



## Effect of Malocclusion on Bully Victim School Students

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### Abstract

**Background:** Bullying or peer victimization in schools is a specific sort of aggressive behavior and can be described as a circumstance in which a student is subjected, frequently and over time, to unpleasant acts on the part of one or more classmates. The study's objective was to evaluate Malocclusion's effect on bully-victim school students, specifically self-esteem and oral health-related quality of life. **Material & Methods:** This study was a prospective cross-sectional investigation carried out at the Baridhara Scholar's International School & College. The study was carried out between October 2021 and October 2022 which included 310 students between the ages of 10 and 14 years. **Results:** Most of the students, 91(29.4%), were aged 13 years. whereas 143(46.1%) were boys and 167(53.9%) were girls. The majority of the participants, 177(57.1%), were bullied, and 133(42.9%) were not bullied. Those who had experienced bullying were significantly more likely to have a Class II Division 1 incisor relationship (P value, 0.034), an increased overjet >4 mm (P value, 0.002), and an increased overbite (P value, 0.041). A negative impact on total Oral health-related quality of life (OHRQoL) (P value, 0.001) is caused by bullied participants reporting higher degrees of oral symptoms (P value, 0.042), functional limits (P value, 0.001), emotional impact (P value, 0.001), and social impact (P value, 0.001) from their oral condition. In comparison to non-bullied participants, those who had experienced bullying reported lower levels of social competence (P-value, 0.001), athletic competence (P-value, 0.001), physical appearance-related self-esteem (P-value, 0.001), and general self-esteem (P-value, 0.001). **Conclusion:** According to this study, bullying in schools is the most prevalent offense children commit. Significant associations exist between the self-esteem of bullying victims, the existence of malocclusion, and their OHRQoL. Orthodontic characteristics such as a Class II Div1, Div2, class III incisor relationship, enhanced overjet, and overbite are linked to bullying.

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## INTRODUCTION

Bullying or peer victimization in schools is "a specific sort of aggressive behavior and can be described as a circumstance in which a student is subjected frequently and over time, to

unpleasant acts on the part of one or more classmates".<sup>[1]</sup> Both direct and indirect forms of violence harming the victim are considered bullying. Physical and verbal threats, kicking, hitting, and name-calling are examples of direct



forms of aggressiveness. The exclusion of a person from a group of peers, gossiping, and spreading rumors are examples of indirect forms which work on an emotional and social level.<sup>[2]</sup> According to several studies, peer victimization among school students is widespread.<sup>[3,4,5]</sup> Bullying affects both genders equally. Males typically experience more direct forms of hostility, whereas females typically experience subtler forms of aggression.<sup>[1,4]</sup> A study on children's malocclusion highlighted its dental and social implications.<sup>[6]</sup> In a sample of 531 students in grades 9 through 13, there was 7% reported incidence of taunting over dental traits.<sup>[7]</sup> In contrast, 15% of teenage groups waiting for orthodontic treatment reported experiencing dental-related taunting. Nine specific dental traits, including greater overjet, crowding, and a deep overbite, have been documented to provoke unpleasant reactions and prompt patients to seek treatment.<sup>[7,8,9]</sup> It's unclear how dent facial aesthetics-related bullying and teasing affect people's psychosocial well-being. Poor dental and facial appearance is frequently believed to be linked to low self-esteem, a negative self-concept, a bad body image, and maybe a long-term effect of bullying related to malocclusion.<sup>[7,8]</sup> It has been noted that children between the ages of 14 and 15 who have unsightly anterior teeth have a poorer opinion of themselves.<sup>[10]</sup> In contrast, there was no detrimental correlation between malocclusion and social or psychological well-being in patients with untreated malocclusion over the course of a 20-year longitudinal follow-up. Furthermore, it is widely acknowledged that malocclusion can affect a person's quality of life regarding their dental health (OHRQoL).<sup>[11,12]</sup> Increased overjet, increased spacing and an anterior open bite are occlusal

characteristics reported to have a detrimental effect.<sup>[12]</sup> Self-esteem, OHRQoL, and malocclusion have complicated relationships. It has been hypothesized that a person's self-esteem may affect how malocclusion affects their OHRQoL.<sup>[13]</sup> The study aimed to assess the self-reported frequency and severity of bullying in orthodontic patients and to determine whether levels of self-reported bullying, malocclusion, and the need for orthodontic treatment have any bearing on a person's sense of self-worth and OHRQoL.

### Objective

The study's objective was to evaluate Malocclusion's effect on bully-victim school students, precisely self-esteem and oral health-related quality of life.

### MATERIAL AND METHODS

This study was a prospective cross-sectional investigation carried out at the Baridhara Scholar's International School & College. The study was carried out between October 2021 to October 2022 which included 310 children between the ages of 10 and 14 years. Permission of student participation was given by the school authority and parents written concern was taken through a written consent form. As there was no relevant study in Bangladesh we used the Olweus Bully/Victim Questionnaire. Each participant was asked to determine frequency, type, and severity of bullying by completing the Olweus Bully/Victim Questionnaire.<sup>[14]</sup> This anonymous self-report survey calculates the frequency of bullying. Harter's Self Perception Profile for Children is specifically intended to measure self-esteem in children aged between 8 and 14 years.<sup>[15]</sup> Under the supervision of

researcher, each participant was requested to complete a Child Perception Questionnaire 11-14 years old (CPQ11-14) to examine the impact on the patient's OHRQoL.<sup>[16]</sup> Participants might work alone or with their caregiver to complete the questions when the consent process is finished. The data were statistically analyzed using SPSS version 25.

### Inclusion Criteria

- Children who were aged between 10-14 years with malocclusion were included in this study.

### Exclusion Criteria

- Students with other physical deformities were excluded from this study.
- Non communicable students (absence of parents' consent, disinterest of students, communication gap, absents from school) were also excluded from this study.

## RESULTS

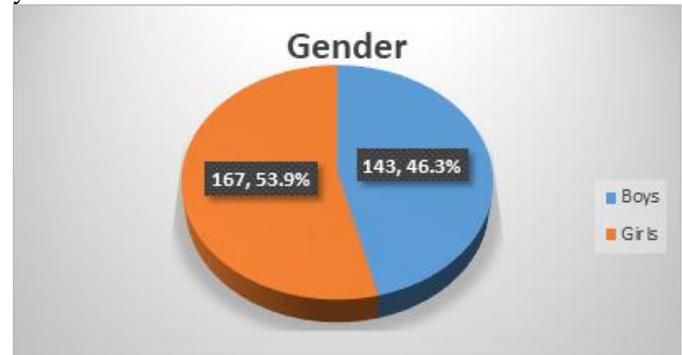
[Table 1] shows the age distribution of participants. Most of the participants, 91(29.4%), were aged 13 years and followed by 45(14.5%), were aged ten years, 57(18.4%) were aged 11 years, 78(25.2%) aged 12 years and 39 (12.6%) aged 14 years.

[Figure 1] shows the gender distribution of the participants, whereas 143(46.1%) were boys and 167(53.9%) were girls.

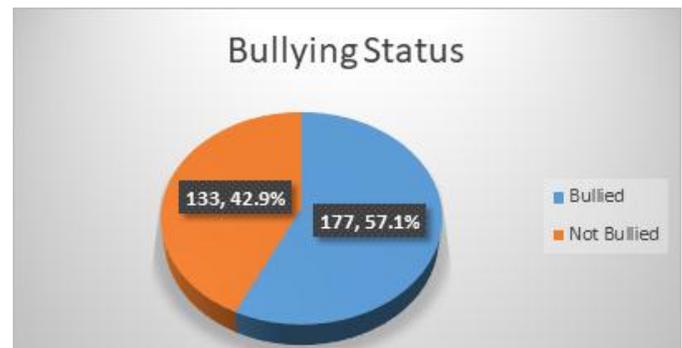
[Figure 2] shows the bullying status of the participants, whereas most participants, 177(57.1%), were bullied, and 133(42.9%) were not.

[Table 2] shows the socio-demographic characteristics of bullied participants. Among the 177 bullied participants, the majority,

110(62.1%), were girls, and 67(37.9%) were boys. Most of the participants, 44(24.9%), were aged 11 years, and their mean age was  $12.43 \pm 4.57$  years.



**Figure 1:** Gender distribution of the participants (N=310)



**Figure 2:** Bullying status of the participants (N=310)

[Table 3] presents the clinical characteristics of participants who had been bullied. The participants were evaluated using the incisor relationship, DHC, LFH, AC, skeletal pattern, overjet, and overjet. Those who had experienced bullying were significantly more likely to have a Class II Division 1 incisor relationship (P value, 0.034), increased aesthetic component (AC) (P value, 0.026), increased overjet >4 mm (P value, 0.002), and increased overbite (P value, 0.041). Class II Division 2 and Class III students were bullied by 16.4% and

15.8%, respectively. Decreased overjet and overbite patients were also bullied at 20.9% and 18.6, respectively.

[Table 4] shows the comparison of CPQ scores of participants that had been bullied with those that did not being bullied. A negative impact on total oral health-related quality of life (OHRQoL) (P value, 0.001) is caused by bullied participants reporting higher degrees of oral symptoms 5.5 whereas for non-bullied it was 4.4 (P value, 0.042) and followed by functional limits was found 5.2 and 9.8 (P value, 0.001), emotional impact was noticed 4.9 and 16.7 (P

value, 0.001), and social impact found 3.9 and 14.2 (P value, 0.001) from their oral condition.

[Table 5] compares Harter’s self-esteem characteristics of participants who had been bullied with those who did not report being bullied. In comparison to non-bullied participants, those who had experienced bullying reported lower levels of social competence (P-value, 0.001), athletic competence (P-value, 0.001), physical appearance-related self-esteem (P-value, 0.001), and general self-esteem (P-value, 0.001).

**Table 1:** Age distribution of the participants (N=310)

Age	Frequency	Percentage
10	45	14.5
11	57	18.4
12	78	25.2
13	91	29.4
14	39	12.6

**Table 2:** Socio-demographic characteristics of bullied participants

Gender	Frequency	Percentage	P-Value
Boys	67	37.9	0.46
Girls	110	62.1	
Age			
10	12	6.8	0.75
11	44	24.9	
12	39	22.0	
13	32	18.1	
14	37	20.9	
15	13	7.3	
Total	177	100.0	
Mean ± SD	12.43 ± 4.57		

**Table 3:** Clinical characteristics of participants that had been bullied

Variable	Total N in group	N (bullied)	Percentage (Bullied)	P value
Incisor relationship				0.034
I	95	14	7.9	



II Div 1	130	106	59.9	
II Div 2	45	29	16.4	
III	40	28	15.8	
<b>DHC (Dental Health Component)</b>				
2	22	0	0.0	0.61
3	48	22	12.4	
4	82	67	37.9	
5	158	88	49.7	
<b>AC(Aesthetic Component)</b>				
2	1	0	0.0	0.026
3	2	0	0.0	
4	10	0	0.0	
5	28	9	5.1	
6	45	15	8.5	
7	72	45	25.4	
8	58	34	19.2	
9	90	74	41.8	
10	4	0	0.0	
<b>Skeletal pattern</b>				
I	95	12	6.8	0.25
II	160	118	66.7	
III	55	47	26.6	
<b>FMPA (Frankfort Mandibular Plane Angle)</b>				
Average	95	55	31.1	0.93
Increased	108	48	27.1	
Decreased	107	72	40.7	
<b>Overbite</b>				
Average	95	32	18.1	0.041
Increased	136	112	63.3	
Decreased	76	33	18.6	
<b>Overjet</b>				
<2(Decreased)	67	37	20.9	0.002
2-4(Normal)	95	35	19.8	
>4(Increased)	148	105	59.3	
<b>LFH(Lower Face Height)</b>				
Average	95	68	38.4	0.64
Increased	132	74	41.8	
Decreased	83	35	19.8	

**Table 4:** Comparison of CPQ scores of participants that had been bullied with those that did not being bullied

Variable	Non-bullied(mean) n=133	Bullied(mean) n=177	P value
Oral symptoms	4.4	5.9	0.042
Functional limitations	5.2	9.8	<0.001
Emotional impact	4.9	16.7	<0.001
Social impact	3.9	14.2	<0.001
Global view of oral health on overall OHQoL	2.5	3.7	<0.001

**Table 5:** Comparison of Harter’s self-esteem characteristics of participants that had been bullied with those that did not report bullied

Variable	Non-bullied (mean) n=133	Bullied (mean) n=177	P Value
Scholastic competence	2.93	2.69	0.97
Social competence	3.33	2.01	<0.001
Athletic competence	2.98	2.25	<0.001
Physical appearance	2.76	2.28	<0.001
Behavioral conduct	2.89	2.82	0.27
General mean	3.2	2.48	<0.001

## DISCUSSION

In this study, the majority of participants, 29.4%, were 13 years old, followed by 14.5% who were ten years old, 18.4% who were 11 years old, 25.2% who were 12 years old, and 12.6% who were 14 years old, which revealed that the incidence of bully victims reduces with increasing of age. A similar result showed in other studies the prevalence of bullying in orthodontic patients declines with increasing age.<sup>[13]</sup> Age and bullying have a substantial correlation, according to logistic regression analysis. It is well-recognized that younger children are more prone to bullying by older peers.<sup>[3]</sup> In this survey, boys made up 37.9%, while girls made up 62.1%. Regarding gender, the outcomes of this study are similar to prior studies.<sup>[3,4]</sup> When participants in this study who

had experienced bullying were evaluated using the AC, they had a significantly higher likelihood of having a Class II Division 1 incisor relationship (P value, 0.034), an increased overjet >4 mm (P value, 0.002), and increased overbite (P value, 0.041). Class II Division 2, class III, Decreased overjet and overbite students were also bullied by 16.4%, 15.8%, 20.9%, and 18.6 respectively. Seehra et al. in their study reported that bullied participants were significantly more likely to have a Class II Division 1 incisor relationship (P=0.041) with an increased overjet (.4 mm) (P<0.001), increased overbite (P=0.023) and a higher need for orthodontic treatment when assessed using the AC of IOTN (P=0.014).<sup>[12]</sup> The bullied participants in this study reported higher levels of oral symptoms (P = 0.042), functional



restrictions ( $P < 0.001$ ), emotional impact ( $P < 0.001$ ), and social impact ( $P < 0.001$ ) from their oral condition, which harmed total OHRQoL ( $P < 0.001$ ). It has previously been documented that malocclusion has a considerable impact on both emotional and social domains, suggesting that the existence of malocclusion essentially has a psycho-social effect.<sup>[11,12]</sup> It is not unexpected that bullying affects a child both emotionally and socially, as comments on oral appearance have been observed to be more painful and unpleasant in comparison to other physical aspects.<sup>[7]</sup> It is uncertain if higher levels of oral symptoms and functional restrictions are exacerbated by peer victimization or low levels of self-esteem rather than directly linked to the malocclusion. A child's Class II Division 1 incisor connection with an elevated overjet and overbite is a case study for this. In comparison to non-bullied participants, those who had experienced bullying reported lower levels of social competence ( $P$ -value, 0.001), athletic competence ( $P$ -value, 0.001), physical appearance-related self-esteem ( $P$ -value, 0.001), and general self-esteem ( $P$ -value, 0.001). A low level of dental attractiveness has been previously found to be connected with a detrimental impact on self-esteem.<sup>[10,18]</sup> It's possible that other characteristics, like a child's age and social and physical skills have a more significant impact on whether or not a child is bullied than a malocclusion. Self-esteem, OHRQoL, and malocclusion have complicated relationships. It has been found that there is no apparent connection between self-esteem and the presence or absence of therapy for malocclusion in longitudinal cohort research.<sup>[19]</sup>

Agou et al. argued that the link between self-esteem, OHRQoL, and malocclusion could be impacted by other factors.<sup>[20]</sup> However, socioeconomic status has no substantial impact on self-perception of malocclusion, but gender has. The existence of malocclusion has been documented to harm a child's OHRQoL.<sup>[11,12]</sup> [Table 5] compares Harter's self-esteem characteristics of participants who had been bullied with those who did not report being bullied. In comparison to non-bullied participants, those who had experienced bullying reported lower levels of social competence ( $P$ -value, 0.001), athletic competence ( $P$ -value, 0.001), physical appearance-related self-esteem ( $P$ -value, 0.001), and general self-esteem ( $P$ -value, 0.001).

### Limitations of the study

As there was no relevant scale/pre-established structured questionnaire in Bangladesh to measure child perception we used international questionnaire (Olweus Bully/Victim Questionnaire and Harter's Self Perception Profile for Children).

### CONCLUSIONS

According to this study, bullying in schools is the most prevalent offense committed by school students. Significant associations exist between the self-esteem of bullying victims, the existence of malocclusion, and their OHRQoL. Orthodontic characteristics such as a Class II Division 1 incisor relationship and an enhanced overjet and overbite are linked to bullying.



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