



Oral Health-Related Quality of Life (OHQoL) among Adolescents Seeking Orthodontic Treatment

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ABSTRACT

Aim: The aim of this study was to assess the effect of different orthodontic treatment needs on the OHQoL of adolescents.

Materials and methods: 200 subjects (100 males and 100 females), 11 to 15 years of age were recruited for the study. OHQoL was assessed with the short form of the oral health impact profile (OHIP-14), and malocclusion severity was assessed with the index of orthodontic treatment need (IOTN). The Chi-square test was used to analyse the qualitative data. The level of significance was 0.05.

Results: The more severe the malocclusion the worse was the impact on the OHQoL. Orthodontic treatment need had almost similar impact on the daily activities of both males and females. Pronunciation and taste was not significantly affected by the need for orthodontic treatment in either males or females. The proportions of orthodontic patients who found it uncomfortable to eat any food and had to interrupt their meals were significantly correlated with orthodontic treatment needs in both males and females.

Conclusion: Orthodontic treatment need had an impact on OHQoL of adolescents with no significant difference between males and females.

Clinical significance: Orthodontists should be aware of the impact caused by malocclusion and orthodontic treatment on the quality of life of the patients and should provide regular positive reinforcements to them.

Keywords: Oral health-related quality of life, Orthodontic treatment need, Malocclusion.

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INTRODUCTION

Quality of life measures have been developed in dentistry based on a conceptual framework to help explain the

multidimensional nature of the impact of oral health on daily life (Locker, 1988).¹ Quality of life is a multidimensional concept that includes subjectively perceived physical, psychological and social function, as well as a sense of subjective well-being.² People with dentofacial deformities suffer from both functional and esthetic impairments. The aim of this treatment is 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 well-being.³ Although malocclusion in itself is neither a disease nor a life-threatening condition, there has long been a marked demand for orthodontic care.^{4,5} Moreover, the treatment of malocclusion places a considerable burden on health care resources globally, particularly when funded by public means.⁶ A number of orthodontic need indices have been developed and used as outcome measures.^{7,8} However, it is questionable whether there is a strong association between orthodontic indices and patients' perception of their oral health status.⁹ Since, the subject's perception is central to the assessment of overall need and satisfaction with treatment, it is important to establish what the patients' perceptions are.² The physical, social, and psychologic consequences of malocclusion and its influence on QoL have long been topics of research.¹⁰ Moreover, over the past two decades a number of specific OHQoL measures have been developed to assess the impact of oral health status on QoL and to assess the outcomes of oral health care intervention in terms of contribution to QoL.⁶ Although access to orthodontic services is limited by clinical need, health service use is also driven by demand for treatment which is influenced by the less tangible consumer-based factors that cause a person to seek care. Quality of life measures aim to capture these multiple consumer-based factors and it may be advantageous to combine such information with clinician-based measures of orthodontic

need.¹ 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 treatment and measure the difference that orthodontic treatment might bring to patients' daily lives.¹¹ The need to evaluate orthodontic patients' quality of life reflects the importance of dental and facial esthetics in people's lives, and the extent to which they evaluate their own esthetics.¹²

AIMS AND OBJECTIVES

The aim of this study was to assess the effect of different orthodontic treatment needs on the OHQoL of adolescents.

MATERIALS AND METHODS

A cross-sectional study was conducted of orthodontic patients to assess the relationship between orthodontic treatment needs assessed by the DHC of the IOTN and OHQoL assessed by the OHIP-14 questionnaire.

Ethical approval was obtained at the beginning of the study from the Institutional Review Board. The participants were informed about the examination procedures and were assured of the confidentiality of the collected information. Only those who gave consent were included in the research.

A sample of adolescents seeking orthodontic treatment at Indira Gandhi Institute of Dental Sciences, Pillaiyarkuppam Puducherry was recruited in the study. Patients who had a perceived need for orthodontic treatment and who were about to undergo orthodontic therapy were included. Exclusion criteria were chronic medical conditions, previous orthodontic treatment, 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.¹³ This was to prevent possible confounding effects of these conditions on the participants' quality of life. After screening, the sample comprised 200 orthodontic patients (100 males, 100 females) from 11 to 15 years of age who were willing to participate in the study.

Each patient was examined for orthodontic treatment need with the DHC of the IOTN. Examiners were calibrated for its use (kappa, 8.9). Treatment needs of the patients were categorized as (1) little or no treatment need, (2) borderline need, and (3) treatment required. The DHC uses missing teeth, overjet, crossbite, displacements of contact points, overbite to identify the most severe occlusal trait for each patient. The final overall score was given to the patient according to the most severe trait.⁷

The data collection instrument for assessment of OHQoL was the OHIP-14 questionnaire.¹⁴ Responses were made on a 5-point Likert-type scale (never, seldom, occasionally, often and very often). A score of occasionally, often, and very often was used to indicate participants who had experienced at least some oral health impact. The daily activities were: had problems pronouncing words, felt that the sense of taste worsened, had painful aching in the mouth, found it uncomfortable to eat any food, have been self-conscious, felt tense, had an unsatisfactory diet, had to interrupt meals, found it difficult to relax, have been a bit embarrassed, have been irritable with other people, had difficulty doing useful jobs, felt that life in general was less satisfactory, and have been totally unable to function.

Statistical Analysis

Data presentation and statistical analysis were performed with the SPSS statistical package (version 15, SPSS, Chicago, ILL). The Chi-square test was used to analyse the qualitative data. The level of significance was 0.05.

RESULTS

Table 1 shows the distribution of the study population according to gender and treatment need. The mean age of the total sample was 13 years. In this study, patients who had little or no, borderline, and need for orthodontic treatment were 16.5, 52 and 31.5% respectively. The corresponding percentages were 16, 55 and 29% in the males and 17, 49 and 34% in the females respectively.

In Table 2 shows the impacts on daily activities in relation to gender and orthodontic treatment needs. The Chi-square test shows that pronunciation and taste was not significantly affected by the need for orthodontic treatment

Table 1: Distribution of the study population according to gender and treatment need

Sample characteristics		Males	Females	Total
Number		100	100	200
Age	Mean	12.99	13.01	13.00
	SD	1.367	1.418	1.389
Treatment need	No or little need	16	17	33 (16.5%)
	Borderline	55	49	104 (52%)
	Definitive need	29	34	63 (31.5%)

Table 2: Impacts on daily activities in relation to gender and orthodontic treatment needs

OHIP-14 Daily activity	Orthodontics treatment need								χ^2 p
	No or little treatment need				Definitive treatment need				
	Males 16	Females 17	Males 55	Females 49	Males 29	Females 34	Males 100	Females 100	
1	Impact No impact	6 10	7 10	34 21	34 15	17 12	19 15	3.034 0.219	4.549 0.103
2	Impact No impact	8 8	9 8	36 19	36 13	22 7	26 8	3.090 0.213	3.332 0.189
3	Impact No impact	4 12	5 12	35 20	35 14	22 7	25 9	11.569 0.003*	11.441 0.003*
4	Impact No impact	7 9	8 9	36 19	36 13	23 6	27 7	5.827 0.054	6.046 0.049*
5	Impact No impact	5 11	6 11	34 21	34 15	22 7	25 9	8.661 0.013*	8.096 0.017*
6	Impact No impact	6 10	7 10	37 18	37 12	23 6	27 7	8.121 0.017*	8.996 0.011*
7	Impact No impact	7 9	8 9	35 20	35 14	22 7	25 9	4.622 0.099	4.168 0.124
8	Impact No impact	6 10	7 10	36 19	36 13	23 6	27 7	7.934 0.019*	8.441 0.015*
9	Impact No impact	7 9	8 9	37 18	37 12	22 7	25 9	4.826 0.090	5.171 0.075
10	Impact No impact	8 8	9 8	35 20	35 14	22 7	26 8	3.131 0.209	3.081 0.214
11	Impact No impact	6 10	7 10	34 21	34 15	22 7	25 9	6.442 0.040*	5.778 0.056
12	Impact No impact	7 9	8 9	35 20	35 14	19 10	21 13	2.411 0.300	3.365 0.186
13	Impact No impact	5 11	6 11	35 20	35 14	22 7	25 9	8.849 0.012*	8.645 0.013*
14	Impact No impact	5 11	6 11	34 21	34 15	22 7	26 8	8.661 0.013*	9.055 0.011*

*significant

in either males or females. The proportions of orthodontic patients who found it uncomfortable to eat any food and had to interrupt their meals were significantly correlated with orthodontic treatment needs in both males and females. Also, in both male and female patients, the need for orthodontic treatment significantly affected painful aching mouth, self-consciousness, and feeling tensed. Relaxation was also associated with the level of orthodontic treatment need but it did not reach the level of significance in either males or females.

Males reported significantly more irritability with people in association to the treatment need than females. Moreover, embarrassment and the general feeling of less satisfaction in life were significantly associated with higher orthodontic treatment needs in both males and females. On the other hand, orthodontic treatment needs did not significantly affect the ability of the patients to do their jobs or function effectively and their satisfaction with the diet.

DISCUSSION

This study shows that 11 to 15-year-old adolescents with malocclusion reported significantly more impacts and hence a worse quality of life compared with a non-malocclusion group with no or minimal malocclusion according to IOTN. There is a growing interest in the relationship between malocclusion/orthodontic treatment need and HRQoL.⁶ Quality of life measures are becoming increasingly important, since clinician-based measures of treatment need not take into account patient perceptions or opinions.¹ Since the subject's perception is central to the assessment of overall need and satisfaction with treatment, it is important to establish what the patients' perceptions are.²

The oral health impact profile (OHIP) is an extensively used instrument for the assessment of OHQoL.^{15,16} The original version of the scale includes 49 items divided into 7 domains. A short form of the OHIP containing only 14 items (OHIP-14) has been developed.¹⁴ The OHIP is designed to determine the perception of the social impact of oral disorders and has well-documented psychometric properties.^{10,15}

In the present study, orthodontic treatment need had almost similar impact on the daily activities of both males and females. Similar result was reported by Feu D¹⁷ and colleagues but in contrast with the study of de Oliveria and Sheiham² who reported gender variation in OHQoL in relation to orthodontic treatment. The present study also showed that orthodontic treatment need did not affect the speech and taste perception of the participants. This could be due to the fact that speech is complex process involving the nervous system. However, this finding was in contrast with that of other researchers.¹⁶

The chewing ability and diet satisfaction was considerably affected in our study. This finding was consistent with those of Owen S¹⁸ and Hollister MC.¹⁹

Also, in both male and female patients, the need for orthodontic treatment significantly affected painful aching mouth, self-consciousness, and feeling tensed. This finding is in agreement with Klages et al²⁰ and Hassan AH.¹⁰ It has been reported that the self-consciousness and embarrassment felt by orthodontic patients are not only displayed in adolescence, but also persist in adulthood. Embarrassment and the general feeling of less satisfaction in life were significantly associated with higher orthodontic treatment needs in both males and females in our study. On the other hand, orthodontic treatment needs did not significantly affect the ability of the patients to do their jobs or function effectively and their satisfaction with the diet. Therefore, it can be assumed that orthodontic patients mainly suffer esthetic and social problems rather than impairment of daily activities. These results agree with those of Albino et al,²¹ who reported that about 80% of orthodontic patients complain about esthetic rather than health and functional impacts.

A limitation of our study could be the use of adolescent subjects as study subjects. Major life changes during adolescence can affect their quality of life and make it difficult to identify which daily activities are changed solely by the malocclusion.

Assessing quality of life as it relates to patients' oral health before and after treatment makes it possible to significantly improve the dentist-patient relationship and, especially, to achieve more successful treatment results.¹²

CONCLUSION

The study emphasizes the impact of malocclusion on oral health-related quality of life of adolescents. Orthodontic treatment need had almost similar impact on the daily activities of both males and females.

CLINICAL SIGNIFICANCE

The success of orthodontic treatment depends on the patient's satisfaction. The subject's perception is central to the assessment of overall need and satisfaction with treatment, it is important to establish what the patients' perceptions are. Hence, OHQoL is an essential tool in establishing patients' perceptions.

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