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Original Article

Head and Face Injuries in Brazilian Schoolchildren Victims of Physical Bullying: A Population-Based Study

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Abstract

Objective: To investigate the occurrence of head and face injuries in Brazilian schoolchildren victims of physical bullying. **Material and Methods:** A population-based study was conducted on a stratified sample of 525 adolescents aged 13 to17 years of both sexes. Data on sex, age, occurrence of physical bullying, form of aggression, affected body region and presence of oral lesions were collected. Two questionnaires were used: one on bullying model TMR (Training and Mobility of Researchers) and another to record injuries in the maxillofacial region. The bivariate analysis used the Chi - square and Fisher's exact tests, with significance level of 5 %. **Results:** Among victims of bullying, 19.4 % were victims of physical bullying, more often among males (63.6 %). Face injuries were reported by 36.4 % of students, and involvement of the oral cavity reported by four individuals with lesions located in soft tissues. There was no association between sex of the victim and affected body region and between sex and form of aggression ($p > 0.05$). Head injuries were more frequent among boys (42.9 %), while face injuries were more frequent among girls (37.5 %). There was association between age of victims and the presence of injuries in the neck region ($p = 0.04$). **Conclusion:** The occurrence of physical bullying was more common among boys and face was the most affected body region. Injuries in the oral cavity involved soft tissues, especially lips, and no face and dental fractures were found.

Keywords: Bullying; Violence; Aggression; Maxillofacial Injuries.

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Introduction

Violence has taken on great importance for Brazilian society in recent decades and has become a public health problem due to its magnitude, severity, social impact and ability to make individual and collective health vulnerable [1]. As a social phenomenon that can result from multiple causes, violence should be addressed from different perspectives and with the use of appropriate methods [2].

Bullying consists of intentional and repeated aggression that involves a disparity of power between victim and perpetrator [3]. This can be direct bullying, which includes physical aggression (e.g., hitting, pushing, and kicking) verbal bullying; and indirect bullying, such as social exclusion and spreading rumors [4].

In various schools around the world, bullying is seen as a normal part of life [5]; however, the consequences of bullying behavior affect everyone involved, especially the victim, who may continue to suffer the negative effects of bullying far beyond the school hours. Committing bullying against others is more strongly associated with externalizing problems, while being victim is related to internalizing symptoms [6].

The prevalence of bullying reported in literature shows great variability, with 13.6% among Swiss and Australian adolescents [6], 28.0% among South African students [7] and 47% among Jordanian students [8]. In Brazil, the prevalence ranges from 17.6 % [9] to 30.8 % [10].

Physical violence is one of the main causes of maxillofacial trauma in children and / or adolescents [11-15]. The literature shows that the existence of lesions around head and face is high (69.1 %) among children and adolescents victims of physical violence in school [16].

Given the fact that all studies on bullying have evaluated its occurrence in the school environment, without; however, analyzing existing injuries and body regions affected, the present study aimed to verify the occurrence of head and face injuries in Brazilian schoolchildren victims of physical bullying.

Material and Methods

Study Population

This cross-sectional study was carried in Campina Grande, Northeastern Brazil. The city has a population of 379,871 inhabitants and human development index (HDI) of 0.72. Subjects were included if they were present on the day of data collection with the ICF (Informed Consent Form) signed by parents.

There were 2,105 students aged 13-17 years enrolled in 15 municipal public schools. The selection of students was performed through simple random sampling procedure. Confidence level of 95% and 50% of disease prevalence were used for sample size calculation. An additional 20% were used in the study to compensate potential refusals, giving a total sample of 525 adolescents. To ensure sample representativeness, distribution was performed proportionally to the number of students per school.

Training and Calibration Process

A pilot study was conducted with 36 students aged 13-17 years. The consistency of responses from students was obtained from the degree of coincidence between test and retest responses, being applied at intervals of 12 days. The agreement values observed between the applications of two instruments ranged from 80.0 % to 97.1%. The individuals included in the calibration process did not take part in the main study. Data from this pilot study demonstrated that there was no need to modify the methods previously proposed.

Data Collection

Two questionnaires were used : one on bullying model TMR (Training and Mobility of Researchers) [17] and another to record injuries in the maxillofacial region [16,18] in order to identify the affected body regions, form of aggression, presence of oral lesions, tissue involvement and existence of dental fracture. The questionnaires were applied by an examiner (JAS) in the school facilities.

Data Analysis

Data analysis was conducted using the SPSS software (version 16.0; SPSS, Chicago, Ill). Data analysis involved descriptive statistics (frequency distribution) and analytic statistics. To test the association between presence of bullying and oral injuries, a bivariate analysis was conducted using the exact versions of the nonparametric Pearson's chi-squared or Fisher's exact test. The statistical significance was 5%, with confidence interval of 95%.

Ethical Aspects

This study followed ethical guidelines recommended by the Brazilian legislation and was approved by the Human Research Ethics Committee of the State University of Paraiba. All participants/guardians signed the informed consent form.

Results

The prevalence of bullying was 23.2 %, with 19.4% of students being victims of physical bullying, with predominance of males (63.6 %) (Table 1).

Table 1. Distribution of victims according to occurrence and type of bullying.

	Frequency	
Variable	n	%
Víctim of bullying		
Yes	122	23.2
No	403	76.7
Type of bullying(1)		
Physical	22	19.4
Verbal	107	86.3
Relational	46	37.1

Victim of physical bullying		
Male	14	63.6
Female	8	36.4

(1) The student could suffer more than one type of bullying simultaneously.

Among the victims who have suffered physical aggressions, 72.7 % reported that pushing was the main form of aggression. With respect to the affected body region, face injuries were reported by 36.4 % of students, involvement of the oral cavity in four individuals with lesions located in soft tissues (upper lip, lower lip and oral mucosa). No facial bone or dental fractures (Table 2) were recorded.

Table 2. Distribution of victims of bullying by physical aggression according to form of aggression (pushing, punches / slaps and kicks), affected body region, presence of oral cavity injuries, soft tissue injury and region involved.

Variable	n	%
Form of aggression		
Pushing	16	72.7
Punches/Slaps	15	68.2
Kicks	8	36.4
BASE(1)	**22**	
Affected body region		
Head	7	31.8
Face	8	36.4
Neck	4	18.2
Other region	21	95.5
BASE(1)	**22**	
Presence of oral cavity injuries		
Yes	4	50.0
No	4	50.0
TOTAL	**8**	**100.0**
Soft tissue injury		
Yes	4	100.0
No	-	-
TOTAL	**4**	
Region involved		
Cheeks	1	25.0
Lower lip	2	50.0
Upper lip	2	50.0
BASE(1)	**4**	

(1)Whereas one respondent has reported more than one alternative, the basis is considered for the calculation of percentages and not total.

No association between sex of the victim of bullying by physical aggression and affected body region was found ($p > 0.05$) (Table 3). It was found that 42.9 % of boys reported head injuries, while 37.5 % of girls had injuries in the face region. No association between sex and form of aggression was found ($p > 0.05$), since 71.4 % of boys reported suffering aggressions by punches / slaps and 87.5 % of girls by pushing.

Table 3. Evaluation of the affected body region and form of aggression by sex of victims of bullying by physical aggression.

Body region	Sex				Total Group		P-value
	Male		Female				
	n	%	n	%	n	%	
Head							
Yes	6	42.9	1	12.5	7	31.8	p = 0.193
No	8	57.1	7	87.5	15	68.2	
Face							
Yes	5	35.7	3	37.5	8	36.4	p = 1.000
No	9	64.3	5	62.5	14	63.6	
Neck							
Yes	4	28.6	-	-	4	18.2	p = 0.254
No	10	71.4	8	100.0	18	81.8	
Other region							
Yes	13	92.9	8	100.0	21	95.5	p = 1.000
No	1	7.1	-	-	1	4.5	
Form of aggression							
Pushing							
Yes	9	64.3	7	87.5	16	72.7	p = 0.351
No	5	35.7	1	12.5	6	27.3	
Punches / slaps							
Yes	10	71.4	5	62.5	15	68.2	p = 1.000
No	4	28.6	3	37.5	7	31.8	
Kicks							
Yes	6	42.9	2	25.0	8	36.4	p = 0.649
No	8	57.1	6	75.0	14	63.6	

Regarding age, no association was found between age of the victims of bullying by physical aggression and affected body region except for the neck region (p = 0.04) (Table 4). Additionally, no statistically significant association was found between age and form of aggression (p > 0.05).

Table 4. Evaluation of the affected body region and form of aggression by age of victims of bullying by physical aggression.

Affected body region	Age						Total Group		P-value
	13 years		14 years		15 years				
	n	%	n	%	N	%	n	%	
Head									
Yes	1	16.7	4	36.4	2	40.0	7	31.8	p = 0.710
No	5	83.3	7	63.6	3	60.0	15	68.2	
Face									
Yes	2	33.3	4	36.4	2	40.0	8	36.4	p = 1.000
No	4	66.7	7	63.6	3	60.0	14	63.6	
Neck									
Yes	-	-	1	9.1	3	60.0	4	18.2	p = 0.040*
No	6	100.0	10	90.9	2	40.0	18	81.8	
Other region									
Yes	6	100.0	11	100.0	4	80.0	21	95.5	p = 0.227
No	-	-	-	-	1	20.0	1	4.5	
Form of aggression									
Pushing									

Yes	5	83.3	7	63.6	4	80.0	16	72.7	p = 0.834
No	1	16.7	4	36.4	1	20.0	6	27.3	
Punches / slaps									
Yes	4	66.7	7	63.6	4	80.0	15	68.2	p = 1.000
No	2	33.3	4	36.4	1	20.0	7	31.8	
Kicks									
Yes	2	33.3	5	45.5	1	20.0	8	36.4	p = 0.845
No	4	66.7	6	54.5	4	80.0	14	63.6	

Discussion

The aim of this study was to investigate the presence of maxillofacial injuries in children and adolescents victims of physical bullying in the school environment. It is extremely relevant to highlight the uniqueness of this study, since no similar studies that have attempted to analyze their occurrence were identified in the international literature. Therefore, these findings are important, and other studies should have been carried out in other countries to analyze and to determine the magnitude of the problem and to allow comparisons of results [8].

In the present study, 19.4 % of students surveyed were victims of physical bullying, a result similar to that observed by other authors [19]. However, previous research has described a frequency of 35.5 % physical bullying in Turkish adolescents aged 14-17 years [20]. Cultural and socio -demographic differences and differences in educational policies and school environments are possible explanations for variability in victimization percentages [21].

Among the victims of physical aggressions, most were males, confirming the findings of other authors who have identified greater involvement of males [19,22-25]. One suggested explanation is that the stereotypical participation of boys and girls in situations of bullying has social roots, because traditionally the more aggressive behavior and violence of boys are reinforced, whereas indirect involvement or further victimization of girls is more consistent with traditional stereotypes of femininity [26].

Unlike verbal bullying, physical bullying can leave obvious signs on the body of the victim, depending on the form of aggression and magnitude of the force employed. In this study, pushes were the main form of aggression, followed by punches / slaps and kicks; similar to results previously described [20]. However, some authors have reported hitting with objects and punches / slaps as the main forms of aggression in physical bullying [27,28].

A major cause of maxillofacial or facial trauma in children or adolescents is physical violence, with higher prevalence in those over 10 years of age [11-14,29]. By analyzing the affected body region in victims of bullying by physical aggression, the involvement of face and head was observed, confirming previous findings [16]. When an individual is attacked for any reason, the head and face regions are often involved [18,30]. This is because these areas are exposed and accessible, and the head is considered the representative region of the entire body [27].

Victims of bullying reported to be injured on the face, four reported involvement of the oral cavity, with all injuries being located in soft tissues, in which lips were the most affected region,

confirming previous findings [16,18]. Understanding and identifying the anatomical sites at risk and the mechanisms that cause injuries in individuals at specific ages is important for the prevention of traumatic lesions [31].

Children who are victims of physical violence may have intra - oral injuries ranging from minor injuries such as bruising on lips to more severe impairments such as dental fractures and in extreme cases, facial fractures. The dentist and dental staff should be trained to diagnose different forms of oral injuries resulting from child abuse, in addition to providing the best treatment to victims. These professionals should also notify authorities responsible for the protection of children of any suspected or confirmed case of this type of violence [18]. The same procedures can be applied to victims of bullying by physical aggression, since according to results of this research, they have similar characteristics in relation to maxillofacial and oral cavity injuries.

Some study limitations should be mentioned. As in so many other studies, data were obtained solely through self-reports, so that the individual perception of bullying may vary. However, the anonymity of questionnaires favored greater sincerity in the subjects' responses [22]. The data of this study come from a cross-sectional study and as such, the direction of the relationship between the variables cannot be determined; therefore, further longitudinal studies should be carried out.

The involvement of Brazilian students in situations of physical bullying showed percentages similar to those observed in other countries; therefore, further studies aimed at better understanding how bullying occurs should be conducted in order to outline policies for prevention, intervention and reduction of injuries in victims of bullying.

Conclusion

The occurrence of physical bullying was more frequent among boys and face was the most affected body region. Injuries in the oral cavity involved soft tissues, especially lips, and no victims with face and dental fractures were found.

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