

General health & psychological distress in children with temporomandibular disorder

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Abstract

Introduction. Temporomandibular disorders (TMD) are a heterogeneous group of disorders affecting temporomandibular joints (TMJ), masticatory muscles, or both. The aim of this study is to evaluate the relationship between general health and psychological distress variables and the clinical diagnosis of TMD in children between 8 – 13 years old. Moreover, it will be underlined the different perception of psychological distress existing between patients and their parents.

Materials & Methods. Patients were divided in two groups: the "case group", which includes patients with TMD, and the "control group", which included patients asymptomatic for TMD. The "case group" is composed by 29 patients, while the "control group" is composed by 22 patients. The patients were asked to fill in a questionnaire called Child Health Questionnaire (CHQ), to evaluate general health and psychological condition and, eventually, the presence of symptoms of stress, anxiety and/or depression. The CHQ is 87 – item questionnaire developed in USA specifically for children.

Results. As widely reported during the present work, the link between TMD and psychological distress is existing and quite strong, because of lack of number of patients many aspects worth of attentions have not been analyzed as they deserved.

Conclusions: That's way the conclusion must lead to the proposal of going on with the present study following, possibly, some aspects of research as an increase of the number of patients involved in the study; Individuate possible elements, internal and external, that could strongly influence differences between patient's results and parent's results, etc. *Clin Ter 2019; 170(5):e??-???. doi:10.7417/CT.2019.????*

Key words: General Health, Psychological Distress, Tmd, Chq Test.

Introduction

Psychological characteristics potentially may be a cause or consequences of temporomandibular disorders (TMD) (1,2,3). The purpose of the present study is to evaluate the relationship between general health and psychological distress variables and the clinical diagnosis of temporomandibular disorders (TMD) in children between 8 – 13 years old.

In the last two decades it has also been paid increasing attention to the perceptions that patients have of their oral health status and problems related. Recently, it has also been introduced a distinction between the perception of oral health status and real quality of life related to oral health (*Oral Health Related Quality of Life, OHRQoL*), the latter considered as the interaction between the health status of oral cavity, general state of health and quality of life associated with it.

The OHRQoL is thus a broad concept, which includes - in addition to an analysis of the state of physical health - even the level of the subjective perceptions of well-being, satisfaction and self-esteem¹. Because of the considerable impact of pain on quality of life gold facial, OHIP (*oral health impact profile*) provides a valuable tool for measuring the social impact given by oral disease, as well as help the clinician in his treatment decisions.

Moreover, it will be underlined the different perception of psychological distress existing between patients and their parents. The children included in the study were selected according to the following criteria:

- Signs and symptoms of TMD;
- Either gender;
- Consent forms signed by the parents;
- Temporomandibular joint pain;

¹ Evaluating oral health-related quality of life measure for children and preadolescents with temporomandibular disorder. T S Barbosa, M.S.Ieme, Paula M Castelo. Health and quality life outcomes 2011.

- No previous or ongoing orthodontic treatment;
- No syndromic patients;
- No maxilla - facial malformations/tumors/trauma;
- Orthopantomography and lateral skull radiograph.

Materials and methods

Patients included in this study are 51 child patients attending the Department of Dentistry (Orthodontic Division) of Umberto I Hospital, Sapienza University of Rome.

The composition is represented in the Table 1 that represent the demographic description of subjects.

An initial division of patients lead to the composition of two groups: the “case group”, which includes patients with TMD, and the “control group”, which included patients asymptomatic for TMD. The “case group” is composed by 29 patients, while the “control group” is composed by 22 patients.

Subjects were further divided into various groups according to the:

- Angle class;
- RDC/TMD axis I;
- Gender.

Study design

Firstly, the patients were asked to fill in a questionnaire called Child Health Questionnaire (CHQ), to evaluate general health and psychological condition and, eventually, the presence of symptoms of stress, anxiety and/or depression. The CHQ is 87 – item questionnaire developed in USA specifically for children. According to a study developed in Dutch in 2002⁽⁴⁾, CHQ shows very important psychometric properties, even if it is also suggested to pay attention to test – retest reliability⁽⁵⁾. Considering the young age of patients involved in the study, it was developed a parent form of the questionnaire, consisting of 50 questions. The composition of the questionnaire is reported below:

Individually, the subjects received clear instructions on how to answer the questions in the presence of a researcher and later a clinical examination was conducted, which evaluated TMD signs and symptoms, as indicated in the RDC/TMD, which registered:

- Presence and location of pain related to TMD;
- Limitations and/or deviated movements in opening and closing mouth;
- Joint sounds;
- Muscle and joint pain.

Clinical examination

All patients were asked to fill in a general anamnestic questionnaire, in order to obtain information about their general health status. The clinical examination was both intra - oral and extra - oral, and the examiner used gloves.

All measurements were taken with masticatory muscles in the rest position. Mouth aperture patterns were checked: comfortable aperture, unassisted maximum aperture, assisted maximum aperture, as well as vertical and horizontal

overbite. Joint sounds were palpated, while mandibular excursive movements, lateral movements protrusion and deviations were checked. Finally, the researcher measured the intensity of joint and muscular pain. During the clinical examination, the examiner analyses:

- Facial type;
- Profile;
- Masticatory and perioral muscles;
- Angle class;
- Midline;
- Overjet;
- Overbite;
- Cross;
- TMD.

Patients were classified in I, II and III Angle class. After the vision of orthopantomography and lateral skull radiograph, if present, some patients were even classified according to skeletal class. Then all patients have been shared according to RDC/TMD axis I⁽⁶⁻⁷⁾, which provide researchers and clinicians with a standardized system that can be used for examining, diagnosing and classifying the most common subtypes of TMD⁽⁸⁻¹¹⁾. The results of both divisions are represented in the tables 2 – 3.

For some patients the examiner also saw both orthopantomography and lateral skull radiograph, and according to those exams 14 patients were divided also according to skeletal classes (Table 4).

Psychological evaluation

In psychological analysis were conducted through the CHQ-87 which included questions about physical role, emotional role, behavioral role and general mental and social health. Low scores represent clear difficulties in social life, including ability to get along, school and sport’s activities and behavioral problems. Two more elements were considered to take a defined psychological picture of patients: gender and presence of pain appear to be influent and, this way, need to be evaluated.

Statistical analysis

Statistical analysis was performed using SPSS 17.0. It was conducted in order to examine general results and differences among all the categories patients were divided into. Moreover, it was interesting to underline differences between parents and children, also how scores are distributed among the group observed.

To give the study a statistical meaning it was used the Fisher - test and, this way, it was calculated the “p-value” index, and according to it most of the variables considered in the study appear statistically significant. According to this index, in fact, those variables which present a p – value ≤ 0.05 are considered meaningful, and it happens all the variables excepting the skeletal class, for which the number of patients is quite small.

It was also purposed to analyze the Risk – rate, but unfortunately this value is not applicable at the study as it constructed at the moment.

Table 1. Demographic description of subjects

Sex	N	%
Girls	26	50.90
Boys	25	49.10
Age	Mean	Medium
	9.78	9.75

Table 2. Division according to RDC/TMD

	Males	Females	Total	Total %
TMD – free	10	12	22	43.14
Disk – displacement (DD)	6	6	12	23.53
Muscular disorders (MD)	7	7	14	27.45
Both DD & MD	2	1	3	5.88
Total	25	26	51	

Table 3. Division according to Angle classes

	Males	Females	Total	Total%
I Class	9	9	18	35.29
II Class	13	12	25	49.01
III Class	3	5	8	15.69
Total	25	26	51	

Table 4. Division according to skeletal classes:

	Males	Females	Total	Total %
I Class	1	3	4	28.57
II Class	4	3	7	50
III Class	3	0	3	21.43
Total	8	6	14	

Table 5. The variables considered and their level of significance in the study.

Variables	Case group (N) (%)	Control group (N) (%)	P – value
Cases	29	22	
Age (years) (median)(range)	10 (8 – 13)	9.5 (8 – 13)	
Gender			0.05
Male	15 (51.7)	10 (45.5)	
Female	14 (48.3)	12 (54.5)	
Angle Class			0.04
1	6 (20.7)	12 (54.5)	
2	17 (58.6)	8 (36.4)	
3	6 (20.7)	2 (9.1)	
TMD			0.001
Free	0	22 (100)	
MD	14 (48.3)	0	
DD	12 (41.4)	0	
MD&DD	3 (10.3)	0	
Skeletal class			0.35
1	2 (10.5)	2 (9.1)	
2	5 (26.3)	2 (9.1)	
3	2 (10.5)	1 (4.5)	
Missing	10 (52.6)	17 (77.3)	

Results

Before exposing the results of the study, it appears useful to resume all the variables considered and their level of significance in Table 5.

The most important result is the proved link between TMD and psychological distress, which appears in 41,4% of patients composing the case group, while only 9,1% of patients included in the control group show this kind of link, which could be justified even by external elements. Among the TMD, those which present a stronger link between psychological distress are muscular disorders (63,2% of affected patients).

A very interesting aspect is the similarity between the results of the patient’s questionnaire and the results of parent’s questionnaire, as clearly showed in the table 6.

In the graphics 1 and 2 are represented general results, underlining differences between case group and control group.

The graphics 3-4 evidences the very tiny differences between the results of patient’s questionnaire and parent’s ones’.

The similarity between those results appear to be worthy of particular attention, especially referring to those aspects which could cause a different vision of daily life from the prospective of parents and sons. The examiner supports the theory according to which those factors are not strong enough due to the young age of patients involved in the study.

Another important aspect to analyze is the difference between males and females, as showed in the table 7.

Males present a percentage of patients with moderate distress of 46,67%, while only 21,43% of females present the same symptoms. Differences are bigger in the case group than those in the control group, which suggest that, in the range of age analyzed, males are more affected by psychological distress than females. In the discussion it must be taken into consideration the number of hormones that appears in females during the growing process. The whole results are fully represented in the graphic 5-6.

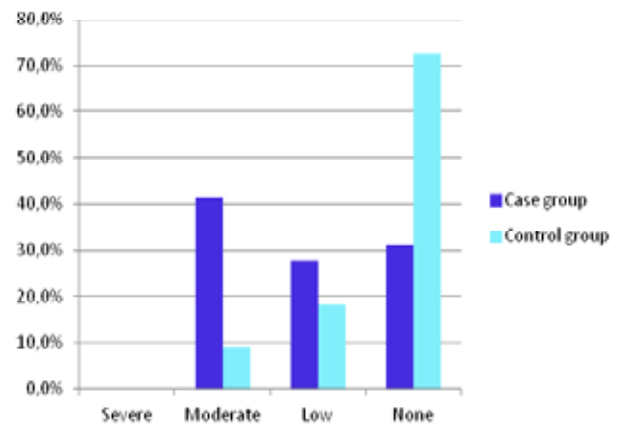
In the end, it is interesting to underline the fact that no patients present severe distress, which suggest that no matter how strong the TMD might be, it is not enough to cause distress which require psychological treatment, at least in the examined range of age and if not supported by other external factors.

Discussion & conclusion

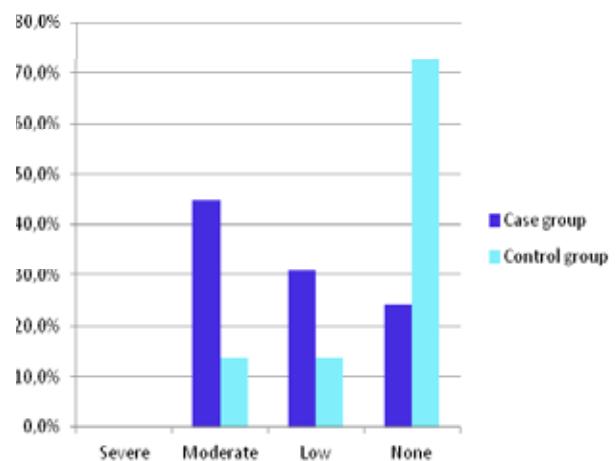
The structure of the study is created to support the conclusion that it effectively exists a link between psychological distress and TMD (12,13). But there are many other elements which can influence both psychological and orthodontic items, and it was quite impossible to include most of them in the present study, mainly because the short number of patients involved, and secondly because it required the presence of a psychiatrist. The dimension of the sample represents, in fact, the main limitation of the study, and it is the reason why, although the skeletal class were used to divide patients, the results linked to it are not significant and, this way, not taken into consideration. For the same reason

it was not possible to calculate the risk indicators, which would make the study more complete.

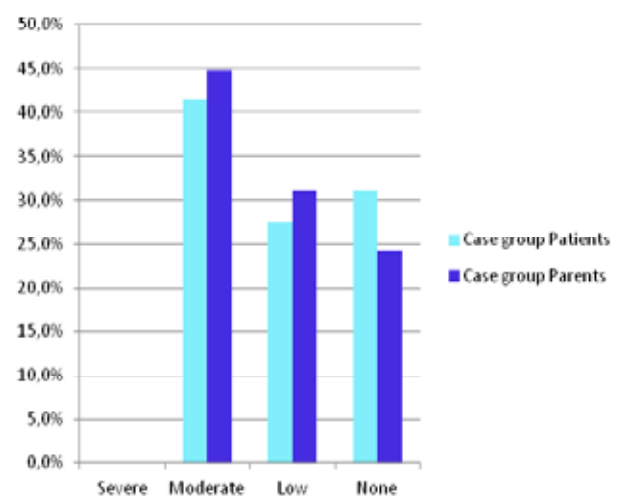
On the other hand, it was possible to analyze in an efficient how the influence between psychological distress and TMD is influenced by the belonging of patients to a certain Angle class. The results connected to this aspect are represented in the graphics 7- 8- 9.



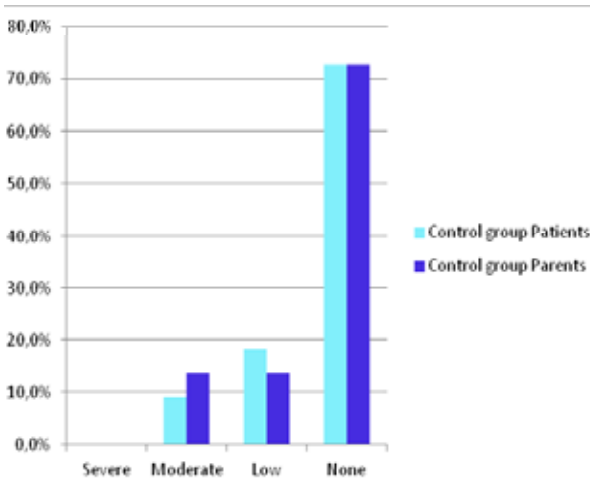
Graphic 1. Patient's results



Graphic 2. Parent's results.

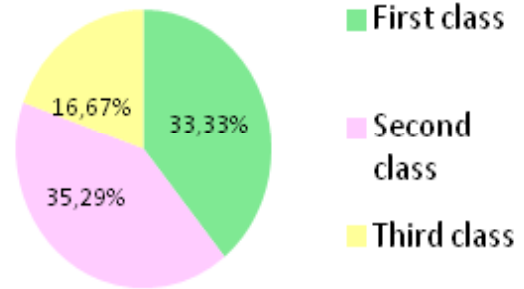


Graphic 3. Case group.

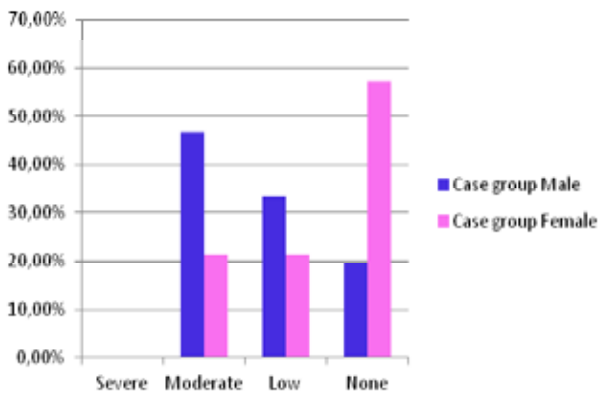


Graphic 4. Control group.

None distress

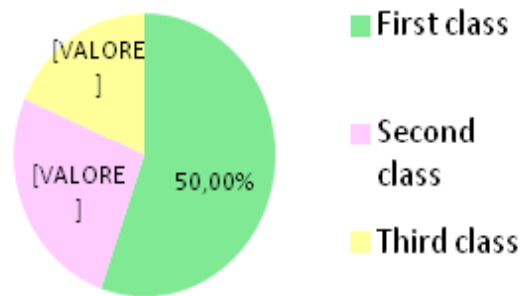


Graphic 7. Influence on psychological distress and TMD in certain Angle class: None distress

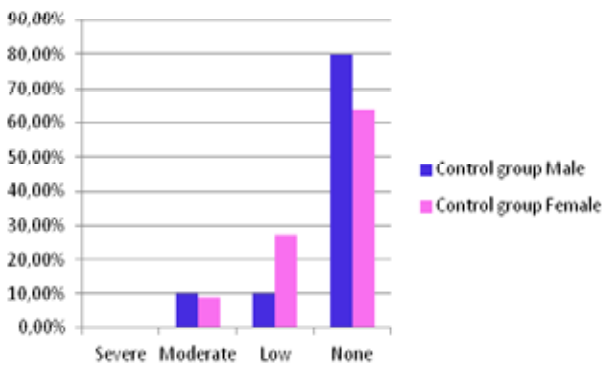


Graphic 5. Case group.

Low distress

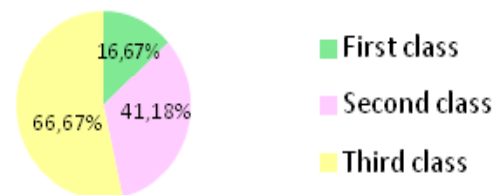


Graphic 8. Influence on psychological distress and TMD in certain Angle class: Low distress



Graphic 6. Control group.

Moderate distress



Graphic 9. Influence on psychological distress and TMD in certain Angle class: Moderate distress

Table 6. The results of the patient's questionnaire and the results of parent's questionnaire

	Patient's distress		Parent's distress	
	Case group	Control group	Case group	Control group
Severe	0,0%	0,0%	0,0%	0,0%
Moderate	41,4%	9,1%	44,8%	13,6%
Low	27,6%	18,2%	31,0%	13,6%
None	31,0%	72,7%	24,2%	72,8%

Table 7. Difference between males and females

	Case group		Control group	
	Male	Female	Male	Female
Severe	0,00%	0,00%	0,00%	0,00%
Moderate	46,67%	21,43%	10,00%	9,09%
Low	33,33%	21,43%	10,00%	27,27%
None	20,00%	57,14%	80,00%	63,64%

Table 8. Distribution' Medium scores: *Max score 261, **Max score 150.

	Patients*	Parents
Case group	169,86	95,2
Control group	222,09	119,72

GRAPHIC 1: Patient's results

Results present the third Angle class as the most affected one by moderate psychological distress. Those results are event supported with a p – value which makes them statistically significant ($p = 0,04$).

To investigate in a deeper way, the psychological aspect of the study it should be useful to divide the CHQ in different categories, according to the different topics the questions are about. That would bring to identify those aspects of social life which are more influent for the final result and, at the same time, to individuate the most critical aspects of social life in children.

It is not clear the reliability of test – retest of the present study, and the reason is quite clear: after a few times the physical and psychological conditions of patients could be strongly different because of the growing process, and it could be really difficult to individuate how different results of questionnaire would be linked to orthodontic therapy. On the other hand, it is widely proved the possibility to adopt CHQ to test – retest general health condition.

Again, the distribution of scores in both patient's and parent's questionnaires suggest that the link between TMD and psychological distress never leads to grave conditions. In fact, the medium score is, for both questionnaires, higher than the 50%, as showed in the table 8.

As widely reported during the present work, the link between TMD and psychological distress is existing and quite strong, because of lack of number of patients many

aspects worth of attentions has not been analyzed as they deserved. That's way the conclusion must lead to the proposal of going on with the present study following, possibly, the aspects of research linked below:

Increase the number of patients involved in the study;

Analyze the link between the results and the skeletal class of patients;

Divide into categories the questions proposed with the CHQ-87 in order to inquire deeper psychological aspects. Some example of categories in which question could be divided into are physical functioning, role emotional, role behavioral, bodily pain, behavior, mental health, self-esteem, general health⁽¹⁴⁾, change in health, family activities, family cohesion⁽¹⁵⁾;

Individuate possible elements, internal and external, that could strongly influence differences between patient's results and parent's results.

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