists have designed objective personality questionnaires such as the Eysenck Personality Questionnaire (EPQ), Cattell's 16 Personality Factors Test (16PF) and the NEO Five-factor Personality Inventory (5NEO). The five factors include: Neuroticism, Extroversion, Openness, Agreeableness and Conscientiousness. Negative

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emotions such as fear, sadness, irritation, anger, guilt, and permanent and pervasive sense of frustration comprise Neuroticism. In practice, extroverted people are outgoing, aggressive, active, and sociable or talkative. They love excitement and mobility and are determined to have a promising future and achieve success. Openness to experience is comprised of active imagination, sensitivity to beauty, attention to internal emotional experience and independent judgment. People with this trait like to enjoy new theories and unconventional values. The Agreeableness index focuses on interpersonal communication trends. An agreeable person is in fact altruistic, sympathetic and willing to help others. He/she believes that others have the same relationship with him/her. In contrast, a disagreeable person is self-centered, skeptical of other people's intentions, and is more competitive than cooperative. Conscientiousness refers to self-control and the active process of planning, organizing and carrying out tasks. The two main features of Conscientiousness include the ability to control impulses and desires and the use of plans in achieving intended goals [5]. The present study uses endoscopy records on intestinal inflammation to identify what NEO factors have a greater role in the development of this disorder.

METHODS AND PROCEDURES

This study is conducted in the form of a correlational and cross-sectional research project. Data were collected from endoscopy records of 50 patients in Hasheminejad Hospital of Mashhad, Iran. Participants were selected by purposive sampling.

Data Collection Instruments:

- *Demographic and Clinical Characteristics of the Patients:*

These characteristics include age, education, history of gastrointestinal disorders in the family, the patient's history of medical conditions, and the patient's history of smoking, alcohol and drug abuse.

- *NEO Five-factor Personality Inventory:*

The instrument used in this study for measuring the personality traits of patients is a revised version of NEO-PI-R (Costa & McCrae, 1992) which is a self-report questionnaire on personality traits based on the NEO Five-factor Personality Inventory [6]. However, considering the complexity and length of NEO-PI-R, the need for rapid screening, and above all, the unwillingness of respondents to respond to the unabridged questionnaire, the present study deploys an abridged NEO inventory called the NEO Five-factor Personality Inventory (NEO-FFI) which is comprised of 60 items. In total, a participant scores between zero and 48 in each scale. The reliability of this questionnaire in Iran was tested by Garousi [7] who reported a Cronbach's alpha coefficient of 0.83, 0.75, 0.80, 0.79, and 0.79 for the variables N, E, D, A and C, respectively. In addition, Mollazadeh [8] reported a Cronbach's alpha coefficient of 0.83, 0.78, 0.73, 0.79, and 0.85 for the five variables in the same order.

- *Gastrointestinal Endoscopy:*

Gastrointestinal endoscopies were performed by internists and gastroenterologists at Shahid Hasheminejad Hospital of Mashhad, Iran, and the records are used in this study.

This study uses the mean value and standard deviation for descriptive statistical analyses and multivariate analysis of variance for inferential statistical analyses. The data are analyzed by the SPSS software product.

RESULTS

Table 1 - Demographic and clinical characteristics of patients with gastrointestinal inflammation

Variables	Range	Frequency	Percent
Age	20-30	12	24
	31-40	14	28
	41-50	13	26
	51-60	2	4
	61-70	9	18
Educational level	illiterate	17	34
	Below high school diploma	21	42
	High school diploma	6	12
	Associate degree	3	6
	BA and above	3	6
History	History of gastrointestinal disorders in the family	10	20
	Patient's history of gastrointestinal disorders	29	58
	Patient's history of hypertension	6	12
	Patient's history of hyperlipidemia	4	8
	Patient's history of diabetes	0	0
	Patient's history of smoking (cigarettes and hookah), alcohol and drug abuse	2	4

Table 2 - Descriptive characteristics of the NEO personality variables in patients with gastrointestinal inflammation

Variables	Mean	Standard deviation
Neuroticism	35.4	3.8
Extroversion	25.7	3.4
Openness	22.5	4.6
Agreeableness	25.5	3.3
Conscientiousness	23.4	4.6

As shown in Table 2, the highest mean value in patients with gastrointestinal inflammation belongs to neuroticism and the lowest belongs to openness.

Table 3 - Descriptive characteristics of the NEO personality variables in healthy participants (Without gastrointestinal inflammation)

Variable	Mean	Standard deviation
Neuroticism	28	10.5
Extroversion	32.5	8.2
Openness	23.22	3.5
Agreeableness	31.7	9.2
Conscientiousness	25.8	8.5

As shown in Table 3, the highest mean value in healthy participants (without gastrointestinal inflammation) belongs to extroversion and the lowest belongs to openness.

Table 4 – Results of multivariate analysis of variance (MANOVA) on the differences between healthy and patient groups

Source	Wilks's Lambda	F	Significance level
Group	0.74	2.70	0.00

Table 4 shows the differences between patient and healthy groups in the variables under study ($p < 0.05$).

Table 5 - Results of multivariate analysis of variance for comparing patient and healthy groups in terms of personality dimensions

Variables	Root mean square	F	Degrees of freedom	Sum of squares	Significance level
Neuroticism	325.9	3.28	1	325.9	0.029
Extroversion	0.106	1.15	1	0.106	0.011
Openness	10.4	0.222	1	10.4	0.067
Agreeableness	7.77	0.0084	1	7.77	0.032
Conscientiousness	41.1	0.62	1	41.1	0.07

As shown in Table 5, there are significant differences between patient and healthy groups in the variables of Neuroticism, Extroversion and Agreeableness ($p < 0.05$). In other words, there is a relationship between neurotic personality type and gastrointestinal inflammatory disease as well as between the variables of Extroversion and Agreeableness and the variable of physical health, i.e., no gastrointestinal inflammation.

DISCUSSION AND CONCLUSIONS

This study was conducted to determine the relationship between the Big Five *personality traits* and gastrointestinal inflammation. The results of the study showed that there is a significant relationship between the variables of Neuroticism, Extroversion and Agreeableness on the one hand and gastrointestinal inflammation on the other such that the level of Neuroticism is higher in patients with gastrointestinal inflammation. These findings are consistent with some of the findings of the study by Taheri, Hasani, and Molavi [9] indicating low levels of psychological health in patients with irritable bowel syndrome especially in the subscales of aggression, anxiety, individual support and psychosis. These subscales can be partly explained by neuroticism which is higher in patients with this syndrome. Furthermore, this study showed that there are significant differences between Extraversion/ Introversion and gastrointestinal inflammation. More precisely, Extroversion is higher in healthy people than in patients with gastrointestinal inflammation. When a person is unable to correctly identify his/her negative emotions, he/she will face problems in draining and neutralizing emotions. As a result of this inability to manage and regulate negative emotions, these debilitating and problematic emotions worsen. In addition, the results of this study showed that there is a significant difference between Agreeableness/Aggressiveness and gastrointestinal inflammation. Agreeableness was higher in healthy controls (without

gastrointestinal inflammation) than in patients with gastrointestinal inflammation. These findings are consistent with the findings of the study by Niazi Azeri and Safari [10] indicating a significant relationship between happiness (as one of the factors affecting personality traits) and agreeableness. In explanation, it can be said that these people have less stress and are less likely to suffer from gastrointestinal disorders. With a look at the results of this study and with regard to the fact that neurotic individuals are more likely to suffer from gastrointestinal disorders, informing and training people - especially those who are predisposed to this disease - can have a significant role in the prevention and treatment of these diseases. Besides, conducting appropriate psychological interventions can play a significant and timely role in preventing or controlling the pace of the disease, reducing the side effects, reducing treatment costs, and improving the physical and mental well-being of patients.

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