IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 24, Issue 12 Ser. 3 (December. 2025), PP 36-41
www.iosrjournals.org

Identification Of A Subgroup Of Patients With Temporomandibular Disorders And Tension-Type Headache With Very High Scores In Somatization.

Bruno R. Simião, Omar F. Molina, Ed W. César, Maria A. Sobreiro, Ricardo Marçal, Juliana Romanelli Marçal, Tito Molina
Prostodhontics Division, UNIRG University Dental School, Gurupi-TO, Brazil
Private Practice In Orofacial Pain, Gurupi-TO, Brazil.
Restorative Dentistry Division, UNIRG University Dental School, Gurupi-TO Brazil
Anatomy Division, UNIRG University Dental School, Gurupi-TO Brazil (Retired)
Restorative Dentistry Division, UNIRG University Dental School, Gurupi-TO, Brazil
Division Of Endodontics UNIRG University Dental School, Gurupi-TO, Brazil.
Graduate Student, Oral And Maxillofacial Surgery, Puerto Rico University, USA.

Abstract:
Introduction: *Temporomandibular disorders constitute a set of signs and symptoms of musculoskeletal disorders in the orofacial region characterized by a complaint of pain, joint noises and limited jaw movements. Current evidence indicates that some psychological factors including anxiety, depression and somatization predominate in patients with temporomandibular disorders.*
Aim: *Evaluate the frequency of very high scores in somatization in a large sample of patients complaining of temporomandibular disorders and tension-type headache and discuss the clinical implications.*
Methods: *Clinical examination of masticatory muscles and temporomandibular joints, history of the chief complaint including description of pain, palpation of muscles and joints, assessment of signs and symptoms, evaluation of jaw movements, use of questionnaires and psychological instruments including 32 items of the Rief and Hiller questionnaire for somatization, assessment of anxiety, depression and evaluation of pain sites adjacent and far from the masticatory system were used to evaluate patients and controls referred consecutively over a period of twelve years. Data were stored for future studies. Recently such files were retrieved alphabetically in order to allocate patients and controls to subgroups with no temporomandibular disorders and no tension-type headache and subgroups with temporomandibular disorders, tension-type headache and different scores in somatization. Once clinical records were retrieved, somatization in controls and TMD + TTH subjects was graded as follows: 0-2 (no somatization), 3-5 (mild somatization), 6-11 (moderate somatization), 12-16 (severe somatization), and 17 or higher (very severe somatization scores). Regarding somatization, 149 subjects with TMDs and TTH (allocated to different subgroups) and 41 no TMDs and no TTH were assessed. Data were analyzed using basic statistics, Kruskal and Wallis statistics with Dunn´s method and Fisher´s exact test.*
Outcome: *Regarding the control subgroup of 41 individuals, 23/41=56,1% demonstrated somatization compared to 18/41=43,9% without. Most subjects in the control subgroup demonstrated mild (12/41=29,3%) and moderate (10/41=24,4%) somatization scores. Regarding the whole group of 149 patients presenting with signs and symptoms of both Temporomandibular Disorders and Tension-Type Headache, there were 6/149=4,02% and 24/149=16,1% with no and mild somatization respectively. A subgroup of 57/149=38,3% subjects demonstrated moderate somatization (scores 6-11), 38/149=25,5% severe somatization (scores 12-16) and 24/149=16,1% very severe scores in somatization (scores 17 or higher). Consequently, in the group of 149 subjects with temporomandibular disorders and tension-type headache, moderate and severe somatization were found more frequently. A subgroup of patients (n=24/149=16,1%) with very severe somatization scores was identified in the current investigation.*
Conclusions: *In this large sample of 149 subjects presenting with signs and symptoms of both temporomandibular disorders and tension-type headache and using the criteria to grade somatization scores in no (0-2), mild (3-5), moderate (6-11), severe (12-16) and very severe (17 or higher), a small subgroup of subjects with very severe somatization scores was identified. Further studies are needed to additionally evaluate findings in the current investigation.*
Keywords: *Temporomandibular Disorders. Tension-Type Headache. Severe somatization.*

Date of Submission: 02-12-2025 Date of Acceptance: 12-12-2025

I. Introduction

Temporomandibular disorders or TMDs is a set of signs and symptoms of pain and dysfunction in the masticatory muscles and/or temporomandibular joints including joint noises, difficulties to perform jaw movements, tenderness to palpation of joint and muscles and headache. TMDs may also involve pain and dysfunction in adjacent anatomic structures. TMDs are considered as a dysfunction of a localized musculoskeletal system and are usually associated with chronic headache, cervical pain and physical and/or psychological disability [1]. TMDs constitute the most prevalent pain conditions worldwide and can be described as acute and chronic [2]. Both headache and TMDs are very prevalent conditions in the general population and constitute a serious health problem affecting the quality of life of millions of individuals around the world [3]. TMDs usually occur as a set of well-defined and localized signs and symptoms or as a part of another set of widespread signs and symptoms affecting many body organs and systems [4].

Tension-Type Headache or TTH is a pain disorder described by patients as bilateral, occurring in the anterior and lateral part of the head, mild or moderate more frequent than severe in intensity, dull, aching, band-like type, lasting hours and sometimes days, pressing or constricting, not aggravated by physical activity, sometimes associated with nausea and rarely with vomiting [5]. TTH occurs very frequently, is associated with TMDs [3] and its intensity and chronicity are affected by psychological factors including anxiety, stress, depression and somatization.

Somatization is a complex and frequent psychiatric disorder in samples of patients with chronic musculoskeletal pain and is described as "the physical expression of a psychological condition which usually manifests as pain in a diversity of body organs and systems and now known as a set of non-specific physical symptoms" [1]. Recent investigations [2] indicate that more chronic and severe pain is directly associated with higher prevalence of non-specific physical symptoms or somatization in clinical populations with pain.

TMDs and TTH can be classified as acute and chronic. Psychological comorbidities including stress, anxiety, depression and somatization may facilitate their transformation from acute to chronic TTH or TMDs [1] and both TMDs and TTH may be related to the process of increased central sensitization leading to the process of increased perception of pain, hyperalgesia and allodynia [6]. Chronic pain in TMDs and in TTH is directly associated to increased pain disability, depression and somatization [1] Chronic pain may occur in samples or subgroups of patients with combined TMDs and TTH, but factors and neurophysiologic mechanisms responsible for the transformation of acute into chronic pain are not well defined. Recently, it has been reported that severer chronic pain correlates well with a higher prevalence of non-specific physical symptoms or somatization [2]. A body of research in this field points to the presence of central sensitization in patients with chronic headache, TMDs and TTH. These chronic conditions represent a challenge in the diagnosis and treatment process. Because the severity of somatization in groups of subjects with TMDs, TTH is not well understood, this clinical investigation was designed to:

1.Test the hypothesis that severe and very severe somatization can be observed in large samples of TMDs and TTH patients using an appropriate instrument.

II. Material And Methods

Sample

In the current study, subjects demonstrating signs and symptoms of TMDs, TTH and information about somatization obtained with the use of an appropriate instrument were retrieved consecutively from a database in which clinical records had been organized alphabetically. The objective of this procedure was to obtain information about different scores in somatization and allocate experimental and control subjects to different subgroups with different scores. In other words, somatization scores in both experimental and controls subjects were graded as no, mild, moderate, severe and very severe somatization. Before initiating the current study both controls and experimental subjects had been examined comprehensively using information about the chief complain, palpation of joint and muscles, evaluation of jaw movements, mechanical tests and assessment of pain description to determine the type of internal derangement of the TMJ, description of both joint and muscle pain, assessment of jaw opening and diagnosis of headache type including TTH. Once subjects were evaluated comprehensively and consecutively the clinical information was stored in a database for future investigations.

Inclusion criteria for TMDs: A complaint of joint and/or muscle pain usually of musculoskeletal origin, joint noises, difficulties to perform jaw movements, tenderness to palpation and a report of pain radiating to the head or cervical structures.

Inclusion Criteria for TTH: A description of bilateral headache in the temporal in frontal areas, described as mild or moderate and rarely severe in intensity, sometimes radiating to or from the cervical area, described as pressing, tightening, compressing, band-like, sometimes associated with nausea and rarely with vomiting, lasting hours or days and without photophobia.

The Rief and Hiller instrument: In the current study we used 32 questions from the original Rief and Hiller somatization instrument with 47 items [7]. We did so, as such authors suggest that some scales assess only a few physical symptoms whereas others evaluate signs and symptoms that rarely occur. Further, researchers asserted that an instrument evaluating 32 somatic symptoms showed a satisfactory psychometric performance [8]

Inclusion criteria for no, mild, moderate, severe and very severe somatization. Scores of 0-2, 3-5, 6-11. 12-16 and 17 or higher observed in experimental subjects and controls were used to grade somatization as absent, mild, moderate, severe and very severe. Regarding very severe scores in somatization when using a scale or instrument with 32 items, we would expect that scores of 25 to 32, would rarely be reported by both patients and controls. Thus, scores ranging from 17 to 24 could be appropriate to grade experimental subjects and controls as presenting very severe somatization.

Criteria to assign TMDs and TTH subjects to a subgroup with severe and very severe scores in somatization. Control and experimental subjects demonstrating scores of 12-16 and 17 or higher using the Rief and Hiller instrument for somatization were considered as demonstrating severe and very severe scores in somatization, respectively.

III. Statistical analysis

Unpaired t-test with Welch correction was used to compare age means in controls (n=41) and in the whole group of TMDs and TTH individuals (n=149). Fisher´s exact test was used to compare frequencies of different categories or severities of somatization. Mann-Whitney statistics was used to compare somatization means in the control and in the whole group of 149 TMDs and TTH individuals. A significant difference was accepted if $p<0,005$.

IV. Outcome

Mean age in the TMDs and TTH group was about 31,2 (SD=11,9, range=17-66) and 33,3 (SD=12,4, range=17-59) in the control group. Age was not statistically and significantly different when both groups were compared (Unpaired t-test with Welch´s correction $p>0,33$, a statistically nonsignificant difference). Females predominated in both TMDs + TTH and control groups, a trend which has been demonstrated in most studies carried out in TMDs patients with or without headache. There were 142=95,3% females and 7/149=4,7% males in the TMDs and TTH group and 27/41=65,9% females and 14/41=34,1% males in the control group. Because it has been very well established that females predominate in groups of subjects with TMDs, which was the case in the current investigation, a test for differences was not utilized. See Table 1 for further social and demographic data.

Mean in somatization was about 10,63 (SD=5,47, range=1-24) in the TMDs and TTH group as compared to 2,73 (SD=1,98, range=0-5) in the control no TMDs no TTH group (Mann-Whitney nonparametric test $p<0,0005$), a statistically significant difference. The frequency of somatization was about 143/149=96% in the TMDs and TTH group as compared to 23/41=56,1% in the control group (Fisher´s exact test $p<0,0005$), a statistically significant difference. Regarding the TMDs and TTH group and the control one, 6/149=4% and 18/41=43,9%, respectively, did no present with signs and symptoms of somatization. When the frequencies of different severities or grades of somatization where compared in the experimental and control groups respectively, the results are explained as follows: Mild somatization 24/149=16,1% and 12/41=29,3% (Fisher´s exact test $p=0,07$, a nonsignificant difference); moderate somatization 57/149=38,3% and 10/41=24,4% (Fisher´s exact test $p=0,13$, a statistically nonsignificant difference); severe somatization 38/149=25,5% and 1/41=2,4% (Fisher´s exact test $p<0,0004$, a statistically extremely significant difference) and very severe somatization 24/49=16,1% and 0/41=0% (Fisher´s exact test $p<0,002$, a statistically very significant difference). Thus, and for the sake of clarity, moderate, severe and very severe somatization predominated in the TMDs and TTH group as compared to mild and moderate somatization in the control group. (See Table 2 for additional information).

V. Discussion

A subgroup of individuals demonstrating very high scores in somatization was found in the whole sample of those demonstrating signs and symptoms of both TMDs and TTH.

One goal of the current investigation was to evaluate the presence of TMDs and TTH subjects with very high scores in somatization in a relatively large sample of subjects. Because in the current investigation 24 individuals reported a score of 17 or higher in the scale of 32 items developed by Rief and Hiller [7,8], findings in the current investigation indicate that different levels of psychologically or psychiatrically impairment including very severe somatization can be found in large samples of those presenting signs and symptoms of both TMDs and TTH.

In the current investigation and when we consider the large sample of 143 subjects with both TMDs and TTH retrieved from a database of approximately 500 individuals with TMDs, it seems apparent that many patients present a combination of signs and symptoms of both TMDs and primary headaches including migraine, tension-type and combination headache. Further, the development of TTH is most likely to occur in individuals presenting with cervical myofascial trigger points, signs and symptoms of TMDs and psychological or psychiatric disturbances. Consequently, these observations are echoed by one investigation [1] assessing a potential correlation between chronic pain, depression and somatization in TMDs patients reporting that most patients presenting with severe and moderate somatization demonstrate signs and symptoms of myofascial pain and other joint conditions.

The combined frequency of severe and very severe somatization in those of those with signs and symptoms of both TMDs and TTH in the current investigation was about 43,4%. Therefore, this outcome is not very different from the frequency of 59,4% and 50% of subjects demonstrating severe symptoms of somatization and pain and somatization and no pain, respectively reported in a recent investigation [9]. This small difference may be attributed to the characteristics of the sample together with the methodology and/ or criteria used in the assessment of somatization.

Moderate, severe and very severe somatization levels were observed frequently in the large sample of subjects with signs and symptoms of TMDs and TTH. Many factors may contribute to this association including levels of somatization, the presence of trigger points and myofascial pain and even more severe inflammation in the TMJs as such disorder may contribute to unilateral or bilateral headache. Further, chronic cases are observed frequently in patients with a combination of TMDs, headache and psychiatric disturbances. These observations are in line with one study [10] evaluating the combination of TMDs and TTH. Researchers reported that TMDs, TTH, and chronic pain constitute overlapping disorders in which any of them may contribute to increase chronicity of pain. Rudiger and associates [10] used logistic regression to evaluate the relationship between TMDs and chronic TTH and high levels of somatization and depression. Those researchers reported that chronic TTH was significantly associated with severe scores in somatization and high pain-related disability.

Even though the chronicity of TTH or pain in TMDs subjects was not evaluated in the current study, there are many factors that contribute to the chronicity of TMD and pain in TTH including higher levels of somatization. Higher levels of somatization have a strong tendency to increase chronicity as it is directly related to increased sensitization and pain dispersion which occur frequently in the masticatory and cervical regions. These considerations are in line with one investigation [11] reporting that psychological and behavioral variables including depression, somatization, pain severity and duration contribute to more chronic pain. Because in the current investigation, a frequency of 43,4% of severe and very severe somatization was observed in TMD and TTH subjects, this outcome is not very different when compared to 55% of moderate to severe somatization found in TMD subjects as reported by Yap and associates [12]

Moderate, severe and very severe levels of somatization were found in the large samples of TMDs and TTH subjects in the current study indicating a higher frequency of such psychiatric disorder. Thus, such findings are endorsed by a recent study [13] reporting that patients with chronic TTH often present with other somatic complains probably because TTH may be present in almost all psychiatric disorders [13]. Excessive patients´ somatic awareness can serve as a primer for TMD incidence and contribute to the development of chronic pain [14] Moderate to severe levels of depression and somatization can be found in population of TMD patients [14]. All patients in the current investigation presented with signs and symptoms of TMDs, TTH and diurnal, nocturnal or mixed bruxing behavior. Because bruxing behavior as a motor disorder is a manifestation of somatization and occurs frequently in TMD patients, it seems that somatization is a common psychiatric disorder in TMDs patients. One can speculate that higher levels of somatization correlates well with more diffuse pain in the masticatory and cervical region. Additionally, higher levels of depression and more intense bruxing behavior can contribute to increase chronicity of both TMDs and TTH. Depression, anxiety disorders and somatic symptoms are frequently associated with TMD and bruxism. Regarding severity of somatization one investigation [15] did not evaluate the association of TTH with TMDs in TMDs patients. However, researchers reported that the levels of moderate to severe somatization in TMDs patients were significantly higher in subjects with TMDs and severe TMD pain disability. It is now apparent that independent of the presence of TTH in TMDs, subjects in this category (disability) do demonstrate higher levels of both depression and somatization.

Yap and associates [16] evaluated the relationship between TMDs and somatic symptoms in subjects with and without TMDs and reported a high prevalence of moderate to severe somatization which mirrors findings in the current investigation. Subjects presenting with orofacial pain including TMDs, headache, and severe to very severe somatization may present both diagnostic and treatment difficulties associated with a complex overlapping of both clinical signs and symptoms and psychiatric impairment. These observations are congruent with one investigation [16] reporting that "subjects with orofacial pain and severe somatic symptoms have higher scores in negative emotions and that somatization may increase severity of clinical TMDs signs and symptoms". Data about chronicity was not reported in the present investigation. However, those TMDs and TTH subjects with severe and more severe scores in somatization reported more chronic pain associated with both TMDs and TTH

VI. Conclusions

Based on the outcome of the current investigation, some conclusions can be drawn:

1.Subgroups of TMDs and TTH demonstrating mild, moderate, severe and very severe somatization scores can be found in a large population of subjects with both TMDs and TTH.

2. A higher frequency of moderate and severe somatization was observed in the population of subjects presenting with signs and symptoms of TMDs and TTH.

3.The frequencies of mild and very severe somatization were relatively low in those dysfunctional subjects with TMDs and TTH.

4.A small subgroup of 24 subjects presenting with very high scores in somatization was identified in the current study.

5.Further studies in similar and large samples of TMDs and TTH subjects are needed in order to evaluate the clinical, psychological or psychiatric characteristics of subjects presenting with TMDs, TTH and very high scores in somatization.

References

[1] Silva TB, Salbergo RS, Ilha RS, Dutra TF, Tomazoni F, Chami VD Et Al. Association Between Chronic Pain, Depression, Somatization And Temporomandibular Disorders In Southern Brazilian Population. Acta Scientiarium, Health Sciences 2023; 45: 1'7.

[2] Manfredini D, Borella L, Favero L, Ferronato G, Guarda-Nardini L. Chronic Pain Severity And Depression/Somatization Levels In TMD Patients. Int J Prosthodont 2010; 23: 529-34.

[3] Ballegaard V, Thede-Schmidt-Hansen P, Svensson P, Jensen R. Are Headache And Temporomandibular Disorders Related? A Blinded Study. Cephalalgia 2008; 28: 832-41.

[4] Gui MS, Rizzatti-Barbosa C. Chronicity Factors Of Temporomandibular Disorders: A Critical Review Of The Literature. Braz Oral Res 2015, 29: 1'6.

[5] Molina OF, Peixoto M, Santos Z, Sobreiro MA, Fregonesi M, Torres SP Et Al. Tension-Type Headache Of Longer Duration Is Associated With Higher Frequency Of Nausea And Vomiting In Temporomandibular Disorder Individuals. IOSR-JDMS 2019; 18: 42-46.

[6] Arend-Nielsen L, Morlion B, Perrot S, Dahan A, Dickenson A, Kress HG Et Al. Assessment And Manifestation Of Central Sensitization Across Different Pain Conditions. Eur J Pain 2018; 22: 216-41.

[7] Rief W, Hiller W. Toward Empirically Based Criteria For The Classification Of Somatoform Disorders. J Psychosom Res 1999; 46: 507-18.

[8] Rief W, Hiller W. A New Approach To The Assessment Of The Treatment Effects Of Somatoform Disorders. Psychosomatics 2003; 44: 492-98.

[9] Piccin CF, Pozzebon D, Chiodelli L, Boufleus J, Pasinato F, Correa E. Clinical And Psychosocial Aspects Assessed By The Research Diagnostic Criteria For Temporomandibular Disorders. Rev CEFAC 2016; 18: 113-19.

[10] Emshoff R, Bertram F, Schnab D, Emshoff I. Association Between Chronic Tension-Type Headache Coexistent With Chronic Temporomandibular Disorder Pain And Limitations In Physical And Emotional Functioning: A Case-Control Study. J Orofacial Pain Headache 2017; 31: 55-60.

[11] Ozdemir Karatas M, Peker K, Balik A, Uysal O, Tuncer E. Identifying Potential Predictors Of Pain-Related Disability In Turkish Patients With Chronic Temporomandibular Disorder Pain. The J Headache And Pain 2013; 14: 1-9.

[12] Yap A, Keson B, Tan C, Chua EK, Tan HH. Depression And Somatization In Patients With Temporomandibular Disorders. J Prost Dent 2002; 88: 479-84.

[13] Solomon GD. Chronic Tension-Type Headache: Advice For The Viselike-Headache Patient. Cleveland Clin J Med 2002; 69: 167-72.

[14] Kim HK, Kim ME. Deepening The Understanding Of Somatization In TMD Pain: A Topical Review. JOMP 2022; 47: 78-86.

[15] Rehm DD, Progiante P, Pattussi P, Irigaray T, Weber J, Costan DB Et Al. Depression, Somatization, And Sleep Disorders As Risk Factors For Temporomandibular Disorders Development: A Population-Based Case Control Study. Psico 2022; 53: 1-12.

[16] Yap A, Kurniawan F, Pragustine Y, Marpaung C. Temporomandibular Disorders And Somatic Symptoms: Relations To "Fear Of Missing Out" And Other Negative Emotional States. AOS 2024; 83: 340-47.

Table 1: Social and demographic data in the group of TMDs and TTH subjects (n=149) and in the Control no TMD no TTH group (n=41).

Data	TMDs and TTH=149	Controls n=41
Mean Age	31,2	33,3*
SD	11,9	12,4
Range	17-66	17-59
GENRE		
Females	142=95,3%	27=65,9%
Males	7 =4,7%	14=34,1%
Totals	149=100%	41=100%

*Unpaired t-test with Welch´s correction p=0,33, a nonsignificant difference.

Table 2: Scores and severities of somatization in TMDs and TTH subjects (n=149) and in control ones with no TMDs no TTH (n=41).

Somatization	TMDs and TTH=149	Controls=41
Mean	10,63	2,73*
SD	5,47	1,98
Range	1—24	0—5

Frequency	143/149=96%	23/41= 56,1%**
No somatization	6/149=4%	18/41=43,9%
Mild somatization	24/149=16,1%	12/41=29,3%***
Moderate somatization	57/149=38,3%	10/41=24,4%****
Severe somatization	38/149=25,5%	1/41=2,4%*****
Very severe somatization	24/149=16,1%	0/41=0%******
Totals	149=100%	41=100%

*Mann-Whitney statistics p<0,0005 (an extremely significant difference)
**Fisher´s exact test p<0,0005 (a statistically extremely significant difference)
***Fisher´s exact test p=0,07 (a statistically nonsignificant difference)
****Fisher´s exact test p=0,13 (a statistically nonsignificant difference)
*****Fisher´s exact test p<0,0004 (a statistically extremely significant difference)
******Fisher´s exact test p<0,002 (a statistically very significant difference)