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FIVE-FACTOR PERSONALITY DIFFERENCES IN ADULTS WITH AND WITHOUT NEUROLOGICAL DISORDERS IN KARACHI

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ABSTRACT

Objectives: *This study investigated the differences in the five –factor personality dimensions in adults with neurological disorders (ND)-(epilepsy, guillain-barre syndrome-GBS and stroke) and without neurological disorders.*
Design: *Comparative Study.*
Place and duration of Study: *Institute of Clinical Psychology, University of Karachi in 2013-2015.*
Subject and Method: *60 individuals with ND and 60 individuals without ND (control group) (Mean age 27.53;SD= 4.38), were selected after matching the variables of age, gender, marital status, educational level, and socioeconomic status from the Neurological Ward of Jinnah Post Graduate Medical Centre (JPMC) Karachi, Pakistan. A demographic form and the NEO Five Factor Inventory-Urdu Version were administered on both the group individually.*
Results and Conclusion: *t-test showed a significant difference in Neuroticism (N) individuals with ND scoring higher than individuals without ND. Alternatively, on the Openness (O) and Conscientiousness (C) dimensions individuals without ND scored significantly higher than individuals with ND indicating that this group had low levels on both these traits. No significance difference was found when comparing Extraversion (E) and Agreeableness (A) between the two groups.*
This study would be helpful for Neurologists, psychiatrists and Clinical psychologists to understand the personality traits of patients with neurological disorders and thereby to provide psychological services according to their needs.

Keywords: *NEO-FFI-Five-Factor Personality; Neurological Disorders (ND)*

INTRODUCTION

According to World Health Organization, (2014) Neurological disorders are categorized as periphreral and central nervous system's disease. A neurological disorder can involve structural, electrical or biochemical abnormalities of the brain, spinal cord or other nerves which can result in multiple cognitive and psychiatric progressions of symptoms. Woods and Short, (1985) explained that 50% of patients with psychiatric disorders have neurological disturbances and Schiffer, (1983) argued that 42% of neurological patients have psychiatric disturbances. However, for the present research purpose the following three neurological disorders were used to select the group with NDs: 1.Epilepsy, 2.Guillain-Barre Syndrome 3. Stroke

Epileptic seizure activity results in many pathophysiologic conditions that impacts on cognition, sensory, motor activity and behavior, as well as the emotional attitude of the person. (Hales & Yudofsky, 1987). Guillain Barre Syndrome (GBS) is the most recurrent acquired demyelinative neurological disorder. Beghi, Kurland, Mulder et al. (1985) defines that GBS starts a few days to 4 weeks after a viral upper respiratory infection, immunization, or surgery. It is featured by cranial and peripheral nerve malfunctioning. The earlier symptoms usually include weakness of muscle, an abnormal sensation or weedy pain. The progression of weakness generally starts from legs towards trunk and upper portion of body (Hales & Yudofsky, 1987). In GBS the psychiatric symptoms can include anxiety and affective imbalance, which need treatment to better functional outcomes. A stroke is also called as cerebrovascular accident (CVA), cerebrovascular insult (CVI) and the brain attack. It depends on which section of the brain damaged due to poor blood flow. There are two main types of strokes i.e ischemic or hemorrhage. Its earlier signs caused difficulty to move positions of the body, clumsiness, loss of balance or coordination, trouble speaking or understanding others ('Stroke', 2015). Boll (1978). In order to understand behavioral and psychological manifestation that occurs in the form of dysfunctions, a neurologist investigates the structure and functions of human brain ('Neuropsychology', 2014). The following work of Hales and Yudofsky (1987) focuses on the personality changes as a result of their stresses and sufferings of particular neurological disorders. He has reviewed the work of

Fordyce, Roueche and Prigatano (1983); Oddy, Coughlan, Tyerman et al. (1985); Thomsen, (1984) suggested that in the personality changes the leading behavioral features such as disorderliness, suspiciousness, argumentativeness, isolativeness, disruptiveness and anxiousness become more prominent with brain injury. Researchers have worked to investigate the effects of neurological disorders on personality, for instance Smith, Nolen-Hoeksema, Fredrickson, and Loftus (2003) have defined personality as the 'unique form of thought, emotion, and behavior that modifies an individual's personal style of life. It is contact with physical and social setting stresses; unique identifiers such as extroverted and conscientious person. Eysenck (1953) unfolded two personality factors: introversion-extraversion and emotional instability-stability, which he contemplated as neuroticism. Lewinsohn, Mermelstein, Alexander and Macphillamy, (1985) claimed that neurological disorders affect person's cognitive and physical functioning due to which he or she faces difficulties in performing daily life activities, that further leads to depressed mood.

In this context and keeping the literature in view it was hypothesized that;

Individuals suffering from a Neurological Disorders would score higher on the domain of neuroticism, and lower on extraversion, agreeableness, openness and conscientiousness, as compared to control group.

METHOD

Participants

The research sample is comprised of 120 participants (equally divided regarding gender and marital status). 60 individuals with NDs-(epilepsy, Guillain-Barre syndrome and stroke) were selected from Neurology Ward of Jinnah Post Graduate Medical Centre (J.P.M.C.), Karachi. The age range of entire sample was from 20-35 years, (mean age= 27.53; SD= 4.38) their minimum educational level was matriculate (10 grade) and maximum was masters and their socio- economic status was middle class. The minimum episode duration of epilepsy, neurological disorder was 6 months period and the minimum duration of Guillain-Barre Syndrome and stroke, as neurological disorder was 15 days period. All patients with neurological disorder were in their stable stage at the time of their participation. Their diagnosis and treatment information was collected from the doctor's report attached in their case file.

Control group comprised of 60 individuals, those were selected after matching the subject with the patient sample on the variables of age, gender, marital status, educational level and Socioeconomic Status from different areas of Karachi through purposive sampling technique.

Measures

Demographic Form

A self- developed demographic form which was comprised of participant's personal information, such as age, education, employment, income level, medical illness etc.

NEO-Five Factor Inventory–Urdu Version (Costa, & McCrae, 2003)

NEO Five Factor 60 items personality Inventory (NEO-FFI) comprised of five big factors that measures personality traits i.e. Neuroticism (N), Extraversion (E), Agreeableness (A), Openness (O) and Conscientiousness (C). Each of its domain scale has 12 items. Both group or individual administration can be done. This is like a 5 –point likert type ranging from strongly disagree (1) to strongly agree (5). Coefficient alpha showing internal consistency .86 for N, .77 for E, .73 for O, .68 for A and .81 for C. It also has good cross observer, convergent and discriminant validity.

Procedure

The proposal of this study was initially approved by the Board of Advanced Studies and Research, University of Karachi as part of Ph. D degree, after getting the approval the researcher purchased the inventory (urdu version) from the publisher. Then the Head of department of the Neurology of JPMC Karachi was approached for permission and data collection. After getting the permission, the patients suffering from Neurological disorders (as described above), written permission letter were signed from the participants and the rapport was established. Later it was followed by the individual administration of a demographic form and NEO-FFI. The same procedure was applied to adults without neurological disorder (control group). To follow the ethical standard of research all participants were brief about the purpose of research study, confidentially of their identity and other individual data, with to withdraw from the research any time. For statistical analyses descriptive and inferential statistics i.e t -test were done by SPSS-V-22.

RESULTS

Table 1

Mean Scores of individuals with Neurological Disorders (IWND) and individuals without Neurological disorders (IWOND) on the variable of Neuroticism, Extraversion, Agreeableness, Openness to experience, and Consciousness

Variables	*Groups*	*M*	*SD*	*MD*	*t*	*Sig*
Neuroticism (N)	IWND	27.13	3.38	5.35	6.54	.000*
	IWOND	21.78	5.35			
Extraversion (E)	IWND	26.93	3.57	-.48	-.58	.563
	IWOND	27.41	5.37			
Agreeableness (A)	IWND	22.53	3.66	-.70	-1.01	.314
	IWOND	23.23	3.91			
Openness (O)	IWND	21.95	3.99	-6.21	-7.36	.000*
	IWOND	28.16	5.17			
Conscientiousness (C)	IWND	27.83	4.10	-5.85	-7.33	.000*
	IWND	33.68	4.61			

Note: N=120,df=118;Sig at .001

DISCUSSION

According to bio psycho social model whenever person's brain functioning changes; it has effects on behavior as well as on personality. In Pakistan there are few studies conducted in this field; the major barrier is lack of awareness, availability of scientific tools in the national language, and resistance of people to inform about their illness to others, such as having any emotional problem or psychological disorder is considered to be a stigma in general population. In the context of our findings from the study it was seen that individuals with ND had high neuroticism and conversely it was also evident from the results that individuals with ND had lower levels of conscientiousness

and openness to experience in compared to the individuals without ND who had scored high on both traits respectively (Table 1).

Adams, Cartwright, Ostrove and Stewart, (1998); Friedman, Hawley and Tucker, (1994); Friedman, Tucker, Schwartz and Tomlinson - Keasey, (1995) have postulated that the big five have helped to organize numerous frequently disturbing results connecting personality traits to physical health. It was found that high levels of neuroticism seem to be threat to the determinant of physical betterment thus it can be postulated that the individuals with neurological disorders might have high neuroticism conversely the results of the studies previously done also proposed that high levels of conscientiousness is related with better health outcomes and consequently contributes to the development of well informed and systematic lives of individuals which again explains as to how the individuals without any ND had higher levels of conscientiousness in the present study findings. The finding of the study indicated that those who had ND had low levels of conscientiousness and openness which can be explained in line with the findings of the researches done by Robins, John, and Caspi (1994) and John, Caspi, Robins, Moffitt, and Stouthamer-Loeber, (1994) have explained that with regards to psychopathology internalizing of the disease could be anticipated due to high neuroticism and low conscientiousness. Moreover, the relationship of the personality trait and adverse outcomes was explained by Eysenck and Derakshan (1997) where they postulated that the above mentioned traits of personality also contribute to increased chances of the negative effects of illnesses. The support to our hypotheses indicating the relationship between personality traits with physical disorders is also provided by the work of Wiggins and Pincus (1989) who have argued that the big five taxonomy has interestingly resume the connection between adult psychopathology and personality.

The difference in the levels of personality traits as corresponding to the incidence of physical disorders such as NDs is explored by various investigators and it was found that trait of conscientiousness corresponds to self-control which is the capability to slow urges and follow through the important tasks logically and patiently and explains that its lower levels can contribute to the stress (Carter et al., 2014). Likewise , it can be explained in a way that with accompanying low levels of conscientiousness, stress as imparted by the physical discomfort may give rise to temptations and unwanted behaviors which is most common in individuals who have high level of neuroticism that ultimately leads to apprehension (Bowling, Burns, Stewart & Gruys, 2011).

The results of the current study indicated that individuals with NDs had higher neuroticism levels while they had low levels of conscientiousness and openness to experience. Various investigations indicated that the personality of the individuals might contribute to the etiology and expression of the physical ailments such as the study of Armon, Melamed, Shirom, Shapira and Berliner (2013) found that neuroticism is positively correlated with C-reactive protein and fibrinogen; as they both are the biomarkers of inflammation and are administered during the severe phase of infection and trauma which corresponds to the fact that with regards to the physical disorders as in the context of NDs , it might be speculated that the relation between neuroticism and inflammation is especially distinct if individuals are physically inactive and challenged likewise the openness to experience , as corresponding to emotional stability may make health easy. In case of the increased inflammatory responses that hinder the physical health, these personality traits such as high level of openness contribute to the declining levels of inflammatory responses. Another plausible explanation of the interplay of personality traits in physical expression in NDs can be defined in a way that, the neuroticism activates the hypothalamic-pituitary-adrenal axis and finally increasing the concentration of cortisol in the blood; cortisol then evokes an inflammatory reactions thus individuals with NDs can be said as having high neuroticism levels. However, physical activity may lessen this array of responses. Conversely, individuals having ND have low levels of Conscientiousness and openness to experience which could be explained in a way that having openness to experience corresponds with orbitofrontal cortex activity and this region is important to flexibility and adaptation. It also moves to restrain activation of the hypothalamic pituitary-adrenal axis resulting in decreased cortisol and inflammation

A non-significant difference on the variables of extraversion (E) and Agreeableness (A) between individuals with neurological disorders and individuals without neurological disorders could be explained in a way as Widiger (2005) had postulated that in a recent time stimulated appeal, the association between normal and abnormal personality have led to explorations of how extraversion connects to different kinds of psychopathology. Ferrando and Okoli, (2009) have explained that dysfunctional effects of personality traits, defense mechanisms and personality disorders or combination of them may introduce neurological disturbances and grow neurological injury which further integrate with presenting difficulty in managing patients functioning. Furthermore, the finding of Butler and Zeman (2005) have postulated that if we affect a “biopsychosocial” approach to disease commonly, one which identifies

the biological, psychological, and social features of our lives, we become less suspicious to neglect the treatable psychological roots of numerous physical problems (from hysteria to complete conversion disorder) and the treatable psychological effect (e.g. depression and anxiety) of much physical diseases.

Implications of the study

It will appear to be a pathfinder and a visionary bridge between neurological disorders and personality issues of an individual which hinder life patterns and environmental adjustments. Moreover findings can be used to develop treatment model and rehabilitation plan for ND patients. Further it allows family members or caregivers and clinicians to identify personality patterns of their patients for outlining their recovery journey.

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