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ORIGINAL ARTICLE

Physical violence against children in Espírito Santo, Brazil: prevalence and associated factors

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Abstract
Objective: To verify the prevalence of reported cases and the factors associated with physical violence against the child.
Methods: Cross-sectional study with data from reported cases of physical violence against children from 2011 to 2018 in the state of Espírito Santo, Brazil. The characteristics of the victim, author and aggression were studied, and the associations were analyzed using Poisson regression.
Results: In the period, were notified of 3,127 cases of violence against children. The frequency of physical violence was 23.6% (CI95%: 22.2-25.2), more prevalent in males; for the age group of 6 to 9 years; in rural areas; among aggressors over 20 years of age; outside the residence, and night/dawn shift.
Conclusions: Physical violence affects an expressive number of children, mainly committed by adult individuals, probably being the result of an asymmetric relationship of power. Thus, it is important to highlight the need for child protection actions together with cultural and structural changes in our society.

Introduction

Around the world, thousands of children have their fundamental rights violated by being victims of violent acts. Physical violence is one of the most common and is characterized by actions with the objective of hurting, causing pain and suffering, intentionally, which may occur through slaps, pinching, kicking, among others, or even with the use of sharp objects and firearms.[1,2]

According to the United Nations Children's Fund (UNICEF), three out of four children aged between two and four and six out of ten aged six to ten around the world suffer some form of physical violence used as educational practice.[3] According to data from the Violence and Accidents Survey (VIVA Survey) of 2017, 14.8% of victims of violence and accidents belonged to the age group from 0 to 9 years of age.[4]

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Physical violence can trigger physical harm, as well as psychological and social consequences for the child, directly affecting their growth and development, and may even lead to death.[5,6] According to data from the Mortality Information System (SIM), 257 infant deaths from acts of violence occurred in the country in 2019, corresponding to 8,8% of all deaths of children.[7]

Despite the legal framework for protection against violent actions in the education of children,[8] the practice of physical violence remains present, rooted and culturally accepted in our society.[9,10] This attitude contributes to the violence against children remaining invisible, trapping them in a perverse cycle. Therefore, intersectoral public policies are essential to guarantee the protection of children's rights and the notification of violence cases is one of the most important tools in this process.[1]

To quantify and give greater visibility to the phenomenon of violence, the health sector instituted a mandatory notification form for cases of violence attended by the services.[11] This technology should be considered a trigger in the line of care for children victims of violence. Most victims of physical violence seek this sector to deal with its consequences. The notification is also a data source to plan policies and programs of the sector, if correctly filled and analyzed.[12]

Thus, it is important to highlight carrying out studies with these data, in order to understand the dynamics of the occurrence of violence that affect children, including physical violence, and contribute to the planning and evaluation of adopted policies. This study aimed to verify the prevalence of reported cases of physical violence against children in the state of Espírito Santo, Brazil, and their association with characteristics of the victim, aggressor, and aggression.

Methods

This is a cross-sectional study analyzing data from reported cases of physical violence against children in the state of Espírito Santo, Brazil, between 2011 and 2018. So, this period was adopted, since violence became a problem of compulsory notification in the country in 2011.[13]

Espírito Santo is a state located in the Southeast region of Brazil, with an estimated population of 4,064,052 inhabitants, being the 14th most populous state in Brazil. According to the 2010 census, the child population represented 14.5% of the total inhabitants (509,336 children).[14]

The authors selected data from all notification forms registered in the Notifiable Diseases Information System (SINAN) of victims between 0 and 9 years old who had the identification of the type of violence suffered. This age group was chosen because it was the one adopted by the Ministry of Health.[11] The database was provided by the Epidemiological Surveillance Sector of the State Department of Health of Espírito Santo.

In this study, the occurrence of physical violence (no; yes) was considered as an outcome; the category "no" consists of cases where victims have suffered other types of violence. The independent variables were classified into three groups: characteristics of the victim, the aggressor, and the aggression. The characteristics of the victim were: gender (male; female); age group (0 to 2 years; 3 to 5 years; 6 to 9 years); race/color (white; black/mixed-race); presence of disabilities and/or disorders (no; yes) and the area of residence (urban/periurban; rural). Regarding the characteristics of the aggressor, the authors considered: age group (0 to 19 years; 20 years or more); gender (male; female); bond with the victim (known – parents, family, friends and neighbors; unknown); and suspected alcohol use (no; yes). The following characteristics of the aggression were included: the number of involved (one; two or more); if violence occurred in the residence (no; yes); occurrence shift (morning/afternoon; night/dawn); if the violence is recurrent (no; yes); and referral to other services of the care network (no; yes).

Initially, the database was subjected to a process of qualification and correction of possible errors and inconsistencies, according to the guidance of the Brazilian Ministry of Health (Brasil, 2016). The blank or ignored data in each of the variables were disregarded, so the total number of individuals may vary. It is worth noting that among the independent variables that presented missing data, the average was around 20%.

The prevalence was calculated considering all cases of physical violence against children divided by the total of all reported violence against children. The authors estimated the absolute and relative frequencies of the variables and their 95% confidence intervals (CI95%). Pearson's Chi-Square test was used in the bivariate analysis and, in the multivariate analysis, Poisson Regression. For inclusion in the model, the p-value criterion lower than 0.2 was used in the bivariate analysis, except for the variable referral to other network services, since this is an event that occurs after the outcome. The variables were inserted in the model from two levels: in the first, the characteristics of the victim were inserted and, in the second, the characteristics of the aggressor and aggression; the maintenance of the variables in the model followed the criterion of $p < 0.05$ from the likelihood ratio test. Prevalence Ratios were estimated and significant p-values < 0.05 were considered. It is noteworthy that the explanatory variables or predictors in the present study were those that explain the outcome, so associated with physical violence. Analyses were performed in the Stata 14.1 program.

This study was approved by the Research Ethics Committee of the Federal University of Espírito Santo under CAAE no. 88138618.0.0000.5060 and opinion number 2.819.597 on August 14, 2018.

Results

The prevalence of reported cases of physical violence against children in the period analyzed was 23.6% (CI95%: 22.2-25.2; 730 cases), considering a total of 3.127 notifications in this age group.

Among the victims can be observed a predominance of male children (59.3%), aged 6 to 9 years (42.8%), black/mixed-race (73.2%), without disabilities/disorders (95.1%), and urban residents (88.7%). Regarding the aggressors' characteristics, they were predominantly 20 years or older (80.4%), were male (62.4%), were known by the child (91.3%) and there is no suspicion of alcohol use in 70.3% of the cases. Overall, the event involved only one aggressor (79.2%), occurred in the residence (72.2%), in the morning/

Table 1 Characteristics of reported cases of physical violence against the child according to characteristics of the victim, the aggressor and the aggression. Espírito Santo, 2011 to 2018.

Variables	n	%	CI 95%
Gender			
Male	433	59.3	55.7-62.8
Female	297	40.7	37.2-44.3
Age group			
0 to 2 years	235	32.7	29.4-36.2
3 to 5 years	176	24.5	21.5-27.8
6 to 9 years	308	42.8	39.3-46.5
Ethnicity/Color			
White	163	26.4	23.0-30.0
Black/Mixed-race	445	73.2	69.5-76.6
Deficiencies/Disorders			
No	660	95.1	93.2-96.5
Yes	34	4.9	3.5-6.8
Place of residence			
Urban/Periurban	627	88.7	86.1-90.8
Rural	80	11.3	9.2-13.9
Age group of the aggressor			
0-19 years old	67	19.6	15.7-24.2
20 years or more	275	80.4	75.8-84.3
Gender of the aggressor			
Male	356	62.4	58.3-66.2
Female	215	37.6	33.8-41.7
Bond with the victim			
known	596	91.3	88.8-93.2
Unknown	57	8.7	6.8-11.2
Suspected use of alcohol			
No	248	70.3	65.3-74.8
Yes	105	29.7	25.2-34.8
Number of aggressors involved			
One	514	79.2	75.9-82.2
Two or more	135	20.8	17.8-24.1
Occurred at the residence			
No	179	27.8	24.4-31.4
Yes	466	72.2	68.7-75.6
Shift of occurrence			
Morning/Afternoon	205	59.3	54.0-64.3
Night/Dawn	141	40.7	35.7-46.0
Repeated violence			
No	219	48.1	43.6-52.7
Yes	236	51.9	47.3-56.5
REFERRAL			
No	70	9.7	7.8-12.1
Yes	649	90.3	87.9-92.2

Absolute frequency totals differ due to the missing data (blank or ignored in notification sheets).
CI 95%, confidence interval 95%.
Source: Notifiable Diseases Information System (SINAN).

afternoon (59.3%), and was repeated (51.9%). Referral to other services of the care network was performed in 90.3% of the reported cases (Table 1).

In the bivariate analysis, physical violence was associated with the child's gender and age group, the area of residence, the age group and gender of the aggressor, the bond with the victim, the suspicion of alcohol use, the number of people involved, the occurrence in the residence and the occurrence shift (Table 2).

After adjustments, physical violence remained associated with the gender and age group of the victim, the area of residence, the age of the aggressor, the occurrence in the residence, and the occurrence shift. This type of violence was almost twice as frequent among boys (PR: 1.93; CI95%: 1.69-2.21) and 30% more frequent in children aged 6 to 9 years old (PR: 1.30; CI95%: 1.12-1.51). Children living in rural area had a frequency 27% higher than those living in urban areas (PR: 1.27; CI95%: 1.05-1.55). The frequency of aggressors over 20 years of age was 1.87 times higher (CI95%: 1.35-2.60) when compared to aggressors under the age of 20. Physical violence occurred more often outside the residence (PR: 1.75; CI95%: 1.33-2.31) and night/dawn shift (PR: 1.35; CI95%: 1.04-1.76) (Table 3).

Discussion

Physical violence reached approximately one-quarter of the notifications of violence against children in Espírito Santo, affecting mainly male children, aged 6 to 9 years old and living in rural areas. It was mainly committed by an adult and/or older individuals, outside the residence and during the night and/or early morning shifts.

The frequency of reported cases of physical violence in this study was lower than that found in the city of Rio das Ostras, state of Rio de Janeiro, Brazil[15] and higher than that found in the state of Paraíba from 2010 to 2013[16] and in the city of Porto Alegre, state of Rio Grande do Sul.[17] Data from the VIVA Survey from 2011 show that physical assaults were the main type of violence attended by the emergency services, precisely because they are those that leave visible marks on the victims.[18] In the same year, the total number of cases registered in SINAN, 38.5% were physical violence,[19] a frequency also higher than that found for Espírito Santo.

Physical violence was associated with males, as also pointed out in other studies.[10,17,19] This can be considered a facet of gender violence present in Brazilian society, where the male is represented by aggression and as the holder of power, while women must be passive and subjugated.[20] From the very early years, different norms are prescribed between the sexes for behaviors, games, and artifacts.[10,21] The girls are more restricted to the households in their games, which are mainly with dolls and simulating situations of the adult woman as "owner of the home". Boys are allowed to play outside the house, even with toys that imitate weapons and other violent attitudes, bringing the symbology of power.[22]

The older children, between six and nine years old, were the main victims of physical violence in the state of Espírito Santo, which was also pointed out by other studies.[17-22] It can be related to the fact that older children are considered less frail to receive physical aggression. Infants in this age group also tend to be more questioning and disobey the norms imposed by adults in an attempt to test their limits and establish themselves as individuals.

Table 2 Bivariate analysis between physical violence and the characteristics of the victim, the aggressor and the aggression. Espírito Santo, 2011 to 2018.

Variables	N	%	CI 95%	p-value
Gender				
Male	433	32.4	29.9-34.9	< 0.001
Female	297	17.0	15.3-18.8	
Age group				
0 to 2 years	235	22.1	19.7-24.7	< 0.001
3 to 5 years	176	20.0	17.5-22.8	
6 to 9 years	308	27.6	25.0-30.3	
Ethnicity/Color				
White	163	22.3	19.5-25.5	0.404
Black/Mixed-race	445	23.9	22.0-25.9	
Deficiencies/Disorders				
No	660	23.2	21.7-24.8	0.060
Yes	34	30.9	23.0-40.2	
Place of residence				
Urban/Periurban	627	22.8	21.3-24.5	0.004
Rural	80	30.9	25.6-36.8	
Age group of the aggressor				
0-19 years old	67	20.6	16.6-25.4	0.025
20 years or more	275	26.8	24.2-29.6	
Gender of the aggressor				
Male	356	24.1	21.9-26.3	0.047
Female	215	27.9	24.8-31.2	
Bond with the victim				
known	596	22.2	20.7-23.9	< 0.001
Unknown	57	57.6	47.6-67.0	
Suspected use of alcohol				
No	248	22.5	20.2-25.1	0.001
Yes	105	31.8	27.0-37.1	
Number of aggressors involved				
One	514	25.4	23.6-27.4	< 0.001
Two or more	135	18.2	15.5-21.1	
Occurred at the residence				
No	179	35.0	31.0-39.3	< 0.001
Yes	466	21.3	19.6-23.1	
Shift of occurrence				
Morning/Afternoon	205	22.1	19.5-24.9	0.013
Night/Dawn	141	27.9	24.2-32.0	
Repeated violence				
No	219	27.4	24.5-30.7	0.063
Yes	236	23.6	21.1-26.3	
REFERRAL				
No	70	19.4	15.7-23.9	0.054
Yes	649	24.0	22.5-25.7	

CI 95%, confidence interval 95%.
Source: Notifiable Diseases Information System (SINAN).

In this study, the rural area was identified as having a higher frequency of cases of physical violence in childhood. The educational level of the rural population is lower than in the urban population,[23] and this fact may compromise access to knowledge and information about more appropriate educational practices that do not involve violent acts. Moreover, access to health and other public services in rural areas is more difficult, and cases of violence that reach the services are the most serious and visible, as in the case of physical violence.[24]

Although this study found no association between the practice of physical violence and the bond between the aggressor and the victim, studies on the subject point to parents and, therefore, adults, as the main aggressors.[15,16,19] Adults tend to use physical violence as a way to exercise their power and as an educational practice, to impose limits and correct wrong attitudes, which is still naturalized and accepted by society, despite efforts to the contrary, a brand of a patriarchal society where the strongest must dominate the weakest and violence is

Table 3 Crude and adjusted analysis of the effects of the characteristics of the victim, the aggressor and the aggression with the physical violence perpetrated against children. Espírito Santo, 2011 to 2018.

Variables	Crude analysis			Adjusted analysis		
	PR	CI 95%	p-value	PR	CI 95%	p-value
Gender						
Male	1.91	1.68-2.17	< 0.001	1.93	1.69-2.21	< 0.001
Female	1.0			1.0		
Age group						
0 to 2 years	1.0		< 0.001	1.0		< 0.001
3 to 5 years	0.91	0.76-1.08		0.99	0.83-1.18	
6 to 9 years	1.25	1.08-1.45		1.30	1.12-1.51	
Deficiencies/Disorders						
No	1.0		0.049	1.0		0.100
Yes	1.33	1.01-1.78		1.28	0.96-1.70	
Place of residence						
Urban/Periurban	1.0		0.002	1.0		0.016
Rural	1.35	1.11-1.64		1.27	1.05-1.55	
Age group of the aggressor						
0-19 years old	1.0		0.029	1.0		< 0.001
20 years or more	1.30	1.03-1.65		1.87	1.35-2.60	
Gender of the aggressor						
Male	1.0		0.046	1.0		0.192
Female	1.16	1.01-1.34		1.28	0.88-1.87	
Bond with the victim						
known	1.0		< 0.001	1.0		0.782
Unknown	2.59	2.16-3.11		1.11	0.52-2.37	
Suspected use of alcohol						
No	1.0		< 0.001	1.0		0.096
Yes	1.41	1.17-1.71		1.34	0.95-1.90	
Number of involved						
One	1.40	1.18-1.66	< 0.001	1.07	0.63-1.83	0.796
Two or more	1.0			1.0		
Occurred at the residence						
No	1.65	1.43-1.90	< 0.001	1.75	1.33-2.31	< 0.001
Yes	1.0			1.0		
Shift of occurrence						
Morning/Afternoon	1.0		0.013	1.0		0.025
Night/Dawn	1.27	1.05-1.52		1.35	1.04-1.76	
Repeated violence						
No	1.16	0.99-1.36	0.062	1.13	0.81-1.58	0.477
Yes	1.0			1.0		

PR, prevalence ratio; CI 95%, confidence interval 95%.
Source: Notifiable Diseases Information System (SINAN).

authorized.[21,25] Besides, violence against children has an important intergenerational character, where parents who have been assaulted tend to repeat this same behavior with their children.[26,27] The lack of knowledge of other ways of educating and relating to children also contributes to the continuity of this cycle.[28]

The literature points to residency as the main place of occurrence of violence against children.[15,17,24] However, the authors found a higher prevalence of occurrence of physical violence outside the household. This divergent result may be due to the particularities of the analyses performed, where the comparison group were children who suffered other types of violence, such as neglect and sexual abuse, which are less accepted by society and, therefore, have their occurrence more linked to the private environment. Corroborating with the present findings, Rates et al. (2015)[19] when analyzing Notifiable Diseases Information System (SINAN) data from all over the country in 2015, found no association between physical violence and the occurrence at home, but this association was present in other types of violence. This finding is relevant in demonstrating that children are vulnerable both inside and outside the house. In addition, boys, the main victims of physical violence, have more access to the exterior of the residence, while girls historically become more reclusive to the domestic environment.[21]

The main period of occurrence of violence found in this study was the night and/or early morning shift. This is believed to be the moment when parents return to their

residence and have greater contact with the children, often taking their frustrations and misadventures of the day out on children.[10,29] In addition, data from a study conducted in emergency services showed that most episodes occurred during the day.[18]

From the work carried out with the notification data, the authors can see the importance of this tool in identifying cases and the magnitude of violence against children, helping in the visibility of this phenomenon. In this context, the health sector becomes essential, since it directly receives the victims to deal with the consequences of violence.[1,30] However, it is not only when dealing with the victims that the health sector must act: the proximity of health professionals, especially those linked to Primary Care, to the daily lives of families allows them to be agents of violence prevention and promotion of the culture of peace.[1] These professionals must then be trained and supported to identify, notify and act with families and communities.[12]

The limitations of this study involve the quality of the data obtained and misclassifications and the underreporting of cases, characteristic of information systems. The difficulties with the accuracy and completeness of the analyzed data were minimized with the database qualification process, but the need for continued training of health professionals is highlighted in their way of filling out the notification form accordingly. It is important to highlight the limitation related to the classification of the type of violence suffered since the Ministry of Health's guidance is that only the priority violence is recorded. The cases that are reported in Sinan are those that arrive at health services and that have been identified as violent by health professionals. However, many cases do not reach the health sector and are not reported. Physical violence often leaves apparent marks on the child's body, being, therefore, easier to identify.

This study allowed us to conclude that physical violence affects an expressive number of children, and is more prevalent in boys, older children, and those living in rural areas. It is mainly committed by adult individuals, probably the result of an asymmetric relationship of power. Unlike the literature, physical violence occurred mainly outside the house and in the night and/or early morning shift, which points to the increasing importance of analyses at the local level, since policies are implemented at this level.

Thus, it is important to highlight the need for actions of governments and society for a change in the paradigm in order to protect the child from any form of violence, ensuring that is advocated by the Statute of the Child and Adolescent (ECA), together with cultural and structural changes in our society, that to stop the permanence of violence in all relationships.

Conflicts of interest

The authors declare no conflicts of interest.

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