



RESEARCH ARTICLE

IOTN INDEX BASED PERCEPTIONS OF ORTHODONTIC TREATMENT NEED AMONG CHILDREN, THEIR PARENT AND ORTHODONTIST: A SPATIAL STUDY OF MYSORE RURAL TALUK

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ABSTRACT

Objective: To evaluate the aesthetic perceptions of 12 year old children and their parent for Orthodontic Treatment Need and to compare their perception with that of Orthodontist.

Methods: The sample consist of 100 children aged 12 years. The self assessment by children and the recording by one of their parent and orthodontist were carried out using the Aesthetic component and Dental Health Components of IOTN.

Results: The results showed a strong association in the perception of dental appearance by children and the views of other dental assessors. These correlations were highly statistically significant ($p < 0.001$) with the highest correlation between the parent and the Orthodontist ($r = 0.816$). The study also focused that about 50% of the children were in the “definitive need for orthodontic treatment”.

Conclusion: There is a strong relationship in the perception of dental appearance by children, parents and orthodontist. IOTN index can thus be used as an effective tool in communication and achieving realistic treatment needs.

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INTRODUCTION

For a successful Orthodontic treatment results, an Orthodontist has to have a thorough understanding of his patients' perception of their occlusal features. This not only helps the Orthodontist in achieving favourable results from Orthodontic treatment but also helps in providing good prognosis from Orthodontic problems. It is very important to know the perception of the child (patient) and the child's parent about the treatment in order to render comprehensible solution to both the child and his/her parent. It is well known fact that patients request for Orthodontic treatment for aesthetic reasons primarily with functional disability being secondary. This clearly states that Psychological factors influence more than the somatic factors (Shaw *et al.*, 1986; Shaw *et al.*, 1980; Turpin, 2007). The perception for the need for Orthodontic treatment is determined by an individual's perception of aesthetic effects of functional disability and malocclusion. Often we come across individuals who are either too much concerned about their dental appearance or they are not at all aware or concerned

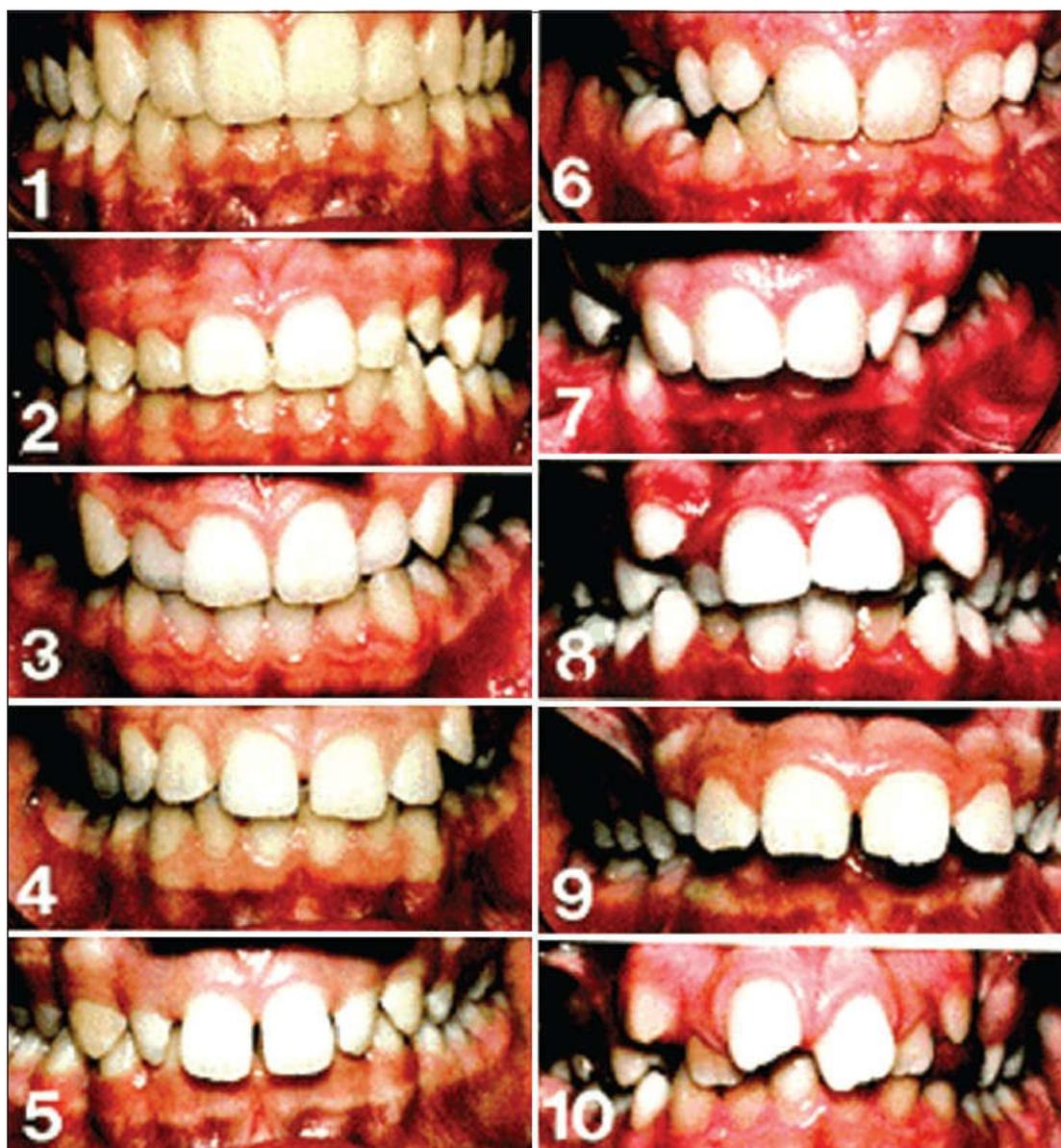
about their appearance (Gosney, 1986). Few studies have shown disagreement between an individual's perception of his dental appearance and the normative need of his dental appearance as assessed by the specialist (Shaw, 1981; Otuyemi *et al.*, 1997). Also, often subjects express dissatisfaction with good occlusion as well underestimate the underlying severe malocclusion (Myrberg and Thilander, 1973; Phillips *et al.*, 1995; Rosen *et al.*, 1995). Some studies have shown that the specialists are less critical when rating a person's aesthetic aspects of teeth and face compared with non-specialists (Tedesco *et al.*, 1983; Phillips *et al.*, 1992). Contrary to this, there are a few studies which states that the specialists are more critical in evaluating the range of acceptance of an individual's facial profiles and his/her dental irregularity than lay people (Prah-Andersen *et al.*, 1979). Results of such a study indicates a significant difference in the subjective evaluation of dentofacial irregularity between children, their parent and the Orthodontist. The reason being the knowledge and the experience in the subject between the various groups. Mostly, the children form the major population of Orthodontic patients (Haynes, 1991). Hence knowing the perception about the treatment from their parents also becomes an integral part of treatment planning. Hence parents play an important role for identifying the dentofacial problems and motivating their children for Orthodontic treatment (Otuyemi *et al.*, 2000; Shaw

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et al., 1980; Pratelli P' et al., 1998). There are various Orthodontic indices to know about the severity of malocclusion and also to know the level of Orthodontic treatment need. It is proved beyond doubt that IOTN is one such index which is valid, reliable and reproducible index for assessing the orthodontic treatment needs (Jaideep, Ruchi 2014; Ucuncu and Ertugay, 2001). IOTN is an index which acts as a tool to determine the normative orthodontic treatment needs of an individual and at the same time helps in knowing the perception of the individual's dentofacial irregularity. The normative need for orthodontic treatment is assessed by DHC of IOTN and the perceptive need for orthodontic treatment need is assessed by AC of IOTN (Brook and Shaw, 1989; Swedish Medical Health Board, 1966; Linder-Aronson, 1974; Linder-Aronson, 1976; Evans and Shaw, 1987; Brook and Shaw, 1989). Since there might be difference between the Orthodontist's and the patient's judgement of dentofacial irregularity and also since the parent plays a crucial role in identifying and motivating their children for orthodontic treatment, this study is designed to compare the perceptions of aesthetic needs for orthodontic treatment need of children, their parent and the Orthodontist.

MATERIALS AND METHODS

The study was carried out on 12 year old school going children of Mysore Taluk (Rural). The sample size for this study was 100. None of the selected sample subject had undergone or undergoing orthodontic treatment. Prior permission to conduct the study was obtained from Deputy Director of Public Instructions (DDPI), Mysore and also by the concerned school authorities. The informed Assent and Consent was provided to the children a week prior to the examination day. Children and their parent who gave his/her assent and consent for the study became the study subjects. The examination was carried out under bright day light in the school premises. Sufficient sterilized instruments were carried out to the school on the day of examination. One Orthodontist who was previously trained to use the IOTN index assessed the normative need for orthodontic treatment through DHC of IOTN index followed by the assessment of aesthetic need for orthodontic treatment through AC of IOTN. The Aesthetic need for orthodontic treatment by the child was then carried out. The child was initially given a face mirror to look into his/her dentition. Later the face mirror was removed and the child was given a sheet containing 10 coloured photographs of dentition with various occlusal features (Figure 1). The child was asked to tick one



of the 10 photographs which will closely resemble his/her dentition. Lastly the parent was called and was asked to look into their child's dentition and record the AC of IOTN (Figure 1) A correlation coefficient test was used to compare the Orthodontist judgement of Aesthetic need, the child and the parents' ratings. A chi-square test was also used to assess the differences in treatment need between genders. The software used for statistical analysis was the statistical programme of SPSS version 20.

females than males at the attractive end of scale among children, parent and Orthodontist assessment. The children's rating of dental appearance was found to fall within the more attractive range on the Aesthetic scale. The Orthodontist and the parent rating fall under less attractive range on the attractive scale. Based on the professional judgement done by Orthodontist for AC & DHC, the females were found to have more attractive dental appearance and less orthodontic treatment needs (Tables 1 & 2).

Table 1. Treatment needs of children according to gender and Aesthetic component (Orthodontist rating)

ACIO * Gender Crosstabulation				
Count		Gender		Total
		Male	Female	
ACIO	Little need	9	16	25
	Moderate need	17	16	33
	Definite need	21	20	41
Total		47	52	99

Gender differences $X^2= 1.76$; $df= 2$; $P>0.01$.

Table 2. Treatment needs of children according to gender and Dental Health component

DHCI * Gender Crosstabulation				
Count		Gender		Total
		Male	Female	
DHCI	Little need	9	16	25
	Moderate need	17	16	33
	Definite need	21	20	41
Total		47	52	99

Gender differences $X^2= 1.76$; $df= 2$; $P>0.01$.

Table 3. Correlation of Aesthetic component between child, parent and Orthodontist

	Child	Parent	Orthodontist
Child	1	0.332	0.421
Parent	0.332	1	0.816
Orthodontist	0.4	0.816	1

$P<0.001$ for all correlations.

Table 4. Cross tabulation of Orthodontist AC & DHC of IOTN

		AC									Total
		1	2	3	4	5	6	7	8	9	
IOTN	1	3	3	2	1	1	0	0	0	0	10
	2	0	10	6	2	0	2	0	0	0	20
	3	1	5	11	7	1	8	1	0	0	34
	4	0	4	5	2	3	5	3	3	0	25
	5	0	3	2	1	1	2	0	1	1	11
Total		4	25	26	13	6	17	4	4	1	100

Correlation coefficient $r= 0.410$; $P < 0.01$.

Table 5. Type of presence of malocclusion as recorded by DHC of IOTN

		TOM			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Missing	3	3.0	3.0	3.0
	Overjet	35	35.0	35.0	38.0
	Crossbite	24	24.0	24.0	62.0
	Displacement	35	35.0	35.0	97.0
	Overbite	3	3.0	3.0	100.0
	Total	100	100.0	100.0	

RESULTS

The gender distribution of AC scores as recorded by the children and their parent is illustrated in Figure 2 & 3. The Orthodontist assessment for treatment need using AC & DHC is illustrated in Figure 4 & 5. There is a high proportion of

However, the differences were not statistically significant ($P>0.001$). Among the different needs for orthodontic treatment, most of children fell into "Definite need of Orthodontic treatment (AC= 41%, DHC=41%). There is a strong association in the perceptions pf dental appearance by the child, parent and the Orthodontist (Table 3). These correlations were highly significant ($P<0.001$) with the highest

correlation between AC and DHC of IOTN ($r=0.410$; $P<0.01$ at 0.01 level). The most common type of malocclusion (Table 5) was Displacement (35%) and Overjet (35%) followed by Crossbite (24%), Missing teeth and Overbite was least (3%).

DISCUSSION

As per the results of the study, there is a good consensus in the perceptions of orthodontic treatment need as judged by children, their parent and the Orthodontist. Highest correlation was found between the children's parent and the Orthodontist ($r=0.816$). This means that the parent and the Orthodontist are more objective in their assessment than the child. The child may not be much aware of the presence of dentofacial irregularity in their mouth ($r=0.0332$). The Orthodontist, because of his high experience in knowledge and also because of the frequency with which he comes across malocclusion conditions among his patients, will be a better person in judging the requirement for Orthodontic treatment. This finding is supported by Shaw *et al* and Holmes. The parent also will be critical in judging the dentofacial irregularities in their children. As reported in the literature that malocclusion is not gender related (Otuyemi *et al.*, 1997; Otuyemi and Abidoeye, 1993; Otuyemi *et al.*, 1999), the present study agrees with the same. There were no statistically significant difference between males and female children in the presence of malocclusion. As assessed by the DHC of IOTN by Orthodontist, 41% of the study samples were in definite need, 34% were in moderate need and 25% were in little / no need of Orthodontic treatment which means that more than half of the study sample requires Orthodontic treatment. This clearly states that malocclusion has become one of the most common oral health problems after periodontitis. There was high correlation between AC of IOTN and DHC of IOTN which states that AC of IOTN can be used as an independent tool to assess the orthodontic treatment requirements for an individual.

Conclusion

There is a strong correlation in the perceptions of Orthodontic treatment need as rated by children, their parent and the Orthodontist. The perception of dentofacial appearance by the child, their parent and Orthodontist could be a reliable tool in communicating an attaining realistic treatment decisions. By providing good education and creating awareness among the population about the presence of dentofacial irregularities and the benefits of getting it treated, the malocclusion which has become a global oral health problem can be well intercepted.

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