



Quality of Life in Children with Skeletal Malocclusion after Myofunctional Therapy—A Questionnaire Study

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Abstract

Objectives Growing children with jaw discrepancies, particularly in the anterior region, may require orthodontic management to improve aesthetics, oral health, and dental function. Growing children with skeletal malocclusions self-perception of his or her current oral health status and its impact on his or her quality of life are of prime importance that is often neglected. Hence, this study aims to compare emotional and social wellness in children with skeletal malocclusion before and after myofunctional therapy through a prevalidated child perception questionnaire (CPQ).

Materials and Methods Fifty young growing patients with skeletal or dental malocclusion between the age group of 8 and 13 years were included in this study. A preoperative close-ended CPQ 8 to 10 and CPQ 11 to 14 questionnaires were given to the selected children to assess their social and emotional status due to malocclusion. A postoperative close-ended CPQ 8 to 10 and CPQ 11 to 14 questionnaire were given to assess any psychosocial improvement in children after myofunctional therapy.

Results An overall improvement was shown in social and emotional well-being of the children using the CPQ, which clearly indicates that growing children with skeletal malocclusion needs to get themselves corrected at the earliest so that their quality of life improves and they become more confident in the society.

Conclusion Myofunctional therapy has a positive impact in quality of life of children with skeletal malocclusion by enhancing their social and emotional wellness

Keywords

- ▶ child perceptive questionnaires
- ▶ myofunctional appliances
- ▶ skeletal malocclusion
- ▶ social and emotional wellness

Introduction

Children and young adults are more impacted psychologically and socially by facial traits. Most children with malocclusion have a significant impact on how people perceive their facial appearance, which affects psychological growth from early childhood through maturity.¹ Youngsters who are thought to be more handsome are not only more socially accepted by their classmates but are also thought to be smarter and have superior social skills. Negative remarks have the opposite effect.²

For the purpose of enhancing appearance, oral health, and dental function, growing children with jaw discrepancies, particularly in the anterior region, may need orthodontic treatment.³ Myofunctional appliances are passive appliances used for growth modification procedures that are aimed at intercepting and correcting jaw discrepancies and self-esteem.⁴ Dentofacial orthopaedics attempt to maximize growth potential and assist in directing the developing face and dentition along the route of ideal development. Myofunctional therapy uses neuromuscular re-education

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exercises to help normalize face and mouth structures. These exercises teach your muscles, nerves, and brain how to restore optimal movement.⁵ Normative indicators have historically been used to assess malocclusion. Nevertheless, malocclusion has the greatest impact on the psychological component of all the oral issues examined.⁶ Unfortunately, normative measures like occlusal indices or cephalometric measurements have been used to analyze the acceptance and effectiveness of orthodontic treatment, which only takes into account the professional viewpoint and not the patients' personal or social requirements, despite the fact that orthodontic treatment is typically performed to improve a person's social well-being.⁶ However, in reality, growing children with skeletal malocclusions self-perception of one's current oral health status and how it affects one's quality of life are crucial yet frequently disregarded.⁷

Hence, this study aims to compare emotional and social wellness in children with skeletal malocclusion before and after myofunctional therapy through a prevalidated child perception questionnaire (CPQ).⁸

Materials and Methods

Children reporting to the Department of Pediatric and Preventive Dentistry, A B Shetty Memorial Institute of Dental Sciences, Mangalore, required treatment with myofunctional appliance. Young growing patients with skeletal or dental malocclusion between the age group of 8 and 13 years were included in this study. Children with cleft lip and palate, syndromic children with gross facial asymmetry, children with temporomandibular joint disorders, and specially abled children were excluded from the study. A detailed case history and clinical and radiographical examination were done to confirm the pattern of malocclusion. A preoperative close-ended prevalidated CPQ8 to 10 and CPQ11 to 14 questionnaire were given to the selected children to assess their social and emotional status due to malocclusion. Later kids were subjected to active myofunctional therapy. After the active stage of the treatment for 6 months, with definite skeletal changes, a postoperative close-ended CPQ8 to 10 and CPQ11 to 14 questionnaire were given to assess any psychosocial improvement in children.

Questionnaires used in this study are prevalidated CPQ8 to 10 and CPQ11 to 14 **questionnaire** (questionnaire is available online).⁸

A total of 49 children had participated in the study that was conducted from January 2022 to June 2022. All the subjects were given a pre- and postoperative self-administered prevalidated questionnaire to assess emotional and social wellness before and post-myofunctional therapy.⁸ Questionnaire consisted of preoperative and postoperative close-ended questions. They were 10 in number and branched under 2 headings social wellness and emotional wellness, each question had 5 options for choice. The responses were recorded on 5-point Likert scale, starting from 0 "never," 1 "once or twice," 2 "sometimes," 3 "often," to 4 "every day or almost every day."⁸

The questionnaire is available as supplementary material.

Statistical Analysis

All children requiring orthodontic treatment by myofunctional therapy, reporting to the Department of Pediatric & Preventive Dentistry, AB Shetty Memorial Institute of Dental Sciences, and fulfilling the eligibility criteria from January 2022 to July 2022 were recruited into the study (time-bound study, population sampling). Intragroup comparison of values pre- and post for each of the two domains is done by paired *t*-test. To account for operator bias, the questionnaire was self-administered to all patients at the reception desk during their appointment waiting periods, collected and stored for data entry and analysis at the end of the study period.

Results

Age of children participated in the study ranges from 8 to 16 years with a mean age of 11 years. Various types of myofunctional appliances delivered as per their needs that included twin block, twin block with combinations, Frankle 4, headgear, and modified reverse twin block (–**Fig. 1**). The emotional and social wellness of all the children and their change in their quality of life were assessed before and after the active stage of myofunctional treatment. Questions from 1 to 5 assessed emotional wellness that showed great improvement in their scores after the treatment. Before the myofunctional therapy, around 70% of the children were always upset, frustrated, and shy about their appearance. Sixty-two percent of the children were always concerned about what other people thought about their appearance, and 64% of children were always worried about their looks in comparison to their peer group. Post-myofunctional treatment, it was observed that around 98% of children were always happy, satisfied, and confident about their looks. Seventy percent of children were confident and did not bother about their looks. Ninety-two percent of children felt that their appearance has improved because of myofunctional therapy. When questions 5 to 10 were assessed, demonstrating social wellness has shown great results clinically. Before the myofunctional treatment, around 71% of the children had a tough time smiling, talking, and paying attention in school, respectively, because of their appearance. Sixty-two percent stayed away from the activities like sports, and 76% of the children had faced teasing from their peers because of their appearance. Post-myofunctional treatment, around 90% of the children felt confident and happy to talk to their peers, respectively, due to improvement in their appearance. Eighty-eight percent of the children felt that their performance in school and extracurricular activities have improved post-treatment. Ninety-six percent of children had not faced any teasing post-treatment after esthetic improvement from their peers. Most of the children were highly satisfied with the treatment and have shown interest in continuing the treatment (–**Table 1**).

There was a statistically highly significant difference seen for the values between the time intervals ($p < 0.01$) for domain 2 with higher values at Post

There was a statistically nonsignificant difference seen for the values between the time intervals ($p > 0.05$) for domain 1

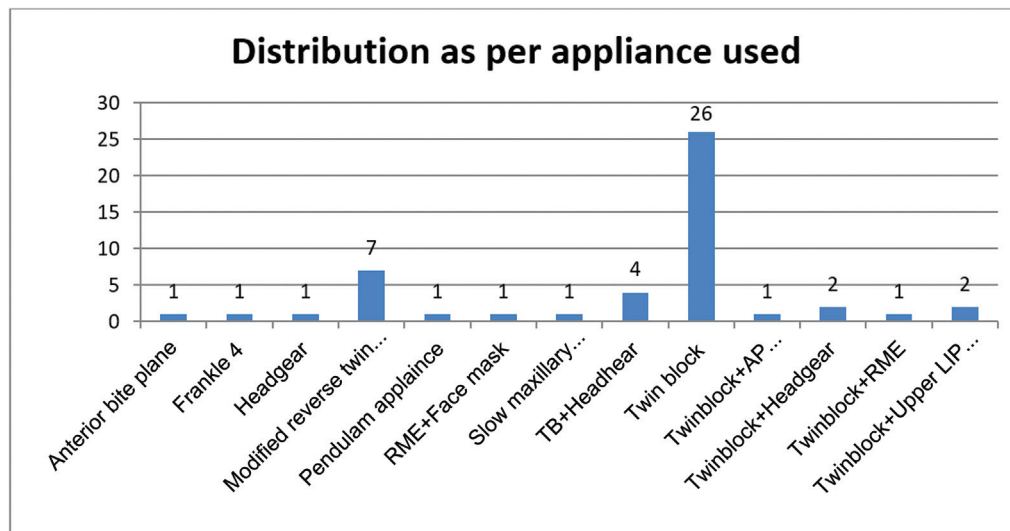


Fig. 1 Distribution as per appliances.

Table 1 Intragroup comparison of values pre and post for each of the two domains

	Mean	SD	SE mean	Mean diff	SD of diff	t-Value	p-Value of paired t-test
Domain 1 Q1 to Q5 pre	2.751	0.8170	0.1167	-0.1633	0.7612	-1.501	0.140*
Domain 1 Q1 to Q5 post	2.914	0.2517	0.0360				
Domain 2 Q6 to Q10 pre	1.6734	0.77963	0.11137	-1.000	0.86794	-8.065	0.000**
Domain 2 Q6 to Q10 post	2.6734	0.36215	0.05173				

Abbreviations: SD, standard deviation; SE, standard error.

• Scoring was done according to Likert scale in the questionnaire.

Discussion

Understanding and controlling our emotions as well as establishing social bonds and interactions with those around us are all aspects of socioemotional health.³ The ability to integrate one's thoughts, feelings, and behaviors in a way that promotes greater health and well-being in life is a sign of having strong social emotional health. Physical, social, and psychological functioning—which is what is meant by “quality of life”—are all impacted by a malocclusion. The Child Oral Health Quality of Life Questionnaire (OHRQoL) can give light on the effects of malocclusion on people's lives and the need for orthodontic treatment outside of clinical characteristics.^{9–11} The subjective perception of oral health is a crucial indicator since it directly influences oral health behaviors.¹²

The Child Oral Health Quality of Life Questionnaire (COH-QoL) is a set of multifaceted questions that assess the impact of dental health on children's and their families' functional, emotional, and social well-being. In this study, CPQ 8 to 10 and CPQ11 to 14 were used for assessing the social and emotional wellness after the treatment. Jokovic et al in 2002 and O'Brien et al in 2006 both demonstrated the validity and reliability of the CPQ 11 to 14.^{9,13,14}

The CPQ for children aged 8 to 10 (CPQ8–10) years used in this study was designed and validated in Canada. It demonstrated good test–retest reliability, outstanding inter-

nal consistency, and good concept validity. It is one of the scales that is most frequently used to measure OHRQoL.⁸

The 25 items on the CPQ for children (8–10 and 11–14 Years Old) questionnaire are divided into four categories: oral symptoms, functional restrictions, emotional well-being, and social well-being.¹⁵ Children aged 8 to 14 self-reported it using a 5-point Likert scale, with responses ranging from 0 to 4 for each item.⁶ In our study, two domains were taken (emotional wellness and social wellness) to assess the quality of life after treatment. Despite the fact that many studies had done assessing the OHRQoL through CPQ before and after malocclusion taking sex, socioeconomic factor and Index of Orthodontic Treatment Need (IOTN) into consideration,¹⁶ very few studies have done to compare the quality of life in children with skeletal malocclusion post-myofunctional therapy, which emphasizes the importance of this study.

Commonly seen malocclusion in our study was skeletal class 2 malocclusion with retrognathic mandible followed by skeletal class 3 malocclusion with prognathic mandible and retrognathic maxilla. All the cases required myofunctional therapy considering the age and treatment outcomes. Closed-ended preoperative and postoperative questionnaire were given to the children before and after the active treatment presenting a highly considerable effect on children's social and emotional well-being, which is in accordance with the observation seen by Bhatia et al.⁶

When emotional wellness was compared before and after the treatment, most of the children felt happy about their facial appearance post-treatment. Before the intervention, majority of the children were upset, frustrated, or shy because of their appearance. They were more concerned about other people's remark and most of them were worried that they are not good looking as other children. These responses from children depict a reduced quality of life in emotional domain. Post-intervention response from the children has shown a great improvement in emotional wellness since a higher frequency of children was happy, satisfied, and confident about their appearance. They also felt like their appearance has improved after the treatment and had shown great interest in continuing the treatment and were least concerned about what other people think about their teeth. Clinically, emotional wellness had greatly improved post-treatment mainly because of forward positioning of mandible or maxilla that improves their overall appearance. Similar results were observed among another 605 children after correction of skeletal malocclusion with myofunctional therapy by Bhatia et al.⁶

The child's social well-being is reflected in how their dentition looks, how they feel about their dental health, and how they interact with their peers.¹⁷ Responses for CPQ 6 to 10, which illustrate social wellness before and after treatment, has shown that their social interaction and performance in school have shown great improvement.⁸ Most of the children who refused to smile or talk to others because of their teeth showed greater confidence during interaction with their peers and a higher number of children who stayed away from sports activities were over enthusiastic about sports. Children who were often distractive and difficulty in paying attention at school changed to be more active, talkative, and interactive with improved performance at school.

It was observed from the present study that an overall improvement was shown in social and emotional well-being of the children using the CPQ, which clearly indicates that growing children with skeletal malocclusion needs to get themselves corrected at the earliest so that their quality of life improves and they become more confident in the society

Conclusion

Myofunctional therapy has a positive impact in quality of life of children with skeletal malocclusion by enhancing their social and emotional wellness.

Conflict of Interest

None declared.

References

- Dallé H, Vedovello SAS, Degan VV, De Godoi APT, Custódio W, de Menezes CC. Malocclusion, facial and psychological predictors of quality of life in adolescents. *Community Dent Health* 2019;36(04):298–302
- Dare GJ. The effect of pupil appearance on teacher expectations. *Early Child Dev Care* 1992;80(01):97–101
- Cunningham S, Horrocks E, Hunt N, et al. ABC or oral health. Improving occlusion and orofacial aesthetics: orthodontics. *BMJ* 2000;321(7256):288–290
- Grabber TM, Rahosi T, Petrovi AG, Muir TD. *Dentofacial orthopaedics with functional appliance*. 1985
- Proffit WR, Fields HW, Sarver DM. *Contemporary Orthodontics*. 5th ed. Elsevier Science Limited: Amsterdam, The Netherlands; 2012
- Bhatia R, Winnier JJ, Mehta N. Impact of malocclusion on oral health-related quality of life in 10-14-year-old children of Mumbai, India. *Contemp Clin Dent* 2016;7(04):445–450
- de Oliveira CM, Sheiham A, Tsakos G, O'Brien KD. Oral health-related quality of life and the IOTN index as predictors of children's perceived needs and acceptance for orthodontic treatment. *Br Dent J* 2008;204(07):1–5, discussion 384–385
- Hadzipasic-Nazdragic A. Validation of the child perceptions questionnaire 8-10 in Bosnia and Herzegovina. *Mater Sociomed* 2012; 24(03):157–161
- Mandava P, Gangavarapu S, Singaraju G, et al. Impact of oral health related quality of life and possible role of self-esteem in orthodontic patients: a prospective clinical study. *Int J Dent Oral Sci* 2021;8(12):5185–5190
- Locker D, Allen F. What do measures of 'oral health-related quality of life' measure? *Community Dent Oral Epidemiol* 2007;35(06): 401–411
- Allen PF, McMillan AS, Walshaw D, Locker D. A comparison of the validity of generic- and disease-specific measures in the assessment of oral health-related quality of life. *Community Dent Oral Epidemiol* 1999;27(05):344–352
- Baskaradoss JK, Geevarghese A, Alsaadi W, et al. The impact of malocclusion on the oral health related quality of life of 11-14-year-old children. *BMC Pediatr* 2022;22(01):91
- Jokovic A, Locker D, Tompson B, Guyatt G. Questionnaire for measuring oral health-related quality of life in eight- to ten-year-old children. *Pediatr Dent* 2004;26(06):512–518
- O'Brien K, Wright JL, Conboy F, Macfarlane T, Mandall N. The child perception questionnaire is valid for malocclusions in the United Kingdom. *Am J Orthod Dentofacial Orthop* 2006;129(04): 536–540
- Omara M, Stamm T, Bekes K. Four-dimensional oral health-related quality of life impact in children: a systematic review. *J Oral Rehabil* 2021;48(03):293–304
- Curto A, Mihit F, Curto D, Albaladejo A. Assessment of orthodontic treatment need and oral health-related quality of life in asthmatic children aged 11 to 14 years old: a cross-sectional study. *Children (Basel)* 2023;10(02):176
- Genderson MW, Sischo L, Markowitz K, Fine D, Broder HL. An overview of children's oral health-related quality of life assessment: from scale development to measuring outcomes. *Caries Res* 2013;47(0 1, Suppl 1):13–21