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 (ANOV) 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. Dental treatment traditionally focuses on normative, clinician measured criteria despite the fact that every individual precept the problem in their own way. The cultural and social background influence how each individual precept their problem. 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. 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 11-14) 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 11-14 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} ≤ 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 form 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. There are studies which specifically indicate that anterior segment spacing and increased over-jet are among the conditions of most concern to children.

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. No statistically significant differences were found between genders regarding the impact of malocclusion on OHRQoL, which corroborates some previous studies. However, gender has been described as a factor affecting the self-perception of dental appearance.

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. 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. In our study we considered DAI 30 as a breaking point because in the previous studies DAI scores above 30 was considered as absolute requirement of treatment.

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, 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


Table 1.

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<tr>
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Table 2.

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<th>Females</th>
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<td>410</td>
<td>758</td>
</tr>
<tr>
<td>High impact</td>
<td>306</td>
<td>340</td>
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