

ORIGINAL RESEARCH

Analysis of Effect of Personality Type on the Response to Physical Therapy Methods in Chronic Low Back Pain at a Tertiary Care Hospital

¹Nitin Joshi, ²Ratnesh Kumar, ³Arun Chaudhary

¹Assistant Professor, Department of Physical Medicine and Rehabilitation (PMR), Government Medical College, Haldwani, Nainital, Uttarakhand, India

²Assistant Professor, Department of Physical Medicine and Rehabilitation (PMR), Patna Medical College Hospital (PMCH), Patna, Bihar, India

³Fellow Pain Medicine, All India Institute of Medical Sciences (AIIMS), New Delhi, India

Corresponding Author

Nitin Joshi

Assistant Professor, Department of Physical Medicine and Rehabilitation (PMR), Government Medical College, Haldwani, Nainital, Uttarakhand, India

Email: nitinjoshiaims@gmail.com

Received: 13 August, 2022

Accepted: 11 September, 2022

ABSTRACT

Introduction: The prevalence of personality disorders (PDs) is significantly greater in the pain population than in the general population or in medical or psychiatric populations. The present study was conducted to find out the effect of personality type on response to physical therapy treatment methods in chronic low back pain. **Materials and Methods:** The present study was a prospective cohort study among 50 patients of chronic low backache. The details regarding the following for measuring pain and disability i.e., the Oswestry Disability Index (ODI), Numeric Pain Rating Scale (NPRS), and the Pain Catastrophizing Scale (PCS), and Eysenck Personality Questionnaire (EPI) questionnaire. Two-tailed p-values of less than 0.05 were considered statistically significant. **Results:** Correlational analysis, revealed statistically significant relationships between the EPI-N score and the pain outcome measures that includes pain catastrophizing scale score ($p < 0.001$, $r = 0.392$), oswestry disability index score ($p = <0.05$, $r = -0.102$), that reports significant positive association of neuroticism with pain catastrophizing scale and oswestry disability index. **Conclusion:** The present study concludes that personality traits are associated with treatment in chronic low back pain patients. Clinicians should recognize the influence of these specific personality traits to provide a more positive approach to the clinical problem.

Keywords: Chronic; Low Backache; Personality Traits.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

INTRODUCTION

Chronic low back pain is one of the most common and costly healthcare problems. One of the most important psychological factors is the personality type of the patient.¹ A collection of individual differences in patterns of thinking, feeling, and behaving is defined as personality.² Personality type refers to the psychological classification of people into different categories according to their preferences, tendencies, and consistent behaviors.¹ Sensitivity-related trait characteristics involving physical and emotional sensitivities and high trait anxiety personality types have been observed in individuals with nonspecific chronic low back pain. High trait sensitivity to sensory

stimulation combined with interpretation biases based on personality type may contribute to the development of central sensitization symptoms.³

It has been shown in research that personality type can affect one's perception of pain, the duration of pain, as well as how one copes with painful experiences.¹ Personality characteristics and disorders have long been noted in the chronic pain population. Clinicians and researchers alike will attest to the high rates of personality difficulties encountered in these individuals. Historically, it has been found that certain personality styles such as hypochondriasis and hysteria are common in chronic pain sufferers. In addition, the prevalence of personality disorders (PDs)

is significantly greater in the pain population than in the general population or in medical or psychiatric populations.⁴ The present study was conducted to find out the effect of personality type on response to physical therapy treatment methods in chronic low back pain.

MATERIALS AND METHODS

The present study was a prospective cohort study among 50 patients of chronic low backache conducted in Department of Physical Medicine and Rehabilitation (PMR), Government Medical College, Haldwani, Nainital, Uttarakhand, India. The inclusion criteria for this study included adults over the age of 18 and currently experiencing low back pain for more than 6 months without spread to regions other than the lumbar, sacral and lumbosacral regions, being able to comply with the outpatient program and those who agreed to participate in the study. Individuals were excluded if they had a history of spine surgery or reported being pregnant. Demographic data i.e., age, gender, height, weight and occupation were recorded. Physical therapy was prescribed. The details regarding the following for measuring pain and disability i.e., the Oswestry Disability Index (ODI), the 11-point

Numeric Pain Rating Scale (NPRS), and the Pain Catastrophizing Scale (PCS), as well as the full Eysenck Personality Questionnaire (EPI) questionnaire.

All analyses were performed on SPSS-21. Data was compiled and expressed as mean \pm standard deviation. Correlation coefficients were calculated to evaluate relationships between Eysenck Personality Questionnaire scores and pain assessment scores after treatment. Two-tailed *p*-values of less than 0.05 were considered statistically significant.

RESULTS

Table 1 shows demographic details, patients aged from 40 to 60 years. 13 patients were self-employed/business, 10 had clerical jobs, 14 were housewives, 9 were teachers and 4 were labourers. Correlational analysis revealed statistically significant relationships between the EPI-N score and the pain outcome measures that includes pain catastrophizing scale score ($p < 0.001$, $r = 0.392$), oswestry disability index score ($p = <0.05$, $r = -0.102$), that reports significant positive association of neuroticism with pain catastrophizing scale and oswestry disability index (table 2).

Table 1: Demographics details of participants

Characteristics		Number
Age		49.56 \pm 9.23 years
Gender	Male	16
	Female	34
Total participants		50
Occupations	Self-employed/ business	13
	Clerical work	10
	Housewife	14
	Teacher	9
	Labourer	4

Table 2: Correlation of Eysenck Personality Questionnaire scores with improvement in pain after treatment

Domain	Eysenck Personality Index Extraversion Score (EPI-E)		Eysenck Personality Inventory Neuroticism Score (EPI-N)	
	<i>p</i> -value	<i>r</i>	<i>p</i> -value	<i>r</i>
Visual Analogue scale	0.453	-0.069	0.905	0.032
Numeric Pain Rating Scale at worst (NPRS-W)	0.437	-0.071	0.103	0.217
Numeric Pain Rating Scale at best (NPRS-B)	0.297	-0.079	0.135	0.157
Pain Catastrophizing Scale (PCS),	0.698	-0.023	<0.001	0.392
ODI (Oswestry Disability Index)	0.73	-0.021	<0.05	-0.102

DISCUSSION

The relationships between personality characteristics, pain duration, pain severity, functional impairment, and psychological distress have been investigated extensively in acute and chronic pain patients. Despite the large number of available studies, a clear understanding of these relationships remains elusive. It is generally accepted, however, that chronic pain

problems are typically associated with severe pain, serious functional impairment, and significant psychological co-morbidities.⁵ In the present study correlational analysis, revealed statistically significant relationships between the EPI-N score and the pain outcome measures that includes pain catastrophizing scale score ($p < 0.001$, $r = 0.392$), oswestry disability index score ($p = <0.05$, $r = -0.102$), that reports

significant positive association of neuroticism with pain catastrophizing scale and Oswestry disability index. In another study by Karasel S,⁶ visual analogue scale ($p < 0.001$) and modified Oswestry low back pain disability questionnaire ($p < 0.001$) scores were significantly lower than before after treatment, however, this study did not find any statistically significant difference in relationship between personality and chronic low back pain, quality of life and response to physical therapy is hypothesized. In a prospective controlled study by Gilchrist IC⁷ of acute low back pain and the personality factors were measured by use of the Eysenck personality inventory (EPI) and it was found that the only difference in the personality factors measured was a higher degree of extraversion in the back-pain patients. Sullivan MJ⁸ studied the pain catastrophizing scale and Catastrophizers reported significantly more negative pain-related thoughts, greater emotional distress, and greater pain intensity than noncatastrophizers. The relation between PCS scores was examined to negative pain-related thoughts, and distress in 28 individuals undergoing an aversive electrodiagnostic medical procedure. Catastrophizers reported more negative pain-related thoughts, more emotional distress, and more pain than noncatastrophizers.

Truchon M et al⁹ reported various biopsychosocial determinants of chronic disability and low-back pain that includes a previous history of LBP, results of certain clinical tests, a subjective negative appraisal of one's ability to work, and job dissatisfaction as well as certain psychological variables, including attitudes and beliefs, as well as coping strategies after systematically analyzing various prospective studies. Similarly, Shivarathre DG et al¹⁰ showed a significant association neuroticism in patients presenting with chronic pain. Clark JR et al³ reported positive correlations between central sensitization inventory (CSI) scores and sensory hypersensitivity profiles and trait anxiety. CSI score increases could be predicted by sensory-sensitive, low-registration profiles; trait anxiety scores; and extreme defensive high anxious personality type.

CONCLUSION

The present study concludes that personality traits are associated with treatment in chronic low back pain

patients. These results, therefore, have an important implication on the design of treatment programs for those patients. Personality type appears to have an influence on many of the attributes associated with chronic low back pain and may be a useful determinate in both prognosis and interventions. Clinicians should recognize the influence of these specific personality traits to provide a more positive approach to the clinical problem.

REFERENCES

1. Ibrahim ME, Weber K, Courvoisier DS, Genevay S. Big five personality traits and disabling chronic low back pain: association with fear-avoidance, anxious and depressive moods. *Journal of pain research*. 2020 Apr 14;745-54.
2. Kazdin AE. *Encyclopedia of psychology*. American Psychological Association, editor. Washington, DC: American Psychological Association; 2000.
3. Clark JR, Nijs J, Yeowell G, Holmes P, Goodwin PC. Trait sensitivity, anxiety, and personality are predictive of central sensitization symptoms in patients with chronic low back pain. *Pain Practice*. 2019 Nov;19(8):800-10.
4. Weisberg JN. Personality and personality disorders in chronic pain. *Current review of pain*. 2000 Feb;4(1):60-70.
5. BenDebba M, Torgerson WS, Long DM. Personality traits, pain duration and severity, functional impairment, and psychological distress in patients with persistent low back pain. *Pain*. 1997 Aug 1;72(1-2):115-25.
6. Karasel S. The Effect of Personality Type on the Response to Physical Therapy Methods in Chronic Low Back Pain. *Int J Phys Med Rehabil*. 2022;10:614.
7. Gilchrist IC. Psychological aspects of acute low back pain in general practice. *The Journal of the Royal College of General Practitioners*. 1983 Jul 1;33(252):417-9.
8. Sullivan MJ, Bishop SR, Pivik J. The pain catastrophizing scale: development and validation. *Psychological assessment*. 1995 Dec;7(4):524.
9. Truchon M, Fillion L. Biopsychosocial determinants of chronic disability and low-back pain: a review. *Journal of occupational rehabilitation*. 2000 Jun;10:117-42.
10. Shivarathre DG, Howard N, Krishna S, Cowan C, Platt SR. Psychological factors and personality traits associated with patients in chronic foot and ankle pain. *Foot & ankle international*. 2014 Nov;35(11):1103-7.