THESIS
Clinical study of malocclusion and orthodontic treatment needs in young people in Roumania
(ABSTRACT)

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| Anexe                                                        |    |
Introduction

Dental anomaly of the jaws is an increasingly spread condition, and with its physiognomic and functional disorders that it produces, it affects oral and dental health, with multiple social phisique implications on the patient and thus on the quality of his life, which justifies establishing of an orthodontic therapy.

The continuous growth of the frequency in dental anomalies of the jaws, estimating that the ideal occlusion is found in only 1-2% of the actual population and high expenses of the treatments as well, impose a severe selection of the cases that could benefit of certain financial compensations from the health insurances.

While the patient’s addressability is also in a continuous growth, not all are willing to endure such a difficult treatment on the strength of time and complexity. In this regard, the permanent concerns for developing therapeutical solutions that contribute to the acceptability increase of the orthodontic treatments are still ongoing.

Although there are many epidemiological studies conducted in several countries concerning malocclusions, the comparative analysis of those are difficult to be made, whereas the indexes and the criteria used in the studies are not standardized, for example the ones from the epidemiological studies concerning dental caries and periodontal diseases.

Today, even the Global Bank of Data concerning Oral Health from the Global Health Organisation posses limited informations about malocclusions.

As a response to the necessary increase of the ortodontic treatments extension, it was undergo the development of certain indices that will allow the clinical cases a classification depending on the strictness of the malocclusion and the treatment needs for several population groups.

In public programs that promote health, the insurance of the ortodontic services raise some issues because of the increased care needs and the limited resources for this purpose.
Chapter I
The prevalence of the alveolar and dental malocclusions in children and adolescents

In the past years, in most of the countries the request for orthodontic treatments increased. In this regard, in order to attain information about the prevalence of dental and maxillary abnormalities and to assess the need of orthodontic treatment at a national level, the epidemiological studies are a must. These informations can be used for developing public health programs in order to prevent and find orthodontic anomalies and to organize the resources in this field [1,2].

Chapter II
The evolution of orthodontic indices

The facial and dental abnormalities and the morphological and functional disorders in the dental maxillary apparatus have an increasingly higher tendency, Proffit’s survey estimating that the need for orthodontic treatment in the children under 18 years old is of 60% [53].

Over time, many authors were preoccupied by the right approach for evaluating malocclusions. By synthesizing the current data, we can speak about 4 types of indices:

- Indices for diagnostic classification
- Epidemiological indices
- Indices for the success of the treatment
- Indices for the need of orthodontic treatment

By going through the literature regarding this subject, I found that there are still some controversies about the understanding and the utility of these indices and that’s the reason it seemed necessary their review.

Chapter III
The Quality of Life and Its Importance in Orthodontics

In the past 10-15 years, the terms quality of life (QOL) and health-related quality of life (HRQL) seem to appear increasingly
more often in the medical literature. Most of the orthodontic
treatment is justified on improving health-related quality of life.
That being said, studying HRQL in orthodontic patients have the
potential to provide information about treatment needs and
outcomes and it also could facilitate improved care. Thereby, the
clinicians should be aware for at least some part of the ways that
HRQL can be assessed.

The quality of life (QOL) can be defined as the person’s
state of well-being that ranges from satisfaction or dissatisfaction
with the important areas of his/her life [119]. This is not a new
custom, much of te pioneering work was undertaking by Thorndike
in 1939 and, yet, it is a rapidly expanding area with over 1000 new
articles every year under the heading ‘quality of life’ [120]. The
term “quality of life” became a keyword in Medline Computer
Search System as recently as 1977, since the interest in this area
increased enormously. Between 1966 and 1974 there were found
only 40 references about quality of life; however, this has increased
to over 10,000 between 1986 and 1994 [121].

Personal contribution

Chapter VI
Oral Health and Quality of Life Association for Children with
Dento-Maxillary Abnormalities Survey

Oral health is an important factor that has a crucial
influence over the global health. Oral hygiene is essential in
mentenance whole body’s health. Oral health is a status lacking
facial and oral pain, chronic diseases and congenital malformations.
It represents the absence of dental conditions, like dental caries,
absence of teeth and periodontal diseases.

Oral health is a condition for oral cavity and associated
structures where the disease can be contained, the occurrence of new
diseases inhibited, where the occlusion is appropriate for chewing
and teeth have a social acceptance regarding their appearance [171].

Another definition is presented by Dolan, who states that
oral health is represented by a comfortable and functional dentition
that allows individuals to live their desirable social life [171].

VI.2 Purpose of the study
The aim of the current survey is to assess oral health status and the children’s self-perception about oral and dental condition. The main purpose of this survey is establishing the major problems that affects the oro-dental system and whether it affects or not children’s life. The survey examines the capacity and necessary knowledge of children inorder to self-evaluate their oro-dental status. Also, it’s exploring the validity and the reliability of the CPQ 11-14 questionnaire as a devoted measure for evaluating the quality of its influence over life [178].

VI.3 Material and Methods

The subjects of the study were children between 11-14 years old.

The survey evaluated 130 children from urban and rural areas, in which 67 are boys and 63 girls. The subjects filled the CPQ 11-14 questionnaire, and parents responded questions regarding their children oral cavity status, attitude towards solving problems and social economic status [179]. A dental examination provided informations regarding dental caries prevalence, oral hygiene and occlusion problems.

There were gathered informations both in the stomatological history and in questionnaire regarding:

- General condition of teeth (number and caries status, edentulous teeth) – DMFT
- Oral hygiene (dental plaque, calculus over and under gingival line) the presence of bleeding
- Gum swelling (the presence of the bleeding)
- Occlusal connections (malocclusions)
- IOTN CPQ 11-14 self-evaluation
- Oral health attitudes
- Socio-economic status

The survey has two phases and it targeted two categories of children:

- Phase I. – 130 CPQ11-14 questionnaires [173, 180] distributed to students and parents for filling.
- Phase II. We examined 69 children and we collected informations about DMFT, DHC and AC al IOTN [180]
First group has 24 children presenting different stages of malocclusion, crowding and dental rotations, dental malpositioning, anodontia.

Second group has 45 children without maloclusion or dental malpositioning but with dental caries, plaque and calculus under and over the gingival line. 10 children had no dental lesions.

VI.6 Conclusions

1. The result and analysis of CPQ11-14 questionnaire showed that most children have problems with oral hygiene. The explanation is that they have poor knowledge about the right technique and about additional means of oral hygiene and their purpose. As a result, most of the children showed dental plaque and calculus more than it should at their age. Most of them have extensive dental caries, especially on molars, sometimes with root residues. Also, there are a large number of dental malpositioning, malocclusions, and most of them remain untreated because of the poor knowledge about these anomalies.

2. The survey showed that educating the children about prevention, hygiene and diseases is a requirement. The purpose is to awaken the interest of the children and parents for these problems. It is necessary to be well informed in order to get appropriate help. Only in such manner one can seek help from a dentist or an orthodontics/periodontal specialist.

3. During the study we noticed that is necessary such kind of periodic evaluation of the oro-dental status and it represents an additional diagnosis and treatment of occlusal anomalies. AC and IOTN helps educating children to recognise different abnormalities and their severity status. It was noticed that the children’s self-evaluate is based upon what they see and thus, a photographic example of such problems would be helpful for recognising their own flaws. Only then they could make an accurate self-report. The aim of the CPQ questionnaire is to assess the current condition of oral health, emotional status, the oro-
dental system functionality and its influences over the real life. In the questionnaire, the answers are not always real, but they still reflect to a certain degree the oral health status and the children’s dentistry knowledge. All these evaluation forms have the purpose to motivate the child-patient and to involve him in diagnosis and treatment.

4. To prevent worsening the situation, it would be advisable to implement and extensive preventive program alongside dentists, parents and teachers regarding learning and use of a helpful brushing technique supervision; choosing the appropriate diet – rich in fibers, low on sugar and the proper techniques for cleaning the oral cavity (flossing, rinsing).

Chapter VII
Dento-maxillary abnormalities – oro-dental public health problem

Psychosocial Impact of Dental Aesthetic Questionnaire

PIDAQ was designed by Klages et al., in 2006 and it represents the only mean of measure of the quality of life appropriate for malocclusions [190].

PIDAQ is a specific health-related quality of life validated index for orthodontics and it takes the form of a self-reported questionnaire. This questionnaire is designed due to preliminary work of Klages and col. In 2004 and 2005 [191], which is inspired from OQLQ (Orthognatic Quality of Life Questionnaire), and he’s resuming some questions that he restate.

VII.2 Purpose of the study
The current study aims:

- To study the ties between these different aspects of the orthodontics care preview (the psychometric properties of the single specific instrument designed for evaluating the malocclusion impact over the quality of life);
- To validate the Romanian version of PIDAQ questionnaire for use in Romania.

VII.3 Material and methods
In order to achieve our goal, we conducted a cross-sectional survey in 3 Universities: Iaşi, Tg. Mureş, Timişoara, on a sample of 1126 subjects.
The evaluation of orthodontic aesthetic perception of their teeth and their need for orthodontic treatment was made with the help of Psychosocial Impact of Dental Aesthetic (PIDAQ). By the same questionnaire was made also the potential impact of orthodontic abnormalities that showed in their quality of life. It has also been evaluated the normative need for orthodontic care on each subject in the study using the Index of Orthodontic Treatment Need (IOTN).

VII.5 Conclusions
- So far PIDAQ questionnaire we used in this study remains the only specific instrument for orthodontics that appreciates the connection between dento-maxillary anomalies and quality of life.
- Analysis of the results shows that PIDAQ has very good psychometric quality with good reliability.
- The internal consistency is good and the reproductibility is near-perfect with an intra-class correlation coefficient ranging from 0.72 for social impact to 0.90 for aesthetic perception.
- The scores of different fields (dimensions) of PIDAQ that we found in this study may be comparable to those reported in three studies found the specialty literature that have been using this tool.
- By assessing reliability and association with other closely related variables measuring PIDAQ, we walked one of the final steps necessary to adapt the cross-cultural validation of PIDAQ, leading to the final validation of the Romanian version.
- The results of this study provide evidence supporting the validity of the Romanian version of PIDAQ as a useful measure for assessing the psychosocial impact of dental aesthetics related to malocclusion. Its psychometric discriminatory and effective assessment properties provide theoretical evidence for further use in the study of specific orthodontic aspects of quality of life among Romanian young adults.
Chapter VIII
Study on Evaluation of Pain Assessment in Relation to the Emotional State of Children with Malocclusions

Recognition of the importance of psychological factors in shaping human interactions and approaching this problem through complex correspondence established between the patient-child and pediatric dentist (pedodontist, orthodontist) are particularly useful in pediatric dental practice. To understand the psychological development of the child, should I consider a "budding existence", given the particular stages of childhood; child should not be compared with the adult model and should not be considered and treated as a "miniature adult" [202, 203]. Therefore, the child must be addressed through the changes occurring gradually throughout its development, under the influence of external and intrinsic factors [204].

VIII.2 Purpose of the study
The aim of this study was to evaluate the relationship between emotional pain and emotional status in children with malocclusions.

VIII.3 Material and methods
A prospective study was conducted in Infant Clinical Dentistry in Iasi, Romania. The study group consisted of 110 children, aged 6-11 years who have addressed the service for various orthodontic problems and were asked to answer a questionnaire with 10 open and closed questions with items that highlighted the extent and ability of child mental reflection in terms of the relationship with the dentist and pediatric dentist. Because the responses can alert the physician about potential behavior problems, the questions focused on various aspects, as follows: previous possible child visits to the dentist and its positive or negative impact factors that have caused fear of the child in the dental office (for example, injection of anesthetic / needle, dental turbine noise, odors in dental office) of testing parents’ afraid of the dentist from the children's point of view, children's complains about dental and facial appearance and the opinion of children regarding on orthodontic
treatment need. Latest concepts were analyzed in relation to pediatric dentist opinion.

**VIII.6 Conclusions**

Children can be taught to monitor behavior in the dental office and at the same time to understand the advantages that certain maneuvers can bring, even if some pleasant experiences occurred in the past. The therapeutic approach for the harmonious development of the child's dento-maxillary system and appropriate psycho-aesthetics can not be completed successfully unless the patient is seen in the complexity of his personality, such as foreshadowing in the future adult life.

**Conclusions**

Application of IOTN index allows identification of potential patients and quantification for the need for treatment (in terms of aesthetics and dental health) in order to establish priority for orthodontic treatment.

In our sample, the highest percentage of subjects (36.24%) were classified in the group with a moderate need (at the limit) in terms of aesthetics, but associated with a greater need in terms of dental health.

The little necessity in terms of dental health was associated with a reduced need or no need for aesthetics.

The AC component does not always capture the real treatment needs imposed by the dento-maxillary anomaly, because the aesthetic appearance cannot be the sole criterion in determining indication for orthodontic treatment.

It was proved to be necessary to associate an assessment through the DHC component in order to limit the bias of AC component.

Regarding dental health, on the group examined there were common the 5.i high scores (teeth eruption disorders excepting molar 3 tooth due to crowding, displacement, the presence of supernumerary teeth, persistent deciduous teeth and any pathological cause), followed by 4c (anterior or posterior reverse occlusion with the difference more than 2 mm between the retruded contact position and IC position).
In the study group, we identified a small number of subjects who did not need orthodontic treatment (14.38%). The results of the CPQ11-14 questionnaire and its examination showed that most children have problems with oral hygiene. The explanation is poor knowledge about the correct technique and the additional oral hygiene means and their role. As a result, most children were presenting dental plaque and tartar quite abundant for their age. A lot suffer from extensive tooth decay, especially molars, are sometimes root debris are present. Also there are presented in large number the dental malpositions, malocclusion, of which many remain untreated due to low knowledge about these anomalies.

The study revealed that it is a great need for educating children about prevention, hygiene and disease. The aim should be to awaken the interest of children and parents to these problems. As someone seeking help need to receive appropriate information. Only then can you know when to seek help to a dental specialist in orthodontics, pedodontics.

During the study it was observed that such periodic evaluation of the oro-dental status is benefic as an additional tool for diagnosis and treatment of dental occlusal anomalies. AC of IOTN help educate children to recognize different anomalies and their degrees of severity. It was observed that children evaluate themselves based upon what they see, so a photo example of the ground problems can be helpful in recognizing their own self defecte. Thus it would be possible to assess correctly their situation. The CPQ questionnaire has the role is to assess the current status of oral health, emotional state, oro-dental system functionality and its influence over the general life. Questionnaire replies are not always real, but still reflects to some degree the situation of oral health, dental knowledge of children. All these forms of assessment are intended to motivate the patient-child to involve in making diagnoses and treatment.

To prevent worsening of the situation it would be advisable to implement a preventive program to incorporate dentists, teachers and parents, which would cover: teaching and supervision of the use of effective brushing techniques; choosing appropriate diet - rich in fiber, low in sugars - the use of adjuvant techniques for cleaning the mouth (dental floss, mouthwash).
So far PIDAQ questionnaire we used in this study remains the only instrument specifically for orthodontics. Analysis results demonstrate that PIDAQ has a very good psychometric quality with good reliability.

Besides, internal consistency is good (Cronbach's alpha coefficient ranging from 0.67 for "aesthetic concerns" to 0.87 for "social impact" - none of Cronbach's $\alpha$ coefficient does not exceed 0.90, which would indicate some redundancy of items). And reproducibility is near-perfect with an intra-class correlation coefficient ranging from 0.72 for social impact to 0.90 for perceived aesthetics.

Scores of different fields (dimensions) of PIDAQ that we found in this study may be comparable to those reported in three studies found in the dental literature that have been using this tool [32,22].

Assessing reliability and association with PIDAQ to other variables measuring closely related concepts, we walked upon one of the final steps necessary to adapt the cross-cultural validation of PIDAQ, leading to the final validation of a Romanian version.

Children can be taught to monitor their behavior in the dental office and at the same time to understand the advantages that certain maneuvers can bring, even if some pleasant experiences occurred in the past.

The therapeutic approach for the harmonious development of the dento-maxilllary system of the child and a psycho-aesthetics appropriate for the child can not be completed successfully unless the patient is seen in the complexity of his personality, such as foreshadowing in future adult life.
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Scientific activity - Doctorand Rosu (Zetu) Sorana

Lucrari ISI publicate:


Lucrari BDI publicate:

- “The etiological factors involved in dental arch perimeter shortening” L. I. Vata, Sorana Roșu, Irina Zetu, International

Rezumate ISI publicate:

Rezumate publicate
- Auto-aprecierea esteticii dentare la pacientii cu anomalii dento-maxilare, D. Olteanu, Sorana ROSU, abstract The 13th International Congres of dentistry for students and young doctors, Bucuresti, 2014 – PREMIUL II
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