

ASSOCIATION OF STRESS, ANXIETY AND DEPRESSION WITH SLEEP QUALITY IN PATIENTS WITH MYOFASCIAL PAIN: A CROSS-SECTIONAL QUESTIONNAIRE STUDY

Dr. Mandavi S. Waghmare¹, Dr. Sandeep S. Pagare², Dr. Kapil Gavand³, Dr. Utkarsha Uttam Sawant⁴, Dr. Nisha Bharos⁵, Namrata Vikas Bhoir⁶

¹Professor and HOD Department of Oral Medicine and Radiology, D. Y. Patil University School of Dentistry, Navi Mumbai, Maharashtra, India
Orcid id: 0000000189191218 Email id: mandavi.waghmare@dypatil.edu

²Professor Department of Oral Medicine and Radiology, D. Y. Patil University School of Dentistry, Navi Mumbai, Maharashtra, India
Email id: professorpagare@gmail.com Orcid id: 0000000183267576

³Associate Professor Department of Oral Medicine and Radiology, D. Y. Patil University School of Dentistry, Navi Mumbai, Maharashtra, India
Email id: kapil.gavand@dypatil.edu Orcid id: 0009000722350625

⁴Postgraduate student Department of Oral Medicine and Radiology, D. Y. Patil University School of Dentistry, Navi Mumbai, Maharashtra, India
Email id: utkarshasawant009@gmail.com Orcid ID- 0009 0003 2093 0635

⁵Postgraduate Student Department of Oral Medicine and Radiology, D. Y. Patil University School of Dentistry, Navi Mumbai, Maharashtra, India
Email id: nishabharos0805@gmail.com Orcid id: 0009 0004 3936 5637

⁶Intern D. Y. Patil University School of Dentistry, Navi Mumbai, Maharashtra, India Email:- bhoirnamrata2002@gmail.com

ABSTRACT

Background: Myofascial Pain Syndrome (MPS) is a common musculoskeletal disorder featuring hypersensitive trigger points within muscle and fascia. Current research increasingly points to psychological factors and sleep problems as key elements affecting how MPS develops and responds to treatment. We designed this study to examine connections between psychological well-being (stress, anxiety, depression) and sleep quality among individuals with myofascial pain.

Methods: A cross-sectional questionnaire study involving 71 myofascial pain patients who met Laskin's diagnostic criteria was conducted. Participants were drawn from the Department of Oral Medicine and Radiology at D.Y. Patil Deemed to be University School of Dentistry, Navi Mumbai. Assessment tools included the Perceived Stress Scale-14 (PSS-14), Beck Anxiety Scale (BAS), Beck Depression Scale (BDS), and Pittsburgh Sleep Quality Index (PSQI). We used descriptive statistics, Chi-square tests, and Spearman correlations for analysis, with significance defined as $p \leq 0.05$.

Results: The participant group included 35 males (49.3%) and 36 females (50.7%). Moderate stress appeared in 66.2% of participants, while 52.1% showed moderate anxiety. Depressive symptoms affected 63.4% of the sample (borderline clinical depression: 35.2%, mild mood disturbance: 28.2%). Poor sleep quality was reported by 97.2% of participants. Depression showed a significant association with sleep quality ($p = 0.039$), while stress ($p = 0.168$) and anxiety ($p = 0.226$) did not reach statistical significance. Nevertheless, all three psychological measures correlated positively with sleep quality scores: stress ($r = 0.542$, $p < 0.001$), anxiety ($r = 0.661$, $p < 0.001$), and depression ($r = 0.640$, $p < 0.001$). Anxiety produced the strongest correlation with sleep problems.

Conclusion: Patients with myofascial pain face considerable psychological distress and poor sleep. The strong correlations we observed between stress, anxiety, depression, and worsening sleep quality emphasize the importance of integrated psychological assessment and multidisciplinary care for this population.

KEYWORDS: Myofascial Pain Syndrome, Stress, Anxiety, Depression, Sleep Quality, Pittsburgh Sleep Quality Index

INTRODUCTION

Myofascial Pain Syndrome (MPS) is a frequently diagnosed musculoskeletal problem defined by sensitive trigger points found within tight bands of skeletal muscle and surrounding connective tissue.^[1] Patients experience a range of symptoms including pain, muscle spasms, stiffness, reduced movement, weakness, and sometimes autonomic nervous system disturbances. MPS stands as one of the leading causes of ongoing musculoskeletal pain, affecting roughly 12% of the general population and 30-31% of those seen in pain clinics.^[2]

Women develop this condition more often than men. Because no specific lab tests or imaging studies can confirm the diagnosis, clinicians must rely on patient history and physical examination.^[3] Pain serves as the main complaint, often spreading from trigger points to predictable areas. Other features include muscle tightness, hypersensitivity, restricted motion, weakness, headaches, dizziness, depressed mood, sleep problems, and autonomic changes like unusual sweating, increased secretions, and reddened skin.^[4]

The two-way connection between psychological factors and how people experience pain has received considerable research attention. Stress, anxiety, and depression affect quality of life, daily function, and how patients view their oral health when dealing with chronic pain.^[5] Sleep problems act as both a result of pain and a factor that makes it worse, creating a cycle that maintains disability and emotional suffering.

Sleep disorders may set the stage for MPS to develop or worsen, showing up as poor sleep quality, daytime tiredness, and greater psychological strain. Despite knowing about these connections, we still need clearer understanding of exactly how psychological status relates to sleep quality in MPS patients.^[6]

Aim

The aim of this study was to evaluate stress, anxiety, depression, and sleep quality levels in Myofascial Pain patients and to reveal how psychological status relates to sleep quality.

Objectives

1. To measure the psychological condition of myofascial pain patients using the Perceived Stress Scale, Beck Anxiety Scale, and Beck Depression Scale.
2. To assess sleep quality in myofascial pain patients using the Pittsburgh Sleep Quality Index.
3. To explore connections between severity of stress, depression, anxiety and sleep quality in this patient group.

MATERIALS AND METHODS

Study Design and Study Population:

A cross-sectional questionnaire design was conducted, carried out at the Department of Oral Medicine and Radiology, D.Y. Patil Deemed to be University School of Dentistry, Navi Mumbai. The Ethical Board approval was obtained from the Institutional Research and Ethics Board of D.Y. Patil Deemed to be University School of Dentistry, Navi Mumbai . The study included 71 patients diagnosed with myofascial pain who were attending the Oral Medicine Department.

Inclusion Criteria:

- Patients with myofascial pain fulfilling the Laskin's criteria , who consented to the study were included.

Exclusion Criteria:

1. People with psychiatric conditions, neuromuscular diseases, pregnancy, dementia, or epilepsy.
2. Patients who were unwilling to answer.

Methodology:

All participants completed four standardized, validated questionnaires:

1. Perceived Stress Scale-14 (PSS-14): Measured stress over the past month. Scores grouped as low (0-18), moderate (19-37), and high (38-56).
2. Beck Anxiety Scale (BAS): Assessed anxiety symptoms. Categories: low (0-21), moderate (22-35), concerning (36-63).
3. Beck Depression Scale (BDS): Evaluated depression. Classification: normal (0-9), mild mood disturbance (10-16), borderline clinical depression (17-20), moderate depression (21-30), severe depression (31-40), extreme depression (>40).
4. Pittsburgh Sleep Quality Index (PSQI): Measured sleep quality over the past month. Scores above 5 meant poor sleep.

Statistical Analysis:

Data is analysed using:

- Descriptive statistics: Frequencies, percentages, means, medians, standard deviations.
 - Chi-square tests: For categorical variables and associations.
 - Spearman's rank correlation: For relationships between continuous variables.
- We set significance at $p \leq 0.05$. When expected counts fell below 5, we used Fisher's exact test.

RESULTS

Gender Distribution:

Table 1: Gender distribution in the study

GENDER	N	%
MALE	35	49.3
FEMALE	36	50.7

The sample had nearly equal numbers of men and women, with males at 49.3% and females at 50.7%. ensuring gender balance in the sample population.

Assessment of Stress, Anxiety, Depression and Sleep Quality

Most participants showed moderate stress (66.2%) and moderate anxiety (52.1%). For depression, borderline clinical depression (35.2%) and mild mood disturbance (28.2%) appeared most often. Overall, 63.4% showed some level of depression. Poor sleep affected 97.2% of participants.

Fisher's exact test; indicates $p \leq 0.05$

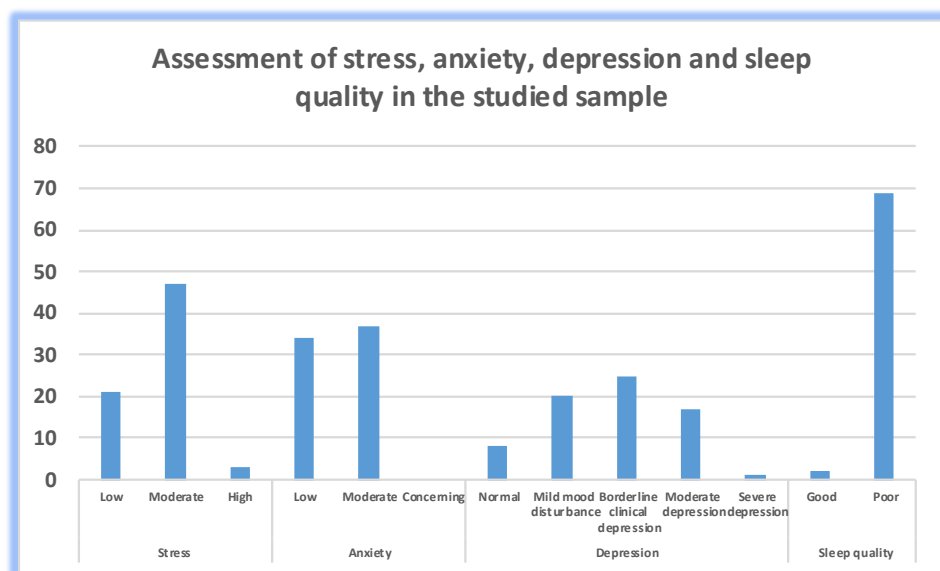


Fig 1: Association of stress, anxiety, depression and sleep quality in the studied sample.

After grouping psychological variables by severity and comparing with sleep quality (good vs. poor), only depression showed a significant link ($p = 0.039$). People with more severe depression had higher chances of poor sleep. Although stress ($p = 0.168$) and anxiety ($p = 0.226$) didn't reach significance, nearly everyone with moderate or high levels of these factors also had poor sleep.

Table 2: Correlation of Stress, Anxiety, Depression with Sleep Quality

CORRELATION	SPEARMAN RHO	P-VALUE
Stress (PSS-14) vs Sleep quality (PSQI)	0.542	<0.001*
Anxiety (BAS) vs Sleep quality (PSQI)	0.661	<0.001*
Depression (BDS) vs Sleep quality (PSQI)	0.640	<0.001*

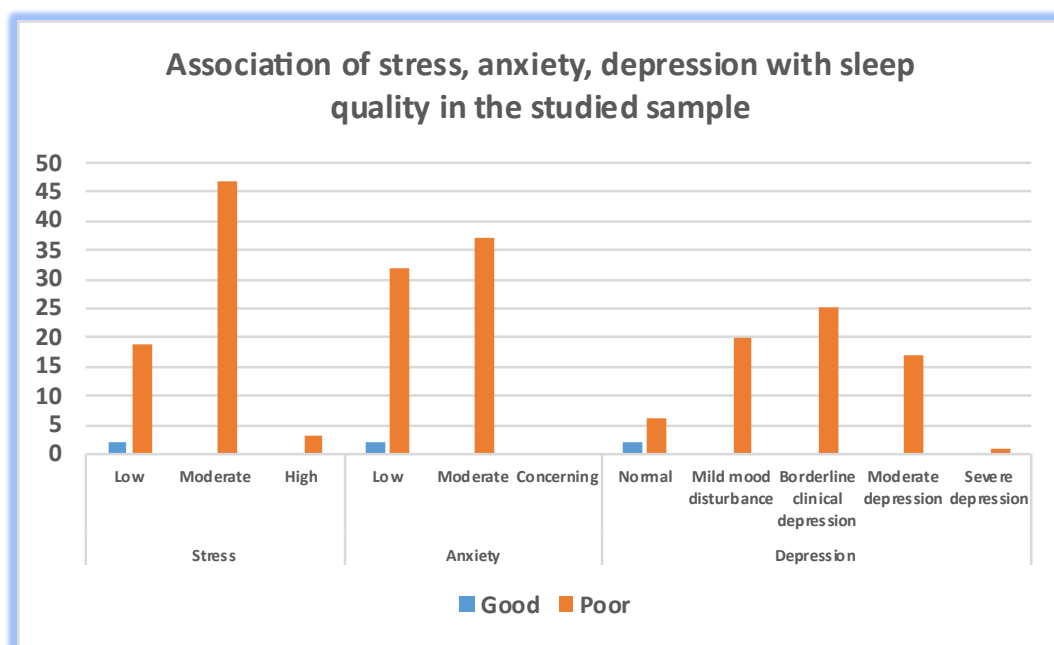


Fig 2: Association of stress, anxiety, depression and sleep quality in the studied sample.

Spearman Correlation test; indicates $p \leq 0.05$

Unlike the grouped analysis, we examined correlations using the original continuous scores. All three variables correlated positively with sleep quality scores: stress ($r = 0.542$, $p < 0.001$), anxiety ($r = 0.661$, $p < 0.001$), and depression ($r = 0.640$, $p < 0.001$). Higher stress, anxiety, or depression scores went along with worse sleep. Anxiety showed the strongest correlation.

DISCUSSION

The study showed the relationships between psychological factors stress, anxiety, and depression and sleep quality in Myofascial Pain patients. Results shows that MPS patients carry heavy loads of both psychological distress and poor sleep.

Most of participants reported moderate stress (66.2%) and moderate anxiety (52.1%). Depressive symptoms appeared in 63.4%, ranging from mild mood disturbance to severe depression. These numbers were similar showing high rates of psychological problems in chronic pain patients, including those with MPS.^[8,9]

The high levels of distress likely come from the long-lasting nature of myofascial pain. Chronic pain sets up a cycle where pain, psychological strain, and sleep problems feed into each other. Stress makes muscles more active, anxiety tightens muscles and disrupts falling asleep, and depression changes sleep patterns.^[10] Together, these psychological factors affect quality of life and how patients view their oral health, possibly making pain feel worse and keeping the cycle going.^[11]

The study showed poor sleep in 97.2% of participants according to the PSQI. Study done by Kundermann B et al showed chronic pain conditions with sleep troubles.^[12] Sleep disorders may play a role in causing MPS, showing up as poor sleep, daytime problems, and psychological distress.^[14]

Orzeszek et al. (2024) emphasized that the severity of pain in orofacial disorders correlates significantly with depression, anxiety, and perceived stress scores, and that psycho-emotional aspects are critically important in the perception of pain and sleep quality.

People with more depression were more likely to have poor sleep. This is similar to the earlier research showing strong two-way ties between depression and sleep problems.^[16,17]

Stress and anxiety didn't show significant links with sleep quality in the grouped analysis. But most people with moderate or severe stress or anxiety also had poor sleep.

There was a significant positive relationships between all three psychological measures and sleep quality: stress, anxiety and depression. These results suggest that as psychological symptoms get worse, sleep quality drops in a step-by-step way. Anxiety had the strongest correlation, it has the closest linear relationship with sleep disruption. This is similar to the study conducted by Mellman T A et al. showing that anxiety, with its hyperarousal and constant worry, has particularly harmful effects on falling asleep and staying asleep.^[19]

The connections between psychological distress and poor sleep suggest that sleep quality worsens as depression and anxiety rise. Our results imply that poor sleep relates to pain intensity in MPS patients, supporting the importance of checking and treating sleep in this group.^[20]

CONCLUSION

The study revealed that individuals' sleep quality varies according to their stress, anxiety, and depression levels, and there is a strong positive relationship between emotional states and sleep quality level.

The psychological condition should thus be considered as an important factor in the diagnosis and treatment of myofascial pain patients and in improving sleep quality. Clinicians should evaluate the patient in many ways by considering the psychological factors and use a multidisciplinary treatment approach.

LIMITATIONS

This study has a few limitations. Since the study was an observational, participation cross-sectional survey, was based on availability and willingness.

REFERENCES

1. Lei J, Liu MQ, Fu KY. Disturbed sleep, anxiety and stress are possible risk indicators for temporomandibular disorders with myofascial pain. *Beijing da xue xue bao. Yi xue ban = Journal of Peking University. Health Sciences.* 2016 Aug 1;48(4):692-6.
2. Can I, Tuman TC. The effect of type D personality on quality of life, sleep quality, anxiety and depression in patients with myofascial pain syndrome. *Psychiatry and Behavioural Sciences.* 2020 Apr 1;10(2):90.
3. Ekici Ö. Association of stress, anxiety, and depression levels with sleep quality in patients with temporomandibular disorders. *CRANIO®.* 2023 Sep 3;41(5):407-15.
4. Orzeszek S, Martynowicz H, Smardz J, Wojakowska A, Bombała W, Mazur G, Wieckiewicz M. Assessment of sleep quality in patients with orofacial pain and headache complaints: A polysomnographic study. *Dental and Medical Problems.* 2024;61(4):549-62.
5. Fillingim RB, Ohrbach R, Greenspan JD, Knott C, Diatchenko L, Dubner R, et al. Psychological factors associated with development of TMD: the OPPERA prospective cohort study. *J Pain.* 2013;14(12 Suppl):T75-90.
6. Smith MT, Haythornthwaite JA. How do sleep disturbance and chronic pain inter-relate? Insights from the longitudinal and cognitive-behavioral clinical trials literature. *Sleep Med Rev.* 2004;8(2):119-32.
7. Ekici Ö. Association of stress, anxiety, and depression levels with sleep quality in patients with temporomandibular disorders. *CRANIO®.* 2023 Sep 3;41(5):407-15.
8. McEwen BS. Central effects of stress hormones in health and disease: Understanding the protective and damaging effects of stress and stress mediators. *Eur J Pharmacol.* 2008;583(2-3):174-85.
9. Bair MJ, Robinson RL, Katon W, Kroenke K. Depression and pain comorbidity: a literature review. *Arch Intern Med.* 2003;163(20):2433-45.
10. Choy EH. The role of sleep in pain and fibromyalgia. *Nat Rev Rheumatol.* 2015;11(9):513-20.
11. Reissmann DR, John MT, Schierz O, Wassell RW. Functional and psychosocial impact related to specific temporomandibular disorder diagnoses. *J Dent.* 2007;35(8):643-50.
12. Kundermann B, Krieg JC, Schreiber W, Lautenbacher S. The effect of sleep deprivation on pain. *Pain Res Manag.* 2004;9(1):25-32.
13. Finan PH, Goodin BR, Smith MT. The association of sleep and pain: an update and a path forward. *J Pain.* 2013;14(12):1539-52.

14. Moldofsky H. Sleep and pain. *Sleep Med Rev.* 2001;5(5):385-96.
15. Lavigne GJ, Sessle BJ. The neurobiology of orofacial pain and sleep. *Sleep Med Rev.* 2007;11(4):239-42.
16. Riemann D, Berger M, Voderholzer U. Sleep and depression—results from psychobiological studies: an overview. *Biol Psychol.* 2001;57(1-3):67-103.
17. Nutt D, Wilson S, Paterson L. Sleep disorders as core symptoms of depression. *Dialogues Clin Neurosci.* 2008;10(3):329-36.
18. Ohayon MM. Prevalence and correlates of nonrestorative sleep complaints. *Arch Intern Med.* 2005;165(1):35-41.
19. Mellman TA. Sleep and anxiety disorders. *Sleep Med Clin.* 2008;3(2):261-8.
20. Edwards RR, Almeida DM, Klick B, Haythornthwaite JA, Smith MT. Duration of sleep contributes to next-day pain report in the general population. *Pain.* 2008;137(1):202-7.
21. Gatchel RJ, Peng YB, Peters ML, Fuchs PN, Turk DC. The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychol Bull.* 2007;133(4):581-624.