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AWARENESS AND CONCERN ABOUT MALOCCLUSION AMONG 12-15 YEAR-OLDS IN MOSHI, TANZANIA
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AWARENESS AND CONCERN ABOUT MALOCCLUSION AMONG 12-15 YEAR-OLD CHILDREN IN MOSHI, TANZANIA

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ABSTRACT

Objective: To assess awareness and concern about malocclusion in 12-15 year-olds in Moshi, Tanzania.

Design: A cross-sectional study.

Setting: Moshi Municipality in Kilimanjaro region, Tanzania.

Subjects: Two hundred and ninety eight randomly selected Public primary school children aged 12-15 years (158 males and 140 females).

Results: About 56% of the respondents thought their teeth were properly aligned. However only 29.1% of the respondents reported being dissatisfied with the way their teeth appeared in their mouth. About 25% of the respondents found their teeth to have been worse than most of their age-mates. Children who reported to have been teased due to their malocclusion comprised 25.8%. Those who thought it was unpleasant to stay with malaligned teeth constituted 55.7% of the respondents. Subjective orthodontic treatment need was reported by 69.1% of the sample. Majority of the children (75%) were ready to accept orthodontic treatment. There were significant correlations between factors of awareness and those of concern about malocclusion among the subjects.

Conclusions: In spite of very little orthodontic treatment exposure in this population, awareness and concern about malocclusion was reported by a significant proportion of the children. These findings form a baseline line for future studies on the trends of awareness and concern towards malocclusion in this population. They will also be useful in the planning of orthodontic services in Tanzania.

INTRODUCTION

Malocclusion refers to the impairment of the anatomical relation and functioning of the teeth and adjacent craniofacial structures. The impact of malocclusion is primarily psychosocial (1). Hence knowledge on how individuals perceive and react to malocclusion in a community is necessary for effective orthodontic planning and care. Espland *et al.*(2) reported that professional perception of malocclusion may differ from the norms existing within the actual

family unit. Birkeland *et al.* (3) reported that a high proportion (90.8%) of parents attach equal importance for both girl's and boy's dental aesthetics. A search for data on malocclusion studies among East African children in connection with awareness and concern about malocclusion reveals very little information. A study by Ng'ang'a *et al.* (4) among subjects aged 13-15 years in Nairobi showed more females being dissatisfied with the appearance of their teeth than their male counterparts. Females also appeared to have had a higher awareness and concern about

malocclusion in that study than males. Mugonzibwa *et al.* (5) reported that parents and their children in Dar es Salaam, Tanzania, perceived severe deviations including space deficiency irregularities as the most unattractive compared to other occlusal traits like open bite. Children with high subjective orthodontic treatment needs were reported to have had high objective orthodontic treatment needs in Dar-es Salaam (6). The purpose of this study was, therefore, to assess the awareness and concern about malocclusion among 12-15 year-olds in Moshi, Tanzania.

MATERIALS AND METHODS

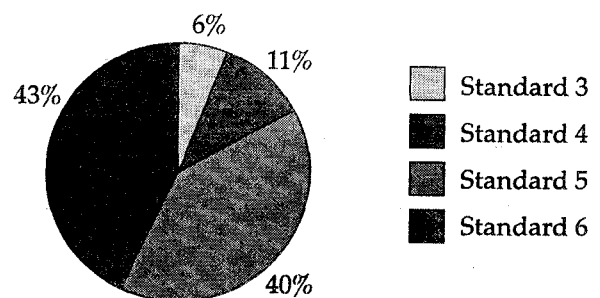
This was a cross-sectional study involving a sample of 298 public primary school children (158 males and 140 females) aged 12-15 years in Moshi Municipality, Tanzania. The subjects were randomly selected from 26 primary schools as follows: in the first stage, two primary schools from each division were randomly selected using a table of random numbers. In the second stage, each pupil-aged 12-15 years in the selected schools was identified through a class register. Subjects were randomly selected using a table of random numbers from each of the selected primary schools. These subjects agreed to participate and constituted a representative sample for study. The sample comprised 3.7% of all the public primary school children aged 12-15 years. Age was recorded to the nearest six months using the class register. The mean age of respondents was 12.7 years (sd 0.7). All the subjects were Tanzanians of African origin. Ethical clearance was sought and obtained from Tumaini University, Kilimanjaro Christian Medical College Ethics and Research Committee.

Data were collected through close-ended, self-administered questionnaires (4). The questionnaire was translated into Kiswahili which is easily understood by Tanzanian children in this age group. A trained assistant distributed and supervised filling-in of the questionnaires by the children. Data were then processed and analysed by the Statistical Package for Social Sciences (7). Chi-square test was used to evaluate gender differences. Subjects' response alternatives to the paired questions (which constituted the questionnaire) were evaluated to assess the association between awareness and concern about malocclusion using the Spearman rank order correlation.

RESULTS

The distribution of respondents according to class level is shown in Figure 1. Most of the respondents were drawn from standards five and six classes. The results of the questionnaire are presented in Tables one to four. Those who responded by showing indifference and those who said "do not know / do not care" were excluded from the statistical calculations for gender differences. About 56% of the respondents thought their teeth were properly aligned while 32.5% thought their teeth were not properly aligned (Table 1). Significantly more males than females thought they had seen one among their age-mates with malaligned teeth before ($p < 0.05$) (Table 1). About 51% of the respondents thought their teeth looked better than those of their age-mates while 20.8% could not find a difference between their teeth and those of their age-mates. Only 24.5% of the respondents found their teeth to have been worse than those of their age-mates. Children who reported having ever been teased due to their malaligned teeth at their schools were 25.8%. More respondents (70.5%) reported not to ever have been teased before due to their malaligned teeth (Table 2). Children who were satisfied with the way their teeth appeared in the mouth were 84.6%. Only 29.1% of the respondents reported not to be satisfied with the way their teeth appeared in their mouth.

Figure 1
Distribution of respondents according to class levels
($n = 298$)



Children who thought it was unpleasant to stay with malaligned teeth were 55.7% of the respondents (Table 3).

Subjective orthodontic treatment need was reported by 69.1% of the respondents. Only 13.8% thought they did not need orthodontic treatment and 17.1% were not sure of the need for treatment. Majority of the children (75%) were ready to accept orthodontic treatment while 10.4% were not ready (Table 4). There was a significant correlation among

all the paired questions except the pair of questions which asked "Do you find your own teeth looking better or worse in your mouth than those of most people of your age?" and "do your schoolmates tease you about the appearance of your teeth or jaws?" (Table 2).

Table 1

Distribution of response alternatives among the Moshi children regarding awareness about malocclusion (n = 298)

Question	Response alternatives	No.	(%)
Do you generally observe that your teeth are not properly aligned in your mouth? M:F: p > 0.05	Yes, very much	22	(7.4)
	Yes, somehow	145	(48.7)
	No, not at all	97	(32.5)
	Do not know/ do not care	34	(11.4)
Have you ever seen one among your age mate with malaligned teeth before? M: F: p <0.05 (more claims from males)	Yes	120	(40.3)
	No	76	(25.5)
	Do not bother to look	102	(34.2)

Correlation between response alternatives of question 1 and 2 : r = 0.194, p < 0.05

Table 2

Distribution of response alternatives among Moshi children in relation to concern about own teeth alignment and teasing (n = 298)

Question	Response alternatives	No.	(%)
Do you find your own teeth looking better or worse in your mouth than those of most people of your age? M: F: p > 0.05	Much better	49	(16.4)
	Somewhat better	104	(34.9)
	Like most of the others	62	(20.8)
	Somewhat worse	61	(20.5)
	Much worse	12	(4.0)
	Do not know/ do not care	10	(3.4)
Do your schoolmates tease you about the appearance of your teeth or jaws? M: F: p > 0.05	Yes, often	20	(6.7)
	Yes, sometime	23	(7.7)
	Yes rarely	34	(11.4)
	No, never	210	(70.5)
	Do not know/ do not care	11	(3.7)

Correlation between response alternatives of question 1 and 2: r = -0.093, p > 0.05

Table 3

Distribution of response alternatives among children regarding satisfaction with own teeth alignment and the opinion on living with malaligned teeth (n = 298)

Question	Response alternatives	No.	(%)
Are you satisfied with the way your teeth appear in your mouth now? M: F: p > 0.05	Very satisfied	86	(28.9)
	Rather satisfied	117	(39.3)
	Rather dissatisfied	52	(17.4)
	Very dissatisfied	35	(11.7)
	Do not know / do not care	8	(2.7)
What is your view about staying with malaligned teeth throughout your life? M: F: p > 0.05	Acceptable	89	(29.9)
	Unpleasant	166	(55.7)
	Do not know / do not care	43	(14.4)

Correlation between response alternatives of question 1 and 2: $r = -0.26, p < 0.05$

Table 4

Distribution of response alternatives among Moshi children in relation to subjective orthodontic treatment need and readiness for orthodontic treatment (n = 298)

Question	Response alternatives	No.	(%)
Would you like to have your teeth straightened? M:F: p > 0.05	Yes	206	(69.1)
	No	41	(13.8)
	Not sure	51	(17.1)
Would you accept any kind of manipulation in your mouth to straighten your malaligned teeth? M: F: p > 0.05	Yes	224	(75.2)
	No	31	(10.4)
	Not sure	43	(14.4)

Correlation between response alternatives of question 1 and 2: $r = 0.592, p < 0.05$

DISCUSSION

Assessing the way children react to malocclusion is a preliminary move towards establishing both subjective and objective treatment needs. This is crucial before embarking on planning and organising meaningful orthodontic services in a society. The aim of this study was to assess in broad terms, the awareness and concern about malocclusion among children in Moshi, Tanzania. The approach used to assess this was through self-administered questionnaires. Close-ended questionnaire format which was considered appropriate at the cognitive level of the studied

pupils was designed to assess awareness and concern about malocclusion and subjective orthodontic treatment need. Similar questionnaires had been used before (4). The use of the Kiswahili language, which was easily understood by this group of subjects, was found appropriate. Close supervision and counterchecking ensured proper completion of the questionnaires.

A positive correlation between the following pair of questions: "do you generally observe that your teeth are not properly aligned in your mouth?" and "have you ever seen one among your age-mates with malaligned teeth before?" suggests that children in this population had awareness towards

malocclusion. However, some defects of occlusion may not have been noticeable to the self. Moreover, those who have malocclusion may not expect them to be noted by others (8). Thus, to some extent, group response to malocclusive traits may be similar to the responses of those without malocclusion. The present results on awareness about malocclusion in relation to this pair of questions therefore, need to be interpreted with caution.

Bullying or teasing is common among school children. Severe malocclusion leading to aesthetic impairment is one of the factors that may lead to teasing. Its effect on a child can be devastating and long-lasting (9). Lack of significant correlation between response alternative of the pair of the following questions: "do you find your own teeth looking better or worse in your mouth than those of most people of your age?" and "do your schoolmates tease you about the appearance of your teeth or jaws?" probably indicates that individual personality and psychosocial variables are responsible for this observation (10). In Tanzania, primary school bullying or teasing is strictly prohibited at home and at school. This can partly explain the higher proportion of children who said they had never been teased before despite the high awareness of having malaligned teeth. A previous study (4) reported similar findings in Nairobi where 75% of children said they had never been teased before. Another possibility could be that children in this population are so used to seeing malocclusion that it is no longer peculiar to have malaligned teeth. This may be related to the fact that orthodontic treatment is virtually non-existent in Moshi.

Dissatisfaction with own dental appearance is commonly related to the severity of the occlusal irregularities (11). However, to what extent this may be true for Moshi and Tanzanian children in general, is not known. Tanzanians' perceived need for oral health care is generally related to the relief of pain and discomfort (12,13). Majority of subjects who had awareness about malocclusion were satisfied with their tooth arrangement. The significant negative correlation noted between response alternative of a pair of the following questions: "are you satisfied with the way your teeth appear in your mouth now?" and "what is your view about staying with malaligned teeth throughout your life?" was interesting. The children found it acceptable to remain with malaligned teeth as long as they were

not the ones with the defects. Likewise when the dissatisfaction was high, they considered it unacceptable to remain with malaligned teeth throughout their lives because they were the ones affected. Although this observation may suggest strong awareness and concern about malocclusion in these children, exposure to orthodontic treatment may change this observation (14). Few children (29.1%) were dissatisfied with their own tooth arrangement in comparison with the high subjective orthodontic treatment need (69.1%). Previous studies have noted the same trend (4,6,15). It is probable that children in this study did not want to have part of their body rated low at the same time they longed for something to be done on their teeth to improve their dentofacial appearance. This is consistent with the general view that children at this age have disturbed self-image and overreact to matters related to personal appearance (1). Majority of children in the current study thought it was unpleasant to remain with malocclusion throughout their life. This was comparable to that of Dar es Saalam children (85%) who thought it was important to have well-aligned teeth for overall facial appearance (6).

The number of subjects who thought they needed orthodontic treatment (69.1%) were less than those who were ready to accept it (75.2%). However, this subjective need for orthodontic treatment was much higher compared to the findings for Nairobi (33%) (4) and Dar es Salaam (38%) children. The reasons for these results are not clear, considering that the general dental services are limited in Moshi and hence the likelihood of the children having been advised by a dental professional on the need for treatment were minimal. However, Mugonzibwa *et al.* (16) reported that Tanzanian parents and their children seemed to know something about malocclusion. Analysis of the response alternatives of a pair of the following questions: "would you like to have your teeth straightened?" and "would you accept any kind of manipulation in your mouth to straighten your malaligned teeth?" showed a positive significant correlation. None of the studied subjects had undergone or was undergoing orthodontic treatment at the time of data collection. It is unlikely that the findings with regard to the subjects who desired orthodontic treatment and were ready to accept it could be explained by factors of availability, accessibility, acceptability, affordability and

awareness of what was possible by the concerned individual or community (17). It is more likely that the Moshi children merely wanted to have their teeth straightened so as to have a pleasing dental appearance like what they saw in non-orthodontic commercial advertisements. Another possible explanation of this observation is that suggestions about straightening of teeth prompted by this study may have made some pupils wish for orthodontic treatment without being familiar with all the factors associated with the treatment.

The present study has demonstrated that there is awareness and concern about malocclusion in this population. Although there was significant correlation between awareness and concern about malocclusion, this could not explain the high subjective orthodontic treatment need. The information from this study forms a basis for planning further research to address the issues of concern on dentofacial appearance and the psychosocial implications of malocclusion not only in this population but in Tanzania in general.

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