

The views and attitudes of parents of children with a sensory impairment towards orthodontic care

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SUMMARY A questionnaire was sent to the parents of 77 visually impaired (VI), 210 hearing impaired (HI) and 494 control children seeking their views on their child's dental appearance, orthodontic treatment need and issues that might influence the child undertaking treatment. The parents' views were compared with a dentist's assessment of treatment need using the Index of Orthodontic Treatment Need (IOTN).

There was disagreement between the dentist's assessment and the parents' perceptions in all groups. However, the least disagreement was seen in the HI group. There was a statistically significant ($P < 0.05$) association between control and HI parents' views of their children's treatment needs and their opinion on their dental appearance. Most parents thought that orthodontic treatment was difficult to obtain and expensive and that their child would find difficulty coping with the treatment. Furthermore, parents of VI children considered that treatment was unlikely to be undertaken due to their child's reduced concern for their appearance.

The study indicates that the awareness of treatment need for VI and HI children differs between their parents and dentists.

Introduction

The rejection and stigma associated with people with disabilities is a common problem, which in some cultures is also exacerbated by deep-rooted cultural and religious prejudices (Wang, 1992; Rogers-Dulan, 1998). Unsightly facial features can aggravate these problems and reinforce the social exclusion of such individuals (Albino *et al.*, 1994). Various psychological, social and cultural variables are involved in deciding whether a person becomes aware of a malocclusion and therefore the demand for correction (Shaw, 1981).

Only a few studies have been carried out to evaluate factors that may influence the uptake of orthodontic treatment. However, such factors are thought to be both patient and dentist related. The majority of orthodontic patients are children and as such their parents or guardians are likely to play an important role in the uptake of orthodontic care. Pratelli *et al.* (1998) reported that the parent was the most important single factor in the motivation for treatment. Parents were found to have noticed occlusal defects in their children almost as frequently as dentists (Kilpelainen *et al.*, 1993).

There is some evidence that parents who desire orthodontic treatment for themselves, or were former orthodontic patients, are more likely to approve of orthodontic care and to perceive a need in their child (Pratelli *et al.*, 1998). An inherited malocclusion in their offspring may increase the parents' desire for their children to be treated. However, the assumption of a

genetic connection may be unwarranted (Pratelli *et al.*, 1998).

The aims of the present study were to determine parents' attitudes to orthodontic issues affecting their children and to orthodontic treatment uptake. In addition the parents' attitudes on their own child's need for treatment were compared with those of a professional assessment of treatment need.

Subjects and method

Two groups of children aged 11–16 years attending two special schools in Riyadh, Saudi Arabia were selected for the study. One group was visually impaired (VI) and the other hearing impaired (HI). The control group consisted of 11–16-year-old children attending mainstream government schools. In total, 77 VI children (38 females, 39 males), 210 HI children (127 females, 83 males) and 494 control children (258 females, 236 males) were examined. The mean age was 12.9 years in the control group, 13.4 years in the VI group, and 13.5 years in the HI group.

Orthodontic treatment need was evaluated by one author (MS) using both the dental health component (DHC) and aesthetic component (AC) of the Index of Orthodontic Treatment Need (IOTN) (Brook and Shaw, 1989).

A questionnaire (see Appendix) was sent to the parents via the school administration asking their views on orthodontic treatment. Five items were included with a simple yes/no response to test the parents' views

about why their children did or did not receive orthodontic treatment.

The questions were related to:

1. Whether the child was interested in his/her dental appearance.
2. Whether the child was able to maintain necessary levels of oral hygiene.
3. Whether their child would be able to cope with the treatment.
4. Whether the treatment was obtainable and affordable.
5. Their dentist's attitude towards providing orthodontic treatment.

In addition, the parents were asked about the condition of their children's dentition (presence of crowding and protrusion), and whether their children would like to have orthodontic treatment.

To determine method error 10% of the questionnaires were randomly selected for the three groups and repeated.

The response rate for 780 questionnaires was 92.9 per cent for the control group, 100 per cent for VI parents and 92.4 per cent for HI parents. Nine parents of control and HI children, but none of the VI children, had previous orthodontic treatment.

Before the examination, the children were asked if they felt they needed treatment and whether they would like to have treatment.

Statistical methods

All the data were collected and entered into the Statistical Program for Social Science (SPSS, Chicago, IL, USA) version 10 for analysis. Descriptive analyses were performed and the frequency distribution compared by cross-tabulation of each dependent variable. This in turn was tested using Chi-square tests with significance set at the 5 per cent level.

Odds ratios (OR) with 95 per cent confidence intervals (CI) were used to assess the strength of the associations between parents' views on their children's need for treatment and all the independent variables (tooth conditions, DHC and AC assessment by the dentist, and the children's opinion of the need for treatment only). Data that showed any statistically significant difference is discussed.

Results

Orthodontic treatment need by the parents' and dentist's assessments

Sixty-two (30 per cent) HI children, 21 (27.3 per cent) VI children and 108 (22.4 per cent) controls were found to have some orthodontic treatment need based on the DHC (3–5) score (Table 1). However, these differences

Table 1 Orthodontic treatment need assessed by the dentist [number (percentage) of children].

IOTN	Control	Visually impaired	Hearing impaired
AC 5–10	190 (39.4)	43 (55.8)	89 (43.0)
DHC 3–5	108 (22.4)	21 (27.3)	62 (30.0)

IOTN, Index of Orthodontic Treatment Need; AC, aesthetic component; DHC, dental health component.

were not statistically significant. Using the AC (5–10) score, 89 (43 per cent) HI children, 43 (55.8 per cent) VI children and 190 (39.4 per cent) controls had a moderate or definite treatment need. Statistically significant differences between the study groups and the control children ($P < 0.05$) were found.

The parents of 250 (50.5 per cent) children from the control group, 50 (64.3 per cent) children from the VI group and 113 (54.4 per cent) children from the HI group thought their children needed treatment. There were statistically significant differences between the VI group and the control children ($P < 0.05$).

Table 2 shows the level of disagreement between the dentist's assessment and the parents' perceptions of their children's need for orthodontic treatment. The results were statistically significant ($P < 0.001$). Almost twice the number of parents of the control group children (113; 54.1 per cent) thought that their child needed treatment compared with the dentist's perception (67; 32 per cent). A similar finding was also observed for the VI group, where the teeth of only half the children (seven; 28 per cent) were found to be acceptable by the dentist compared with the parents (15; 60 per cent). However, the level of disagreement between the perception of parents of the HI children and the dentist's assessment appears to be less marked as compared with the control and VI groups ($P < 0.05$).

Logistic regression analysis (Table 3) showed that the OR for HI parents' views on treatment need for their children was twice that of the control group parents

Table 2 Parents' views [aesthetic component (AC)] of their children's possible orthodontic treatment need compared with the professional assessment [dental health component (DHC) and AC] [number (percentage) of children].

Responses	Control	Visually impaired	Hearing impaired
DHC (3–5)			
Prefer treatment	67 (32.0)	13 (29.0)	35 (36.0)
Teeth acceptable	26 (12.7)	7 (28.0)	22 (26.8)
AC (5–10)			
Prefer treatment	113 (54.1)	23 (51.0)	50 (51.1)
Teeth acceptable	49 (24.0)	15 (60.0)	27 (33.0)

Table 3 Odds ratio of parents' views on their children's possible orthodontic treatment need.

Independent variable	Odds ratio	95% confidence interval	P-value
Parents who considered their child had crowded teeth			
Control parents	1.00	0.75–1.73	<0.001
HI parents	2.05	0.80–2.85	<0.05
Parents who thought their child had crowded teeth			
HI parents	2.61	0.55–2.90	<0.05
Normative treatment based upon AC			
Control parents	2.00	1.21–3.28	<0.05
HI parents	2.04	1.25–3.32	<0.05

AC, aesthetic component; HI, hearing impaired.

(the rating for treatment need was based upon the AC of the IOTN; OR = 2.04, 95% CI = 1.25–3.32, $P < 0.05$).

Fifty-five per cent of the control children, 61 per cent of the VI children and 56.7 per cent of the HI children said they would like to have treatment. There was no statistically significant difference in the children's responses and their parents' views on orthodontic treatment need.

Parental attitude to the appearance of their children's teeth

For the children who were found to be in need of treatment based on AC (5–10), 62.5 per cent of the control, 77 per cent of the VI and 47 per cent of the HI parents thought their children's teeth were 'crooked'. However, 64 per cent of the control, 63.2 per cent of the VI and 57 per cent of the HI parents thought that their children's teeth were protruding compared with the dentist's assessment of treatment need AC (5–10). There was a statistically significant difference between the parents of the control and the HI children who thought their children's teeth were still crooked but at the most attractive end of the AC (1–4).

Logistic regression analysis (Table 3) showed that the OR of the HI parents who thought their children had crowded teeth needing treatment was twice that of the control group (OR = 2.05, 95% CI = 0.80–2.85, $P < 0.05$). For parents of HI children who thought their children had protruded teeth, the OR was twice that of the control group (OR = 2.61, 95% CI = 0.55–2.90, $P < 0.05$).

Parents' views of children having orthodontic treatment

Table 4 shows that the percentage of parents of VI children (31.1%) who believed their children were not concerned about their dental appearance was higher than that of control (23.6%) and HI (17.9%) parents. There was a statistically significant difference between the VI and HI parents' beliefs that their children were not concerned about dental appearance ($P < 0.05$).

Approximately one-quarter of parents (control = 26.2%, VI = 27.4%, HI = 21.9%) indicated that it would be difficult for their children to maintain oral cleanliness during orthodontic treatment.

Most parents (control = 49.5%, VI = 52.6%, HI = 54.2%) considered that orthodontic treatment would be difficult to obtain. Almost half (control = 43.9%, VI = 50.8%, HI = 51.8%) thought their child would find difficulty coping with treatment. Just over three-quarters of the parents (control = 71.7%, VI = 79.7%, HI = 78.7%) thought that orthodontic treatment would be too expensive.

Discussion

Children aged 11–16 years were selected to form the study group, as they were considered old enough to possess perceptual awareness regarding orthodontic treatment need. Children are capable of expressing their own opinion from 10–12 years of age (Horowitz *et al.*, 1971).

Among the factors that may influence the desire and decision to embark upon orthodontic treatment are the parent's perceptions of their child's malocclusion and their views (Shaw, 1981). The high percentage (90–100%) of parents returning the questionnaire revealed a positive interest in obtaining orthodontic care.

Questionnaires about the need and demand for orthodontic treatment need to be carefully worded if a valid evaluation is to be achieved. The poor agreement between the dentist's assessment of orthodontic treatment need and those of the control and HI parents is at variance with other studies (Pietilä and Pietilä, 1994). The parents' perceptions of treatment need could be based on the appearance of the anterior teeth, i.e. a diastema or minor crowding (less than 2 mm), not considered in the IOTN treatment need categories. Also, the lack of effect for the DHC of the IOTN may have been due to the fact that some features rated highly in this component may not have been noticed by the parents, for example crowded or impacted teeth.

Table 4 Parents' views of their children regarding orthodontic treatment [number of parents' responses (percentage)].

Parents' opinion	Control	Visually impaired	Hearing impaired
Child not concerned about dental appearance	88 (23.6)	19 (31.1)	29 (17.9)
Difficult to clean	100 (26.2)	17 (27.4)	37 (21.9)
Difficult to cope with treatment	163 (43.9)	31 (50.8)	87 (51.8)
Difficult to obtain treatment	187 (49.5)	30 (52.6)	90 (54.2)
Treatment is expensive	268 (71.7)	47 (79.7)	129 (78.7)

According to Helm *et al.* (1985) and Espeland and Stenvik (1991), adults are more aware of their own malocclusion if it manifests at the front of the mouth. The results from the present study support the idea that the parents' judgements of their children's treatment need were based on protrusion of anterior teeth rather than alignment (crowding) which may not be visible posteriorly.

Parents have been found to notice occlusal defects in their children's teeth almost as frequently as dentists (Kilpelainen *et al.*, 1993). In the present study, parents were aware of their children's dental appearance and its relationship to treatment need, which confirmed the opinion that aesthetics has a determining role in seeking orthodontic treatment.

The possession of an obvious malocclusion is by no means the only factor that determines whether an individual will receive orthodontic treatment. A self and parental perception of the malocclusion may influence the need for orthodontic treatment (Birkeland *et al.*, 1996).

Frequently there is a lack of understanding by the family of children with disabilities of the need for dental treatment. Often these families are so emotionally, physically and financially involved with the patients' medical condition that they find it difficult to keep dentistry at the forefront of their minds. Orthodontic treatment cannot resolve their medical and physical disability and will place new and extra burdens on the children and their parents. A lack of awareness of the need for orthodontic treatment along with difficulties in seeking care by the parents in the present study revealed that the ability to cope and the difficulty of obtaining treatment greatly influenced the parents' views.

A further point to consider is the cost of treatment to the individual. Government dental health services are free or require a minimum payment in Saudi Arabia for most other dental treatment needs; almost three-quarters of all groups of parents thought that orthodontic treatment was expensive.

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Appendix
Parent questionnaire

Date _____

Dental care for sensory impaired children

There are no right or wrong answers to the questions.

1. Do you have children with a disability?
 Yes No
 If yes, please specify _____
2. Some children's teeth do not have enough room to grow and they become crooked or protruding. At this stage of growing up, are any of your child's teeth crooked at all or not? (Tick one)
 Yes No
3. At this stage of growing up, are any of your child's teeth protruding? (Tick one)
 Yes No
4. At the moment, do you think your child's teeth are alright as they are, or would you prefer him/her to have them straightened? (Tick one)
 Alright as they are Prefer them to be straightened
5. Do you think your child wants to have orthodontic treatment?
 Yes No
6. Do you feel that orthodontic treatment should not be provided for your child because (please answer each statement):
 Your child is not concerned about the appearance of their teeth
 Yes No
 They have difficulty in keeping their teeth clean
 Yes No
 It is difficult for them to cope with the long and complex dental treatment
 Yes No
 It is difficult to obtain orthodontic treatment
 Yes No
 Orthodontic treatment is too expensive
 Yes No
7. Do you believe that the dentist will not provide orthodontic treatment for your child because (please answer each statement):
 Your child is not concerned about the appearance of their teeth
 Yes No
 They have difficulty in keeping their teeth clean
 Yes No
 It is difficult for them to cope with the long and complex dental treatment
 Yes No
 It is difficult to obtain orthodontic treatment
 Yes No
 Orthodontic treatment is too expensive
 Yes No
8. Have you **yourself** had any orthodontic treatment?
 Yes No
 If yes, please specify _____
 There may be answers I need to clarify. If so, would you agree to be contacted by telephone?
 Yes No

Thank you very much for your help

Are there any comments you wish to make about this study?

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