

Quality of Life in Subjects Suffering from Severe Skeletal Malocclusion before Orthodontic Treatment

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Abstract

Objective: The objective of this study was to determine the occurrence of oral health impacts among patients with severe skeletal malocclusions and dentofacial skeletal deformities before orthodontic treatment.

Methods: A cross-sectional study comprising of 45 adult patients referred for orthodontic or surgical-orthodontic treatment to the orthodontics department, Karachi Medical and Dental College, Abbasi Shaheed Hospital Karachi were included. The study group consisted of 29 females and 15 males with a mean age of 21.5 ± 5.4 years. Study was conducted for six months from 30th Oct 2016 to 30th April 2017. A purposive sampling was done on the bases of survey base study design. A self-completed Oral Health Impact Profile (OHIP)-14 questionnaire was used to measure the quality of life before orthodontic treatment.

Inclusion criteria were subjects seeking orthodontic treatment at the department of orthodontics, dental OPD Karachi Medical and Dental College, Abbasi Shaheed Hospital, Karachi, Pakistan. Patients who had perceived a need for orthodontic treatment and who were about to undergo orthodontic therapy were included.

Subjects with chronic medical conditions, previous orthodontic treatment, and craniofacial anomalies such as cleft lip and palate, untreated dental caries, and poor periodontal health status as indicated by a community periodontal index score of 3 or more were excluded. The frequency, extent, and severity scores were calculated from the OHIP-14. Malocclusions were registered at clinical examination. The frequency and mean extent and severity scores were compared among malocclusion groups and between genders. Descriptive and inferential statistical method was applied.

Results: Frequency of oral impact in malocclusion patient was 27.3% though test value was 56 (p value >0.00). Mean value for male and female patients with malocclusion is $22.06 + 7.1$ and $21.34 + 4.4$ (p value >0.626), respectively, which shows no significant difference present. Mean value for class I, II and III was 24.5, 28.9 and 30.5 (p value >0.44), respectively, which shows no significant difference.

Conclusion: There was no difference noted in the class of skeleton malocclusion in quality of life of patients and there was no gender difference noted in oral health impact of patients.

Keywords: Dentofacial deformities, orthodontics, malocclusion, oral health, corrective orthodontics.

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Introduction

The World Health Organization (WHO) defines Quality of Life (QoL) as the human's perception of their position in life in relation to their goals, expectations, standards and concerns. QoL also includes physical health, personal circumstances (wealth, living conditions), social relationships, functional activities and pursuits, as well as wider societal and

economic influence. Patients with severe malocclusions or dentofacial deformities may report various oral health impacts that affect their wellbeing in many ways.

Facial aesthetics strongly influences personal and professional relations, especially in school and professional environments, from childhood to adulthood. Patients with severe malocclusions are dissatisfied with their physical appearance, particularly with their face. In cases of dentofacial deformities, in which patients wish to significantly change their face and solve their functional problems, ortho-surgical treatment is the most suitable option.

Oral conditions can have a strong impact on patients' psychological, social, and functional health. These psychological, social, and functional aspects are referred to as oral health-related quality of life .

In dental research, more emphasis has traditionally been placed on clinician-driven outcome measures than on subjective patient-based measures, such as perceived functional status or psychological and social wellbeing. The presence of malocclusion among other oral conditions represents only one dimension of the complex nature of oral health, and its clinical assessments, which have shown only a weak relationship with the perceived oral health of an individual. While clinician-driven assessment is in some respects relevant, patient-based assessment and provides more substantive information concerning the impacts of oral disorders because patients are considered to be the best persons to judge their own oral health-related quality of life (OHRQoL) .

Quality of life is a multidimensional concept that includes subjectively perceived physical, psychological and social function, as well as a sense of subjective wellbeing. People with dentofacial deformities suffer from functional, psychological and aesthetic impairments. The aim of orthodontic treatment was to achieve a more harmonious relationship between the upper and lower jaws, and to improve occlusal function. However, treatment

should also be aimed at improving patients' psychosocial wellbeing.

Malocclusion and dentofacial deformities are highly prevalent and can have an influence on physical, social, and psychological functioning. Traditionally, orthodontists and health care providers have focused on the clinical-centred measures of outcome for orthodontic treatment, but in recent years, attention to patient-based assessment has greatly increased in dental research. The understanding of the relationship between quality of life and malocclusion, as well as the impact of treatment, is important for clinicians and patients seeking treatment.

Over the past two decades, a number of specific oral health quality of life (OHQoL) measures have been developed to assess the impact of oral health status on QoL and to assess the outcomes of oral healthcare intervention in terms of contribution to QoL. Almost all measures of oral health related quality of life (OHRQoL) have been founded on Locker's conceptualisation of the impact of oral disease based on the WHO model of health. This model states that there are five consequences of oral disease: impairment, functional limitation, pain/discomfort, disability, and handicap. Further the model proposes that these domains are sequentially related such that impairment (structural abnormality e.g. caries) leads to functional limitation (restrictions in body functions, e.g. difficulty chewing) and pain/discomfort (self-reported physical and psychological symptoms), which, in turn, leads to disability (limitations in performing daily activities, such as an unsatisfactory diet) and disability may then lead to handicap (social disadvantage, such as social isolation). Orthodontists have developed a number of measures or indices to assess the severity of a malocclusion, the need for treatment, the perceived complexity of treatment and the quality of the result. These are usually based on assessing relevant occlusal features as defined by the profession either clinically or from a set of study models. Orthodontists are becoming aware of the need to evaluate the patient's own perceived need for treat-

ment and measure the difference that orthodontic treatment might bring to patients' daily lives .

According to the current paradigm of evidence-based dentistry, all treatment procedures must be based on the systematic assessment of clinically relevant scientific evidence available which include patients' current condition, medical/dental history, treatment needs and preferences. Although the demand for ortho-surgical treatment is strongly related with patients' chief complaint about their appearance, as well as with psychological and social interaction issues, assessments on the need for treatment give little emphasis on patients' perception and on how much treatment can improve their oral health-related quality of life.

The concept of oral health-related quality of life (OHRQoL)⁷ describes the patient-perceived impact of oral-facial conditions and effect of dental interventions. It is a broad and comprehensive concept which is widely influenced by physical health, psychological state, social relationship, and environment and so on.

In dentistry, as in other branches of medicine, it has been recognised that objective measures of disease provide little insight into the impact of oral disorders on daily living and quality of life. A significant body of development work has been undertaken to provide health status measures for use as outcome measures in dentistry. In an effort to focus on the assessment of health and quality of life issues, the term "health-related quality of life" is now widely used. Regarding the relationship of health and disease to quality of life. Locker suggested that health problems may affect quality of life but such a consequence is not inevitable¹⁴. The implication of this is that people with chronic disabling disorders often perceive their quality of life as better than healthy individuals, i.e., poor health or presence of disease does not inevitably mean poor quality of life. Individual attitudes are not constant, vary with time and experience, and are modified by phenomena such as coping, expectancy and adaptation. For example an individual who had eating problems due to pain and discomfort, who would have rated

this problem as extremely important at one point in time. However, when this problem is diagnosed as oral cancer, and treated with radiotherapy and/or surgery, the same individual may report the original problem as relatively unimportant

This study was done to check the quality of life in subjects before undergoing orthodontic treatment so to see what were the impacts of improper oral health on quality of life. A further aim was to determine the effect of gender or type of malocclusion on oral impacts.

Patients and Methods

Several instruments of measure have been designed to assess dental outcomes, in terms of the impact on quality of life of changes in oral health¹⁵⁻¹⁷. The oral health impact profile and its short form (OHIP-14) are widely used. The OHIP-14 has seven conceptualised domains (two items per domain): functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. In which, respondents are asked to rate how frequently they experienced an oral health impact (as described by each item). In turn, the response to each item is scored on a five-point Likert scale: 0, never; 1, hardly ever; 2, occasionally; 3, fairly often; and 4, very often or every day. Thus, summary OHIP-14 scores can range from 0 to 56, and domain scores can range from 0 to 8. A high total value indicates a high negative impact on the oral health related quality of life (OHRQoL). Patients will be invited to complete OHIP-14 questionnaires at the OPD.

It was a cross-sectional study. Research work was conducted at the department of orthodontics, dental OPD Karachi Medical and Dental College, Abbasi Shaheed Hospital, Karachi, Pakistan. Study was done in six months (30th Oct 2016 to 30th April 2017) after approval of synopsis by ERB Karachi Medical and Dental College. A purposive sampling was done on the bases of survey base study design. Sampling size was taken by the percentage malocclusion (least among all) that is 3%¹⁰ confidence level 95%, margin error of 5% which showed

a sample of 45 patients. Data was collected from patients referred to department of orthodontics, Karachi Medical and Dental College, Karachi, Pakistan.

Researcher examined all the patients. After thorough history and clinical examination patients were recruited for the study on the basis of inclusion and exclusion criteria. If the patients agreed to participate in the research he was given.

Inclusion criteria were subjects seeking orthodontic treatment at the department of orthodontics, dental OPD Karachi Medical and Dental College, Abbasi Shaheed Hospital, Karachi, Pakistan. Patients who had a perceived need for orthodontic treatment and who were about to undergo orthodontic therapy were included.

Subjects with chronic medical conditions, previous orthodontic treatment, and craniofacial anomalies such as cleft lip and palate, untreated dental caries, and poor periodontal health status as indicated by a community periodontal index score of 3 or more were excluded.

A written consent form was read and accepted. Patients were invited to ask questions related to study. The data collection instrument for assessment of oral health related quality of life (OHQoL) was the OHIP-14 questionnaire. The Oral Health Impact Profile (OHIP) is the most widely used quality of life (QoL) measure to evaluate the influence of oral diseases on individuals. The original OHIP, based on Locker's conceptual framework and the WHO International Classification of Impairments, Disabilities and Handicaps consists of 49 items in English-language. This has, because of ease of administration, been adapted into a short form containing 14 items testing the seven composite domains. The domains emphasised by the OHIP scale are: functional limitations, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap. It has been validated and found to be equivalent to the comprehensive 49 item version 18.

The questionnaire was provided to the patients and was filled under proper guidance. To check impact of severe skeletal malocclusion on the quality of life, one-way ANOVA is applied.

Result

To test the impact of oral health in malocclusion patients, descriptive and inferential statistical method was applied and one sample t-test was applied. To see the gender differences in oral health of patients, independent sample t test was applied. To check impact of severe skeletal malocclusion on the quality of life one-way ANOVA was applied. The hypothesis was that oral health affects the quality of life thus null hypothesis was proved.

Independent sample t-test was applied to see the impact of oral health of patients and gender differences present. Mean value of 22.06 + 7.1 and 21.34 + 4.4 was observed in male and female participants respectively with number of participant being 15 males and 29 females. p-value is >0.626 which showed that result is insignificant and there was no gender difference present in oral health of malocclusion patients.

One-way ANOVA was applied to see the impact of type of malocclusion in oral health of patient. Mean value was 17, 23 and 4 for the class I, II and III of malocclusion patient respective. Number of participants being 17 in class I, 23 in class II and 4 in class III. P-value 0.44 which shows that the result is insignificant and there is no impact of oral health on the class of malocclusion. The mean difference in class is very low and the difference is insignificant.

Table 1. Independent sample t-test is applied to see the impact of oral health of patients and gender differences present

Gender	n	Mean ± SD
Male	15	22.06 + 7.1
Female	29	21.34 + 4.4

**p value is >0.626 which shows that result is insignificant and there is no gender difference

Discussion

There is no consensus on the criteria to be used in assessing the validity, reliability and responsiveness of oral health related quality of life measures. We selected the criteria adopted for the present study based on popularity of usage as found during our literature search. This study showed satisfactory face and content validity of the OHIP-14 measure in the sampled population. The questionnaire was quite easy to administer and completed in a relatively short period of time. The small number of constituent items could have contributed to encouraging a high participation rate and the ease of administration. Further evidence had been given by the ability of very low item non-response with the use of OHIP-14 self-administered questionnaire¹⁹⁻²¹.

Patients with severe malocclusions or dentofacial deformities may report various oral health impacts that affect their well-being in many ways. A combination of orthodontics and orthognathic surgery is, in many cases, a contemporary modality to treat these patients. Patients who seek orthognathic surgery often hope for a remarkable improvement in their physical well-being and quality of life. Problems in the facial region in general, such as those of chewing, speaking, and periodontal disease, are common physical complaints in patients with severe malocclusions. Improvement in aesthetics is a significant motivating factor to undergo orthodontic or orthognathic treatment, and some of these patients report concerns with body image and a low self-esteem or self-concept.

It was noticed that skeletal malocclusions do not have subjective oral impacts in all malocclusion groups. There is overall no oral impact on quality of life is noticed in patients.

Among the questionnaires used to assess the impacts on oral health-related quality of life, the most widely used is the Oral Health Impact Profile (OHIP) developed in Australia by Slade et al,¹² and which assess the individual's perception regarding discomfort and dysfunction caused by oral conditions. Its 49 items are divided into seven dimen-

sions: Functional limitation, physical pain, psychological discomfort, physical incapacity, psychological incapacity, social incapacity and difficulty doing usual jobs. Its short version, known as OHIP-14, was published in 1997³ and comprises fourteen questions that assess the same seven dimensions. The interviewee must score points to each question according to the frequency with which he is affected: 0 = never; 1 = hardly ever; 2 = occasionally; 3 = fairly often and 4 = very often. The sum of points for the 14 questions gives the final OHIP-14 score which may vary between 0 and 56, in which 0 means absence of negative impact and 56 means the worst negative impact on oral health-related quality of life.

Though in previous studies oral health impact is noticed. National Health 2000 survey showed oral health impact in 30 years and older adult¹. It is noticed even seven times higher in another study done in Finland in the year of 2001 to 2004 upon 151 skeleton malocclusion patients when compared with previous study².

It is noted in study that malocclusion patients felt uncomfortable eating at least twice as often compared with those without, and they suffered psychological disability related to their oral conditions nearly four times more often¹. It is not noticed in the present study as more of the patients reported that it does not have impact on their quality of life. Other study showed that class II patients are less self-conscious in relation to their teeth, mouth and had unsatisfactory diet less often as compare to class III other type of skeleton malocclusion patients². This study has less number of class III and class I patient compared to class II patients. There is no gender differences present in the quality of life of skeleton malocclusion patients. Finnish National Health 2000 survey showed only minor differences present between two of the genders that is severity score of males was slightly higher (4.2 versus 13.5) than that of females (3.9 versus 19.6)¹. People seek orthodontic treatment as aesthetic improvement of appearance is a significant motivating factor for orthodontic treatment and it is often related with the social wellbeing of patients³.

Conclusion

It is noted that severe skeletal malocclusion and dentofacial deformities do not have oral health impacts on the quality of life. There is no difference noted in the classes of skeleton malocclusion in quality of life of patients. There is no gender difference noted in oral health

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