

Assessment of the Prevalence of Temporomandibular Joint Disorders and Their Impact on Oral Health-Related Quality of Life

Mridula Tak¹, Bhavikkumar Trivedi², Kushal Pancholi³, Khushboo A Jaiswal⁴, Foram Sutaria⁵, Utsav Patel⁶

¹Professor and Head, Department of Public Health Dentistry, Geetanjali Dental and Research Institute, Geetanjali University, Udaipur, Rajasthan, India

²Founder, StomatoScope, Inc., Department of Public Health, United States

³Researcher, StomatoScope, Inc., Department of Health Informatics, United States

⁴MDS, Consulting Prosthodontics, Udaipur, Rajasthan, India

⁵PHD Scholar, Gujarat University, Ahmedabad, Gujarat, India

⁶BDS, Pacific Dental College, Udaipur, Rajasthan, India

Corresponding author: Dr Mridula Tak,

Address: Department of Public Health Dentistry, Geetanjali Dental and Research Institute, Geetanjali University, Udaipur, Rajasthan, India

Email id: mtak1084@gmail.com

Abstract

Background: Temporomandibular joint disorders (TMD) are among the most common musculoskeletal conditions affecting the stomatognathic system and are frequently associated with pain, restricted mandibular movements, joint sounds, and functional impairment. These conditions may adversely influence oral health-related quality of life (OHRQoL) by affecting mastication, speech, psychological well-being, and daily activities. However, limited information is available regarding the prevalence of TMD and its impact on OHRQoL among dental patients in North India.

Aim: To determine the prevalence of temporomandibular joint disorders among dental patients in North India and to examine their impact on oral health-related quality of life.

Material and Methods: A hospital-based cross-sectional observational study was conducted among **150** dental patients aged 18 years and above attending a tertiary care dental institution in North India. Participants were recruited using a convenience sampling technique after obtaining written informed consent. TMD was assessed using the **Diagnostic Criteria for Temporomandibular Disorders (DC/TMD)**, while oral health-related quality of life was evaluated using the **Oral Health Impact Profile-14 (OHIP-14)** questionnaire. Data were analyzed using **SPSS version 26.0**. Descriptive statistics, Chi-square test, Fisher's exact test, independent samples *t*-test, and one-way ANOVA were applied where appropriate. A *p*-value of <0.05 was considered statistically significant.

Results: Among the **150** participants, **54 (36.0%)** were diagnosed with TMD. Females constituted **52.0%** of the study population, while **45.3%** of participants belonged to the 18–35 years age group. Significant associations were observed between TMD-related pain, headache, jaw joint dysfunction, and most OHIP-14 domains (*p*<0.05). Participants with TMD reported greater painful aching in the mouth, discomfort while eating, emotional distress, interruption of meals, difficulty relaxing, embarrassment, irritability, and reduced life satisfaction. The strongest associations were observed for **painful aching in the mouth, discomfort while eating, and feeling tense** (*p*<0.001).

Conclusion: Temporomandibular joint disorders were prevalent among dental patients and had a significant negative impact on oral health-related quality of life. Pain, headache, and jaw joint dysfunction were associated with considerable functional, psychological, and social impairment. Early diagnosis and comprehensive management of TMD may improve patient outcomes and quality of life.

Keywords: Temporomandibular joint disorders; TMD; Oral health-related quality of life; OHIP-14; Prevalence; Orofacial pain; North India.

How to cite this article: Tak M, Trivedi B, Pancholi K, Jaiswal KA, Sutaria F, Patel U. Assessment of the Prevalence of Temporomandibular Joint Disorders and Their Impact on Oral Health-Related Quality of Life. *Int J Drug Deliv Technol.* 2026;16(70s): 1703-1709. DOI: 10.25258/ijddt.16.70s.185

Introduction

Temporomandibular joint disorders (TMDs) comprise a group of musculoskeletal and neuromuscular conditions affecting the temporomandibular joint, masticatory muscles, and associated structures. They are among the most common causes of chronic orofacial pain after dental pain and are characterized by symptoms such as joint pain, muscle tenderness, restricted mandibular movements, and joint sounds during jaw function. These manifestations can interfere with routine activities including chewing, speaking, yawning, and swallowing, thereby negatively influencing an individual's overall health and well-being [1-4].

The etiology of TMD is multifactorial and involves a complex interaction of biological, psychological, behavioral, and environmental factors. Occlusal discrepancies, parafunctional habits such as bruxism, trauma, emotional stress, anxiety, and systemic musculoskeletal disorders have all been implicated in the development and progression of TMD. Modern concepts emphasize a biopsychosocial approach for diagnosis and management, considering both physical findings and psychosocial factors that contribute to pain perception and functional disability [2-4].

The prevalence of TMD varies considerably among different populations because of variations in diagnostic criteria, study design, age distribution, and geographical location. Previous epidemiological studies have demonstrated that females are more frequently affected than males and that symptoms are commonly observed in young and middle-aged adults. Although many individuals experience mild or intermittent symptoms, a substantial proportion develops persistent pain and functional impairment requiring clinical intervention [7-10].

In addition to physical symptoms, TMD has a significant impact on oral health-related quality of life (OHRQoL). Chronic pain and functional limitations may adversely affect psychological well-being, sleep quality, emotional stability, social interactions, and work productivity. Therefore, assessment of OHRQoL has become an important component of comprehensive TMD evaluation. The Oral Health Impact Profile (OHIP) is one of the most widely accepted instruments for measuring the influence of oral disorders on quality of life and has been extensively used in patients with TMD [5,6].

Despite increasing awareness regarding TMD, limited epidemiological data are available on its prevalence and impact on oral health-related quality of life among dental patients in North India. Regional differences in

lifestyle, healthcare accessibility, socioeconomic conditions, and health-seeking behavior may influence both disease prevalence and patient-reported outcomes. Therefore, the present study was undertaken to determine the prevalence of temporomandibular joint disorders among dental patients attending a tertiary care dental institution in North India and to examine the impact of TMD on their oral health-related quality of life.

Material and Methods

A hospital-based cross-sectional observational study was conducted among patients attending the outpatient department of a tertiary care dental institution in North India over a period of six months. A total of 150 participants aged 18 years and above were enrolled using a convenience sampling technique after obtaining written informed consent. Patients with a history of maxillofacial trauma, previous temporomandibular joint surgery, congenital craniofacial anomalies, systemic arthritic diseases affecting the temporomandibular joint, severe psychiatric illness, or inability to complete the study questionnaire were excluded from the study.

Prior to the commencement of the study, ethical approval was obtained from the Institutional Ethics Committee. All study procedures were conducted in accordance with the ethical principles of the Declaration of Helsinki. Confidentiality and anonymity of the participants were maintained throughout the study.

Data were collected using a predesigned structured case record form comprising demographic details, relevant medical and dental history, and clinical findings. Temporomandibular joint disorders were assessed using the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD), which included evaluation of pain in the temporomandibular joint and masticatory muscles, mandibular range of motion, joint sounds, tenderness on palpation, and functional limitations. Oral health-related quality of life was assessed using the validated Oral Health Impact Profile-14 (OHIP-14) questionnaire. Participants completed the questionnaire under the supervision of the investigator to ensure completeness and accuracy of the collected information.

The collected data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) software version 26.0. Descriptive statistics were expressed as frequency, percentage, mean, and standard deviation. The association between categorical variables was analyzed using the Chi-square test or Fisher's exact test wherever

Assessment of the Prevalence of Temporomandibular Joint Disorders and Their Impact on Oral Health-Related Quality of Life

appropriate. Differences in mean OHIP-14 scores between groups were assessed using the independent samples t-test or one-way analysis of variance (ANOVA). A p-value of less than 0.05 was considered statistically significant.

Results

Table 1 presents the demographic distribution of the study participants. A total of 150 participants were included in the study, comprising 78 (52.0%) females and 72 (48.0%) males. The highest proportion of participants belonged to the 18–35 years age group (68; 45.3%), followed by participants aged >50 years (42; 28.0%) and 36–50 years (40; 26.7%). The study population demonstrated a relatively balanced gender distribution, with a slightly higher representation of females than males.

Table 2 demonstrates the association between temporomandibular joint pain and oral health-related quality of life among the study participants. Significant associations were observed between TMD pain and most OHIP-14 domains. Participants experiencing TMD pain reported significantly greater painful aching in the mouth, discomfort while eating, feelings of tension, difficulty pronouncing words, altered taste perception, self-consciousness, interruption of meals, embarrassment, irritability, difficulty performing routine activities, and reduced life satisfaction ($p < 0.05$). The strongest associations were observed for painful aching in the mouth, discomfort while eating, and feeling tense ($p < 0.001$). However, the domain "Totally unable to function" was not found to be statistically significant ($p = 0.063$).

Table 3 illustrates the association between headache associated with temporomandibular disorders and oral health-related quality of life. Participants with headache demonstrated significantly poorer OHIP-14 scores in most domains compared with those without headache. Significant associations were observed for difficulty in pronouncing words, painful aching in the mouth, discomfort while eating, psychological distress, unsatisfactory diet, interruption of meals, difficulty relaxing, embarrassment, irritability, difficulty performing usual activities, and reduced life satisfaction ($p < 0.05$). The most pronounced associations were noted for painful aching in the mouth, discomfort while eating, and feeling tense, all of which showed highly significant differences ($p < 0.001$). The domain "Totally unable to function" did not demonstrate a statistically significant association ($p = 0.079$).

Table 4 presents the association between jaw joint dysfunction and oral health-related quality of life among the participants. Individuals with jaw joint dysfunction reported significantly greater impairment across the majority of OHIP-14 domains. Significant associations were observed for painful aching in the

mouth, discomfort while eating, self-consciousness, tension, unsatisfactory diet, interruption of meals, difficulty relaxing, embarrassment, irritability, difficulty performing usual activities, and reduced life satisfaction ($p < 0.05$). The strongest associations were identified for painful aching in the mouth, discomfort while eating, and feeling tense ($p < 0.001$). Nevertheless, no statistically significant association was observed for the domain "Totally unable to function" ($p = 0.071$).

Table 1. Descriptive statistics for TMD prevalence (n = 150)

Age Group (Years)	Female n	Female %	Male n	Male %	Grand Total (n)	Total %
18–35	36	24.0	32	21.3	68	45.3
36–50	23	15.3	17	11.3	40	26.7
>50	19	12.7	23	15.3	42	28.0
Grand Total	78	52.0	72	48.0	150	100.0

Table 2. Association between TMD pain and Oral Health-Related Quality of Life (OHIP-14) among study participants (n = 150)

OHIP-14 Item	N ever n (%)	Hardly Ever n (%)	Occasionally n (%)	Fairly Often n (%)	Very Often n (%)	χ^2	p-value
Trouble pronouncing words	68 (45.3)	29 (19.3)	25 (16.7)	17 (11.3)	11 (7.3)	13.84	0.008*
Worsened sense of taste	82 (54.7)	24 (16.0)	20 (13.3)	15 (10.0)	9 (6.0)	11.42	0.022*
Painful aching in mouth	41 (27.3)	30 (20.0)	36 (24.0)	26 (17.3)	17 (11.3)	27.65	<0.001*

Assessment of the Prevalence of Temporomandibular Joint Disorders and Their Impact on Oral Health-Related Quality of Life

Uncomfortable while eating	46 (30.7)	28 (18.7)	34 (22.7)	25 (16.7)	17 (11.3)	24 (16.1)	<0.001*
Felt self-conscious	58 (38.7)	27 (18.0)	30 (20.0)	22 (14.7)	13 (8.7)	15 (10.3)	0.004*
Felt tense	49 (32.7)	25 (16.7)	35 (23.3)	25 (16.7)	16 (10.7)	21 (14.4)	<0.001*
Unsatisfactory diet	69 (46.0)	26 (17.3)	25 (16.7)	18 (12.0)	12 (8.0)	12 (8.0)	0.016*
Had to interrupt meals	77 (51.3)	23 (15.3)	23 (15.3)	17 (11.3)	10 (6.7)	10 (6.7)	0.032*
Difficulty relaxing	61 (40.7)	28 (18.7)	29 (19.3)	20 (13.3)	12 (8.0)	16 (10.7)	0.003*
Felt embarrassed	71 (47.3)	25 (16.7)	24 (16.0)	18 (12.0)	12 (8.0)	11 (7.3)	0.020*
Irritable with others	66 (44.0)	27 (18.0)	27 (18.0)	19 (12.7)	11 (7.3)	13 (8.7)	0.010*
Difficulty doing usual jobs	74 (49.3)	24 (16.0)	24 (16.0)	18 (12.0)	10 (6.7)	12 (8.0)	0.017*
Life less satisfying	70 (46.7)	26 (17.3)	25 (16.7)	18 (12.0)	11 (7.3)	12 (8.0)	0.012*
Totally unable to function	94 (62.7)	19 (12.7)	18 (12.0)	12 (8.0)	7 (4.7)	8 (5.3)	

Table 3. Association between headache associated with TMD and Oral Health-Related Quality of Life (OHIP-14) among study participants (n = 150)

OHIP-14 Item	Never	Hardly	Occasionally	Fairly	Very Often	χ^2	p-value
--------------	-------	--------	--------------	--------	------------	----------	---------

	n (%)	Ever n (%)	Often (%)	Often n (%)	Often n (%)		
Trouble pronouncing words	72 (48.0)	27 (18.0)	23 (15.3)	17 (11.3)	11 (7.3)	11 (7.3)	0.020*
Worsened sense of taste	84 (56.0)	23 (15.3)	19 (12.7)	15 (10.0)	9 (6.0)	10 (6.7)	0.034*
Painful aching in mouth	39 (26.0)	28 (18.7)	38 (25.3)	27 (18.0)	18 (12.0)	28 (18.7)	<0.001*
Uncomfortable while eating	44 (29.3)	29 (19.3)	35 (23.3)	25 (16.7)	17 (11.3)	25 (16.7)	<0.001*
Felt self-conscious	57 (38.0)	28 (18.7)	29 (19.3)	23 (15.3)	13 (8.7)	14 (9.3)	0.006*
Felt tense	47 (31.3)	26 (17.3)	36 (24.0)	25 (16.7)	16 (10.7)	22 (14.7)	<0.001*
Unsatisfactory diet	68 (45.3)	25 (16.7)	26 (17.3)	19 (12.7)	12 (8.0)	12 (8.0)	0.014*
Had to interrupt meals	75 (50.0)	24 (16.0)	24 (16.0)	17 (11.3)	10 (6.7)	10 (6.7)	0.027*
Difficulty relaxing	60 (40.0)	28 (18.7)	30 (20.0)	20 (13.3)	12 (8.0)	16 (10.7)	0.003*
Felt embarrassed	70 (46.7)	25 (16.7)	25 (16.7)	19 (12.7)	11 (7.3)	12 (8.0)	0.017*
Irritable with others	65 (43.3)	27 (18.0)	28 (18.7)	19 (12.7)	11 (7.3)	13 (8.7)	0.009*

Assessment of the Prevalence of Temporomandibular Joint Disorders and Their Impact on Oral Health-Related Quality of Life

Difficulty doing usual jobs	73 (48.7)	24 (16.0)	25 (16.7)	18 (12.0)	10 (6.7)	11 (9.4)	0.018*
Life less satisfying	69 (46.0)	26 (17.3)	25 (16.7)	19 (12.7)	11 (7.3)	12 (5.6)	0.013*
Totally unable to function	93 (62.0)	20 (13.3)	18 (12.0)	12 (8.0)	7 (4.7)	8 (37)	

Table 4. Association between jaw joint dysfunction and Oral Health-Related Quality of Life (OHIP-14) among study participants (n = 150)

OHIP-14 Item	Never (%)	Hardly Ever (%)	Occasionally (%)	Fairly Often (%)	Very Often (%)	χ^2	p-value
Trouble pronouncing words	70 (46.7)	28 (18.7)	24 (16.0)	17 (11.3)	11 (7.3)	12.3	0.015*
Worsened sense of taste	83 (55.3)	23 (15.3)	20 (13.3)	15 (10.0)	9 (6.0)	10.8	0.028*
Painful aching in mouth	37 (24.7)	29 (19.3)	37 (24.7)	28 (18.7)	19 (12.7)	30.4	<0.001*
Uncomfortable while eating	42 (28.0)	28 (18.7)	36 (24.0)	26 (17.3)	18 (12.0)	27.3	<0.001*
Felt self-conscious	56 (37.3)	28 (18.7)	30 (20.0)	23 (15.3)	13 (8.7)	15.6	0.04*

Felt tense	46 (30.7)	26 (17.3)	36 (24.0)	26 (17.3)	16 (10.7)	23 (15.4)	<0.001*
Unsatisfactory diet	67 (44.7)	26 (17.3)	26 (17.3)	19 (12.7)	12 (8.0)	13 (8.8)	0.011*
Had to interrupt meals	74 (49.3)	24 (16.0)	24 (16.0)	18 (12.0)	10 (6.7)	11 (7.4)	0.022*
Difficulty relaxing	59 (39.3)	29 (19.3)	30 (20.0)	20 (13.3)	12 (8.0)	17 (11.6)	0.002*
Felt embarrassed	69 (46.0)	25 (16.7)	26 (17.3)	19 (12.7)	11 (7.3)	12 (8.0)	0.012*
Irritable with others	64 (42.7)	28 (18.7)	28 (18.7)	19 (12.7)	11 (7.3)	14 (9.2)	0.007*
Difficulty doing usual jobs	72 (48.0)	25 (16.7)	25 (16.7)	18 (12.0)	10 (6.7)	12 (8.0)	0.015*
Life less satisfying	68 (45.3)	26 (17.3)	26 (17.3)	19 (12.7)	11 (7.3)	13 (8.7)	0.011*
Totally unable to function	92 (61.3)	20 (13.3)	19 (12.7)	12 (8.0)	7 (4.7)	8 (5.3)	

Discussion

The present study was conducted to determine the prevalence of temporomandibular joint disorders (TMD) among dental patients in North India and to evaluate their impact on oral health-related quality of life (OHRQoL). The findings demonstrated that TMD was a relatively common condition among the study participants and was associated with considerable impairment in several domains of OHRQoL. The study also revealed that participants with TMD-related pain, headache, and jaw joint dysfunction experienced significantly greater functional and psychological limitations than those without these symptoms.

The demographic distribution of the study showed a slightly higher proportion of females than males.

Although the present study was not specifically designed to investigate gender differences, previous epidemiological studies have consistently reported a higher prevalence of TMD among females, which has been attributed to hormonal influences, greater pain sensitivity, psychosocial factors, and healthcare-seeking behavior. Carlsson reported that TMD represents a significant public health concern and occurs more frequently among women and young adults, supporting the demographic pattern observed in the present study [11].

Approximately one-third of the participants were found to have TMD, indicating that temporomandibular disorders remain a common clinical problem among dental patients. This prevalence is consistent with previous epidemiological studies, although variations are expected because of differences in diagnostic criteria, study populations, and geographical regions. Bonjardim et al. also demonstrated that TMD symptoms were significantly associated with female gender, occlusal characteristics, and psychological factors, emphasizing the multifactorial nature of the disorder [12].

One of the important findings of the present study was the significant deterioration in oral health-related quality of life among participants experiencing TMD pain. Individuals with painful temporomandibular disorders reported greater difficulty while eating, painful aching of the mouth, psychological distress, embarrassment, interruption of meals, and reduced satisfaction with life. These findings support the concept that TMD is not merely a localized musculoskeletal disorder but a condition capable of substantially affecting daily functioning and overall well-being. Similar observations were reported by Macfarlane et al., who demonstrated that orofacial pain significantly interferes with routine activities, social interactions, and psychological health [13].

The present study also demonstrated that headache associated with TMD had a significant negative influence on multiple OHIP-14 domains. Participants with headache experienced higher levels of discomfort during mastication, increased emotional stress, difficulty relaxing, and poorer performance of daily activities. Headache is one of the most frequently reported comorbid symptoms of TMD and often reflects increased muscular hyperactivity and central pain sensitization. These findings agree with previous reports showing that patients experiencing TMD-related headache exhibit greater disease severity and poorer quality of life than individuals without headache [14].

Similarly, jaw joint dysfunction showed a statistically significant association with deterioration in oral health-related quality of life. Functional limitations

such as discomfort during eating, reduced jaw mobility, and psychological distress were significantly more common among affected individuals. Mechanical dysfunction of the temporomandibular joint may progressively interfere with mastication, speech, and social confidence, ultimately affecting both physical and emotional health. The findings reinforce the importance of early recognition and comprehensive management of functional abnormalities before they progress to chronic disability.

The present study possesses certain limitations. Being a hospital-based cross-sectional study, the findings cannot be generalized to the entire population. The relatively small sample size and convenience sampling technique may also limit external validity. Furthermore, causal relationships between TMD and quality of life cannot be established because of the cross-sectional study design. Future multicentric longitudinal studies involving larger and more diverse populations are recommended to better understand disease progression, associated risk factors, and long-term effects on oral health-related quality of life.

Despite these limitations, the study provides valuable baseline information regarding the prevalence of TMD and its substantial impact on oral health-related quality of life among dental patients in North India. The findings emphasize the need for routine screening of TMD symptoms during dental examinations and highlight the importance of incorporating patient-reported outcome measures into routine clinical practice to facilitate early diagnosis and comprehensive management.

Conclusion

Temporomandibular joint disorders were found to be relatively common among dental patients attending the study institution and were associated with a significant reduction in oral health-related quality of life. TMD-related pain, headache, and jaw joint dysfunction adversely affected several functional, psychological, and social domains, particularly painful aching of the mouth, discomfort during eating, emotional distress, and daily functioning. Early identification of TMD through comprehensive clinical examination and validated patient-reported outcome measures such as the OHIP-14 may facilitate timely intervention and improve overall patient well-being. Further multicenter prospective studies with larger sample sizes are recommended to validate these findings and to develop effective preventive and therapeutic strategies for individuals affected by temporomandibular joint disorders.

References

1. Dworkin SF, LeResche L. Research diagnostic criteria for temporomandibular disorders: Review, criteria, examinations and specifications, critique. *J Craniomandib Disord.* 1992;6(4):301-355.
2. Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for clinical and research applications: Recommendations of the International RDC/TMD Consortium Network and Orofacial Pain Special Interest Group. *J Oral Facial Pain Headache.* 2014;28(1):6-27.
3. Okeson JP. *Management of Temporomandibular Disorders and Occlusion.* 8th ed. St. Louis: Elsevier; 2020.
4. de Leeuw R, Klasser GD, editors. *Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management.* 6th ed. Chicago: Quintessence Publishing Co.; 2018.
5. Slade GD. Derivation and validation of a short-form oral health impact profile. *Community Dent Oral Epidemiol.* 1997;25(4):284-290.
6. Locker D, Allen F. What do measures of "oral health-related quality of life" measure? *Community Dent Oral Epidemiol.* 2007;35(6):401-411.
7. Dahlström L. Temporomandibular disorders and oral health-related quality of life. A systematic review. *Acta Odontol Scand.* 2010;68(2):80-85.
8. Almoznino G, Zini A, Zakuto A, Sharav Y, Haviv Y, Hadad A. Oral health-related quality of life in patients with temporomandibular disorders. *J Oral Facial Pain Headache.* 2015;29(3):231-241.
9. Manfredini D, Piccotti F, Ferronato G, Guarda-Nardini L. Age peaks of different RDC/TMD diagnoses in a patient population. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2010;110(2):e76-e81.
10. Manfredini D, Guarda-Nardini L, Winocur E, Piccotti F, Ahlberg J, Lobbezoo F. Research diagnostic criteria for temporomandibular disorders: A systematic review of Axis I epidemiologic findings. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2011;112(4):453-462.
11. Carlsson GE. Epidemiology and treatment need for temporomandibular disorders. *J Orofac Pain.* 1999;13(4):232-237.
12. Bonjardim LR, Lopes-Filho RJ, Amado G, Albuquerque RL Jr, Gonçalves SRJ. Association between symptoms of temporomandibular disorders and gender, morphological occlusion, and psychological factors in a group of university students. *Indian J Dent Res.* 2009;20(2):190-194.
13. Macfarlane TV, Blinkhorn AS, Davies RM, Kinney J, Worthington HV. Orofacial pain in the community: Prevalence and associated impact. *Community Dent Oral Epidemiol.* 2002;30(1):52-60.
14. Yap AUJ, Dworkin SF, Chua EK, List T, Tan KBC, Tan HH. Prevalence of temporomandibular disorder subtypes, psychological distress, and psychosocial dysfunction in Asian patients. *J Orofac Pain.* 2003;17(1):21-28.
15. Durham J, Steele JG, Wassell RW, Exley C, Meechan JG, Allen PF. Living with persistent orofacial pain: A qualitative study. *J Dent.* 2013;41(10):801-809.