

# Self-perception of malocclusion among north Jordanian school children

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**SUMMARY** This study was undertaken to assess the factors affecting self-perception and the demand for orthodontic treatment among north Jordanian school children. In total, 1404 students randomly selected to represent five geographical areas of northern Jordan were examined. The students were further subgrouped according to gender (858 females, 546 males), age (985 13 year olds, 419 17 year olds) and rural/urban place of residence (212 rural, 1192 urban). The aesthetic component (AC) of the Index of Orthodontic Treatment Need (IOTN) was used as an assessment measure of the need for orthodontic treatment. The self-perception of malocclusion was evaluated by asking each student to identify which photograph on the AC scale most closely matched the appearance of their anterior teeth. The demand for orthodontic treatment was measured by asking the students: 'Do you feel it is necessary to have your teeth straightened by an orthodontist?' Differences between the self-perception of malocclusion among the different groups were tested using the chi-squared test.

The results showed that the majority of students rated their dentition from grades 1 to 4, with a tendency for the females and older school children to score their teeth as more attractive than males and younger children ( $P < 0.05$ ,  $P < 0.001$ , respectively). Rural and urban school children did not differ in the perception of their own dentition. The self-perception scores of subjects within the no aesthetic need, borderline need and definite need groups differed significantly ( $P < 0.001$ ). The subjects who reported a definite need perceived their teeth to be worse than the other two groups. The demand for orthodontic treatment was found to be affected by gender ( $P < 0.01$ ) and rural/urban areas of living ( $P < 0.05$ ).

## Introduction

Physical appearance, including the dentition, is an important aspect of human activity, as one aims to be liked, respected or accepted by those around him/her. The uptake of orthodontic treatment is influenced by the desire to look attractive, the self-perception of dental appearance, self-esteem, gender, age and peer group norms (Shaw *et al.*, 1991; Burden, 1995).

Gender, socio-economic background and age have been suggested as factors affecting the self-perception of dental appearance, with high social class individuals considered to be more critical and younger children less aware of their dental appearance (Horowitz *et al.*, 1971; Jenkins *et al.*, 1984). In contrast, Burden and Pine (1995) found that adolescents who were scored by an examiner as having similar dental aesthetics, had similar perceptions of malocclusion irrespective of gender or social background.

Data concerning the self-perception of malocclusion and the uptake of orthodontic treatment are available for many populations. However, no such data are available for Jordanians. The aim of this study was to investigate the self-perception of malocclusion among north Jordanian school children and to determine if gender, age and rural/urban areas of living influence self-perception and orthodontic uptake.

## Subjects and methods

In total, 1404 students aged 13 and 17 years in 14 representative public schools in northern Jordan were examined. The students were further subgrouped according to gender (858 females, 546 males), age (985 13 year olds, 419 17 year olds) and rural/urban area of living (212 rural, 1192 urban). Schools were selected from a list obtained from the Directorate of Education in Irbid Governorate. The schools in the list were categorized into five sections according to geographical location: central (10 schools), eastern (12 schools), western (12 schools), northern (12 schools) and southern (12 schools). Two schools containing 13–17-year-old children were randomly selected from each geographical area. Approval was obtained from the individual heads of the schools and a negative consent letter was sent to the students, parents and guardians.

A full clinical examination was carried out using a mouth mirror under natural lighting at the school premises. Students who had orthodontic treatment or were currently wearing an orthodontic appliance were not included in the study. Each student's anterior teeth were assessed using the aesthetic component (AC) of the Index of Orthodontic Treatment Need (IOTN). The examination was carried out by one author (EAA) who had been previously trained and calibrated in the use of the IOTN.

The AC (Brook and Shaw, 1989) has a scale of 10 coloured photographs showing different levels of dental attractiveness, with grade 1 representing the most attractive and grade 10 the least attractive. According to Richmond *et al.* (1995), grades 1–4 represent no or little aesthetic need, grades 5–7 borderline aesthetic need, and grades 8–10 a definite aesthetic need for orthodontic treatment. The self-perception of malocclusion was evaluated by asking each student to identify which photograph of the AC scale most closely matched the appearance of their anterior teeth. To evaluate the demand for orthodontic treatment, each student was asked: 'Do you feel it is necessary to have your teeth straightened by an orthodontist?'

### Reproducibility

Intra-examiner reliability was tested using weighted kappa statistics. Twenty-five children were re-examined 1 month after their initial examination. The kappa value for the AC was 0.68, indicating good agreement (Cicchetti, 1976).

### Results

Examiner rating revealed that 787 students (56 per cent) had no aesthetic need (grades 1–4), 473 students (33 per cent) a borderline need (grades 5–7) and 144 students (10 per cent) a definite aesthetic need (grades 8–10) for orthodontic treatment (Table 1). The IOTN scores were higher for the males and for the older age group ( $P < 0.05$ ). However, when the students were asked to rate their own dental attractiveness, 91 per cent scored their teeth as aesthetically acceptable (grades 1–4), 5 per cent as borderline (grades 5–7) and 4 per cent rated their teeth from grades 8 to 10 (Table 2). A weak but significant correlation was found between the examiner rating and the students' self-perception ( $R = 0.30$ ,  $P < 0.01$ ).

### Self-perception and gender

The majority of the students (93 per cent of the females and 87 per cent of the males) rated their dental attractiveness from grades 1 to 4, 4 per cent of the females and 7 per cent of the males scored their teeth from grades 5 to 7. Three per cent of the females and 6 per cent of the males rated their teeth from

grades 8 to 10. Females tended to rate their dentition as more attractive than males ( $P < 0.01$ ). The correlation coefficients between the examiner rating and the students' perception for females and males were 0.22 and 0.31, respectively.

### Self-perception and age

Ninety-four per cent of the 17 year olds and 89 per cent of the 13 year olds scored their teeth as aesthetically acceptable (grades 1–4), 5 per cent of the older and 5 per cent of the younger children scored their teeth as borderline need, and 2 per cent of the 17 year olds and 6 per cent of the 13 year olds rated their teeth in definite aesthetic need. The 17-year-old group tended to score their dentition as more attractive than the 13-year-old group ( $P < 0.05$ ). The correlation coefficients between the examiner rating and the students' perception for 13 and 17 year olds were 0.29 and 0.35, respectively.

### Self-perception and area of living

Ninety-one per cent of urban and 87 per cent of rural school-children rated their as aesthetically acceptable (grades 1–4), 5 per cent of each group rated their teeth as borderline (grades 5–7), and 4 per cent of urban and 8 per cent of rural students perceived their teeth as having a definite aesthetic need. There was no significant difference in the self-perception of malocclusion between rural and urban groups. The correlation coefficients between the examiner rating and the students' perception for urban and rural students were 0.26 and 0.27, respectively.

Ninety-six per cent of the subjects who had an aesthetically acceptable dentition according to the IOTN rated their dental attractiveness from grades 1 to 4, 2 per cent from grades 5 to 7, and 2 per cent from grades 8 to 10. Within this category, the younger age group tended to score their dentition as less attractive ( $P < 0.05$ ). Gender and rural/urban culture did not affect the students' rating of their dentition.

In borderline aesthetic need subjects, 89 per cent scored their dental attractiveness from grades 1 to 4, 6 per cent from grades 5 to 7 and 5 per cent from grades 8 to 10. Within this category, gender and rural/urban communities affected the students' self-perception ( $P < 0.05$ ), whereas age did not.

**Table 1** The examiner ratings of dental attractiveness using the Aesthetic Component of the Index of Orthodontic Treatment Need according to gender, age and rural/urban area of living.

	Gender*		Age*		Rural/urban area of living	
	Females ( $n = 858$ )	Males ( $n = 546$ )	13 year olds ( $n = 985$ )	17 year olds ( $n = 419$ )	Rural ( $n = 212$ )	Urban ( $n = 1192$ )
No need	494 (58%)	293 (54%)	568 (58%)	220 (28%)	108 (51%)	679 (57%)
Borderline need	292 (34%)	181 (33%)	329 (33%)	144 (30%)	81 (38%)	392 (33%)
Definite need	72 (8%)	72 (13%)	88 (61%)	55 (9%)	23 (11%)	121 (10%)

\* $P < 0.05$ .

**Table 2** Self-perception of dental attractiveness using the Aesthetic Component of the Index of Orthodontic Treatment Need according to gender, age and rural/urban area of living.

	Gender**		Age*		Rural/urban area of living	
	Females ( <i>n</i> = 858)	Males ( <i>n</i> = 546)	13 year olds ( <i>n</i> = 984)	17 year olds ( <i>n</i> = 415)	Rural ( <i>n</i> = 212)	Urban ( <i>n</i> = 1192)
No need	795 (93%)	476 (87%)	880 (89%)	391 (94%)	188 (87%)	1083 (91%)
Borderline need	36 (4%)	38 (7%)	54 (5%)	20 (4%)	11 (5%)	63 (5%)
Definite need	27 (3%)	32 (6%)	50 (6%)	9 (2%)	13 (8%)	46 (4%)

\* $P < 0.05$ ; \*\* $P < 0.01$ .

In the definite aesthetic need subjects, 67 per cent scored their teeth from grades 1 to 4, 17 per cent from grades 5 to 7, and 16 per cent from grades 8 to 10. In this group, rating dental attractiveness was not affected by gender, age or rural/urban areas of living.

The self-perception scores of the subjects within the no aesthetic need, borderline need and definite need for orthodontic treatment groups differed significantly ( $P < 0.001$ ).

#### *The demand for orthodontic treatment*

Six hundred and twenty-eight students (45 per cent) reported that they would like to have orthodontic treatment. Of those, 21.5 per cent had no aesthetic need, 16 per cent a borderline need, and 7.5 per cent a definite aesthetic need according to the IOTN. The demand for orthodontic treatment was affected by gender and rural/urban area of living. More females than males and more urban than rural students wanted to have their teeth straightened ( $P < 0.001$ ).

## Discussion

Concern over appearance and dental attractiveness is thought to be affected by gender, social class and age (Horowitz *et al.*, 1971; Jenkins *et al.*, 1984). In this study, females and older school children tended to rate their dentition towards the more attractive end of the scale, while urban students did not differ in the perception of their own dentition from rural students. Gender and age differences in the self-perception of malocclusion in this study may be explained by the desire to feel attractive by females and the older age group. The influence of gender on the self-perception of malocclusion is inconsistent with that reported by Burden and Pine (1995), who stated that gender does not influence the self-perception of malocclusion.

The correlation between the student's perception and the examiner rating was higher in the older age group which is in agreement with Hurrelmann (1989), who stated that awareness of dental attractiveness increases with age. Overall, the majority of the students in this study rated their teeth as more attractive, which is in agreement with Burden and Pine (1995).

As the need for orthodontic treatment increases, the factors affecting the student's self-perception vary. In the no need group, age was the most important factor affecting the perception of dental attractiveness, with a tendency for the younger group to score their teeth as less attractive. In the borderline aesthetic need group, the students' self-perception was mostly affected by gender and rural/urban areas of living, whereas the definite aesthetic need group perceived their dental attractiveness similarly irrespective of gender, age and rural/urban areas of living.

As the aesthetic need for the students increased, they tended to score their dentition towards the less attractive end of the scale. This is in line with Mandall *et al.* (2000), who found that definite need subjects perceived themselves as worse off than their peers with a lower need.

The demand for orthodontic treatment among north Jordanians was affected by gender and area of living. More females and urban students asked for orthodontic treatment. This can be explained by the greater concern for looking more attractive by females and the availability of treatment and dental awareness among urban students. The effect of gender on the demand for orthodontic treatment in this study is in agreement with that reported by Roberts *et al.* (1989), but inconsistent with the findings of Burden (1995), who concluded that gender has no influence on the uptake of orthodontic treatment.

This study confirms the effect of gender and age on the self-perception of malocclusion and provides information regarding the effect of rural/urban areas of living and gender on the uptake of orthodontic treatment.

## Conclusions

1. Gender and age influence the self-perception of malocclusion.
2. Rural children perceive their dentition similar to urban children.
3. The self-perception of students with no aesthetic need, borderline need and definite need was different.
4. Females and urban children are more willing to have orthodontic treatment.

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