

## Quality Of Life as Related To Malocclusion among Libyan School Children

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### Abstract

**Objective:** To test whether the quality of life among school children is affected by malocclusion.

**Materials and Methods:** A cross-sectional study was carried out with a population-based sample size of 1404 among school children in Fezzan region, Libya. Dental examinations were carried out by two calibrated Examiners. OHRQoL was assessed using Child Perceptions Questionnaire. The Dental Aesthetic Index was used for the clinical assessment of malocclusion. Statistical analysis involved analysis of variance[ANOVA] test and Games-Howell post-hoc tests.

**Results:** DAI Scores above 30 had significant impact on quality of life ( $p = .0001$ ).

**Conclusion:** Severe malocclusions had significant impact of quality of life among Libyan school children.

**Key Words:** Oral health-related quality of life; Malocclusion; Libyan Children.

### I. Introduction

Self-Perceptions regarding physical, psychological, social, and material aspects have significant influence on the multi-dimensional concept of quality of life, which can be satisfactorily addressed when individuals are evaluated based on their own experiences<sup>[1,2]</sup>Dental treatment traditionally focuses on normative, clinician measured criteria despite the fact that every individual precept the problem in their own way.<sup>[3,5]</sup>The cultural and social background influence how each individual precept their problem.<sup>[6]</sup>In order to evaluate the influence of severity of malocclusion on the quality of life, indicators of oral health-related quality of life questionnaire (OHRQoL) and dental esthetic index were used in this study. The aim of the present study was to evaluate how malocclusions affect quality of life among Libyan school children.

### II. Materials And Methods

This study was conducted by faculty of dentistry, Sheba University, Libya. Samples were taken from the schools in the Fezzan region. Random sampling was done in two stages. During the First stage, two schools from each administration unit of Fezzan were randomly selected. During Second stage, 4 classes were randomly selected from each schools selected in First stage. The final sample size was 1404 students. The minimum sample size needed to make this a meaningful study was calculated as 1300, at 95 percent confidence interval based on pilot study. The mean age of the sample was 13.5 years with age range between 13 to 14 years. The gender distribution among the sample was 654 males and 750 females. The inclusion criteria were either gender, present at the school on the day of data collection, in permanent dentition stage and their willingness to participate in the study. The exclusion criteria were any facial or dental trauma in past 6 months and unwillingness of the student to participate in the study, mixed dentition stage.

#### Clinical Oral Examination

Oral examinations were performed at school during daytime hours. The criteria of the Dental Aesthetic Index (DAI) were used to measure malocclusion. The clinical examinations were carried by 2 calibrated examiners, the calibration was done based on pilot study done on 180 students following the same criteria. Cohen kappa values for inter-examiner agreement ranged from 0.78 to 1.00. Fifty children were reexamined after 2 weeks to assess intra-examiner agreement, for which Cohen kappa values ranged from .93 to 1.00.

Impact on OHRQoL was measured using the Child Perceptions Questionnaire (CPQ<sub>11-14</sub>) short version translated into Arabic. This instrument is made up of 25 items distributed among four subscales: oral symptoms, functional limitations, emotional well-being, and social well-being. (Fig 1)The items address the frequency of events in the 4 previous weeks. A five-point rating scale is used, with the following options: never = 0, once, twice = 1, sometimes = 2, often = 3, and every day/almost every day = 4. CPQ<sub>11-14</sub> scores are calculated by summing all the item scores, with the total score ranging from 0 (no impact of oral condition on OHRQoL) to 100 (maximal impact of oral condition on OHRQoL). For the statistical analysis, impact on OHRQoL was

classified as either low impact ( $CPQ_{11-14} \leq 20$ ) or high impact ( $CPQ_{11-14} > 20$ ) based on median value of  $CPQ_{11-14}$  total score. In order to measure the OHRQoL of children in Libya, the questionnaires were subjected to translation and cross-cultural adaptation to southern Libyan culture. Based on standard recommendations, two bilingual translators with experience in translating health-related questionnaires (a Libyan fluent in the English language and a native English speaker fluent in Arabic) carried out two independent translations. To determine concept and item equivalence, the translated versions were analyzed by a group of specialists, who drafted synthesized versions. Attention was given to the meaning of the words in the different languages in order to obtain similar effects on respondents from different cultures, seeking to identify possible difficulties in understanding the questionnaires. These versions were then back translated by a bilingual translator whose native language was English and who had no access to the original versions. To assess the equivalence between the original and back translated questionnaires, a Libyan translator whose native language was Arabic and who was fluent in English carried out a third assessment between the original and back translated versions. The reliability and validity of the translated questionnaires were proved to be good based on sample and subsample data analyzed statistically from the pilot study.

### **III. Statistical Analysis**

The Statistical Package for the Social Sciences (version 19.0; SPSS Inc, Chicago, IL, USA) was used for the data analysis. Descriptive analyses were performed (frequency distribution and cross-tabulation). The Kolmogorov-Smirnov test revealed that the normality of the sample could not be confirmed. The analysis of variance [ANOVA] was used to test associations between the impact on OHRQoL and groups based on DAI scores. The significance level was set at 5%. Games-Howell post hoc tests were used.

### **IV. Result**

Of the total 1404 subjects, 758 subjects had DAI scores below 30 and 95 percent of those subjects had no or little impact on their quality of life due to malocclusions (Table 1). 646 subjects had DAI scores above 30 and 98 percent of those subjects had high impact on their quality of life due to malocclusions. The effect on quality of life due to malocclusions when DAI scores above 30 was statistically significant ( $p=.0001$ ). The gender distribution effect in the groups, when DAI score was above 30; on the effect of quality of life by malocclusion was not significant (Table 2).

### **V. Discussion**

There is increasing interest in how quality of life affects psychosocial well-being in childhood and adolescence. The experiences in childhood play a significant role in psychological development in later years.<sup>[7,8,9]</sup> In the present study, severe malocclusions significantly associated with low quality of life. This finding is consistent with previous studies.<sup>[10,11,12]</sup> There are studies which specifically indicate that anterior segment spacing and increased over-jet are among the conditions of most concern to children.<sup>[13,14,15]</sup>

In the present study, school children with severe malocclusion and high caries activity experienced more negative impact on OHRQoL than those without severe malocclusion which is supported by a number of studies suggesting that displeasing dental esthetics, have a negative impact on psychosocial well-being.<sup>[16,17,18]</sup> No statistically significant differences were found between genders regarding the impact of malocclusion on OHRQoL, which corroborates some previous studies.<sup>[19,20,21]</sup> However, gender has been described as a factor affecting the self-perception of dental appearance.<sup>[22,23,24]</sup>

There was no previous libyan data on malocclusion and over its effect on quality of life in any age group. The DAI was developed for permanent teeth and so has a tendency to be over-sensitive during the mixed dentition period, possibly confounding the results due to the transitory developmental conditions.<sup>[25]</sup> Also, the CPQ as a generic measure of OHRQoL could not address aspects specifically related to malocclusion. Moreover, cross-sectional studies have limitations inherent in the design, as such studies are carried out either at a single point in time or over a short period, so the associations identified cannot be considered a causal relationship.<sup>[26,27,28]</sup> In our study we considered DAI 30 as a breaking point because in the previous studies<sup>[29, 30]</sup> DAI scores above 30 was considered as absolute requirement of treatment.<sup>[34]</sup>

It is important to evaluate school children presenting both the late mixed dentition and early permanent dentition, as an early diagnosis may facilitate preventive or interceptive orthodontics, if necessary, taking advantage of the child's growth potential. This underscores the importance of considering both the normative need observed by the dentist and the subjective need perceived by the child,<sup>[31,32,33]</sup> in order to fulfill the patient's needs.

### **VI. Conclusion:**

DAI scores above 30 had significant negative impact on the quality of life on Libyan school children.

DAI scores below 30 had no or little impact on the quality of life among Libyan school children.

## References

- [1]. Allison PJ , Locker D , Feine JS . Quality of life: a dynamic construct. *SocSci Med.* 1997;45:221–230.
- [2]. Locker D , Slade G . Association between clinical and subjective indicators of oral health status in an older adult population. *Gerodontology.* 1994;11:108–114.
- [3]. de Oliveira CM , Sheiham A . Orthodontic treatment and its impact on oral health-related quality of life in Brazilian adolescents. *J Orthod.* 2004;31:20–27.
- [4]. Marques LS , Ramos-Jorge ML , Paiva SM , Pordeus IA . Malocclusion: esthetic impact and quality of life among Brazilian schoolchildren. *Am J OrthodDentofacialOrthop.* 2006;129:424–427.
- [5]. 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 OrthodDentofacialOrthop.* 2006;129:536–540.
- [6]. Bernabé E , Sheiham A , Tsakos G , Messias de Oliveira C . The impact of orthodontic treatment on the quality of life in adolescents: a case-control study. *Eur J Orthod.* 2008;30:515–520.
- [7]. Liu Z , McGrath C , Hägg U . The impact of malocclusion/orthodontic treatment need on the quality of life: a systematic review. *Angle Orthod.* 2009;79:585–591.
- [8]. Marques LS , Ramos-Jorge ML , Ramos-Jorge J , Pereira LJ , Paiva SM , Pordeus LA . Self-perception regarding the need for orthodontic treatment among impoverished schoolchildren in Brazil. *Eur J Paediatr Dent.* 2009;10:125–130.
- [9]. Helm S , Petersen PE , Kreiborg S , Solow B . Effect of separate malocclusion traits on concern for dental appearance. *Community Dent Oral Epidemiol.* 1986;14(4):217–220.
- [10]. Mtaya M , Astrom AN , Brudvik P . Malocclusion, psycho-social impacts and treatment need: a cross-sectional study of Tanzanian primary school-children. *BMC Oral Health.* 2008;8:14.
- [11]. Marques LS , Filogônio CA , Filogônio CB , Pereira LJ , Pordeus IA , Paiva SM , Ramos-Jorge ML . Aesthetic impact of malocclusion in the daily living of Brazilian adolescents. *J Orthod.* 2009;36:152–159.
- [12]. de Paula Júnior DF , Santos NC , da Silva ET , Nunes MF , Leles CR . Psychosocial impact of dental esthetics on quality of life in adolescents. *Angle Orthod.* 2009;79:1188–1193.
- [13]. Marques LS , Pordeus IA , Ramos-Jorge ML , Filogônio CA , Filogônio CB , Pereira LJ , Paiva SM . Factors associated with the desire for orthodontic treatment among Brazilian adolescents and their parents. *BMC Oral Health.* 2009;18:34.
- [14]. Dias PF , Gleiser R . Orthodontic concerns of Brazilian children and their parents compared to the normative treatment need. *J Oral Sci.* 2010;52:101–107.
- [15]. Flores-Mir C , Major PW , Salazar FR . Self-perceived orthodontic treatment need evaluated through 3 scales in a university population. *J Orthod.* 2004;31:329–334.
- [16]. Tessarollo FR , Feldens CA , Closs LQ . The impact of malocclusion on adolescents' dissatisfaction with dental appearance and oral functions. *Angle Orthod.* Published online ahead of print September 26, 2011. DOI: 10.2319/031911-195.1.
- [17]. Mandall NA , Wright J , Conboy FM , O'Brien KD . The relationship between normative orthodontic treatment need and measures of consumer perception. *Community Dent Health.* 2001;18:3–6.
- [18]. Peres KG , Barros AJ , Anselmi L , Peres MA , Barros FC . Does malocclusion influence the adolescent's satisfaction with appearance? A cross-sectional study nested in a Brazilian birth cohort. *Community Dent Oral Epidemiol.* 2008;36:137–143.
- [19]. Kiyak HA . Comparison of esthetic values among Caucasians and Pacific-Asians. *Community Dent Oral Epidemiol.* 1981;9:219–223.
- [20]. Tausche E , Luck O , Harzer W . Prevalence of malocclusions in the early mixed dentition and orthodontic treatment need. *Eur J Orthod.* 2004;26:237–244.
- [21]. Kirkwood BR , Sterne JAC . *Essential Medical Statistics.* 2nd ed. Oxford, England: Blackwell Scientific Publications; 2003.
- [22]. World Health Organization. *Oral Health Surveys: Basic Methods.* 4th ed. Geneva, Switzerland: World Health Organization; 1997.
- [23]. Martins MT , Ferreira FM , Oliveira AC , Paiva SM , Vale MP , Allison PJ , Pordeus IA . Preliminary validation of the Brazilian version of the Child Perceptions Questionnaire 8–10. *Eur J Paediatr Dent.* 2009;10:135–140.
- [24]. Nahas MI , Ribeiro C , Esteves O , Moscovitch S , Martins VL . O mapa da exclusão social de Belo Horizonte: metodologia de construção de um instrumento de gestãourbana. *Cad Cienc Soc.* 2000;7:75–88.
- [25]. Bendo CB , Paiva SM , Torres CS , Oliveira AC , Goursand D , Pordeus IA , Vale MP . Association between treated/untreated traumatic dental injuries and impact on quality of life of Brazilian schoolchildren. *Health Qual Life Outcomes.* 2010;8:114.
- [26]. Shaw WC , Meek SC , Jones DS . Nicknames, teasing, harassment and the salience of dental features among school children. *Br J Orthod.* 1980;7:75–80.
- [27]. Damon W , Hart D . The development of self-understanding from infancy through adolescence. *Child Development.* 1982;53:841–864.
- [28]. Gosney MB . An investigation into some of the factors influencing the desire for orthodontic treatment. *Br J Orthod.* 1986;13:87–94.
- [29]. Kilpeläinen PV , Phillips C , Tulloch JF . Anterior tooth position and motivation for early treatment. *Angle Orthod.* 1993;63:171–174.
- [30]. Spalj S , Slaj M , Varga S , Strujic M , Slaj M . Perception of orthodontic treatment need in children and adolescents. *Eur J Orthod.* 2010;32:387–394.
- [31]. Bos A , Hoogstraten J , Zentner A . Perceptions of Dutch orthodontic patients and their parents on oral health-related quality of life. *Angle Orthod.* 2010;80:367–372.
- [32]. Keay P , Freer T , Basford K . Orthodontic treatment need and the Dental Aesthetic Index. *AustOrthod J.* 1993;13:4–7.
- [33]. Marshman Z , Gibson BJ , Benson PE . Is the short-form Child Perceptions Questionnaire meaningful and relevant to children with malocclusion in the UK? *J Orthod.* 2010;37:29–36.
- [34]. [Motohashi M](#) , [Yamada H](#) , [Genkai F](#) , [Kato H](#) , [Imai T](#) , [Sato S](#) , [Sugaya A](#) . Employing dmft score as a risk predictor for caries development in the permanent teeth in Japanese primary school girls. [J Oral Sci.](#) 2006 Dec;48(4):233-7.

Table 1.

OHRQoL	DAI SCORES LESS THAN 30	DAI SCORES MORE THAN 30	total
High impact	13	633	646
Low impact	720	38	758
	733	671	1404

Table 2.

OHRQOL	males	females	total
Low impact	348	410	758
high impact	306	340	646
	654	750	1404