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Association between Malocclusion, Self-perception, Self-esteem and Socio-demographic Factors among Primary Schoolchildren in Dar esSalaam, Tanzania

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Abstract

Aim: The aim of this study was to assess the association between malocclusion, self-perception, self-esteem, and socio-demographic factors among primary schoolchildren in Dar es Salaam, Tanzania.
Methods: This was an analytical cross-sectional study that involved children aged 10-12 years from primary schools in Dar es Salaam. A questionnaire was used to obtain information about the participants' socio-demographics, self-perception and self-esteem. Clinical examination was done to determine their occlusal statuses. Data were analyzed using SPSS software (version 22.0), and Chi-square test and logistic regression model were used to assess statistically significant differences between variables. $P<0.05$ was considered significant.
Results: A total of 620 schoolchildren participated in this study. The overall prevalence of malocclusion was 66.5%. Undesirable self-perception was reported in 34.0% and self-esteem issues in 30.0% of the schoolchildren. Significantly, many participants with less educated fathers had malocclusion compared with their counterparts (p=0.002). Furthermore, most children with malocclusion perceived themselves negatively and reported lower self-esteem compared with those who had no malocclusion (78.7% vs. 21.3%, p=0.000 and 75.8% vs. 24.2%, p=0.001, respectively). In the logistic regression model, the presence of malocclusion remained as a significant determinant of schoolchildren perceiving themselves negatively and reporting lower self-esteem (OR: 2.4, CI: 1.62-3.54, p= 0.000 and OR: 1.82, CI: 1.23-2.7, p= 0.003, respectively).
Conclusion: The presence of malocclusion was associated with children's negative self-perception and lowerself-esteem. Malocclusion prevention and early interventions in children are highly recommended.

Keywords: Malocclusion, Orthodontic treatment need.

Background

Malocclusion is a condition that reflects an expression of variability in the way maxillary and mandibular teeth occlude (1). The condition is among the most common dental disorders that affects mankind (2). Absence of malocclusion is often associated with better academic performance (indirectly), good work performance, positive peer relations, social acceptance, high social status, positive image, and good self-concept (3,4). On the other hand, presence of malocclusion can have both economic and psychosocial effects on an individual (5,6). The psychosocial effects of malocclusion comprise alterations in one's self-perception and self-esteem. Self-perception is the awareness of the characteristics that constitute one's "self" (7). Contrariwise, self-esteem refers to the judgments and evaluations that people make about themselves or an evaluation of the "self" (8).

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Considering self-perception, people with malocclusion were reported to be dissatisfied with their faces and/or teeth appearances, and had a negative perception of their dentofacial aesthetics (9,10). In previous Tanzanian studies (11,12), a sizeable proportion of children were found to be either unhappy or dissatisfied with their dentofacial appearances due to malocclusion. Thus, body image in terms of appearance is an important element in psychosocial adjustments and often has negative effects on one's life (13,14). Many factors have been related to dentofacial dissatisfaction and negative self-perception, including, but not limited to, age, sex, and socioeconomic status. As regards age, younger children were found to tend to perceive themselves to be less attractive than older children (15). Other studies found presence of malocclusion to be associated with dentofacial dissatisfaction in both younger and older children (9,16). As for socioeconomic status, earlier studies have shown that it could influence one's perceptions about his/her dentofacial appearance (16,17). Regarding sex, females were reported to have a high propensity to score themselves as being attractive compared with males (15,18).

As regards self-esteem, a study by Clijmans et al. (19) showed that the presence of malocclusion negatively affected certain personality traits of their participants. Likewise, compared with individuals who were dissatisfied with their dental appearances, those who were satisfied were reported to have higher self-esteem (20). In addition, participants who viewed themselves as being attractive were found to have higher self-esteem than those who viewed themselves otherwise (18,21). Furthermore, researchers have stated that individuals who underwent orthodontic treatment had higher self-esteem than those who never received such treatment (18).

Worldwide, several studies have reported various psychosocial impacts of malocclusion. However, studies that have assessed the effects of malocclusion on both self-esteem and self-perception could not be retrieved from Tanzanian literature. Besides, some inconclusive findings have been drawn by previous studies regarding the relationship between malocclusion and psychosocial factors. The inconsistencies of those findings could be due to socio-cultural disparities between different populations or differences in the assessment methods used to obtain data. Therefore, the present study aimed to assess the association between malocclusion, self-perception, self-esteem, and socio-demographic factors among Tanzanian primary schoolchildren.

Methods

This was an analytical cross-sectional study that involved schoolchildren from nine selected primary schools from three out of five districts of the Dar es Salaam region. The chosen districts were Kinondoni (North), Ilala (Centre), and Kigamboni (South). Thus, the districts were selected randomly considering their geographical location. Participants were selected through a systematic random sampling method. A total of 620 schoolchildren, aged 10-12 years, participated in the study. None of the children had a history of orthodontic treatment. Permission to conduct the study was obtained from all relevant authorities in Tanzania, including educational authorities, relevant municipalities, and respective schools. The Research and Publication Committee of the Muhimbili University of Health and Allied Sciences provided ethical clearance for the study (registration code: DA. 287/298/01A), and all those who participated gave their consent.

Questionnaire

Schoolchildren were interviewed in the schools' compound, using a structured questionnaire with questions enquiring about their socio-demographic characteristics, self-perception, and self-esteem (assessed using a modified Global Self-Evaluation scale) (18). The interview was done before conducting a clinical examination. The questionnaire was pilot tested in a convenience sample of 50 primary schoolchildren to test its clarity, and 98% of the children were able to comprehend and respond appropriately to the questions.

Clinical Examination

A clinical examination was performed on each pupil by one trained and calibrated dentist in the classroom setting, using natural daylight as a source of illumination and an assistant recorded the findings. The examiner utilized a method described by Björk et al. (22) with modifications by Al-Emran et al. (23), wherein:

Maxillary overjet was coded into four categories, where 1=grade 1 (1–4.9 mm), 2=grade 2 (5–8.9 mm), 3=grade 3 (9 mm or more), and 9=not registered.

Mandibular overjet was categorized as 0=absent, 1=grade 1 (<0 to -1.9 mm), and 2=grade 2 (≤ -2mm).

Angle's Classification (assessing the sagittal molar occlusion) was coded into the following categories: 1=class I (normal/neutral), 2=class II (distal), 3=class III (mesial), and 9=not registered.

Overbite (vertical overlapping of the upper and

lower incisors) was coded into four categories, where 1=grade 1 (0.1–2.9 mm), 2=grade 2 (3–4.9 mm), 3=grade 3 (5 mm or more), and 9= not registered.

Openbite was categorized as 0=absent, 1=frontal openbite grade 1 (0–1.9 mm), 2=frontal openbite grade 2 (≥2 mm), and 3=lateral openbite.

Lateral crossbite was categorized as 1=absent, 2=present unilaterally, and 3=present bilaterally.

Scissors bite was recorded when one or more teeth were in the side segment and categorized as 1=absent, 2=present unilaterally, and 3=present bilaterally.

Midline shift was recorded if the displacement in relation to the midline of the face was more than or equal to 2 mm and categorized as 1=absent and 2=present. Crowding was recorded when it was ≥2 mm in a segment, and then categorized as 1=absent, 2=present on upper jaw, 3=present on lower jaw, and 4=present on both jaws.

Spacing was recorded when it was ≥2 mm in a segment, and 1=absent, 2=present upper jaw, 3=present lower jaw, and 4=present on both jaws.

Overall malocclusion was recorded when the presence or absence of each malocclusion trait was obtained by re-coding value(s) of the trait: 0=absent (for normal findings) and 1=present (for one or more abnormal findings). Then a sum score of the malocclusion was constructed for use in cross- tabulation and logistic regression analyses, based on the absence (0)/presence (1) of the following recordings: maxillary overjet, mandibular overjet, class II and class III molar occlusion, openbite, deep bite, lateral crossbite, scissors bite, midline shift, crowding, and spacing.

Self-perception was assessed by considering satisfaction with dental appearance and social impacts of teeth appearances using a questionnaire containing these questions: satisfaction with dental appearances, straight teeth make me popular and successful and being told to straighten my teeth.

Self-esteem was assessed by a modified General Self-Efficacy Scale (24) using following questions: At times I feel am not good at all, I feel I don't have much to be proud of, I certainly feel useless at times, I'm inclined to feel that I'm a failure, I would like to change many things about myself, I have often wanted to become someone else.

Validity and Reliability of the Data

The schoolchildren were able to complete the questionnaire without any problem; this suggested its face validity. Also, construct validity was such that participants reported altered self-esteem and self-perception as their occlusal statuses changed from normal to abnormal. The reliability of the data was demonstrated in a test-retest clinical examination. This was carried out about a month after the initial examination, and was based on duplicate measurements of 62 schoolchildren (10% of all participants). The Cohen's kappa values were calculated accordingly, giving the scores of 0.69 (midline shift), 0.83 (spacing), 0.86 (lateral crossbite), 0.87 (crowding), 0.96 (maxillary overjet), and 1 (for mandibular overjet, Angle's classification, deep bite, openbite, and scissors bite). The values indicated a substantial to perfect agreement, according to Petersen (25).

Statistical Analysis

Data were coded and analyzed using the computer software SPSS version 22.0. The frequency distribution of variables was generated in a univariate analysis. Chi-square statistics were used to assess the association between having malocclusion and socio-demographic characteristics, children's self-perceptions, as well as their self-esteem. Multiple logistic regression analysis was used for multivariate analyses. The p-value for statistically significant associations was set at $p<0.05$, and the CI was at 95%.

Results

Socio-demographic characteristics

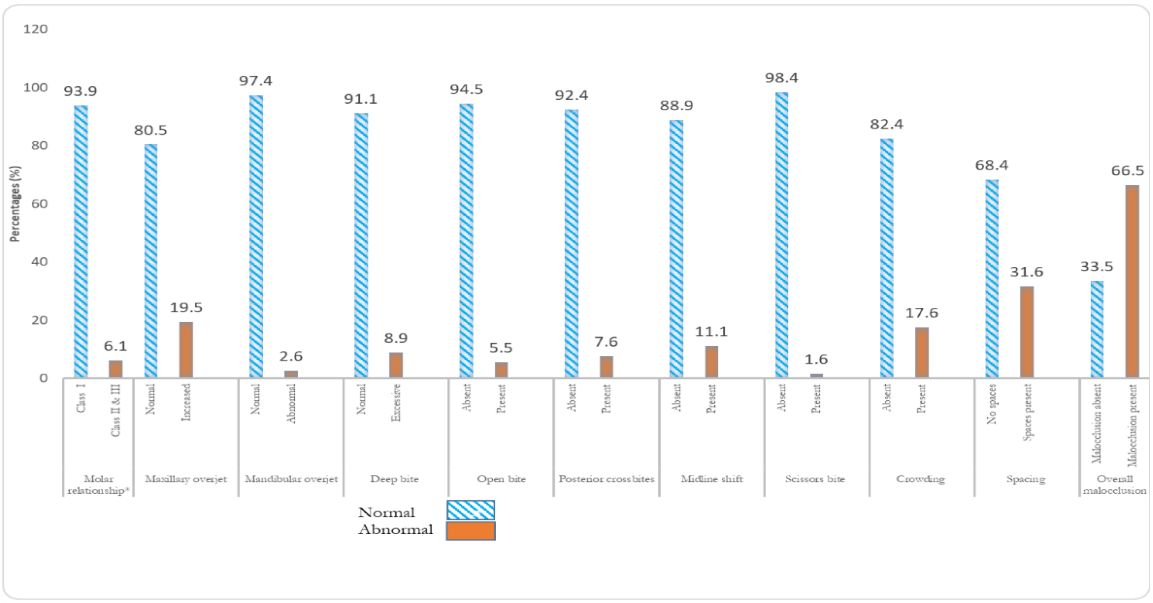
A total of 620 children participated in this study. The majority of parents/guardians had a secondary level of education or above (fathers: 60.8% and mothers: 50.6%). Only a few of the children's parents were reported to have a formal occupation (fathers: 23.7% and mothers: 10.6%) (Table 1).

Occlusal characteristics

The majority (93.9%) of the participants had a Class I molar relationship (according to Angle's classification). The overall prevalence of malocclusion in this study was 66.5%. Spacing (31.6%), increased maxillary overjet (19.5%), crowding (17.6%), and midline shift (11.1%) were the most common malocclusion traits (Figure. 1).

Table 1. Distribution of participants by socio-demographic characteristics (N=620).

Variable	Category	Number	Percentage
Age	10 years old	246	39.7
	11-12 years old	374	60.3
Sex	Boys	228	36.8
	Girls	392	63.2
Class of the child	Standard IV	294	47.4
	Standard V	326	52.6
Father's education	Primary education and below	243	39.2
	Secondary education and above	377	60.8
Mother's education	Primary education and below	306	49.4
	Secondary education and above	314	50.6
Father's occupation	Formal employment	147	23.7
	Informal employment	473	76.3
Mother occupation	Formal employment	66	10.6
	Informal employment	554	89.4



*As assessed by Angle's classification

Figure1. Percentage distribution of schoolchildren by their dichotomized occlusal characteristics

Self-perception

Dissatisfaction with dental appearances was reported among 39.4% of the schoolchildren. Regarding the social impact of malocclusion, the majority (54.5%) thought that straight teeth would make them popular and successful, 12.4% were once advised to straighten their teeth, 17.1% reported being teased due to their dental appearances, 10.3% reported avoiding smiling, and 11.6% hid their teeth while speaking. The overall prevalence of negative self-perception in this study was 34.0% (Table 2).

Self-esteem

A reported lowered self-esteem in this study was mainly in terms of the children as "not feeling good at all at times" (14.2%), "preferring to change many things about themselves" (17.4%), and "wanting to become someone else" (11.3%). The overall prevalence of lowered self-esteem in children was 30.0% (Table 3).

Association between socio-demographic characteristics and malocclusion

Many children from families with fathers who had a low education level had malocclusion, compared with their counterparts with fathers who had a high education level (73.7% vs. 61.8%, p=0.002). Other socio-demographic characteristics were not significantly associated with malocclusion (Table 4).

Association between having malocclusion, self-perception, and self-esteem

Most of the primary schoolchildren who had an increased maxillary overjet (>4.9 mm), deep bite, openbite, or crowding (>2 mm), reported to perceive themselves negatively compared with

their counterparts who did not have those conditions (the p-values being p=0.000, p=0.000, p=0.023, p=0.001, respectively). Also, the overall presence of malocclusion was related to children perceiving negatively (p=0.000). Regarding self-esteem, many primary schoolchildren who had an altered molar relationship (according to Angle's classification), excessive maxillary overjet, crowding, and overall presence of malocclusion, reported to have a lowered self-esteem, compared with their counterparts who did not have those conditions (the p-values being p=0.046, p=0.002, p=0.000, and p=0.001, respectively) (Table 5).

Association between having malocclusion, socio-demographic factors, self-perception, and self-esteem

Older children (11-12 years) were more likely to perceive themselves negatively than younger ones (OR: 1.41, CI: 1.92-2.12, p=0.013). Also, schoolchildren who were in Grade IV were less likely to report negative self-perception compared with those in Grade V (OR: 0.63, CI: 0.42-0.96, p=0.031). However, participants who had malocclusion were twice as likely to perceive themselves negatively compared with those without malocclusion (OR: 2.4, CI: 1.62-3.54, p=0.000). Furthermore, participants who had malocclusion were almost twice as likely to report a lowered self-esteem compared with those without malocclusion (OR: 1.82, CI: 1.23-2.7, p= 0.003) (Table 6).

Table 2. Percentage distribution of schoolchildren by self-perception status

Variable	Category	Number	Percentage
Satisfaction with dental appearances	Yes	376	60.6
	No	244	39.4
Social impacts of teeth appearance			
Straight teeth make me popular and successful	Yes	338	54.5
	No	282	45.5
Being told to straighten my teeth	Yes	77	12.4
	No	543	87.6
Teased due to dental appearance	Yes	106	17.1
	No	514	82.9
Avoiding smiling	Yes	64	10.3
	No	556	89.7
Hiding teeth while speaking	Yes	72	11.6
	No	548	88.4
Overall self-perception	Positive	409	66.0
	Negative	211	34.0

Table 3. Percentage distribution of schoolchildren according to self-esteem status (as assessed by a modified General Self-Efficacy Scale)

Variable	Category	Number	Percentage
At times, I feel I am not good at all	Yes	88	14.2
	No	532	85.8
I feel I don't have much to be proud of	Yes	52	8.4
	No	568	91.6
I certainly feel useless at times	Yes	18	2.9
	No	602	97.1
All in all, I'm inclined to feel that I'm a failure	Yes	17	2.7
	No	603	97.3
I would like to change many things about myself	Yes	108	17.4
	No	512	82.6
I have often wanted to become someone else	Yes	70	11.3
	No	550	88.7
Overall self-esteem	Normal	434	70.0
	Lowered	186	30.0

Table 4. Distribution of schoolchildren by malocclusion status and socio-demographic characteristics

Socio-demographic characteristics		Malocclusion status			
	Category	**Malocclusion absent n (%)**	**Malocclusion present N (%)**	**Total n (%)**	**p-value**
Age	10 years old	78 (31.7)	168 (68.3)	246 (39.7)	0.436
	11-12 years old	130 (34.8)	244 (65.2)	374 (60.3)	
Sex	Boys	83 (36.4)	145 (63.6)	228 (36.8)	0.253
	Girls	125 (31.8)	267 (68.2)	392 (63.2)	
Class	Class IV	94 (32.0)	200 (68.0)	294 (47.4)	0.444
	Class V	114 (35.0)	212 (65.0)	326 (52.6)	
Father's education	Primary education & below	64 (26.3)	179 (73.7)	243 (39.2)	0.002*
	Secondary education & above	144 (38.2)	233 (61.8)	377 (60.8)	
Mother's education	Primary education & below	98 (32.0)	208 (68.0)	243 (39.2)	0.445
	Secondary education & above	110 (35.0)	204 (65.0)	377 (60.8)	
Father's occupation	Informal employment	162 (34.2)	311 (65.8)	473 (76.3)	0.549
	Formal employment	46 (32.3)	101 (68.7)	147 (23.7)	
Mother's occupation	Informal employment	188 (33.9)	366 (66.1)	554 (89.4)	0.329
	Formal employment	20 (30.3)	66 (69.7)	66 (10.6)	

Table 5. Distribution of schoolchildren by occlusal characteristics, self-perception, and self-esteem status

Malocclusion traits		Self-perception status			Self-esteem status		
	Category	**Positive n (%)**	**Negative n (%)**	**p-value**	**Positive n (%)**	**Negative n (%)**	**p-value**
Molar relationship	Normal	192 (95.0)	390(93.3)	0.477	413 (95.2)	169 (90.9)	0.046*
	Abnormal	10 (5.0)	28 (6.7)		21 (4.8)	17 (9.1)	
Maxillaryoverjet	Normal	179 (88.6)	320(76.6)	0.000*	364 (83.9)	135 (72.6)	0.002*
	Increased	23 (11.4)	98 (23.4)		70 (16.1)	51 (27.4)	
Mandibularoverjet	Absent	198 (98.0)	406(97.1)	0.600	422 (97.2)	182 (97.8)	0.787
	Present	4 (2.0)	12 (2.9)		12 (2.8)	4 (2.2)	
Deep bite	Positive	196 (97.0)	369(88.3)	0.000*	399 (91.9)	166 (89.2)	0.284
	Negative	6 (3.0)	49 (11.7)		35 (8.1)	20 (10.8)	
Openbite	Absent	197 (97.5)	389(93.0)	0.023*	410 (94.5)	176 (94.6)	1.000
	Present	5 (2.5)	29 (7.0)		24 (5.5)	10 (5.4)	
Posteriorcrossbite	Absent	193 (95.5)	380(90.9)	0.051	407 (93.8)	166 (89.2)	0.067
	Present	9 (4.5)	38 (9.1)		27 (6.2)	20 (10.9)	
Midline shift	Absent	185 (91.6)	366(87.6)	0.173	392 (90.3)	159 (85.5)	0.094
	Present	17 (8.4)	52 (12.4)		42 (9.7)	27 (14.5)	
Scissors bite	Absent	198 (98.0)	412(98.6)	0.735	426 (98.2)	184 (98.9)	0.731
	Present	4 (2.0)	6 (1.4)		8 (1.8)	2 (1.1)	
Crowding	Absent	181 (89.6)	330(79.0)	0.001*	375 (86.4)	136 (73.1)	0.000*
	Present	21 (10.4)	88 (21.0)		59 (13.6)	50 (26.9)	
Spaces	Absent	140 (69.3)	284(68.0)	0.782	296 (68.2)	128 (68.8)	0.925
	Present	62 (30.7)	134(32.0)		138 (31.8)	58 (31.2)	
Overall Malocclusion	Absent	163 (39.9)	45 (21.3)	0.000*	271 (62.4)	141 (75.8)	0.001*
	Present	246 (60.1)	166(78.7)		163 (37.6)	45 (24.2)	

Table 6. Logistic regression analysis for self-perception, self-esteem, and other related factors among Dar es Salaamprimary schoolchildren.

Associated factors		Self-perception			Self-esteem		
	Category	OddsRatio	95% CI	p-value	OddsRatio	95% CI	p-value
Age of respondents	10 years old 11-12 years old	1 1.41	(1.92-2.12)	0.013*	1 1.3	(0.84–2.00)	0.237
Sex of participants	Male	1			1		
	Female	1.04	(0.72–1.50)	0.833	1.25	(0.79–1.94)	0.253
Grade of participants	Grade VGrade IV	1 0.63	(0.42–0.96)	0.031*	1 0.74	(0.48–1.12)	0.154
Father's level of education	Primary education & below Secondary education & above	1 0.75	(0.49–1.14)	0.172	1 0.77	(0.50–1.17)	0.215
Mother's level of education	Primary education & below Secondary education & above	1 1.40	(0.93–2.11)	0.106	1 1.05	(0.69–1.59)	0.827
Father's occupation	Informal employment Formal employment	1 1.49	(0.96–2.31)	0.074	1 1.10	(0.70–1.74)	
Mother's occupation	Informal employment Formal employment	1 0.81	(0.44–1.47)	0.485	1 0.90	(0.48–1.70)	0.751
Malocclusion status	Absent Present	1 2.4	(1.62–3.54)	0.000*	1 1.82	(1.23–2.7)	0.003 *

*p<0.05

*p<0.05 statistically significant

Discussion

Focusing on self-perception and self-esteem, this study assessed the socio-psychological effects related to malocclusion among primary schoolchildren in Dar es Salaam, Tanzania. The survey was cross-sectional; thus, causal inferences cannot be ascertained. Nevertheless, this method was chosen considering its advantage, wherein it was possible to collect enough data in a shorter time with less cost (26).

Socio-demographic characteristics

It was found that most parents of the children involved in this study had a secondary education level or above. This is unlike the profile of many parents of children attending public schools in Tanzania, where the majority of them have a low education level (17). The selected sites for this study could explain the disparity, as most schoolchildren resided in urban areas with fewer educated people.

Occlusal characteristics

Björk et al.'s (22) method of characterizing malocclusion was the basis for the clinical examination. The method was chosen to allow objective comparison of malocclusion status between the current study population and those from previous studies. Moreover, none of the children had undergone orthodontic treatment. Thilander et al. (27) reported the importance of using non-orthodontically treated children in population-based studies. The overall prevalence of malocclusion obtained in this study was 66.5% and most of the participants (93.9%) had a class I molar relationship (with at least one form of occlusal or space anomaly).

The present prevalence of malocclusion is comparable to that reported in previous East African studies (17,28,29). For specific occlusal traits, spacing was recorded in 31.6%, increased maxillary overjet in 19.5%, crowding in 17.6%, and midline shift in 11.1% of the schoolchildren. Apart from midline shift, the prevalence of other conditions was slightly higher than that obtained earlier by Tanzanian and Nigerian researchers (30, 20, respectively). The higher prevalence of the occlusal anomalies reported in the current study could be due to the fact that most of the study participants were younger and were in the mixed dentition stage (31).

Malocclusion and socio-demographic characteristics

Contrary to the findings obtained by Mitchell (31) and Tumurkhuu et al. (32), the present study found that most children who had malocclusion were from families with fathers who had a low education level. This could be due to the relationship between malocclusion and its etiological factors (i.e., dental caries) because dental caries experience is also related to socio-demographic and socioeconomic disparities (12,33).

Self-perception

17.1% of the present schoolchildren reported that they were "being teased" due to their dental appearances, a similar proportion was found in a study by Mugonzibwa et al. (11). This implies that teasing a child may cause the child to be ashamed during social interactions, and he/she may develop psychosocial issues (34,35).

Regarding dissatisfaction with dental appearance, 39.4% of the current participants reported dissatisfaction. A relatively lower prevalence of dissatisfaction with dentofacial appearance was reported in former studies (9,10,17). The slightly higher prevalence of dissatisfaction obtained in this study corresponds to the higher prevalence of malocclusion among the participants.

Malocclusion and self-perception

Having an increased maxillary overjet (>4.9 mm), crowding (>2 mm), openbite, and deep bite were significantly associated with schoolchildren perceiving themselves negatively. This finding is in agreement with what was reported previously by Seehra et al., Marques et al, Benson et al, and Bardan et al (3, 9, 16, 18, respectively). Increased maxillary overjet, crowding, and openbite are anomalies that can be visible during smiling and speaking. Consequently, a child with such anomalies may acquire some negative feelings about himself/herself (36,37).

Self-perception, socio-demographic characteristics, and malocclusion

The relationship between malocclusion, self-perception, and socio-demographic characteristics was examined by logistic regression analysis. It was found that older children (11-12 years old) were more likely to perceive themselves negatively than younger ones. Concurrently, schoolchildren in Grade IV were less likely to perceive themselves negatively compared with those in Grade V. This could be explained by the fact that schoolchildren from a higher grade (Grade V) and those who were older were approaching adolescence. Hence, they tended to become more conscious of their looks than their younger counterparts (13,15,38). Furthermore, the overall presence of malocclusion was a significant determinant for schoolchildren to report negative self-perception. This finding is similar to what was reported by researchers (9,37) among adolescents, indicating the effect of malocclusion on someone's self-perception status (39).

Self-esteem

Thirty percent of the current study participants reported having lowered self-esteem. This percentage is higher than that reported by De Oliveira et al. (20) but lower than that reported by Taibah et al. (40). The variation in prevalence can be ascribed to both the differences in the data collection tools used and socio-cultural dissimilarities between populations.

Malocclusion and self-esteem

An altered molar relationship, an increased maxillary overjet, and crowding were significantly associated with children reporting lowered self-esteem. A study by Agou et al. (21) obtained comparable results. The self-esteem of children with such conditions is probably lowered because the presence of the conditions can subject a child to being teased and bullied by others (3). Conversely, orthodontic treatment for malocclusion can enhance one's body image (41) and improve one's self-esteem as well as social interaction (18,42).

Self-esteem, socio-demographic characteristics, and malocclusion

In a logistic regression analysis, only the presence of malocclusion remained as a significant determinant of reporting a lowered self-esteem. This finding is similar to what was reported in studies by Jung (43,44) and Taibah et al. (40). Correspondingly, earlier studies found that children with lowered self-esteem demonstrated a great need to correct their malocclusion (45,46).

Generally, there is immense importance in addressing the lowered self-esteem and negative self-perception as they relate to malocclusion in children. The effects of these factors can be the main reason for children to demand orthodontic treatment to eliminate their socio-psychological problems (47).

Conclusion

This study found a significant association between the presence of malocclusion in schoolchildren and reporting socio-psychological impacts such as negative self-perception and lowered self-esteem.

Conflicts of interest: None to declare.

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