







Physical violence in children and adolescents: a retrospective study of injuries to the head and neck region

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Aim: This study aimed to investigate the prevalence of physical violence and head and neck injuries among children and adolescents who suffered physical aggression, firearm aggression, and white gun aggression referred to the Legal Medical Department in a southern city in Brazil. **Methods:** This study was performed at Legal Medical Department in the city of Pelotas, RS, Brazil, from January 2011 to December of 2015. Data were collected from medical reports of children and adolescents (0-19 years old). Demographic information such as sex, age, and skin color was collected. Data were submitted to Chi-square test and multivariate Poisson regression analysis.

Results: In this study, 2,716 physical examination reports were analyzed, with a total of 2,171 exams resulting from violence; lesions that had physical aggression as their etiology (1,951) had a higher prevalence. The analysis of the exams revealed that the majority were adolescents (90,05%), white (84.09%), and female (50.21%). The head and neck regions were affected in most cases of violence (57.90%). In the adjusted model, the occurrence of injuries in the head and neck region was higher in males (PR 1.16, CI 95% 1.08 - 1.25), among adolescents (PR 1.28, CI 95% 1.10 - 1.48) and in victims of physical aggression compared to victims of the firearm (2.81, CI 95% 1.79 - 4.40). **Conclusion:** The results revealed a high prevalence of head and face injuries in victims of violence and that there was a greater prevalence of physical violence among adolescents compared to children and males.

Keywords: Child abuse. Dentistry. Violence. Facial injuries. Epidemiology.

Introduction

Violence is a worldwide phenomenon recognized as an important public health problem. In Brazil, this topic has been brought to attention due to its high prevalence and direct and indirect implications for the health and quality of life of individuals^{1,2}. The general population is affected by violence regardless of race, social class, religion, culture, or age³. In particular, children and adolescents are considered to be a risk group for violence and abuse, owing to their greater vulnerability. To better understand child-juvenile violence, it is necessary to analyze the social context, recognizing that violence is often associated with a social, historical, cultural, economic, legal, and political background^{4,5}.

Regarding the nature of violent acts, physical, psychological, and sexual violence, abandonment, neglect as well as deprivation of care are the most prevalent types⁶. Among the different types of violence, physical violence is the most frequent among the victims served by the Brazilian Health System, covering over 40% of the total number of children and adolescents who demanded the service because of violence⁷. In Brazil, both in the public and private sectors, professionals have the legal and moral duty to identify cases of violence, as determined by the Statute of the Child and Adolescent, in Administrative Rule No. 1968/2001 from the Health Ministry and the Code of Professional Ethics⁸.

Health professionals play a significant role in the recognition and reporting of violence against children and adolescents⁹. Due to the frequent contact with the head and neck structures and the oral cavity commonly affected in cases of violence^{9,10}, dentists are considered to be in a primary position to identify physical manifestations associated with violence and, therefore, report potential victims to the authorities^{10,11}. Although it is known that head and neck injuries are frequent, the prevalence varies widely and there is insufficient data to demonstrate and characterize such injuries.

Accordingly, this study aimed to investigate the prevalence, region and type of lesions in the head and neck and the associated factors related to children and adolescents victims of physical violence.

Materials and methods

This is a retrospective study with secondary data. Data were collected in the LMD, in the city of Pelotas, Brazil. Briefly, Pelotas is a medium-sized city in the state of Rio Grande do Sul in the southernmost part of Brazil. In Pelotas, the LMD is a reference for 11 cities, covering a total population of 600,000 inhabitants¹². Victims of personal injuries are referred to this service and medical examination is performed by a specialist, aiming to quantify and classify the existing injuries. This study was approved by the Research Ethics Committee at the Federal University of Pelotas under the protocol CAAE: 36809420.2.0000.5318.

Children and adolescents (0-19 years old) medical reports (dated from January 2011 to December 2015) which presented an offense to the integrity and/or the health of

the victim according to the WHO definition were collected and analyzed¹³. Body-of-crime examinations that did not include the date of birth of the victim, in which the subjects had no offense to integrity and/or health, were not analyzed. For this study, only reports of physical violence were included. Reports in which is not clear the etiology or if the etiology did not represent clearly physical violence (e.g. traffic accidents, fall incidents, medical error) were excluded. Data were collected by a single researcher using a pre-defined instrument¹².

Data were extracted based on the demographic characteristics of the victim, physical violence type and presence and characteristics of head and neck lesions¹². Demographic information such as sex, age and skin color were collected. Age was collected in years and dichotomized in less or equal ten years (children) or >ten years (adolescent)^{13,14}. Skin color was dichotomized in white and non-white (brown, black, yellow and indigenous). Physical violence was categorized in physical aggression, firearm aggression, and white gun aggression.

Head and neck injuries were collected, and records in which individual presented at least one injury in this region was included. Moreover, the location of the head and neck injuries were noted and categorized into: face, head, mouth (intra and extra oral) and neck. Lip lesions were included in the mouth region. The type of extraoral head and neck lesions were categorized into: abrasion, ecchymosis, edema, hematoma, wound, erosion and fractures.

Data were recorded on a spreadsheet using Microsoft Office Excel (Microsoft, Washington, USA) and typed twice to minimize typing errors.

Using Stata 14.0 software data were analyzed (StataCorp, College Station, TX, USA). Descriptive statistics were performed to determine the absolute and relative frequencies for individual's sociodemographic characteristics, type of physical violence and head and neck injuries characterization. For the multivariate analysis, Poisson regression with robust variance was used to assess the association between the presence of head and neck injuries and type of physical violence and demographic characteristics. All variables were maintained in the final adjusted model. Prevalence ratios (PR) with respective 95% confidence intervals (95% CI) of the retained variables were estimated in the final model. Variables with a p-value<0.05 in the final adjusted model were considered statistically significant.

Results

In this study, a total of 2,716 physical examination reports were analyzed from children and adolescents who suffered physical aggression, firearm aggression, and white gun aggression from January 2011 to December 2015 in the Legal Medical Department in the city of Pelotas. Among these, 412 were excluded because they did not represent cases of physical violence (e.g. traffic accidents, fall incidents, medical error), and 133 were excluded due to uncertain or unknown etiology.

A total of 2.171 exams included were related to physical violence. Physical violence caused by physical aggression as etiology was 89.87% of the cases, followed, respectively, by injuries with white guns (5.20%) and firearms (4.93%).

Analysis of the profile of the victims of physical violence revealed that the majority was white (84.09%), sex 50.21% were female. The age range of children and adolescents who suffered violence was 0 months to 19 years (mean: 14.63; SD: 3.97). The highest prevalence of physical violence was observed in adolescents 90.05% (age > ten years) (Table 1).

Table 1. Characteristics of 2.171 children and adolescents' victims of physical violence. Pelotas, Brazil, 2011-2015.

Variables	N	(%)
Sex		
Female	1,090	(50.21)
Male	1,081	(49.79)
Age		
Children (≤ 10 years)	216	(9.95)
Adolescents (> 10 years)	1,955	(90.05)
Skin color*		
White	1,622	(84.09)
Non- White	307	(15.91)
Physical violence types		
Firearm	107	(4.93)
White gun	113	(5.20)
Physical aggression	1,951	(89.87)
Head and neck injury		
Absent	914	(42.10)
Present	1,257	(57.90)

*missed data

Table 2 shows the head and neck regions were affected in 57.90% of the physical violence cases. The involvement of more than one region was detected in 35.79%.

Table 2. Prevalence of injuries according to the location in the head and neck in 2.171 child and adolescent victims of physical violence. Pelotas, Brazil, 2011-2015.

Location of injury	N	(%)
Face	802	(36.94)
Head	464	(21.37)
Mouth (intra and extra oral)	232	(10.69)
Neck	209	(9.63)

p<0,05

In the present study, the prevalence of the type of extra-oral lesions among child and adolescent victims of physical violence extraoral injuries varied from abrasions to bone fractures. The most common injuries found during examinations were: abrasions (56.96%), ecchymosis (43.44%) and edema (34.05%).

Regarding of mouth lesions, the lips were the most affected region (17.42%). Few inquiries reported injuries to the dental tissues, only crown fracture (1.11%), avulsion (0.64%), luxation (0.48%) was described in these records (Table 2).

Table 3. Prevalence of type of extra-oral lesions among 2.171 child and adolescent victims of physical violence who presented head and neck injuries. Pelotas, Brazil, 2011-2015.

Type of lesion	Presence of extra oral type			
	Yes		No	
	N	(%)	N	(%)
Abrasion	716	(56.96)	541	(43,04)
Ecchymosis	546	(43.44)	711	(56,56)
Edema	428	(34.05)	829	(65,95)
Wound	133	(10.58)	1.124	(89,42)
Hematoma	128	(10.18)	1.129	(89,82)
Erosion	96	(7.64)	1.161	(92,36)
Fractures	23	(1.83)	1.234	(98,17)

p<0,05

In Table 4, the adjusted model, the occurrence of injuries in the head and neck region was higher in male (PR 1.16, CI 95% 1.08 - 1.25), among adolescents (PR 1.28, CI 95% 1.10 - 1.48) and in victims of physical aggression compared to victims of the firearm (2.81, CI 95% 1.79 - 4.40).

Table 4. Association between sociodemographic characteristics and physical violence types in relation to prevalence head and neck injuries in 2.171 children and adolescents victims of personal injury. Pelotas, Brazil, 2011-2015.

Variables	Head and neck injury					
	PR ^a	(95% CI)	p-value	PR ^a	(95% CI)	p-value
Sex			0.162			<0.001
Female	1.00			1.00		
Male	1.05	(0.98-1.13)		1.16	(1.08-1.25)	
Age			0.016			0.001
Children (≤10 years)	1.00			1.00		
Adolescents (>10 years)	1.19	(1.03-1.36)		1.28	(1.10-1.48)	

Continue

Continuation				
Skin color			0.387	0.721
White	1.00		1.00	
Non-White	0.95	(0.86-1.06)	0.98	(0.88-1.09)
Physical violence types			<0.001	<0.001
Firearm	1.00		1.00	
White gun	1.46	(0.92-2.33)	1.31	(0.77-2.24)
Physical aggression	2.99	(2.06-4.35)	2.81	(1.79-4.40)

Discussion

The present study showed that most children and adolescent victims presented head and neck injuries as a mark of physical violence, with a prevalence in men and adolescents. As far as we know, this study is probably one of the few studies conducted in South Brazil with the aim of investigating physical violence among children and adolescents and assessing head and neck injuries, including oral lesions.

The prevalence of injuries in the head and neck was more than half in our sample, corroborating similar studies in the literature¹⁵⁻¹⁷ which presented similar frequencies. Other epidemiological studies have shown that there is no unanimity regarding the prevalence in which the head and neck region is affected in cases of violence, ranging from 35% to 67%^{5,16,18-20}. In most studies with victims of physical violence, the head and neck region were referenced as the most affected region, probably because it is a susceptible and exposed area^{9,16}. Often, the aggressor aims to socially mark the victim and humiliate she/he in relation to others^{18,21} since the face region represents the center of human attention and injuries can often leave irreparable marks or sequelae that can cause physical or psychological damage²².

Concerning the oral structures involved in violence cases, the frequency was 10.69%, and in only 2.47% of the cases, the intra-oral region was affected, corroborating with the literature²³. However, some studies show a prevalence of up to 12,4%^{16,20}. In the study by Cavalcanti¹⁶ 2010, the regions of the mandible and maxilla were considered intraoral, which differs from our study and may explain this difference in the results. Concerning oral injuries, the lips were the most affected structures, despite a different methodology employed, the same result was found in the study by Naidoo²⁰ (2000).

In the present study, regarding the prevalence of injuries in the head and neck region, male victims presented a 16% higher prevalence of head and neck lesions than female victims. This finding corroborates the study by Cavalcanti et al.¹⁶ (2010) and Pimenta et al.²⁴ (2013). This fact can be explained due to males, greater social exposure and vulnerability to external problems^{18,25}. In contrast, the results found in the studies by Valente et al.¹⁷ (2015), Bernardino et al.²⁶ (2016) and Vidal et al.¹⁸ (2019) show that there was no difference between the sexes.

Regarding the age group, a statistically significant difference was found. The adolescents had a 28% higher presence of injuries in the head and neck region when compared to children. It is important to notice that the head and neck region was less affected in children because the parents, in the act of violence, hit other parts of their children's bodies in an attempt to hide these injuries from the victims. With the child's growth, this role of aggressor by parents begins to be replaced by friends and, when they are older, by partners or strangers⁷. In adolescents, in many cases, the aggressor intends to humiliate the victim^{18,21} and, as the face region is the center of attention²², becoming this location a very frequent target.

Head and neck injuries were more prevalent in victims of physical aggression (punches, slaps, kicks) in comparison to victims of firearms. Regarding the low frequency of involvement of the head and neck region in cases of white gun and firearm, our findings are in line with other studies^{27,28}. An epidemiological study was carried out by Backman et al.²⁷ (2020) in a Scandinavian trauma center to verify firearm injuries; the most common anatomical location was the lower extremity, followed by the abdomen, the head and neck region were the least affected. In another study carried out in Brazil, Da Trindade and Correia²⁸ (2015) analyzed the epidemiological profile of stab and firearm victims in an emergency hospital. They perceived the most affected regions were the chest, followed by the abdomen, and the skull region presented the lowest involvement.

It is known that collecting data on violence against children and adolescents is a complex task with ethical and methodological challenges²⁹. The incidence of confirmed cases increases every year³⁰, which is a real problem today and affects different cultures, ethnic and social groups^{5,31}. All forms of violence experienced by children and adolescents, regardless of the nature or severity of the act, are harmful.

The results of this research and the literature show that the head and neck region are relevant for diagnosing cases of physical violence against children and adolescents¹⁵⁻¹⁷. The dentist, due to his area of work, is in a privileged position to be able to detect these cases and subsequently notify the protective agencies⁹.

Studies performed from secondary data often present some difficulties in data collection, since records are often incomplete, what makes difficult a truthful transcription of the findings³². Other limitations are in relation to the study design, in Rio Grande do Sul, the population up to 17 years old, according to 2019 data, is composed of 77% of white people and 23% of non-white people³³, the results of the study in relation to the demographic characteristics such as skin color may have resulted in a greater propensity to affect white people. A similar result was found in the study by de Oliveira et al.³⁴ (2021), where white people were the majority, which can be explained by colonization by European immigrants.

The absence of identification of the aggressors' profiles is another limitation in the present study. Thus, we can't identify children and adolescents who suffered physical violence due to domestic intrafamily violence or community violence. Regardless of the limitations, studies with secondary data about physical violence can provide an estimate of the magnitude of the problem. Few studies with similar methodologies were carried out in the world^{5,16,18,24}. In the southern region of Brazil, there are few

studies carried out with children and adolescents with a methodology similar to the present study. Thus, these findings can contribute to developing local and regional public policies and preventive programs²⁶.

The continuation of future studies to determine the causality of physical violence in different regions of the world is important to better understand how physical violence against children and adolescents occurs. However, it is necessary to have the correct information available, to ensure that violence in its all forms is documented, and to outline the epidemiological profile of victims and aggressors, as they are important steps to assist in elaborating public policies to combat violence.

Conclusion

The results of this retrospective study revealed a high prevalence of injuries in the head and neck region in children and adolescents victims of physical violence. In addition, males, adolescents and victims of physical aggression compared to firearms were the most affected.

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Conflict of interest

None.

Data availability

Datasets related to this article will be available upon request to the corresponding author.

Authors Contribution

I.A.S., L.D.C., and R.G.L. conceived the ideas; I.A.S. collected the data; I.A.S., T.A.S.N., L.D.C.; G.G.N. and M.S.A. analyzed the data; I.A.S, M.S.A. and R.G.L. led the writing and corrected the study. All authors actively participated in the manuscript's findings, revised and approved the final version of the manuscript.

References

1. Minayo MCS, Souza ER, Silva MMAD, Assis SG. Institutionalizing the theme of violence within Brazil's national health system: progress and challenges. *Cien Saude Colet*. 2018 Jun;23(6):2007-16. Portuguese, English. doi: 10.1590/1413-81232018236.04962018.
2. Lund RG, Manica S, Mânica G. Collateral issues in times of covid-19: child abuse, domestic violence and femicide. *Rev Bras Odontol Leg*. 2020 Jul;7(2):54-69. doi: 10.21117/rbol-v7n22020-318.
3. Hazar Bodrumlu E, Avşar A, Arslan S. Assessment of knowledge and attitudes of dental students in regard to child abuse in Turkey. *Eur J Dent Educ*. 2018 Feb;22(1):40-6. doi: 10.1111/eje.12242.

4. Mathur S, Chopra R. Combating child abuse: the role of a dentist. *Oral Health Prev Dent.* 2013;11(3):243-50. doi: 10.3290/j.ohpd.a29357.
5. Vidal HG, Caldas IM, de França Caldas A Jr, de Miranda Coelho Júnior LGT, de Souza EHA, Pereira ML. Physical violence against children and adolescents in porto: a 5-year study. *J Interpers Violence.* 2020 Jun;35(11-12):2297-2315. doi: 10.1177/0886260517700616.
6. World Health Organization. *World report on violence and health: summary.* Geneva: WHO; 2002. p.14-23.
7. Waiselfisz JJ. [Violence map 2012: children and adolescents in Brazil]. Rio de Janeiro: Cebela: Flasco; 2012. Portuguese.
8. Presidency of the Republic of Brazil. Civil House. [Law No. 8,069, of July 13, 1990. Provides for the Child and Adolescent Statute and other provisions] [cited 2022 Dec 2]. Available from: https://www.planalto.gov.br/ccivil_03/leis/l8069.htm. Portuguese.
9. da Silva-Júnior IF, Drawanz Hartwig A, Leão Goettems M, Sousa Azevedo M. Is dental trauma more prevalent in maltreated children? A comparative Study in Southern Brazil. *Int J Paediatr Dent.* 2019 May;29(3):361-8. doi: 10.1111/ipd.12466.
10. Massoni AC, Ferreira AM, Aragão AK, de Menezes VA, Colares V. [Orofacial aspects of childhood abuse and dental negligence]. *Cien Saude Colet.* 2010 Mar;15(2):403-10. Portuguese. doi: 10.1590/S1413-81232010000200016.
11. Özgür N, Ballıkaya E, Güngör HC, Ataç AS. Turkish paediatric dentists' knowledge, experiences and attitudes regarding child physical abuse. *Int Dent J.* 2020 Apr;70(2):145-51. doi: 10.1111/idj.12532.
12. Conceição LD, da Silveira IA, Nascimento GG, Lund RG, da Silva RHA, Leite FRM. Epidemiology and risk factors of maxillofacial injuries in brazil, a 5-year retrospective study. *J Maxillofac Oral Surg.* 2018 Jun;17(2):169-74. doi: 10.1007/s12663-016-0994-3.
13. 13- United Nations General Assembly. *Convention on the rights of the child.* United Nations, Treaty Series, vol. 1577. New York, United Nations; 1989. [cited 2022 Dec 2]. Available from: <https://www.refworld.org/docid/3ae6b38f0.html>.
14. WHO, World Health Organization. *Young people's health - a challenge for society: report of a WHO Study Group on Young People and "Health for All by the Year 2000".* Technical Report Series, no. 731. Geneva: WHO; 1986. [cited 2022 Dec 2]. Available from: https://iris.who.int/bitstream/handle/10665/41720/WHO_TRS_731.pdf?sequence=1&isAllowed=y.
15. Fisher-Owens SA, Lukefahr JL, Tate AR; American Academy of Pediatrics, Section on Oral Health; Committee on Child Abuse and Neglect; American Academy of Pediatric Dentistry, Council on Clinical Affairs, Council on Scientific Affairs; Ad Hoc Work Group on Child Abuse and Neglect. *Oral and Dental Aspects of Child Abuse and Neglect.* *Pediatrics.* 2017 Aug;140(2):e20171487. doi: 10.1542/peds.2017-1487.
16. Cavalcanti AL. Prevalence and characteristics of injuries to the head and orofacial region in physically abused children and teenagers—a retrospective study in a city of the Northeast of Brazil. *Dent Traumatol.* 2010 Apr, 26(2) 149-53. doi: 10.1111/j.1600-9657.2009.00859.x.
17. Valente LA, Dalledone M, Pizzatto E, Zaiter W, de Souza JF, Losso EM. Domestic violence against children and adolescents: prevalence of physical injuries in a southern Brazilian metropolis. *Braz Dent J.* 2015 Jan-Feb;26(1):55-60. doi: 10.1590/0103-6440201300137.
18. Vidal HG, Caldas IM, de França Caldas A Jr, Toledo de Miranda Coelho LG, Alvim de Souza EH, Pereira ML. Physical violence against children and adolescents in Recife: a 5-year retrospective study. *J Forensic Odontostomatol.* 2019 May 1;37(1):20-5.
19. Barbosa KGN, Bernardino ÍM, Cavalcante GMS, Ferreira EFE, Martins RC, d'Avila S. Patterns of oral-maxillofacial trauma and determinant factors among brazilian victims of physical aggression: a 4-year study. *Oral Health Prev Dent.* 2018;16(6):483-9. doi: 10.3290/j.ohpd.a41545.

20. Naidoo S. A profile of the oro-facial injuries in child physical abuse at a children's hospital. *Child Abuse Negl.* 2000 Apr;24(4):521-34. doi: 10.1016/s0145-2134(00)00114-9.
21. Rabello PM, Caldas Júnior AF. [Facial Lesions of woman who have been physically attacked – Paraíba – Brazil]. *Odontol Clin-Cient.* 2006 Oct/Dec;5(4):321-5. Portuguese. doi: 10.1590/1413-81232015209.19012014.
22. Kostakis G, Stathopoulos P, Dais P, Gkinis G, Igoumenakis D, Meztis M & Rallis G. An epidemiologic analysis of 1,142 maxillofacial fractures and concomitant injuries. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2012 Nov, 114 (5): 69-73. doi: 10.1016/j.tripleo.2011.08.029.
23. da Fonseca MA, Feigal RJ, ten Bensele RW. Dental aspects of 1248 cases of child maltreatment on file at a major county hospital. *Pediatr Dent.* 1992 May-Jun;14(3):152-7.
24. Pimenta RMC, Matos FRRO, da Silva MLCA, Rodrigues AAAO, Marques JAM, Musse JO. [Survey of oral and maxillofacial injuries in victims of violence who were subjected to forensic dental expertise at Feira de Santana's Forensic Medicine Institute, Bahia, between 2007 and 2009]. *Arq Odontol.* 2013;49(4):154-61. Portuguese. doi: 10.7308/aodontol/2013.49.4.01.
25. Rates SM, de Melo EM, Mascarenhas MD, Malta DC. Violence against children: an analysis of mandatory reporting of violence, Brazil 2011. *Cien Saude Colet.* 2015 Mar;20(3):655-65. doi: 10.1590/1413-81232015203.15242014.
26. Bernardino IM, Barbosa KGN, da Nóbrega LM, Cavalcante GMS, Silva JAL, D'Avila S. Physical violence against Brazilian children and adolescents: a 4-year study. *J Public Health.* 2016 Apr;24:135-40. doi: 10.1007/s10389-016-0707-x.
27. Bäckman PB, Riddez L, Adamsson L, Wahlgren CM. Epidemiology of firearm injuries in a Scandinavian trauma center. *Eur J Trauma Emerg Surg.* 2020 Jun;46(3):641-7. doi: 10.1007/s00068-018-1045-1.
28. Trindade RFC, Correia MAA. [Epidemiological profile victims of white gun and fire in a hospital emergency]. *Rev Enferm Atencao Saude,* 2015 Jan/Jun;4(1):55- 64. Portuguese.
29. United Nations Children's Fund. A familiar face: violence in the lives of children and teenagers. New York: UNICEF; 2017.
30. Barbosa KGN, Walker BB, Schuurman N, Cavalcanti SDLB, Ferreira E Ferreira E, et al. Epidemiological and spatial characteristics of interpersonal physical violence in a Brazilian city: a comparative study of violent injury hotspots in familial versus non-familial settings, 2012-2014. *PLoS One.* 2019 Jan;14(1):e0208304. doi: 10.1371/journal.pone.0208304.
31. Krug EG, Dahlberg LL, Mercy JA, Zwi AB, Lozano R, editors. World report on violence and health. Geneva: World Health Organization; 2002. [cited 2022 Dec 2]. Available from: <https://www.who.int/publications/i/item/9241545615>.
32. Cavalcanti AL, Martins VM, Lucena RN, Granville-Garcia AF, Menezes VA. [Morbidity due to external causes against children and adolescents in Campina Grande - Paraíba]. *ACM Arq Catarin Med.* 2008;37(3):27-31. Portuguese.
33. Augustin AC, Menezes DB, Oliveira LLS, Agranonik M, Oliveira Júnior RCG, et al. Panorama das desigualdades de raça/cor no Rio Grande do Sul. Relatório técnico. Porto Alegre: DEE- SPGG; 2021 Nov [cited 2022 Dec 2]. Available from: <https://dee.rs.gov.br/upload/arquivos/202111/18175612-relatorio-tecnico-dee-panorama-das-desigualdades-de-raca-cor-no-rio-grande-do-sul.pdf>. Portuguese.
34. de Oliveira SMT, Galdeano EA, da Trindade EMGG, Fernandez RS, Buchaim RL, Buchaim DV, et al. epidemiological study of violence against children and its increase during the COVID-19 pandemic. *Int J Environ Res Public Health.* 2021 Sep;18(19):10061. doi: 10.3390/ijerph181910061.