

Personality Profile, Quality of Life and Neuroticism in Patients with Crohn's Disease

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Abstract

Introduction: The chronic nature of Crohn's disease makes it necessary to assess specifically the relation between long term psychological effects and the patients' profile.

Objective: To investigate the relation between personality traits, depressive symptoms and quality of life of a sample of patients with Crohn's disease in a hospital context.

Design: A prospective study with questionnaires and batteries were applied on patients with Crohn's disease to examine their personality profile and quality of life.

Methods: The sample consisted of 100 patients. The EDEP, the IBDQ, the BFP, and a QSD were employed for data collection. Correlations between the tools were checked by using the Pearson correlation test.

Results: There was a strong negative significant correlation ($r = -0.71$, $p < 0.01$) between depression (EDEP) and quality of life (total IBDQ). The most significant correlations occurred between depression (EDEP Totals) and personality traits (BFP), in the dimensions of neuroticism ($r = 0.48$, $p < 0.01$) and extraversion ($r = -0.32$, $p < 0.01$).

Conclusion: The results indicated a link between participants' personality characteristics and the other measured variables, with Neuroticism being the personality trait with the highest association. The greater the depression, the worse the quality of life, with more effect on emotional aspects.

Keywords: Crohn's Disease; Inflammatory Bowel Disease; Quality of Life; Personality Profile; Neuroticism; Depression

Introduction

Inflammatory Bowel Diseases (IBD) encompass chronic inflammatory disorders involving the small and large intestines such as Idiopathic Ulcerative Colitis (UC), Crohn's disease (CD), and Indeterminate Colitis (IC), all of which may present similar signs and symptoms [1,2].

Studies aimed at identifying the psychological profile of patients with IBD have determined the key personality traits involved, such as insecurity, feelings of inferiority and inadequacy, stress, anxiety, depression, aggression, dependence, sensitivity, emotional lability, and hyperactivity. Besides these traits, patients with a controlling and obsessive-perfectionist personality are likely to suffer from difficulty in emotional self-expression, sexual conflicts, masochism, shyness and diffidence. Some of the traits just mentioned are directly related to general factors or specific facets of the patients' personality, according to the Five-Factors Model of Personality (FFM), also internationally known in the literature as the "Big Five" [3-9].

McCrae and John [10] note that the Big Five model is an updated version of the Trait Theory, as it provides a conceptual and empirical refinement in the field that describes basic human dimensions in a more consistent and replicable form. This model proposes that personality can be described in five broad and orthogonal dimensions: Neuroticism, Extraversion, Agreeableness, Openness and Conscientiousness. Neuroticism is associated to the predisposition to experience negative effects, and includes traits related to vulnerability, depression, and anxiety. Extraversion describes individuals' typical amount of interpersonal interaction, as well as their levels of communication, assertiveness, and gregariousness. Agreeableness encompasses aspects of altruism, care, trust, and cooperation. Openness describes a preference for new experiences, cultural, aesthetic sensitivity and flexibility. Conscientiousness is related to a tendency to show persistence, discipline, responsibility and the need for achievement.

In addition to studies linking personality traits to CD, researchers have been interested in studying the quality of life of these patients, calling attention to its importance throughout the treatment of the disease. This concern stems from the recurrent nature of the disease (with acute episodes interspersed with periods of remission), and its appearance in patients classified as young adults. For CD patients, the impact upon their quality of life manifests itself in significant functional problems such as loss of appetite and weight, besides relationship difficulties in social, family, and affective contexts [11-14].

Patients with IBD oscillate between relatively stable periods and unstable ones, in relation to both the physical symptoms and the psychological aspects. Throughout life, there may be several events that trigger changes which require adjustments in various personality traits associated to behavioral, cognitive and emotional responses in broad areas, such as affection, sexuality, (low) self-esteem, depression, anxiety, irritability, aggression, frustration, hostility, mistrust, addiction, guilt, and others. Financial and family issues, medical uncertainty, job dissatisfaction, and distorted thought are themselves directly related to this instability. Adaptation to the disease requires a significant effort and can often trigger a lifestyle change not only for the patients, but also for their families [3-7,15].

Patients with CD need, in addition to adequate medical care, emotional support in the affective, social, professional and familial levels to enable them to cope not only with the problems associated to their day-to-day life, but also with the problems caused by the disease's symptoms. The impact of chronic diseases on the lifestyles and psychosocial functioning of patients and their families interferes with their quality of life. Research related to mental disorders points to the concurrence of chronic diseases such as depression, anxiety, and substance abuse in these patients. Furthermore, chronic disease is regarded as a long-term stressor for the patients, their families, and their caregivers [16].

Gill and Feinstein [17] note that quality of life depends upon how patients perceive and react to their health and to other non-medical aspects of their lives. According to Morton [18] and McDonough, *et al.* [19] quality of life is a measure of the perception that patients have of the discrepancy between their reality and their needs. It is a multidimensional construct that covers the individual's functional ability, social support, emotional understanding, and absence of psychological discomfort.

Chronic diseases are a major problem of the modern world. Their evolution tends to be progressive. They trigger several changes in the patients' day-to-day life and may have specific impacts upon their level of life satisfaction [12,20]. Due to the chronic nature of CD, as well as to the lack of correlation between inflammatory markers and the functional status of the patient, it has become increasingly important to conduct studies designed to measure the quality of life of patients with IBD [21].

Objective of the Study

The objective of this paper is to verify the correlation between personality traits, depressive symptoms, and quality of life in a hospital setting, from a sample consisting of CD patients.

Design and Methods

Case description

The sample consisted of 100 CD patients being treated at the IBD Clinic, 52 female and 48 males. Regarding the educational level of the participants, 22% had incomplete elementary education, 12% completed elementary school, 6% did not have a high school diploma, 36% completed high school, 7% had incomplete college education, 14% had a college degree and 3% had earned a master's degree. With respect to marital status 29% were single, 5% unmarried living together, 13% married with no children, and 41% married with children (Table 1).

Variables	Frequency	Percentage
Gender		
Female	52	52%
Males	48	48%
Education Level		
Incomplete Elementary Education	22	22%
Completed Elementary School	12	12%
Incomplete High School	6	6%
Completed High School	36	36%
Incomplete College Education	7	7%
College Degree	14	14%
Master's Degree	3	3%
Marital Status		
Single	29	29%
Unmarried Living Together	5	5%
Married with no Children	13	13%
Married with Children	41	41%

Table 1: Characterize the sample by gender, education level and marital status.

The mean age of the group was 37.71 years (SD = 9.8), with a minimum of 18 years and maximum of 62.

Variables	N	Minimum	Maximum	Mean	SD
Age	100	18	62	37,71	9,83

Table 2: Characterize the sample by age.

Ethical statement

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki. Research Ethics Committee approved the project, All participants were informed about the objectives of the study and signed the Informed Consent Form.

Instruments

The following instruments were employed for data collection: Battery Factor of Personality (BFP), Depression Scale (EDEP) and Inflammatory Bowel Disease Questionnaire (IBDQ).

Battery factor of personality (BFP)

The BFP was developed with the aim of evaluating all areas of personality described in the Five Factors Model by Nunes., *et al* [22]. The battery consists of 126 items that measure the overall dimensions of the model and its facets, namely: Extraversion (E1-communication, E2-pride, E3-dynamism/assertiveness and E4-social interactions); Agreeableness (S1-kindness, S2-pro-sociability, and S3-confidence); Conscientiousness (R1-competence, R2-deliberation, circumspection and caution and R3-diligence, dedication, and commitment), Openness (A1-interests for new ideas, A2-liberalism and A3-novelty seeking), and Neuroticism (N1-vulnerability, N2-instability, N3-passivity, and N3-lack of energy and depression).

Depression scale (EDEP)

The EDEP was built to evaluate symptoms of depression, from the depressive indicators contained in the DSM-IV and ICD-10 psychiatric manuals, and in the Beck Cognitive Therapy of Depression, using 75 items [23].

Inflammatory bowel disease questionnaire (IBDQ)

The IBDQ is an American tool developed by Mitchell., *et al* [24]. It contains 32 items that are divided into four dimensions (1-intestinal symptoms, 2-systemic symptoms component, 3-social aspects, and 4-emotional aspects), and uses questions that show up randomly in the questionnaire as a safeguard against bias in the answers. Each question has seven possible answers and each answer option has its own value in number of points on a scale from one for poor quality of life to seven for the best. One then calculates the total sum of the points earned in each domain. A simple sum of all areas will result in the total score obtained by the patient. The translation from English to Portuguese was made by two persons who had Portuguese as their mother tongue and were proficient in English and Portuguese. This Portuguese version was submitted to a commission made up of an English teacher, two gastroenterologists, and a person with experience in quality of life studies to revise it and thus obtain a consensual form. It was then translated back into English independently by two teachers whose mother tongue was English. These versions were compared to the original test in English and the differences were analyzed. Thereafter, the final English version was translated to Portuguese while checking for its faithfulness to the original English test [12].

Procedures

Sample selection was done by reading the medical records of patients who came to the outpatient facility for appointments or exams in order of arrival. This reading was important to identify the diagnosis of CD and the criteria for exclusion from the study. To avoid probable influence in some answers to the quality of life questionnaire (IBDQ), patients with a background of alcoholism, drug addiction, stoma or inconclusive diagnosis were excluded. After reading the medical records and identifying the inclusion and exclusion criteria, patients were invited, in the waiting room, to participate in the study. Volunteers were led to a designated outpatient facility room to be informed about the aims of the study and about their rights to privacy and to quit at any moment. After these explanations and the volunteers' agreement to participate, they received the written free informed consent form. Data was collected only after the informed consent forms were signed.

Results

We used the descriptive statistical method to characterize the sample and the Pearson test to examine the correlations among the results of BFP, EDP and IBDQ.

The results indicate a positive correlation, this means that the degree of relationship between variables is high. The increase or decrease of a variable implies the increase or decrease in another. However, when the correlation is negative, it means that the increase of a variable implies the decrease of the other.

Correlation between the EDEP, IBDQ and the BFP (Table 3)

Extraversion	-0.32**
E1- Communication level	-0.22**
E2- Pride	-
E3- Dynamism and Assertiveness	-0.38**
E4- Social Interactions	-0.30**
Agreeableness	-0.23**
S1- Kindness	-
S2- Trust	-0.15*
S3- Sociability	-0.34**
Conscientiousness	-0.15*
R1- Competence	-0.27**
R2- Deliberation, Circumspection and Caution	-0.16*
R3- Diligence, Dedication and Commitment	-
Openness	-
A1- Interest for new ideas	-0.14*
A2- Liberalism	-
A3- Search for novelties	-
Neuroticism	0.48**
N1- Vulnerability	0.33**
N2- Instability	0.47**
N3- Passivity and Lack of energy	0.32**
N4- Depression	0.42**
IBDQ-TOTAL	-0.71**
IBDQ-F1-Intestinal Symptoms	-0.52**
IBDQ-F2- Systemic Symptoms	-0,61**
IBDQ-F3- Social Aspects	-0,50**
IBDQ-F4- Emotional Aspects	-0,80**

Table 3: Correlation between the EDEP, BFP and the IBDQ.

*: $p < 0.05$ **: $p < 0.01$.

The comparison between EDEP and total IBDQ showed a strong significant negative correlation ($r = -0.71, p < 0.01$), which indicates that the higher degree of CD patient depression, the lower is the perception of life quality. The correlation between total EDEP and the factors analyzed in IBDQ shows an influence of emotional aspects in the patients' quality of life, for emotional aspects had a strong negative correlation ($r = -0,80, p < 0.01$), whereas the systemic ($r = -0,61, p < 0.01$), intestinal ($r = -0,52, p < 0.01$) and social ($r = -0,50, p < 0.01$) symptoms produced a moderate negative correlation.

The most significant correlations occurred between the EDEP Totals and BFP, in the dimensions of Neuroticism ($r = 0.48, p < 0.01$) and Extraversion ($r = -0.32, p < 0.01$) and in the facets mentioned above. Such associations suggest that depression and extraversion have a consistently negative correlation, which indicates that high levels of depression may be linked to impairment in the degree of personal interaction.

Only the neuroticism dimension and its facets showed moderate positive correlations with the EDEP. In particular, the N-4 depression ($r = 0.42, p < 0.01$) and the N-1 vulnerability facet ($r = 0.33, p < 0.01$) demonstrated that the higher the depression, the greater the possibility of low self-esteem, insecurity, and dependency. The N-2 emotional instability facet ($r = 0.47, p < 0.01$) indicated an increase in depression, aggression, and hostility. The N-3 anxiety facet ($r = 0.32, p < 0.01$) showed an increase in depression, and mood and disposition swings.

All the other dimensions presented weak negative correlations. Facet A-1, which is related to internet for new ideas, stood out ($r = -0.14, p < 0.05$), followed by the dimension related to accomplishment ($r = -0.15, p < 0.05$) and dimensions of agreeableness ($r = -0.23, p < 0.05$), in which the S-2 confidence facet ($r = -0.15, p < 0.05$) showed a weak negative correlation, indicating increased depression and decreased concern for engagement in risk situations and compliance with rules. R-2 deliberation, circumspection, and caution ($r = -0.16, p < 0.05$) and R-1 competence ($r = -0.27, p < 0.01$) showed negative correlation also confirmed increased depression and decreased self-esteem. We also underscore the weak negative correlation in the E-1 communication facet ($r = -0.22; p < 0.01$), E-3 dynamism and assertiveness ($r = -0.38, p < 0.01$) and E-4 social interactions ($r = -0.30, p < 0.01$), which indicates an increase in the symptoms of depression and decreasing levels of communication and ease to meet new people.

Correlations between the BFP and the IBDQ (Table 4)

Scales	IBDQ TOTAL	IBDQ-F1 Intestinal Symptoms	IBDQ-F2 Systemic symptoms	IBDQ-F3 Social Aspects	IBDQ-F4 Emotional aspects
Extraversion					0.22*
E1- Communication levels					
E2- Pride					
E3- Dynamism/Assertiveness	0.23*		0.20*		0.31**
E4- Social Interactions					0.26**
Agreeableness					0.20*
S1- Kindness					
S2- Trust					
S3- Sociability	0.21*				0.30**
Conscientiousness					
R1- Competence	0.22*				0.29**
R2- Deliberation, Circumspection and Caution					
R3- Diligence, Dedication and Commitment					
Openness					
A1- Interest for new ideas					
A2- Liberalism					
A3- Search for novelties					

Neuroticism	-0.21*				-0.32**
N1- Vulnerability					-0.21*
N2- Instability					-0.30**
N3- Passivity and Lack of energy					
N4- Depression	-0.26*		-0.21*		-0.32**

Table 4: Correlations between IBDQ and BFP.

*. $p < 0.05$ **. $p < 0.01$.

The findings of the correlations between the BFP and the IBDQ indicated that the emotional aspects measurements had higher associations with assertiveness ($r = 0.31, p < 0.01$), sociability ($r = 0.30, p < 0.01$), emotional instability ($r = -0.30, p < 0.01$), depression ($r = -0.32, p < 0.01$), and the overall score of neuroticism ($r = -0.32, p < 0.01$).

It was also possible to confirm that only the neuroticism dimension ($r = -0.21, p < 0.05$) showed a weak negative correlation with the IBDQ total, which indicates that the higher the quality of life, the lower the predisposition to experience negative emotions such as depression. In addition, the moderate negative correlation with the emotional factor F-4 ($r = -0.32, p < 0.01$) of the IBDQ corroborated the fact that the better the quality of life, the less one encounters emotional conflicts.

A weak positive correlation with the extraversion ($r = 0.22, p < 0.05$), social interactions ($r = 0.26, p < 0.01$) and agreeableness ($r = 0.20, p < 0.05$) dimensions with the factor F4 (emotional aspects) of the IBDQ was also noticeable, and it showed that the better the quality of life, the greater the involvement with issues involving aspects of extraversion and agreeableness.

For F-2 systemic symptoms of IBDQ, we found a weak positive correlation for E-3 dynamism and assertiveness ($r = 0.20, p < 0.05$) and a weak negative correlation for N-4 depression. This indicates that the systemic factors in the evaluation of CD patients' quality of life are interdependent, that is, that dynamism and assertiveness tend to improve the quality of life concerning systemic symptoms and that the presence of depression tends to worsen quality of life in that factor.

Discussion

In our literature review we found several studies that sought to identify the psychological profile of IBD and CD patients. The results are that these patients tend to have an obsessive and controlling personality, with traits such as insecurity, inadequacy, stress, dependency, emotional lability, sensitivity, anxiety, depression and feelings of inferiority [4-9].

Other authors studied and described the impact of CD on the quality of life of these patients [11-12,26]. However, we did not find any study that established the direct correlation between depression, personality traits and quality of life in CD patients.

After analyzing the relations among the results about depression and quality of life on the basis of EDEP and total IBDQ, we noted a strong significant negative correlation ($r = -0.71, p < 0.01$) between depression and quality of life, showing that the stronger the depression, the worse is the patients' perception of quality of life, together with a major impact on emotional aspects, which showed a strong negative correlation ($r = -0.80, p < 0.01$). This corroborates Drossman, *et al.* [25,26] who identified emotional difficulties as a major factor influencing quality of life and established relations between CD characteristics such as chronicity, symptomatology and uncertain prognostic with emotional difficulties that influence lifestyle. The statistical analyses of the BFP and IBDQ correlations confirmed that only the neuroticism dimension ($r = -0.21, p < 0.05$) showed a weak negative correlation with the IBDQ total. This indicates that the better the quality of life, the lower the predisposition to experience negative emotions such as depression, which also found a moderate negative correlation with the emotional factor F4 ($r = -0.32, p < 0.01$) of the IBDQ. This confirms that if the quality of life is better, then there are less emotional conflicts (Table 4).

The correlations between the BFP and IBDQ found in this study indicated that the emotional aspects measurements had higher associations with assertiveness ($r = 0.31, p < 0.01$), sociability ($r = 0.30, p < 0.01$), emotional instability ($r = -0.30, p < 0.01$), depression ($r = -0.32, p < 0.01$), and the overall score of neuroticism ($r = -0.32, p < 0.01$). A weak positive correlation with the extraversion ($r = 0.22, p < 0.05$), social interactions ($r = 0.26, p < 0.01$) and agreeableness ($r = 0.20, p < 0.05$) dimensions with the factor F4 (emotional aspects) of the IBDQ was also noticeable, and it showed that the better the quality of life, the greater the involvement with issues involving aspects of extraversion and agreeableness (Table 4).

These data are also discussed in the literature by Ricco., *et al.* [9,16], who report that the main personality traits that may be triggered by patients with IBD, such as insecurity, feelings of inferiority and inadequacy, tension, anxiety, depression, aggression, dependence, sensitivity, emotional lability, and hyperactivity are familiar. The chronicity of CD and the correlations found in this study underscore the concurrence of chronic diseases with mental disorders, manifested by the possible presence of problems such as depression, anxiety, and substance abuse in these patients. Furthermore, chronic disease can be seen as a long-term stressor that affects not only the patient, but also their families or caregivers.

A weak positive correlation of the extraversion ($r = 0.22, p < 0.05$) and agreeableness ($r = 0.20, p < 0.05$) dimensions could be established with the factor F-4 of the IBDQ, which shows that the better the quality of life, the greater the involvement with issues involving aspects of extraversion and agreeableness (Table 4). These correlations suggest that quality of life reflects how patients perceive and react to issues involving their health and other non-medical aspects of their lives [5].

The associations found in this study are reported in the literature. This highlights the importance of the emotional component in the etiology and progression of IBD, which increases the need to prepare patients for their physical and emotional losses. Challenges related to IBD can trigger personality traits such as insecurity, feelings of inferiority and inadequacy, stress, anxiety, depression, aggression, dependence, sensitivity, emotional lability, and hyperactivity. Patients with controlling and obsessive-perfectionist personalities may present difficulty in emotional self-expression, sexual conflicts, masochism, shyness and diffidence [3-8,27].

The most significant correlations occurred between the BFP and EDEP Totals and in the neuroticism ($r = 0.48, p < 0.01$) and extraversion dimensions ($r = -0.32, p < 0.01$), in addition to the facets previously mentioned. Such results suggest that depression and extraversion show a consistent negative correlation, indicating that high levels of depression may be associated with impairment in the levels of interaction between people. These findings corroborate the study of Bonanno [28] that identified elevated levels of neuroticism in patients with CD.

Show a weak negative correlation in the E-1 communication facet ($r = -0.22; p < 0.01$), indicating an increase in the symptoms of depression and decreasing levels of communication and ease of meeting new people. The S-2 pro-sociality facet ($r = -0.15, p < 0.05$) showed a weak negative correlation, demonstrating increased depression and decreased interest in engaging in risk situations and compliance with rules, and in the R1 facet ($r = -0.27, p < 0.01$), which confirms the increased depression and the decreased self-esteem. The remaining correlations investigated in this study occurred in the facets R2 ($r = -0.16, p < 0.05$), A1 ($r = -0.14, p < 0.05$) and in the dimensions Extraversion ($r = -0.32, p < 0.01$), Conscientiousness ($r = -0.15, p < 0.05$) and Agreeableness ($r = -0.23, p < 0.01$). The remaining correlations between BFP and EDEP results have already been discussed in the literature dealing with personality traits such as extraversion (which can be defined as the amount of interpersonal interactions typical to the individuals, including the levels of communication, gregariousness, and assertiveness), and openness (defined as a disposition for new experiences, cultural interest, aesthetic sensitivity, and flexibility). The agreeableness factor involves aspects of altruism, care, cooperation and trust, and lastly, Conscientiousness includes traits such as persistence, discipline, responsibility, and need for [10].

Only the neuroticism dimension and its facets showed moderate positive correlations with the EDEP, more specifically, the N-1 vulnerability facet ($r = 0.33, p < 0.01$) demonstrated that the higher the depression, the greater the possibility of low self-esteem, insecurity,

and dependency. The N-2 emotional instability facet ($r = 0.47$, $p < 0.01$) had an increase in depression, aggression, and hostility, and N-3 anxiety facet ($r = 0.32$, $p < 0.01$) showed an increase in depression, and mood and disposition swings (Table 3).

These correlations are also found in the literature by Nunes [22], who reports that the greater the degree of depression, the more vulnerable and emotionally unstable the patient will be, which confirms that mental disorders point to the concurrence of chronic diseases and the presence of problems such as depression and anxiety.

The limitations of this study consists in the fact that the data to be based entirely on the self-assessment of the patients, typical characteristic of the psychological instruments that implies in considering factors of subjectivity. The sample size is relatively small that difficult to universalize the observed characteristics and it is not possible to establish causalities for the findings, that further studies are required.

Conclusion

Even considering the limitations of the study, the results indicated a link between participants' personality characteristics and the other measured variables, with Neuroticism being the personality trait with the highest association. The greater the depression, the worse the quality of life, with more impact on emotional aspects. This indicates an increase in neuroticism with less socialization and extraversion and results in a controlling obsessive-perfectionist personality.

Conflicts of Interest

All authors declare no conflicts of interest.

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