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Evaluation of the Personality Traits of Asthmatic Patients

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ABSTRACT

Background: The effect of mental status on physical conditions has been well established and it has been proven that psychosocial factors play an important role in physical diseases. There are numerous factors that may be involved in development of asthma. Emotional stress and anxiety attacks are of the factors responsible for initiation of asthmatic attacks.

Materials and Methods: For evaluation of the personality traits of asthmatic patients, the Minnesota Multiphasic Personality Inventory (MMPI) test was used which had 8 clinical and 3 validity scales. It is one of the most frequently used personality tests in mental health. This study was performed on 300 asthmatic patients including 197 females and 103 males. Along with personality traits, we also evaluated demographic characteristics of patients including age, sex, level of education, marital status, and number of children.

Results: Level of education, age and marital status were significantly correlated with the severity of disease ($P=0.001$, $P=0.007$ and $P=0.011$, respectively). Our study results showed that people with low educational level, middle-aged and married individuals were at higher risk of developing severe asthma. Correlation coefficients between clinical scales of D (depression), Hs (hypochondriasis), Hy (hysteria), Pt (psychasthenia), Pa (paranoia) and Sc (schizophrenia) and severity of asthma were $rD=0.301$, $rHs=0.306$, $rHy=0.159$, $rPt=0.161$, $rPa=0.1431$ and $rSc=0.136$, respectively. All correlations were statistically significant indicating the presence of depression, excitability and anxiety symptoms in these patients.

Conclusion: Signs and symptoms of mental disorders are usually disregarded and therefore, they often remain undiagnosed. However, such conditions are potential risk factors for psychosomatic diseases like asthma. (Tanaffos 2009; 8(2): 37-41)

Key words: Asthma, Personality traits, Chronic diseases, Stress, Tehran

INTRODUCTION

The ancient Greeks were aware of the effect of mental state on physical conditions. In 17th and 18th centuries, this belief became much more popular and

in the 19th century Charcot used hypnotism for the treatment of physical symptoms. Psychosomatic disorders are physical symptoms that are due to the emotional stresses that affect the function of autonomic nervous system, endocrine glands and physiologic function of the body. These are different from somatoform disorders because they are

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correlated with sympathetic and parasympathetic nervous system and are associated with obvious physical trauma and may even lead to patient's death. Peptic ulcer, cancers, asthma, cardiovascular diseases and eczema are among these conditions (1).

Asthma is a disorder of the airways and is characterized by tracheal and bronchial hyperresponsiveness to different stimuli. Physiologically, during an asthma episode the airways narrow and the bronchi contract into spasm which may resolve spontaneously or as a result of therapy. Clinically, asthma is characterized by shortness of breath, wheezing and cough. The disease occurs as recurrent acute exacerbations (asthma attacks) and the asthmatic may show no signs of the disease between these episodes (2).

There are numerous factors that may be involved in initiation of asthma attacks and there is growing evidence that emotional/psychological stress is a trigger. Patients who usually overreact when dealing with life issues are at a higher risk for an asthma attack.

Studies have reported various levels of stress among those suffering from chronic diseases (3). Also, several factors may play a role in development of asthma and its severity including life satisfaction, extroversion, gender, and physical differences (4-9).

This study aimed to evaluate personality traits of asthmatic patients according to their age, sex, level of education, marital status and number of children.

MATERIALS AND METHODS

Understudy population: The understudy population included 300 asthmatic patients from Masih Daneshvari, Milad, and Fayazbakhsh Hospitals and 2 clinics. This study was conducted between September 2006 and September 2007. Since severity of asthma was a ordinal qualitative variable,

the samples size for this variable was calculated by using the formula below:

$$n = Z^2_{1-\alpha/2} P(1-P) / d^2$$

$$n = \frac{0.5(1-0.5) \times 1.64^2}{(0.05)^2} = 268.96$$

The understudy population was calculated to be 269 people but we evaluated 300 patients considering the possibility of incomplete questionnaires. The diagnostic criteria for asthma were adopted from the American Thoracic Society (ATS) guidelines and based on clinical symptoms and spirometric indices.

Data collection: Minnesota Multiphasic Personality Inventory (MMPI) and the demographic variables questionnaires were completed for all participants. MMPI is one of the most popular clinical psychology personality inventories in use today. The original authors of the MMPI were Starke R. Hathaway and J. C. McKinley and it was copyrighted by the University of Minnesota in 1943. They aimed to create a means for evaluation of different aspects of normal and abnormal personalities and they wanted it to have all the features for precise statistical analysis while being easy to use at the same time. The MMPI has 566 items printed on cards. The test taker is asked to read each question carefully and respond in one of the 3 formats of "true", "false" or "I do not know". This questionnaire has 8 clinical (Ma: hypomania, Sc: schizophrenia, Pt: psychasthenia, Pa: paranoia, Pd: psychopathic deviate, Hy: hysteria, Hs: hypochondriasis and D: depression) and 3 validity scales (L: lie, F: infrequency and K: defensiveness).

Interpretation of MMPI is usually done in 2 forms:

- 1- Curves interpretation
- 2- Code interpretation

In general, all points outside the range of 70 in MMPI profile indicate that the patient's behavior in

terms of that scale is abnormal.

In the short version of MMPI which includes 71 questions, researchers have made some cultural compatibility changes to make it more compatible to Iranian culture and even some literature and cultural scientists have cooperated in redesigning this questionnaire (10).

In order to evaluate the correlation between the severity of asthma and clinical (including Ma, Hs, D, Hy, Pd, Pa, Pt and Sc) and validity (K, L, and F) scales, Pearson's correlation coefficient was used.

Also, cross-tab, independent t-test and chi-square test were used for assessing the correlation between severity of asthma and demographic variables.

RESULTS

Three hundred patients were evaluated in this study out of which 197 were females and 103 were males.

In regard to the demographic variables, there was a significant correlation between level of education, age and marital status with the severity of asthma (Table 1). According to the results, patients with elementary education, those between the ages of 36 to 55 and married subjects were more prone to severe asthma.

Table 1. Results of Chi-square test between the demographic variables and severity of asthma

Demographic variables	Chi-square coefficient	P-value
Age	13.956	0.007
Level of education	26.442	0.001
Marital status	8.938	0.011
Number of children	23.614	0.368
Gender	2.487	0.288

There was no significant correlation between the number of children or gender and the severity of asthma.

Regarding the clinical scales, there was no significant correlation between Pd (psychopathic deviate) or Ma (hypomania) and severity of asthma. However, other clinical scales had a statistically significant correlation with the severity of asthma. Table 1 demonstrates the value of these correlations. The highest correlation coefficient belonged to the correlation between the D (depression) scale and the severity of asthma followed by the Hs (hypochondriasis), Pt (psychasthenia), Hy (hysteria), Pa (paranoia) and Sc (schizophrenia) scales indicating the presence of depression, excitability and anxiety symptoms (Table 2).

Among the validity scales, there was a significant correlation between the F (infrequency) scale and severity of asthma. The correlation coefficient between the severity of asthma and F scale was 0.160 indicating a positive correlation and mental infrequency. L (lie) and K (defensiveness) scales did not have a statistically significant correlation with the severity of asthma (Table 3).

Table 2. Results of the Pearson's correlation coefficient between the clinical scales and severity of asthma

Clinical scales/Correlation	Pearson's correlation coefficient	P-value	Confidence interval
D scale and severity of asthma	0.341	0.000	0.235≤r≤0.437
Hs scale and severity of asthma	0.306	0.000	0.164≤r≤0.435
Hy scale and severity of asthma	0.159	0.006	0.047≤r≤0.267
Pt scale and severity of asthma	0.161	0.005	0.047≤r≤0.267
Pa scale and severity of asthma	0.143	0.013	0.030≤r≤0.253
Sc scale and severity of asthma	0.136	0.019	0.022≤r≤0.240

Table 3. Results of Pearson's correlation coefficient between validity scales and severity of asthma

Correlation	Pearson's correlation coefficient	P-value	Confidence interval	
Validity scales	F scale and severity of asthma	0.160	0.005	$0.047 \leq r \leq 0.267$

DISCUSSION

This study was conducted to evaluate the personality traits of asthmatic patients. To our knowledge, this is the first study on this subject conducted in Iran. By using the standardized MMPI questionnaire, it was concluded that the highest frequencies belonged to D, Hs, Hy, Pa, Pt, and Sc scales representing depression, excitability and anxiety symptoms based on scoring and interpretations. Our results are in accord with those of other researchers from different countries (5, 6, 11-14) emphasizing the importance of mental disorders in development of psychosomatic diseases.

As shown in Table 1, age, level of education and marital status were factors affecting the severity of disease and based on this statement, married, middle aged and low educated people are more prone to severe asthma. In our society, low education and married life are considered as stressors (middle aged people are optimistic towards the future if they are satisfied with the way they have spent their life so far and on the contrary, they can be pessimistic if they are not satisfied with their life so far and think that it is too late to make up for the past).

This conclusion is not far from the truth since we are all aware of the fact that married and low-educated citizens (economically, culturally or socially) are mostly struggling. It is believed that

emotional stresses due to the individual's social or cultural position result in the development of mentioned symptoms which consequently lead to the exacerbation of the disease.

No significant correlation was found between number of children or gender and severity of disease. In other studies (4, 6, 9) gender has been considered as a confounding factor. Huovinen in his study on 11,000 cases and Rietveld in his study on 897 patients demonstrated that women were at a higher risk for developing asthma (especially the severe form) (4,9).

Although women comprised two third of the understudy population in our study, no such correlation was found which might be due to several reasons. One may be the fact that our study was conducted on a homogenous population with Persian ethnicity and culture while other studies were mostly performed on American/European populations with mixed races and different cultures.

Studies performed on children and adolescents (13-16) indicated that asthmatic patients had these symptoms from the early ages. These findings were also reported by Richardson in his study on 767 adolescents (largest sample size) and Baron in his study on 34 adolescents (smallest sample size) indicating that if therapy for prevention or treatment of these symptoms starts early in life, these individuals will be able to deal with these issues more efficiently in the future (15,16).

In conclusion, it is important to evaluate the patients' mental health, recognize the stressors in this respect and improve the patients' mental and physical health by eliminating these triggers.

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