



## ORIGINAL ARTICLE

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## Pain detection by clinical questionnaire in patients referred for temporomandibular disorders in a Chilean hospital.

**Abstract:** Aim: To determine pain frequency by means of a clinical screening questionnaire in patients with temporomandibular disorders (TMD) referred to the general Hospital of Valdivia (HBV) between September and December 2014. Material and method: A descriptive study, which included patients referred to the TMD Unit of the dental service at HBV between September and December 2014, was carried out. A clinical screening questionnaire was applied by an examiner in order to detect painful Temporomandibular Joint Disorders. The variables age, sex, wait time, and presence of related TMD pain were measured. Results: 101 patients were surveyed; 88.17% (84 patients) were women. Average age was 33.5 (11-70) years; 66% of patients had mandibular pain or stiffness upon awakening; 80% informed pain related to painful TMD. Conclusion: Most surveyed patients were women. Pain was highly frequent in the surveyed population; its main location was in temporal areas.

**Keywords:** Pain, Symptoms, Temporomandibular joint disorders, Diagnosis of pain.

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### INTRODUCTION.

Temporomandibular disorders (TMD) are a group of clinical problems that are clinically characterized by pain affecting the masticatory muscles, temporomandibular joints and associated structures<sup>1</sup>.

Studies reveal that 75% of the population will have signs or symptoms of TMD at some point in their lives<sup>2</sup>. For unknown reasons TMD may be characterized as localized pain or radiating pain<sup>3</sup>. TMD studies in Chile suggest a higher prevalence in women<sup>4,5</sup>. Prevalence of myofascial pain was 80.99%.

TMDs are the second leading cause of pain in the orofacial region, after odontogenic pain<sup>6</sup>. Patients with orofacial pain are usually evaluated by different clinicians who, before finding the correct diagnosis<sup>7</sup>, give different diagnoses and prescribe treatment options that do not necessarily treat the source of this condition.

As TMDs have a multifactorial etiology<sup>8</sup>, clinicians require a tool to identify the interaction between the different physical and psychological dimensions of pain<sup>9</sup>. In 1992 Dowrkin and Leresche proposed the Research Diagnostic Criteria for TMD (RDC/TMD), an instrument intended to be universally accepted and validated. However, it is a comprehensive instrument that requires specialized and calibrated clinicians to perform the diagnosis of TMD<sup>9</sup>. Gonzalez *et al.* 2011<sup>10</sup> developed a clinical questionnaire containing a series of 49 essential items for TMD symptoms. From this questionnaire a short version that included three questions, and other extended version that included six were proposed. Both versions were compared with the extended protocol RDC/TMD, finding an internal reliability of the extended version (alpha coefficient 0.93) with high sensitivity (99%) and specificity (97%)<sup>10</sup>.

As there are no other studies on the frequency of pain in patients referred for TMD by general dental practitioners in Chile, this study will be useful to establish the frequency of pain in patients referred for TMD, characterize it according to different activities and obtain epidemiological information of the target population.

The aim of this study is to determine the frequency of pain in TMD patients referred to the general Hospital of Valdivia, between September and December 2014.

## MATERIALS AND METHODS.

### Design and population:

This study was approved on October 20<sup>th</sup>, 2014 by the Ethics Committee of the Health Service of Valdivia (ORD 403). Surveyed patients were informed and advised specifically on TMD.

A descriptive study, based on the application of a clinical questionnaire to detect painful TMD was performed. The questionnaire was the extended version containing 6 questions proposed by Gonzalez *et al.* 2011<sup>10</sup>.

The study included patients referred by dentists from primary health care services for suspicion of TMD to the dental service at the general Hospital of Valdivia (HBV) between September and December 2014. Patients were asked to sign an informed consent form. Minors needed authorization of their guardian or chaperone to participate in the study. Patients who refused to sign the informed consent, and those unable to answer the questionnaire for themselves were excluded.

### Sample size:

Non-probability sampling was performed for convenience. Sample size was calculated using Raosoft, 2014 (Raosoft, Inc.; Seattle, WA, USA), with a margin of error of 5%, confidence level of 95%, and prevalence of 38.6% for painful TMD<sup>6</sup>. The size obtained by the software was 107 patients from a total of 150 new patients treated at the dental service during the course of this study.

### Use of scale:

The extended questionnaire proposed by Gonzalez

*et al.*<sup>6</sup> was used. The questionnaire contains 3 items and 6 questions about pain. The answer to each question gives a score. The questionnaire gave a maximum of seven points and a minimum of zero. The score considered for each answer was: Answer A, 0 points; B, 1 point; C, 2 points. As a result, the threshold for positive diagnosis was greater or equal to 3 points; in such a case it was considered pain associated with the presence of painful TMD, with unspecified diagnosis.

In the first stage, translation into Spanish and adaptation of the instrument for the Chilean population were made. Two native English speakers, both professors at the school of English Teaching and Translation at University of Los Lagos, Osorno, Chile, performed a simultaneous translation of the instrument. The translation was applied to a pilot group of 10 patients, assessing face validity (evaluation of syntax and semantics of the instrument) in order to recognize its reliability. At this stage changing the word “temple” (sien) with “temporal area” (área temporal) and increasing the font size of the instrument was suggested by 60% of respondents. Internal consistency (test retest) was evaluated, an average of 0.75 Kappa was obtained. These questionnaires were not included in the next stage.

One researcher applied the questionnaire to referred patients in the waiting room of the hospital dental service. Patients were given an ink pen, a sheet with the questionnaire, and five minutes to respond. Incomplete questionnaires were replaced by new questionnaires to comply with the number of respondents established in the sample design.

### Data analysis:

Sex, age and waiting time from referral to treatment at HBV were recorded. The score of each item and the total score were also recorded. To confirm the presence of pain associated with painful TMD, the score should be 3 or more points.

Data were collected and tabulated by the examiner in a spreadsheet Google Docs, v1.20.8672 (Google, Mountain View, CA, USA) and analyzed using descriptive

statistics, average variations and standard deviation ( $\pm$ ), and presented in tables. All analyzes were performed using Microsoft Excel 2013 (Microsoft Corporation, Redmond, WA, USA).

## RESULTS.

Of the 150 patients referred to HBV from September to December 2014, only 120 patients attended the treatment, from them, only 110 met the inclusion criteria. 101 (92%) patients completed the entire questionnaire, and 9 were discarded for incomplete answers.

From the total sample (101 patients), all were referred from primary or secondary health care centers of Región

de los Ríos, Chile. Patients were referred for suspicion of TMD, with unspecified diagnosis. One of the confounding factors was the waiting time from the date of referral, considering that 60% of patients had been waiting for treatment at least 3 years.

Average age was  $33.5 \pm 15.87$ , between 11 and 70 years. 83.17% (84 patients) were women. Distribution by age and sex is shown in Table 1.

The average score of the questionnaire was  $4.14 \pm 2$ . The instrument reported that in 80% of cases pain was associated with the presence of painful TMD. The response distribution of the questions in the questionnaire is shown in Table 2 and Figure 1.

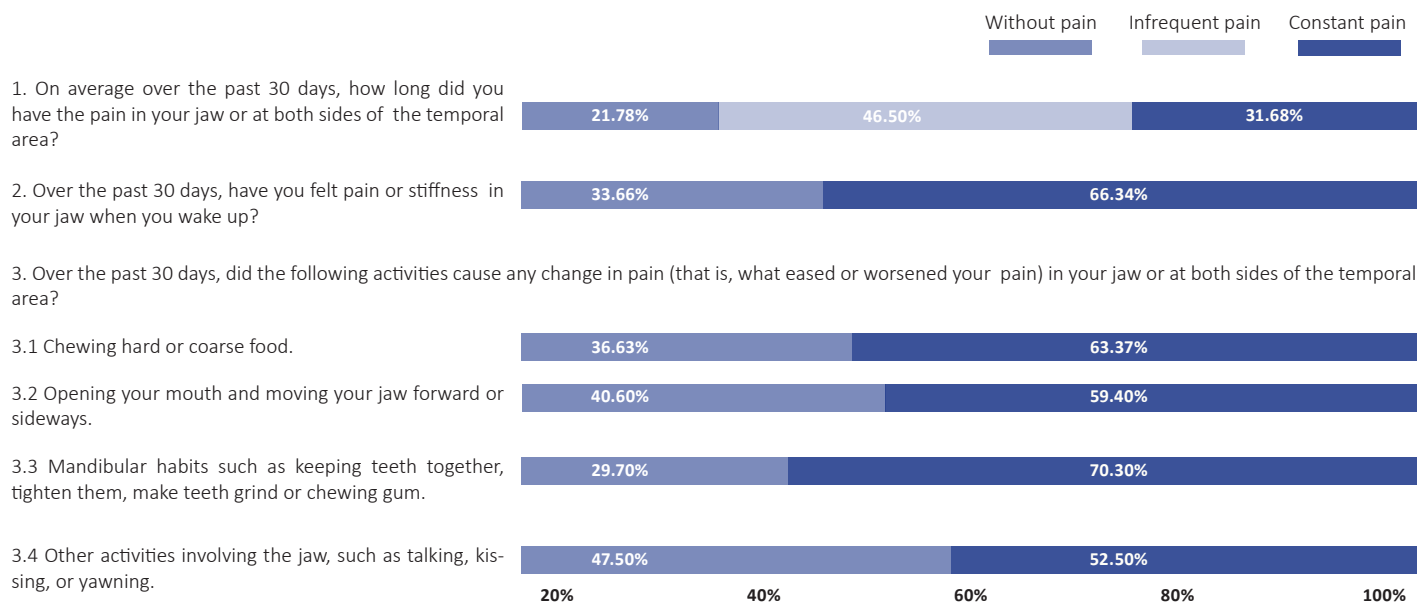
**Table 1.** Distribution of age by sex, and age range.

| Variable |                    | Female (n=84)   | Male (n=17)     | Total (n=101)    |
|----------|--------------------|-----------------|-----------------|------------------|
| Age      | (average $\pm$ DE) | 34.5 $\pm$ 15.7 | 28.7 $\pm$ 16.3 | 33.5 $\pm$ 15.87 |
|          | min-max            | 12-70           | 11-62           | 11-70            |

**Table 2.** Distribution of responses.

| Question   | Response     |                 |               |
|--|--------------|-----------------|---------------|
|  | Without pain | Infrequent pain | Constant pain |
| 1. On average over the past 30 days, how long did you have the pain in your jaw or at both sides of the temporal area?   | 21.78%       | 46.50%          | 31.68%        |
|  | No           |                 | Yes           |
| 2. Over the past 30 days, have you felt pain or stiffness in your jaw when you wake up?  | 33.66%       | -               | 66.34%        |
| 3. Over the past 30 days, did the following activities cause any change in pain (that is, what eased or worsened your pain) in your jaw or at both sides of the temporal area? |              |                 |               |
|  | No           |                 | Yes           |
| 3.1 Chewing hard or coarse food.   | 36.63%       | -               | 63.37%        |
| 3.2 Opening your mouth and moving your jaw forward or sideways.  | 40.60%       | -               | 59.40%        |
| 3.3 Mandibular habits such as keeping teeth together, tighten them, make teeth grind or chewing gum.   | 29.70%       | -               | 70.30%        |
| 3.4 Other activities involving the jaw, such as talking, kissing, or yawning.  | 47.50%       | -               | 52.50%        |

Figure 1. Distribution of responses.



## DISCUSSION.

Of the total respondents, 83.17% were female, with an average age of 33.51 years. 80% of patients had pain associated with the presence of painful TMD, and obtained a score equal to or greater than 3 in the questionnaire.

Regarding the sex of respondents, our study found a prevalence of women among the patients surveyed for TMD. In Chile Iturriaga *et al.*<sup>5</sup> in a referral center for TMD, as well as Díaz-Guzmán *et al.*<sup>4</sup> in a general population, found similar results. In other studies conducted in Latin American in countries like Venezuela<sup>11</sup>, Peru<sup>12</sup> and Colombia<sup>13</sup>, the number of women surveyed exceeded that of men. Two Italian<sup>8,14</sup> studies found a higher prevalence of women among its participants. The prevalence of females is consistent with other studies, in which the entire sample was composed of women<sup>15</sup>. Average age was consistent with other data found in studies conducted on similar populations in Chile by Iturriaga *et al.*<sup>5</sup>, Campos *et al.*<sup>10</sup> in Brazil and Manfredini *et al.*<sup>12</sup> in Italy, with averages of 27, 38, and 39 years respectively. In a systematic review the average age ranged between 30.2 and 39.4 years<sup>16</sup>. The age group was similar in all the studies.

In a research conducted in Venezuela<sup>11</sup>, pain was the

most common symptom (80% in men and 91% in women) in patients diagnosed with TMD; results that are consistent with the findings of this study. Other studies agree<sup>1,8,11,12,17</sup> with the fact that pain is more frequently associated with diagnosis of TMD in women. This may be due to psychosocial, neurophysiological and hormonal factors that influence the perception and modulation of pain<sup>11</sup>. The most common pain symptoms were observed in mandibular habits such as clenching tooth, nail biting, grinding or chewing gum (70.3%).

Another research in TMD, conducted by telephone in a general population, reported 8.3% of pain in patients with tooth clenching<sup>8</sup>; results that differ from the findings of this study. Mandibular dynamics (opening and laterality) was among the actions that made the painful symptoms vary; in these cases pain intensity varied in 59.4% of patients. This differs from another study where patients with limited movement had pain in 49% of the cases<sup>8</sup>. With regard to the question of whether other activities done with the jaw as talking, kissing or yawning, changed or worsened the pain, there was a similar distribution of the responses (yes, 47.5%, not 52.5%).

Pain in patients referred for TMD may be associated

with myofascial pain, a muscular disease that may cause referred pain and have differential diagnosis of pain in the temporomandibular joint<sup>5</sup>. Reports of pain during mouth opening or pain during chewing are common, and some individuals may even feel pain when speaking or singing<sup>18</sup>. It is also associated with limitation of mandibular joint movement or sounds. That is why the verbal communication of a symptom such as pain poses a challenge, since different individuals may describe and characterize a similar pain in a number of different ways<sup>6</sup>. The instrument used in this study meets these requirements by detecting if the pain described by the patient can be associated to painful TMD, without specifying a diagnosis.

On the other hand, systematic reviews of the available literature suggest that only 15 articles of TMD populations and 6 in community samples were developed to collect data from clinical diagnoses in patients with the use of the RDC/TMD<sup>15</sup>, so the use of the latter in large epidemiological studies may not be possible depending on the interview technique, and/or the time available for data collection<sup>10</sup>. Consequently it is necessary to standardize and simplify the design of validated studies on painful TMD.

Among the referrals to the TMD dental service at HBV, problems caused by TMD were the most frequent; therefore they represented the largest number of consultations during the time of our study.

Among the limitations of this study are: waiting time for treatment, because it could have been a factor altering the responses. Another limitation was the patients' lack of technical vocabulary. They probably did not have a full under-

standing of anatomical areas, and may have given confusing answers with respect to the area where the pain actually came from. However, despite these limitations, patients' responses are similar to those found in other studies conducted in Chile<sup>2,3</sup>.

The present study serves as a reference for future research that may use this questionnaire as a simple and rapid method to detect painful TMD, since no similar studies have been conducted in Chile. Despite the fact that this is not the gold standard in international research, it is a relatively validated method and provides information about the manifestation of pain in these pathologies in the Chilean population. We suggest to change or simplify some of the technical terms to make them more accessible to patients before applying the questionnaire in the general population.

## CONCLUSION.

As in other studies on TMD, pain has a high frequency in the surveyed population; there is a higher frequency of women referred for TMD, with an average age of 31 years. Pain occurs mainly in temporal areas.

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PR proposed the research. TM performed sampling, tabulation and data entry. TM and PR wrote the manuscript. PA and CR performed the analysis and reviewed the final draft. All authors approved the final version.

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### **Detección de dolor mediante cuestionario clínico en pacientes derivados por trastornos temporomandibulares en un hospital chileno.**

**Resumen:** Objetivo: Determinar la frecuencia de dolor mediante un cuestionario de detección clínico en pacientes derivados por sospecha de trastornos temporomandibulares (TTM) al Hospital Base de Valdivia (HBV) entre septiembre y diciembre del 2014. Material y método: Se

realizó un estudio descriptivo que incluyó a pacientes derivados a la especialidad de TTM del servicio dental del HBV entre Septiembre y Diciembre del 2014. Un examinador aplicó un cuestionario clínico para detectar TTM dolorosos. Se midieron las variables edad, sexo, tiempo de espera y presencia de dolor asociado a TTM doloroso. Resultados: Se encuestaron 101 pacientes. El 83.17% (84 pacientes) fueron mujeres. El promedio de edad fue 33.5

(11-70) años. 66% de los pacientes han presentado dolor o rigidez mandibular al despertar; 80% presentó dolor asociado a TTM doloroso. Conclusión: La mayoría de los encuestados son mujeres. El dolor tiene una alta frecuen-

cia en la población encuestada, se presenta principalmente en áreas temporales.

**Palabras clave:** *Dolor, Síntomas, Trastornos Temporomandibulares, diagnóstico de dolor.*

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