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Development of a reliable and clinically useful Italian version of the Axis II of the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD)

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Abstract

Background: Multiple-language versions of the same psychometric instrument are increasingly needed, but simply translating an English version word-to-word into another language is not adequate to account for linguistic and cultural differences. Our aim was to validate an Italian version of the Axis II of the Research Diagnostic Criteria for temporomandibular disorders (RDC/TMD) and to test its reproducibility in order to use this important diagnostic instrument in Italian patients.
Methods: The original English-language version was translated and culturally adapted for Italian-speaking people, back-translated to English and then tested on 68 subjects: 34 TMD patients and 34 healthy subjects. Internal consistency was assessed by calculating the Cronbach coefficient alpha for the entire scale in the two samples. The reproducibility of the domains was assessed with the use of the Spearman-Brown test-retest reliability test, Wilcoxon matched pair test, Sign test and 2x2table Chi Square test according to the data types. Correlation of the initial and test-retest scores of the Axis II was measured with the Spearman rank correlation coefficient as an additional measure of reproducibility.
Results: The Italian version of Axis II has a good reproducibility; the internal consistency (measured with the Cronbach coefficient alpha) of the overall final questionnaire was excellent: 0.95.
Conclusions: The Axis II Italian version appeared reliable and it could be useful to assess TMD patients and to standardize the data acquisition in this relevant and common disease.

Key words: temporomandibular joint, research diagnostic criteria/TMD, axis II, cross-cultural adaptation, quality of life

Introduction

Temporomandibular joint disorders (TMD) refer to a group of heterogeneous pain and dysfunction conditions involving the masticatory system, which reduces the quality of life of sufferers [1]. It is increasingly accepted that physical indicators of oral morbidity and the patient's perception of oral conditions contribute to the description of oral health status. Both the objective part, which is accessible to the healthcare professional, and the subjective part, which is experienced by the patient, are complementary, not antagonistic. As two faces of a coin, they belong together and cannot be separated in clinical practice or research [2].

Patient-centred measures of symptom severity and functional status are important complements to traditional outcome measures, such as radiographic or physical examination parameters [3]. In consideration of the complex aetiopathogenesis and multiplicity of symptoms of TMD, a standardized diagnostic system with a good intra- and inter-examiner reliability is strongly required. The introduction of the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) by Dworkin & LeResche [4] aimed to standardize the diagnosis and classification of the different clinical forms of TMD, among different races and countries. They proposed a set of research diagnostic criteria for TMD (RDC/TMD) which is divided in two parts: Axis I and Axis II. Axis I allows a physical diagnosis to be made based on pathophysiology; it was developed to standardize and compare clinical studies on the most commonly occurring subtypes of TMD. Axis II emphasizes psychological classification; it is composed of a history questionnaire including measures of depression, somatization and a graded chronic pain scale. RDC/TMD is widely used, but there is only one Italian reference [5].

This paper describes 1) the development of an

Italian version of the Axis II, conceptually equivalent to the US-English version, easy to understand and to answer for Italian TMD patients, and 2) the evaluation of the instrument's reliability.

Materials and methods

According to the previously described methodology [6], we submitted the Axis II questionnaire to the stages of the validation process through translation, cultural adaptation and testing phases.

Translation

The questionnaire was translated into Italian by two independent mother tongue translators and by one physician. These two Italian translations were analysed for the cultural characteristics of Italian people and were merged into one version. Then this version was back-translated into English, compared with the original text, and checked for inconsistencies. This is one of the stages of the process of validity checking: to make sure that the translated version reflects the same item content as the original version [7].

After approving the Axis II definitive Italian version, we tested the questionnaire on patients.

Although an Italian version of this questionnaire was already available[8], it wasn't assessed for validity and reproducibility and translation was not performed according to the accepted translation process.The version resulting from the translation process here described is quite different from the previous version. Another version is included in the website of the International Consortium for RDC/TMD-based pain research, but no mention about validation is reported.

Outcomes Tool

The History questionnaire includes 31 questions covering information such as to demographics and psychosocial assessment [9]. The measures include the Graded Chronic Pain Scale, developed to provide a quantitative index for assessing the impact of chronic pain. Chronic pain severity is graded according to hierarchical classes from 0 to IV reflecting the severity and impact of TMD on interference with usual functioning at home, work, or school and incorporating disability days (loss of work days) because of TMD pain [10,11].

Grade 0 = no TMD pain and no-related disability; Grade I= low pain intensity and low pain-related disability; Grade II= high pain intensity and low pain-related disability; Grade III= moderately limiting disability; and Grade IV= severely limiting disability. Grades III and IV are typically associated with high pain intensity and TMD-related lost work days [9].

The psychological status was assessed through depression and non-specific physical symptom scores measured with subscales of the Revised Symptom Checkist-90 (SCL-90-R) [12]. Depression scores - q20, items b, e, h, i, k, l , m, n, v, y, cc, dd, ee, plus "Additional Items" f, g, q, z, aa, bb, ff - reflect the extent of self-reported subdued mood, feeling sad, loss of interest in social activities, work, appetite and libido. Somatization scores (non-specific physical symptoms)- q20, items a*, c, d*, j*, o*, p*,r, s, t, u, w, x – reflect the predisposition to report numerous non-specific physical symptoms, the tendency to seek medical treatment and emotional disturbance.

There is also a jaw disability checklist, a composite of 12 items concerning limitations in activities related to mandibular functioning, which measures the number of activities limited.

Validity

Construct validity: the construct validity of the new instrument was tested on 34 consecutive TMD patients referred to our department and a healthy group (without TMD symptoms) composed by 34 subjects randomly selected among the staff of the Catholic University Dental school - 14 male, 20 female, mean age 34,62 years (SD 11,04 range 21-59 years). The sample size of the groups was calculated based on an α level set at 99% and power of 80% to detect the 95% of TMD patients with a specificity of 60%.The power analysis showed that 33 subjects in each group were required.

The TMD sample included 7 patients with intra-capsular derangement and 27 with muscle disorders (6 male, 21 female, mean age 33,72 years; SD 12,89 range 19-58) (Table 1). Patients and healthy subjects younger than 18 years of age were excluded being several questions difficult to understand or inappropriate, in accordance with outcome research movement [9]. Each subject filled in the History questionnaire. The questionnaire was administered in the waiting room before any contact with the physician (to avoid influence of the physician). Time requested and any difficulties completing the questionnaire were recorded for each patient; after filling in the questionnaire, each patient was interviewed about comprehension of the questions and about the questionnaire in general. Comprehension was assessed in a scale from 1 to 5 where 1= excellent, 2= very good, 3= good, 4= fair and 5= poor.

Table 1. Overview of data-collection methods, sample populations by age, gender, and type of investigation.

Sample	Data collection	Age mean	Percentage of women	Type of investigation
TMD patients	Questionnaire*	33.7	61.7%	Construct validity, internal consistency
Staff of the Catholic University Dental School	Questionnaire	34.6	58.8%	Construct validity, internal consistency
Mixed sample	Questionnaire•	34.2	60%	Test-retest reliability

*The questionnaire was administered in the waiting room before any contact with the physician

•3 weeks after the first time

A group of experts predicted that subjects with no TMD or facial pain, no mandibular disability, no joint clicking or other sounds and no muscular derangement would have lower Axis II scores than persons with these conditions and/or poorer oral health.

Reliability

In order to assess the reproducibility (test-retest reliability), twenty out of 68 respondents (13 healthy and 7 TMD subjects) were asked to fill in the questionnaire 3 weeks after the first time.This time interval was selected for the test-retest because the respondents should have remained stable and, in addition, they were unlikely to remember how they answered the first time [13].

Statistical Analysis

Statistical analysis was performed by using the STAT-SOFT (Tusla, OK, USA) package.

Internal consistency was assessed by calculating the Cronbach coefficient alpha for the entire scale in the 34-healthy subjects and 34-patient cohorts. An alpha of 1.0 represents perfect internal consistency, 0.9 is considered excellent, 0.8 is considered good, and 0.7 is considered acceptable [14,15].

Since ordinal or nominal scales were used for measurement, non-parametric analyses were performed: the reproducibility of the domains was assessed with the use of the Spearman-Brown test-retest reliability test, Wilcoxon matched pair test, Sign test and 2x2table Chi Square test according to the data types. Moreover, correlation of the initial and test-retest scores of the Axis II was also measured with the Spearman rank correlation coefficient as an additional measure of reproducibility.

Results

The patients found no difficulty in filling in the questionnaire: the mean time required is 5,7 minutes (range 3-10 minutes); the distribution of comprehension value and education level is showed in Table 2.

The internal consistency (measured with the Cronbach coefficient alpha) of the overall final questionnaire was excellent: 0.95.

Reproducibility was very good: measured with the Spearman rank correlation coefficient, the r value was 0.91; measured with Spearman-Brown test-retest analysis, the coefficient value was 0.94.

For the subjects with TMD, 17% exhibited dysfunctional chronic pain (Grade III and IV) and mean impairment in daily living due to facial pain was rated as 2,2 for impact on overall daily activities. Thirty-three percent of symptomatic subjects reported that they had been kept from normal activities 1 or more days in the last six months because of facial pain, and 17% reported 10 or more disability days.

In the TMD group the most frequently reported activities impaired by TMD were yawning (83%), eating hard foods (62%), and chewing (45%). The mean number of limited activities was 3,2. The sample group reported no chronic TMD pain or impairment in daily living due to facial pain.

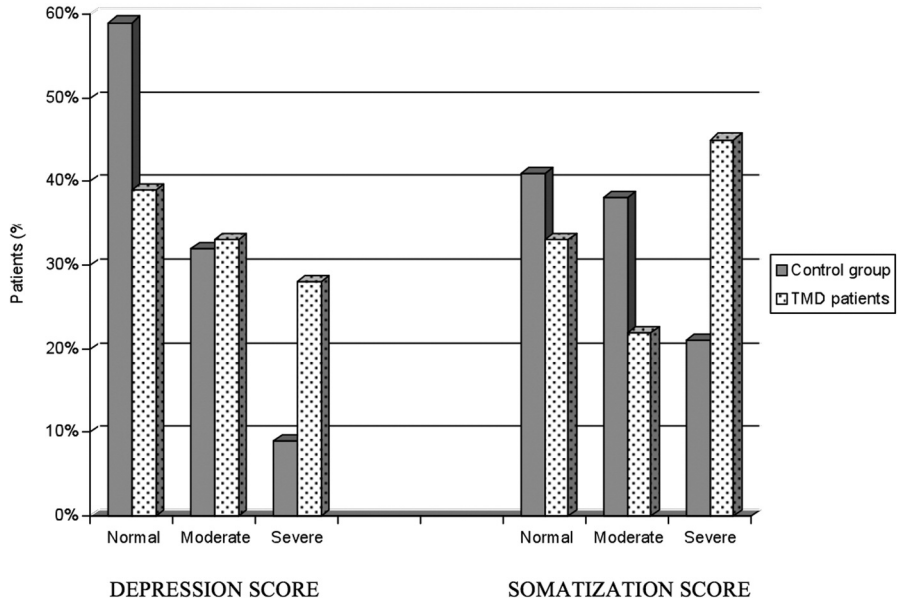
For the healthy subjects, the depression score was normal in 59% of the sample, moderate in 32%, and severe in 9% (total mean value=0,55; SD=0,52); the somatization score was normal in 41%, moderate in 38%, and severe in 21% (total mean value=0,74; SD=0,60).

Conversely, for the TMD patients, depression score was normal in 39% of the sample, moderate in 33%, and severe in 28% (total mean value=0,72; SD=0,56). The somatization score was normal in 33%, moderate in 22%, and severe in 45% (total mean value=1,12; SD=0,87). Comparisons of the occurrence of depression and somatization (sum of the moderate and severe classes according to the Axis II classification) between control and patient groups showed no significant differences (2x2 chi square test). Figure 1 shows the comparison data between TMD and healthy Italian patients.

Table 2. Distribution of comprehension value and educational level in the TMD sample and in the healthy control group (CG).

COMPREHENSION	EDUCATIONAL LEVEL		
	University	High School	Middle + Elementary school
Excellent	10 TMD 10 CG	1 TMD 0 CG	0 TMD 0 CG
Very Good	0 TMD 2 CG	15 TMD 15 CG	0 TMD 0 CG
Good	0 TMD 0 CG	4 TMD 0 CG	4 TMD 5 CG
Fair	0 TMD 0 CG	0 TMD 0 CG	0 TMD 2 CG

Figure 1. Comparison data between healthy and TMD patients' depression and somatization scores.



Discussion

Traditionally, there has been a tendency to treat the oral cavity as an autonomous anatomical landmark, which happens to be located within the body and, as such, the oral cavity has been seen as separate to the body and the individual [16]. Fortunately, during recent decades there has been growing interest in quantifying those consequences of oral disease which affect function, comfort and ability to perform everyday activities. In fact, systematic knowledge about the consequences of disease is important to evaluate how pathologies and treatments can change patients' lives from the social and psychological point of view.

Since their introduction in 1992, the RDC/TMD have been widely used in clinical research settings around the world where TMD and orofacial pain are managed [17].

Multiple-language versions of the same psychometric instrument are increasingly needed [18], but simply translating an English version word-to-word into another language is not adequate to account for linguistic and cultural differences [19]. The adaptation between one culture and another requires the most precise attention to conceptual equivalence and the ripples of meaning associated with a word [20].

Such cultural and language adaptations are

useful in local settings and they benefit international collaboration and communication. In addition, and no less importantly, successful cross-cultural adaptation provides evidence for a measure's construct validity [2].

This study was designed to adapt the original English-language Axis II version to the Italian cultural environment and to investigate its psychometric properties in typical populations. The results were considered sufficient for the instrument's use to discriminate subjects with different levels of chronic pain and to evaluate changes in depression and somatization.

No de novo development of special Italian items has been performed.

We evaluated our Italian version on an heterogeneous population composed by healthy and dysfunctional patients to evaluate the reliability. In fact, as previously reported by the authors who developed Axis II: "Reliability is at the core of valid or useful diagnostic procedures, and if reliability is low, validity cannot be determined" [21].

The mean age was similar in the healthy and TMD groups, as well as the education level. Questionnaire comprehension was good in both groups. Concerning the questions about ethnicity, marital status and income level we believe that they are inappropriate for the Italian socio-cultural context and for the Italian privacy law. We included this part in the Italian version but we believe that it will not be used in most clinical studies. In fact, in cross-cultural adaptation process consideration should be given to the acceptability of the content to the target population [22].

The face validity of the measures is confirmed because there is good reason to expect that TMD cases are different in several aspects than control sample. In fact, depression and somatization was higher in the TMD group than in the healthy; this confirms the hypothesis of many authors [23-27] that TMD is highly correlated with depression.

Note that we didn't evaluate reliability or relationship between the jaw disability checklist and the other aspects of the RDC/TMD, this issue has been discussed by previous authors in studies which did not specificallly test for these elements [4].

So, we can say the Axis II Italian version appeared reliable and it could be useful to assess TMD patients and to standardize the data acquisition in this relevant and common disease.

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Axis II – Italian version

Legga attentamente ogni domanda e risponda in modo appropriato.

Per ciascuna domanda scelga solo una risposta.

1) In generale, potrebbe definire la sua salute eccellente, molto buona, buona, discreta, o scadente?

Eccellente.....1
Molto buona..2
Buona.....3
Discreta.....4
Scadente.....5

2) In generale, potrebbe definire la sua salute orale eccellente, molto buona, buona, discreta, o scadente?

Eccellente.....1
Molto buona..2
Buona.....3
Discreta.....4
Scadente.....5

3) Nell'ultimo mese, ha provato dolore alla faccia, alla mandibola, alle tempie, nella zona preauricolare, o all'orecchio?

No.....0
Si.....1

Se ha risposto no, salti alla domanda 14;

Se ha risposto si:

4a) Quanti anni fa è comparso per la prima volta il suo dolore facciale?

_____Anni

Se un anno fa o più salti alla domanda 5;

Se meno di un anno fa:

4b) Quanti mesi fa è comparso per la prima volta il suo dolore facciale?

_____Mesi

5) Definirebbe il suo dolore facciale persistente, ricorrente, o occasionale?

Persistente...1
Ricorrente...2
Occasionale..3

6) E' mai stato da un medico, da un dentista, da un chiropratico, o da un altro specialista per il suo dolore facciale?

No.....1
Si, negli ultimi 6 mesi.....2
Si, più di 6 mesi fa.....3

7) In questo momento, che valore darebbe al suo dolore facciale in una scala da 0 a 10, in cui 0 è "nessun dolore" e 10 "il massimo dolore possibile"?

Nessun Dolore								Il massimo dolore possibile		
0	1	2	3	4	5	6	7	8	9	10

8) Negli ultimi sei mesi, quanto intenso è stato il dolore peggiore che ha provato in una scala da 0 a 10 in cui 0 è "nessun dolore" e 10 "il massimo dolore possibile"?

Nessun Dolore								Il massimo dolore possibile		
0	1	2	3	4	5	6	7	8	9	10

9) Negli ultimi sei mesi, in media, quanto intenso è stato il suo dolore in una scala da 0 a 10 in cui 0 è "nessun dolore" e 10 "il massimo dolore possibile"? (Cioè il dolore che prova abitualmente).

Nessun Dolore								Il massimo dolore possibile		
0	1	2	3	4	5	6	7	8	9	10

10) Negli ultimi sei mesi, per quanti giorni è stato impossibilitato a compiere le sue normali attività (lavoro, scuola, lavoro a casa) a causa del suo dolore facciale?

_____Giorni

11) Negli ultimi sei mesi, in che misura il suo dolore facciale ha interferito con le sue attività giornaliere in una scala da 0 a 10, in cui 0 è "nessuna interferenza" e 10 "incapacità a svolgere qualsiasi attività"?

Nessuna Interferenza								Incapacità a svolgere qualsiasi attività		
0	1	2	3	4	5	6	7	8	9	10

12) Negli ultimi sei mesi, in che misura il suo dolore facciale ha cambiato la sua capacità a partecipare alle attività sociali, ricreative e familiari, in una scala da 0 a 10, in cui 0 è "nessun cambiamento" e 10 "estremo cambiamento"?

Nessun Cambiamento								Estremo Cambiamento		
0	1	2	3	4	5	6	7	8	9	10

13) Negli ultimi sei mesi, in che misura il suo dolore facciale ha modificato la sua capacità lavorativa (sia in casa sia fuori casa), in una scala da 0 a 10, in cui 0 è "nessun cambiamento" e 10 "estremo cambiamento"?

Nessun Cambiamento								Estremo Cambiamento		
0	1	2	3	4	5	6	7	8	9	10

14a) Ha mai avuto un blocco mandibolare oppure incapacità ad aprire la bocca al massimo?

No.....0
Si.....1

Se non ha mai avuto problemi di apertura, vada alla domanda 15.

Se ha risposto si:

14b) Questa limitazione nell'apertura della bocca è tanto grave da interferire con la sua capacità di cibarsi?

No.....0
Si.....1

15a) Sente un click o uno schiocco quando apre o chiude la bocca, o quando mastica?

No.....0
Si.....1

15b) Sente degli sfregamenti o degli scricchiolii quando apre o chiude la bocca, o quando mastica?

No.....0
Si.....1

15c) Le è mai stato detto o si è mai accorto che lei serra o digrigna i denti di notte, quando dorme?

No.....0
Si.....1

15d) Serra o digrigna i denti durante il giorno?

No.....0
Si.....1

15e) La sua mandibola al mattino, quando si sveglia, è indolenzita o irrigidita?

No.....0
Si.....1

15f) Ha mai sentito fischi o ronzii nelle orecchie?

No.....0
Si.....1

15g) Percepisce la sua occlusione come scomoda o anormale?

No.....0
Si.....1

15g) Percepisce la sua occlusione come scomoda o anormale?

No.....0
Si.....1

16a) Soffre di artrite reumatoide, lupus, o di altra patologia sistemica con coinvolgimento articolare?

No.....0
Si.....1

16b) Qualche suo familiare, che lei sappia, soffre di una di queste patologie?

No.....0
Si.....1

16c) Ha avuto o ha articolazioni gonfie o dolenti, oltre a quella temporo-mandibolare (vicina alle orecchie)?

No.....0
Si.....1

Se la sua risposta è no, vada alla domanda 17a

Se ha risposto si:

16d) Si tratta di un dolore persistente, cioè che dura da almeno un anno?

No……..0
Si……..1

17a) Ha recentemente subito un trauma al viso o alla mandibola?

No……..0
Si……..1

Se la risposta è no, salti alla domanda 18.

Se ha risposto si:

17b) Prima del trauma, aveva mai provato dolore alla mandibola?

No……..0
Si……..1

18) Negli ultimi 6 mesi, ha sofferto di cefalea o emicrania?

No……..0
Si……..1

19) Quali di queste attività le sono impedite o limitate dal suo attuale problema alla mandibola ?

Masticare	No….0; Si….1
Bere	No….0; Si….1
Fare esercizi	No….0; Si….1
Masticare cibi duri	No….0; Si….1
Masticare cibi morbidi	No….0; Si….1
Sorridere/ridere	No….0; Si….1
Attività sessuale	No….0; Si….1
Lavarsi i denti o la faccia	No….0; Si….1
Sbadigliare	No….0; Si….1
Deglutire	No….0; Si….1
Parlare	No….0; Si….1
Avere la sua normale espressione facciale	No….0; Si….1

20) Nell'ultimo mese, quanto è stato disturbato da:

	Per niente	Un po'	Moderatamente	Abbastanza	Molto
Mal di testa	0	1	2	3	4
Perdita di interesse o di piacere sessuale	0	1	2	3	4
Debolezza o capogiri	0	1	2	3	4
Dolore al cuore o al petto	0	1	2	3	4
Calo di energia	0	1	2	3	4
Pensiero di morte o di morire	0	1	2	3	4
Poco appetito	0	1	2	3	4
Pianto facile	0	1	2	3	4
Incolparsi	0	1	2	3	4
Mal di schiena	0	1	2	3	4
Solitudine	0	1	2	3	4
Tristezza	0	1	2	3	4
Preoccupazione eccessiva	0	1	2	3	4
Disinteresse per le cose	0	1	2	3	4
Nausea o disturbi di stomaco	0	1	2	3	4
Dolore muscolare	0	1	2	3	4
Difficoltà ad addormentarsi	0	1	2	3	4
Difficoltà respiratorie	0	1	2	3	4
Brividi di freddo o vampate di calore	0	1	2	3	4
Torpore o formicolio in qualche parte del corpo	0	1	2	3	4
Un nodo in gola	0	1	2	3	4
Sentirsi senza speranze per il futuro	0	1	2	3	4
Sensazione di debolezza	0	1	2	3	4
Sensazione di pesantezza a gambe o braccia	0	1	2	3	4
Pensieri di suicidio	0	1	2	3	4
Mangiare troppo	0	1	2	3	4
Svegliarsi presto la mattina	0	1	2	3	4
Sonno disturbato o agitato	**0**	1	**2**	**3**	**4**
Sentire che tutto sia uno sforzo	**0**	1	**2**	**3**	**4**
dd) Sentirsi inutile	0	1	2	3	4
Sentirsi in trappola o catturato	0	1	2	3	4
Sensi di colpa	0	1	2	3	4

21) In media,come pensa di essersi preso cura della propria salute?

In maniera eccellente..1
Molto bene……..2
Bene……3
Discretamente…….4
Poco……5

22) In media, come pensa di essersi preso cura della propria salute orale?

In maniera eccellente..1
Molto bene……..2
Bene……..3
Discretamente……..4
Poco……..5

23) Quando è nato? Giorno_____ Mese_____ Anno_____

24) E' maschio o femmina?

Maschio 1
Femmina 2

Axis II – English version

Please read each question and respond accordingly. For each of the questions below circle only one response.

1. Would you say your health in general is excellent, very good, good, fair or poor?

Excellent	1
Very good	2
Good	3
Fair	4
Poor	5

2. Would you say your oral health in general is excellent, very good, good, fair or poor?

Excellent	1
Very good	2
Good	3
Fair	4
Poor	5

3. Have you had pain in the face, jaw, temple, in front of the ear or in the ear in the past month?

Yes	0
No	1

[If no pain in the past month, SKIP to question 14]

If Yes,

4.a. How many years ago did your facial pain begin for the first time? ___ ___ years ago

[If one year ago or more SKIP to question 5] **[If less than one year ago, code 00]**

4.b. How many months ago did your facial pain begin for the first time? ____ ____ months ago

5. Is your facial pain persistent, recurrent or was it only a one-time problem?

Persistent	1
Recurrent	2
One-Time	3

6. Have you ever gone to a physician, dentist, chiropractor or other health professional for facial ache or pain?

No	1
Yes, in the last 6 months.	2
Yes, more than 6 months ago	3

7. How would you rate your facial pain on a 0 to 10 scale at the present time, that is right now, where 0 is "no pain" and 10 is "pain as bad as could be"?

No pain **Pain as bad as could be**

0 1 2 3 4 5 6 7 8 9 10

8. In the past six months, how intense was your worst pain rated on a 0 to 10 scale where 0 is "no pain" and 10 is "pain as bad as could be"?

No pain **Pain as bad as could be**

0 1 2 3 4 5 6 7 8 9 10

9. In the past six months, on the average, how intense was your pain rated on a 0 to 10 scale where 0 is "no pain" and 10 is "pain as bad as could be"? [That is, your usual pain at times you were experiencing pain].

No pain **Pain as bad as could be**

0 1 2 3 4 5 6 7 8 9 10

10. About how many days in the last six months have you been kept from your usual activities (work, school or housework) because of facial pain? ___ ___ ___ DAYS

11. In the past six months, how much has facial pain interfered with your daily activities rated on a 0 to 10 scale where 0 is "no interference" and 10 is "unable to carry on any activities"?

No Interference **Unable To Carry On Any Activities**

0 1 2 3 4 5 6 7 8 9 10

12. In the past six months, how much has facial pain changed your ability to take part in recreational, social and family activities where 0 is "no change" and 10 is "extreme change"?

No Change										Extreme Change
0	1	2	3	4	5	6	7	8	9	10

13. In the past six months, how much has facial pain changed your ability to work including housework) where 0 is "no change" and 10 is "extreme change"?

No Change										Extreme Change
0	1	2	3	4	5	6	7	8	9	10

14.a.	Have you ever had your jaw lock or catch so that it won't open all the way?	Yes	0
		No	1

[If no problem opening all the way, SKIP to question 15]

If Yes,

14.b. Was this limitation in jaw opening severe enough to interfere with your ability to eat? No 0 Yes 1

15.

a.	Does your jaw click or pop when you open or close your mouth or when chewing?	No 0 Yes 1	d.	During the day, do you grind your teeth or clench your jaw?	No 0 Yes 1
b.	Does your jaw make a grating or grinding noise when it opens and closes or when chewing?	No 0 Yes 1	e.	Does your jaw ache or feel stiff when you wake up in the morning?	No 0 Yes 1
c.	Have you been told, or do you notice that you grind your teeth or clench your jaw while sleeping at night?	No 0 Yes 1	f.	Do you have noises or ringing in your ears?	No 0 Yes 1
			g.	Does your bite feel uncomfortable or unusual?	No 0 Yes 1

16.a. Do you have rheumatoid arthritis, lupus, or other systemic arthritic disease? No 0 Yes 1

16.b. Do you know of anyone in your family who has had any of these diseases? No 0 Yes 1

16.c. Have you had or do you have any swollen or painful joint(s) other than the joints close to your ears (TMJ)? No 0 Yes 1

[If no swollen or painful joints, SKIP to question 17.a.]

If Yes,

16.d. Is this a persistent pain which you have had for at least one year? No 0 Yes 1

1	7.a.	**Have you had a recent injury to your face or jaw?**	Yes	0
			No	1

[If no recent injuries, SKIP to question 18]

If Yes,

17.b. Did you have jaw pain before the injury? No 0 Yes 1

18. During the last six months have you had a problem with headaches or migraines? No 0 Yes 1

19. What activities does your present jaw problem prevent or limit you from doing?

a.	Chewing	No 0 Yes 1	g.	Sexual activity	No 0 Yes 1
b.	Drinking	No 0 Yes 1	h.	Cleaning teeth or face	No 0 Yes 1
c.	Exercising	No 0 Yes 1	i.	Yawning	No 0 Yes 1
d.	Eating hard foods	No 0 Yes 1	j.	Swallowing	No 0 Yes 1
e.	Eating soft foods	No 0 Yes 1	k.	Talking	No 0 Yes 1
f.	Smiling/laughing	No 0 Yes 1	l.	Having your usual facial appearance	No 0 Yes 1

20. In the last month, how much have you been distressed by:

		Not At All	A Little Bit	Moderately	Quite A Bit	Extremely
a.	Headaches	0	1	2	3	4
b.	Loss of sexual interest or pleasure	0	1	2	3	4
c.	Faintness or dizziness	0	1	2	3	4
d.	Pains in the heart or chest	0	1	2	3	4
e.	Feeling low in energy or slowed down	0	1	2	3	4
f.	Thoughts of death or dying	0	1	2	3	4
g.	Poor appetite	0	1	2	3	4
h.	Crying easily	0	1	2	3	4
i.	Blaming yourself for things	0	1	2	3	4
j.	Pains in the lower back	0	1	2	3	4
k.	Feeling lonely	0	1	2	3	4
l.	Feeling blue	0	1	2	3	4
m.	Worrying too much about things	0	1	2	3	4
n.	Feeling no interest in things	0	1	2	3	4
o.	Nausea or upset stomach	0	1	2	3	4
p.	Soreness of your muscles	0	1	2	3	4
q.	Trouble falling asleep	0	1	2	3	4
r.	Trouble getting your breath	0	1	2	3	4
s.	Hot or cold spells	0	1	2	3	4
t.	Numbness or tingling in parts of your body	0	1	2	3	4
u.	A lump in your throat	0	1	2	3	4
v.	Feeling hopeless about the future	0	1	2	3	4
w.	Feeling weak in parts of your body	0	1	2	3	4
x.	Heavy feelings in your arms or legs	0	1	2	3	4
y.	Thoughts of ending your life	0	1	2	3	4
z.	Overeating	0	1	2	3	4
aa.	Awakening in the early morning	0	1	2	3	4
bb.	Sleep that is restless or disturbed	0	1	2	3	4
cc.	Feeling everything is an effort	0	1	2	3	4
dd.	Feelings of worthlessness	0	1	2	3	4
ee.	Feeling of being caught or trapped	0	1	2	3	4
ff.	Feelings of guilt	0	1	2	3	4

21. How good a job do you feel you are doing in taking care of your health overall?

Excellent	1
Very good	2
Good	3
Fair	4
Poor	5

22. How good a job do you feel you are doing in taking care of your oral health?

Excellent	1
Very good	2
Good	3
Fair	4
Poor	5

23. When were you born? Month __ __ Day __ __ Year __ __

24. Are you male or female?

Male 1

Female 2