Assessing Personality Traits in Patient of Chronic Pain and Healthy Individuals

Mohammad Ebrahim Madahi, Laleh Amirsoleimany, Mohammad yusef bahareh, Rezvaneh Ghasemzadeh

Abstract— This study makes a comparison between patients of chronic pain and healthy individuals for personality traits. In this study, personality traits (the “Big Five” traits of Neuroticism (N), Extraversion (E), Agreeableness (A), Conscientiousness (C), and Openness to Experience) are considered based on NEO-FFI questionnaire. The study sample included 133 patients with chronic pain who are referred to pain clinics of Tehran University of Medical Sciences University and 123 healthy individuals living in Tehran. For data analysis, MANOVA was used. In conclusion, research has shown difference of personality traits.

Index Terms— Personality, Chronic Pain.

1 INTRODUCTION

The aim of the present study was to assess the possible role of personality traits at chronic pain. Almost one in three people suffer from chronic pain, a condition frequently associated with decreased health-related quality of life and high levels of psychological distress (National Center for Health Statistics, Health, United States, 2006). The enormous human and economic costs associated with chronic pain have increased interest in the psychological components of chronic pain as there is a growing consensus that personality traits and related alterations in cognitive patterns and behaviors have important implications for health outcome (Collins, 2010). Despite conventional healthcare utilization, nearly half of patients with chronic pain report their pain as not under control (Rosenzweig, et al, 2010).

Personality has been defined as stability in thought and behavior across situations, as well as the behavioral differences among people reacting to the same situation (American Psychiatric Association, 2000). Also personality and temperament are defined as characteristic patterns of thoughts, feelings, and behaviors over time and across situations. Although temperament often refers to traits reflecting predominantly biological predispositions and personality to traits influenced by environmental factors, models of temperament and personality show a strong degree of overlap (Connor-Smith, Flachsbart, 2007). Since pain is widely accepted to be a bio-psychosocial process, it is very likely to be influenced by personality. Over the years, researchers have investigated the contribution of personality to pain perception, both through experimentally induced pain models as well as in various clinical settings. The different parameters measured include pain threshold, pain magnitude, tolerance, and pain behavior. Findings are still inconsistent and the relationship between personality and the various pain parameters remains unclear (Pud, Eisenberg, Sprecher, Rogowski, Yarnitsky, 2004).

Personality traits can play an important role in the understanding of the variability of pain perception among individuals in pain perception. Personality may have an effect on how one perceives and interprets pain, exerting influence via cognitive processing rather than sensory mechanisms (Fry & Debbets, 2009, pud, et al, 2004). Direct effects of personality on coping may begin in early childhood, with biologically based appetitive, defensive, and attention systems providing the framework in which coping develops (Derryberry, Reed, & Pilkenton-Taylor, 2003).

Psychological diagnostic workout with special attention to personality traits in relation to their coping style is recommended in order to choose the most appropriate therapeutic approach in this population (Popp, Crombez, Hanoule, Vogelaers, Petrovic, 2011). Life-long vulnerability to anxiety and depression is paramount in understanding the relationship between personality and suffering in chronic pain. These findings provide support for the idea that personality traits influence the ways in which people cognitively process the meanings that chronic pain holds for their life, and hence the extent to which they suffer. (Wade, et all, 1992). The prevalence of personality disorders (PDs) is significantly greater in the pain population than in the general population or in medical or psychiatric populations (Weisber, 2000). The coping use and coping effectiveness were moderated by personality. (Newth, DeLongis, 2004). In addition, patients with high neuroticism were found to exhibit greater emotional distress related to LBP (Janowski, Steuden, Kurylowicz, 2010).

2 METHOD

The present study is causal-comparative one which logistic regression model has been used to predict variables. The sample includes 133 individuals suffering from chronic pain (skelatal-muscle) and 123 healthy individuals aged 20-65 years admitted to the clinics of hospitals affiliated to Medical Sciences University of Tehran with a medical diagnosis of chronic pain and the inhabitants of Tehran in 2011 that were chosen with multi-stage random method.
3 INSTRUMENT

The NEO-FFI test assesses five personality dimensions (neuroticism, extraversion, openness, agreeableness and conscientiousness) which are considered the major dimensions of human personality (Costa et al., 1986). This inventory is reliable when retesting over time and is therefore independent of current life circumstances. It consists of 60 items (12 for each personality dimension). (Costa, et all, 1986). The 60 items are rated on a 5-point scale and require 10–15 min to complete. The NEO-FFI factors show correlations between 0.75 (C) and 0.89 (N) with the full-scale NEO-PI validity max factors and the domain scales show correlations between 0.87 (A and C) and 0.92 (N). Internal consistency reliabilities for the NEO-FFI range from 0.68 (A) to 0.86 (N) and test–retest reliabilities range from 0.79 (E and O) to 0.89 (N) (Costa, McCrae, 1992).

4 RESULTS

Central tendency, dispersion and distribution of scores indices were used in proportionate with the variables under study and the type of data collected in order to describe them. In statistical analysis stage, Multivariate Analysis of Variance (MANOVA) was used for data analysis given the nature of variables measurement scale and research hypotheses.

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>SUMMARY OF DESCRIPTIVE INDICATORS OF HEALTHY PARTICIPANT (N= 123) AND CHRONIC PAIN PATIENTS (N=133) SCORES IN THE NEO TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>healthy participant</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>mean</td>
</tr>
<tr>
<td>Extraversion</td>
<td>5.695</td>
</tr>
<tr>
<td>Openness to experiences</td>
<td>34.76</td>
</tr>
</tbody>
</table>

**P<0.05**

Hypothesis: there is a difference in personality components between individuals with chronic pain and healthy people.

According to the value of Wilkes-Lambday test (0.898) and the calculated F (5.695) with 250 degree of freedom and 5, the zero hypothesis can be rejected (P<0.01). In other words, the mean difference of 5-component scores namely neuroticism, extraversion, openness to experience, agreeableness and conscientiousness is simultaneously significant between healthy and patient people and they can be separated from each other based on five components of neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. According to Eta-squared values (0.102), the effect size of this difference is in a relatively weak level. In general, Eta-squared values (0.102) show relatively weak relation between personality traits and risk of being affected to chronic pain.

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>SUMMARY OF MULTIVARIATE TESTS</th>
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<tbody>
<tr>
<td>Wilkes Lambday</td>
<td>0.898</td>
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<tr>
<th>TABLE 3</th>
<th>SUMMARY OF TESTS OF EFFECTS BETWEEN SUBJECTS</th>
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</thead>
<tbody>
<tr>
<td>Sources</td>
<td>Neuroticism</td>
</tr>
<tr>
<td>SS</td>
<td>245.993</td>
</tr>
<tr>
<td>DF1</td>
<td>1</td>
</tr>
<tr>
<td>DF2</td>
<td>254</td>
</tr>
<tr>
<td>MS</td>
<td>245.993</td>
</tr>
<tr>
<td>F</td>
<td>5.363**</td>
</tr>
<tr>
<td>Eta-squared</td>
<td>0.021</td>
</tr>
</tbody>
</table>

**SIGNIFICANCE AT 0.01 LEVEL, * SIGNIFICANCE AT 0.05 LEVEL**

According to the results of effects tests among subjects and F calculated indicators and their significance level, it can be concluded that there is a significant difference between the mean of healthy people and the patients in terms of five components namely neuroticism, extraversion, openness to experience, agreeableness and conscientiousness which are considered the major dimensions of human personality. Each Eta-squared value indicates the weak relationship between personality traits and affecting to chronic pain. Results of follow-up test indicate that mean of healthy people scores in extraversion, openness to experience, agreeableness and conscientiousness components is higher than those of
patient scores and the scores of patients is higher than healthy people only in neuroticism component.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Healthy</th>
<th>Patient</th>
<th>Groups</th>
<th>Healthy</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-1.962*</td>
<td></td>
<td>Healthy</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Patient</td>
<td>-</td>
</tr>
</tbody>
</table>

**SIGNIFICANCE AT 0.01 LEVEL, * SIGNIFICANCE AT 0.05 LEVEL

5 DISCUSSION

Neuroticism moderated the relationship between pain severity and catastrophic thinking about pain (Goubert, Crombez, Van Damme, 2004). The domain of Neurotic traits was significantly and positively associated with beliefs in mystery, pain permanence, and self-blame. The domain of Openness traits was not correlated with pain beliefs. The domain of Agreeableness was unrelated to pain beliefs; however, greater conscientiousness was significantly associated with the perception of pain being more constant than intermittent (Williams, Robinson, Geisser, 1994).

Neuroticism and conscientiousness were significant predictors of pain catastrophizing, and neuroticism, openness, and agreeableness were significant predictors of pain anxiety. Personality traits did not contribute significantly to vigilance to pain. The effect of neuroticism upon pain anxiety was mediated by pain catastrophizing, and neuroticism showed a trend to moderate the relationship between impairment and pain anxiety. (Martínez, Sánchez, Miró, Medina, Lami, 2011)

Neuroticism was demonstrated to constitute a vulnerability factor predisposing patients with LBP to greater pain fear, pain catastrophizing and higher pain severity (Janowski, etc all, 2010). Conscientiousness predicted better acceptance of life with the disease (Janowski, etc all, 2010). The patients with LBP, higher conscientiousness was a predictor of better psychosocial functioning (Janowski, etc all, 2010).

The combination of high Neuroticism and low Extraversion which is a pattern often characterized as anxious and socially avoidant was found to be consistently related to poor health outcomes. (Wall, Ogloff, Morrissey, 2006).

Assessment of personality traits allows for considering the global nature of the patients rather than merely aiming the normalization of their deviant aspects (Weber, et al, 2012).

In a comparison made between two groups of chronic pain patients and healthy people, it has been found that the difference between personality traits in all five components is significant. According to the current research findings, mean scores of healthy people in extraversion, openness to experience, agreeableness and conscientiousness components is higher than those of patients. The scores of patients are higher than those of healthy people only in neuroticism component. Some of the personality traits can put people at risk of poor compatibility with chronic pain (Asghari, Nicholas, 2006). Conner and Smith (2007) achieved contradictory results regarding the contribution of personality components in affecting to chronic pain in an analysis performed on a number of similar articles that attributed it to the heterogeneity of article samples with respect to culture and climate, especially low number of articles from non-western samples.

According to the findings of Ilona Croy, Maria Springborn, Jörn Lötsch, Amy N. B. Johnston and Thomas Hummel in 2011, obtaining high score in neuroticism is compatible with increased sensitivity to pain and gaining high score is compatible with reduced sensitivity to pain i.e. high threshold to pain. Neuroticism underlies many psychological disturbances and negative emotions can put the person at risk of catastrophic mental and psychological unpleasant events.

According to the research performed by Schmidt JE, Hooten WM and Carlson CR in 2010, it has been reported that people with lower score have more pain in openness to experience. People with high score on openness to experience have likely a...
better performance to face with adverse conditions such as affecting to chronic pain due to having a higher level of curiosity, flexibility and accepting new experience (Costa, McCrae, 1992). Extraversion is made known with high skills in communicating with others. Therefore, attracting the attention of relatives in this group than people with low score in extraversion is predictable which is consistent with the results of this study. Intense desire to perform properly the tasks and duties in individuals with high score in conscientiousness elements can be associated with the level of pain tolerance. Low mean extraversion score is led to poor performance in support of friends and families and high neuroticism score though inefficient use of problem-solving strategies likely makes it possible the context for the affection and continuity of chronic pain.

According to the research findings, it seems that agreeableness and conscientiousness are more associated with chronic pain. People with high score of agreeableness have a high level of sympathy and good suspicion towards others as they are contributors and altruists. These characteristics are likely led to gain more support through relatives and thus facilitate using problem-solving strategies by providing a suitable environment. In contrast, people with a lower score in agreeableness are stubborn, egocentric, skeptical and competitive in their interactions. These features can make possible the possibility of isolation and complications resulted from by disturbing attracting the support of relatives and the person is prone to many psychological and even physical problems such as chronic pain. Probably people with high score are faced with fewer problems in conscientiousness element with regard to the type of their orientation to community and social communications. Also, objectivity, motivation and strong determination are means to make the person efficient in coping with the problems. Contemplation and thought before acting, which is one the features of these people is led to primary and secondary assessment in accordance with the situation and makes possible the context to use problem-incentive strategies and more effective dealing with pain.

On the other hand, conscientiousness is in turn effective in providing a suitable situation for interaction with others and is probably led to more support from around people.

REFERENCES


