

Spatial distribution of the violation of the rights of children and adolescents in a Brazilian state

Distribuição espacial da violação dos direitos da criança e adolescente em um estado brasileiro

Distribución espacial de la violación de los derechos de los niños y adolescentes en un estado brasileño

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Abstract

Objective: To analyze the violation of the rights of children and adolescents in the state of Paraná, from 2009 to 2015. **Method:** The violation of children's and adolescents' rights in the state of Paraná, Brazil, is investigated by a descriptive, retrospective and transversal study with spatial analysis techniques. Data were retrieved from the Information System for Childhood and Adolescence (SIPIA). Data description and spatial distribution of the violation of rights in the state of Paraná were undertaken by GeoDa 0.9.5-i. Spatial auto-correction was calculated by global Moran (uni- and bi-variate) Index and choropleth maps were undertaken. **Results:** The nuclear family was the predominant violating agent (88.67%), with family and communitarian conviviality as the main violated right, with 41.02% of cases. Univariate analysis revealed positive auto-co-relationship. High-high and low-high clusters of violation of rights against children and against adolescents were concentrated in the south and center-west regions. There was a significant co-relationship between violation rates of children's and adolescents' rights and socio-economic variables, such as illiteracy, Gini Index, earning and urbanization degree. **Conclusion:** The violence of rights against children and adolescents occurs within the society of the state of Paraná in spite of ensuing laws. There are also difficulties and weaknesses within the Information System for Childhood and Adolescence (SIPIA) and under-registration of cases occurred in many towns even when Tutelary Councils are present.

Keywords: Violation of Human Rights; children; adolescents, violence.

Resumo

Objetivo: Analisar a violação dos direitos das crianças e adolescentes no estado do Paraná, no período de 2009 a 2015. **Método:** Estudo descritivo, retrospectivo de corte transversal, com técnicas de análise espacial. Os dados foram coletados junto ao Sistema de Informação para a Infância e Adolescência (SIPIA). Realizada a distribuição espacial da violação dos direitos, através do software GeoDa versão 0.9.5-i. Calculada a autocorrelação espacial, utilizando o índice (I) de Moran global (univariada e bivariada) e realizados Mapas coropléticos. **Resultados:** A família nuclear foi o agente violador predominante (88,67%), e o principal direito violado foi à convivência familiar e comunitária, com 41,02% dos episódios. A análise univariada mostrou autocorrelação positiva. Os "clusters" alto-alto e baixo-alto da criança e do adolescente, se concentraram na região Sul e Centro Oeste. Houve significância entre as taxas de violação dos direitos e as variáveis socioeconômicas: analfabetismo, Gini, renda e grau de urbanização. **Conclusão:** A violação dos direitos das crianças e adolescentes está presente na sociedade paranaense. Observaram-se ainda dificuldades e fragilidades do Sistema de Informação para a Infância e Adolescência (SIPIA) e a subnotificação em muitos municípios mesmo com a presença dos Conselhos Tutelares.

Palavras-chave: Violação dos direitos humanos; crianças; adolescentes, violência.

Resumen

Objetivo: Analizar la violación de los derechos de los niños y adolescentes en el estado de Paraná, de 2009 a 2015. **Método:** Estudio descriptivo, retrospectivo, transversal, utilizando técnicas de análisis espacial. Los datos fueron recolectados del Sistema de Información para Niños y Adolescentes (SIPIA). La distribución espacial de la vulneración de derechos se realizó a través del software GeoDa versión 0.9.5-i. La autocorrelación espacial se calculó mediante el índice de Moran global (I) (univariado y bivariado) y se realizaron mapas de coropletas. **Resultados:** La familia nuclear fue el agente violador predominante (88,67%), y el principal derecho violado fue a la vida familiar y comunitaria, con el 41,02% de los episodios. El análisis univariado mostró autocorrelación positiva. Los grupos alto y bajo-alto de niños y adolescentes se concentraron en las regiones Sur y Medio Oeste. Hubo significancia entre las tasas de vulneración de derechos y las variables socioeconómicas: analfabetismo, Gini, ingreso y grado de urbanización. **Conclusión:** La violación de los derechos de los niños y adolescentes está presente en la sociedad paranaense. También se observaron dificultades y debilidades del Sistema de Información de la Niñez y la Adolescencia (SIPIA) y el subregistro en muchos municipios, aún con la presencia de los Consejos Tutelares.

Palabras clave: Violación de los derechos humanos; niños; adolescentes, violencia.

1. Introduction

Violence is considered an important risk factor for health, bringing serious physical, emotional and social consequences to the population and substantial costs to health services. Approximately half a million people are murdered each year in the world, that is, 1386 human beings die every day victims of violence (World Health Organization, 2014). Although violence affects different subjects, when it is practiced against children and adolescents, it provides a prominent situation, as these individuals are part of vulnerable segments of society (Silva et al., 2020).

Globally, the numbers are alarming: 25% of all adult's report having suffered physical abuse as children; while one in five women report having been sexually abused as a child (World Health Organization, 2014; Agência Brasil, 2018).

In Brazil, the situation is no different: 17,900 children aged ≤ 9 years suffered violence in a period of one year, equivalent to 49 minors per day, two defenseless human beings every hour (Rates et al. 2015). Almost half of all reports of violence in Brazil are against children and adolescents (42.3%) (Assis et al., 2012). In addition, the consequences of violent acts go beyond deaths. Children who suffer any type of violence are at high risk of having aggressive and antisocial behavior in more advanced stages of their development, including adulthood (World Health Organization, 2014). full development of children, adolescents and society.

Rape as a form of violence is the denial of the rights of children and adolescents. As it is directly related to a process of physical, moral or psychological damage, it is considered broader than violence. (Brasil, 2018).

It is important to know how to identify these situations of violence/rape with the child and youth population. In this sense, the National Information System for Children and Adolescents-SIPIA is an instrument for recording information on the defense of the rights of children and adolescents, which carries out the process of monitoring the situation of protection of children and adolescents, from the perspective of violation and reimbursement of rights (Paraná, 2013).

Numerous studies have been developed addressing violence against children and adolescents (Barbani, 2016; Reis et al., 2018; López & Lefevre, 2019; Macedo et al., 2019; Silva et al., 2020; Silva et al., 2021), two of which were developed in Brazil using SIPIA data (Lins et al., 2010; Silva et al., 2014). There are, however, few studies on the violation of the rights of children and adolescents in the state of Paraná using the spatial distribution methodology. Bearing in mind that it is the responsibility of the municipality to define and implement policies to serve the children and youth population and that it is necessary to diagnose and plan the needs of each municipality, studies that analyze the distribution in geographic space of violations of the rights of children and adolescents can contribute to the planning of actions and the contribution of public resources (Diácomo, 2013).

Thus, the present study aims to analyze the spatial distribution of violence/violation of the rights of children and adolescents in the state of Paraná, from 2009 to 2015

2. Methodology

Descriptive, cross-sectional, retrospective study, using spatial analysis techniques and carried out from secondary data regarding violations of rights against children and adolescents in the state of Paraná, from 2009 to 2015 (Pereira, et al., 2018).

Paraná, a state located in the southern region of Brazil, has a total area of 199,307,985 km². The estimated population for 2016 is 11,242,720 inhabitants, with a population density in 2010 of 52.40 inhab/km². The state is distributed in 399 municipalities, of which 306 (76.69%) have a population below 20,000 inhabitants (Ibge, 2017).

Data source

Data were collected in the Information System for Children and Adolescents (SIPIA), designed and implemented by the Federal Government, with the help of the Ministry of Justice (Oliveira, 2011). The system is fed with information from the guardianship councils based on complaints made by family members or people in the community. The information contained in the SIPIA refers to the violation of the rights of children and adolescents, according to the Statute of Children and Adolescents (ECA) (Pordeus, 2011)

The system is composed of modules that address specific issues: Module I – violation of rights based on complaints collected by tutelary councils. Module II – assistance to adolescents in conflict with the law. Childhood sticks are responsible for feeding these data. Module III – family insertion and national and international adoption. Obtains information from the childhood and youth courts. Module IV – registration of rights, guardianship councils and funds for childhood and adolescence in Brazilian municipalities. Data collected by state councils and other sources (Paraná, 2013).

SIPIA I was the module used for data collection in this study, as it is available for public consultation. (Information System for Children and Adolescents – SIPIA [accessed on November 10, 2016]. Ministry of Justice. Available at: <http://www.mj.gov.br/sipia/>).

The variables studied were: gender (male, female, transmale, transfemale and not informed), age group (children -0 to 11 years, 11 months and 29 days; adolescents -12 to 17 years, 11 months and 29 days)⁹; race/skin color (yellow, white, brown, black, indigenous, not informed); violating agent I (grandparents, brother, stepmother, mother, other, stepfather, father, guardian, uncle/aunt) and violated right (Family and Community Living, Right to Life and Health, Education, Culture, Sport and Leisure, Freedom, Respect and Dignity, Professionalization and Protection at Work and Indigenous Law).

In relation to the violating agent, it was decided to analyze only the violating agent I, which represents 41.92% in relation to the other three violating agents. In addition, studies show that this is the most prevalent category in the violation of the rights of children and adolescents (Pordeus, et al., 2011). Later, this category was grouped into nuclear family (brother, stepmother, mother, stepfather, father, guardian) and extended family (grandparents, uncle/aunt). This division was designed by the author for a more detailed visualization of the data, improving the analysis.

The data were compiled and transported to Excel spreadsheets and, later, structured in a table, composing the descriptive statistics of the study. The map with the cartographic base, containing the political-administrative division of the Paraná state was freely obtained in shapefile format (SHP), through online access to the website of Institute of earth, Cartography and Geosciences (Paraná, 2010).

To analyze the spatial distribution of violence in Paraná, the age group variable was used, in order to measure the problem experienced by children and adolescents in a different way. The rate of violation of the rights of children and adolescents was obtained through the relationship between the notifications registered in the SIPIA and the adjusted population of each municipality, made available in digital format by the Brazilian Institute of Geography and Statistics (IBGE).

To smooth out possible instabilities in the rate of violation of children's and adolescents' rights, the spatial empirical Bayesian estimator was used (Anselin et al., 2006). In view of this, the specific rate of violation of children's rights (TEVDC)

and the specific rate of violation of the rights of adolescents (TEVDA) were acquired for each municipality per 10,000 inhabitants.

This analysis was initially determined by means of a spatial weight matrix — W of the Queen type, which makes it possible to quantify the non-random relationship between the value of a variable in a given municipality and the weighted average of neighboring units, considering all municipalities that share a common geographic border. This prior determination is necessary to assess the existence of spatial autocorrelation (Anselin, 1998)

After obtaining the smoothed rates, an exploratory analysis of spatial data (AEDE) was performed using the GeoDa software version 0.9.5-i (Spatial Analysis Laboratory, University of Illinois at Urbana-Champaign, Urbana, USA) (Anselin et al., 2006), in order to obtain measures of global spatial autocorrelation and local spatial autocorrelation (clusters) (Anselin, 1998).

Spatial autocorrelation was calculated considering the DEVDc and the AVTD of each municipality, using the global Moran index (I). those of the other surrounding regions. The Moran index varies between -1 and $+1$, where $I = 0$ means the hypothesis of spatial independence and numbers greater or less than the expected Ide Moran value [$E(I) = -1/(n - 1)$], meaning spatial dependence (Perobelli & Haddad, 2006).

Moran's I values between 0 and $+1$ are considered positive and indicate positive (direct) spatial autocorrelation, that is, municipalities are close to municipalities with similar rates (high or low); values of Moran's I index between 0 and -1 are determined as negative and represent negative (inverse) spatial autocorrelation, that is, municipalities are surrounded by municipalities with different rates (Anselin, 1998; Silva et al., 2014).

Global Moran shows spatial correlation, ie spatial dependence, high rates of violence in the state. However, they do not show the locations where clusters with high or low rates are present.

However, the global Moran I have a restriction, which may omit local patterns of spatial association, since an inverse autocorrelation does not necessarily indicate the absence of spatial correlation at the local level. Therefore, local indicators of spatial association (LISA) were used to determine significant patterns of spatial association specific to each region surveyed. LISA's is used to verify the occurrence of local spatial clusters (clusters), with high or low rates, and to detect the areas that most collaborate for the occurrence of spatial autocorrelation (Perobelli & Haddad, 2006).

Choroplectic maps were built with the rates of VTEDc and TEVD of each municipality. These values were segmented into class intervals and incorporated into quartile ranges, considering the mean. Significant global and local spatial autocorrelation coefficients were considered for $P < 0.05$. The significant coefficients for this study must be judged as pseudo-significance levels, as they must be proven by the simulated redistribution of rates among the researched regions (permutation test) (Campos et al., 2009).

3. Results

In the period from 2009 to 2015, 170,643 violations of the rights of children and adolescents were recorded, with an average of 24,380/year. This number does not necessarily mean that they were different children and adolescents, since the same person may have suffered more than one violation in the period.

In 64 municipalities (16.00%) no records were found in the SIPIA and in another six municipalities (1.50%) only the gender variable was filled. (22.72%) all municipalities filled out the records. The Regionals of Jacarezinho, Maringa, Ivaiporã and Paranavaí had the highest number of municipalities that did not complete the SIPIA

There was a small difference in violations between the sexes, with a predominance of males (50.66%). In the color/race category, there was a predominance of whites (77.09%). Violation of rights was higher in the age group of children,

with 63.44% of occurrences, and the nuclear family was the predominant violating agent (88.67%), which is consistent with the main violated right: family and community coexistence., with 41.02% of the episodes (Table 1)

Table 1. Distribution of violated rights against children and adolescents according to sociodemographic variables and violating agent, Paraná, Brazil, 2009 to 2015. Maringa, 2017

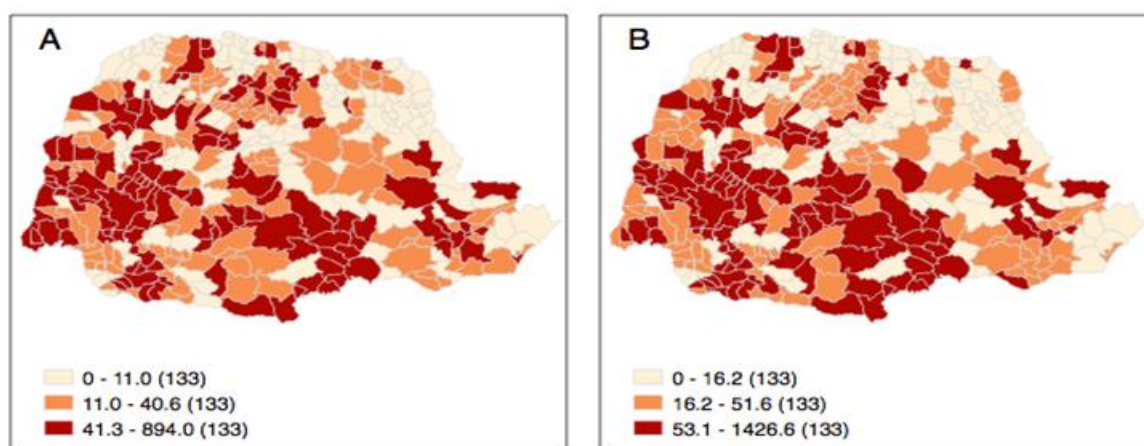
Variables/categories	No.	%
Gender		
Male	86493	50.66%
Female	83959	49.17%
Transsexual Male	63	0.04%
Transsexual Female	78	0.05%
Not informed	143	0.08%
Color/race		
White	131518	77.09%
Brown	27191	15.94%
Black	7198	4.22%
Yellow	4207	2.47%
Indigenous	341	0.20%
Not informed	142	0.08%
Age group		
Child	84312	63.44%
Adolescent	48589	36.56%
Violator Agent		
Violator Agent I	105628	41.92%
Violator Agent II	74125	29.42%
Violator Agent III	51416	20.40%
Violator Agent IV	20813	8.26%
Violator Agent I		
Nuclear Family	93663	88.67%
Extended Family	4404	4.17%
Other	7561	7.16%
Violated Right		
Conv. Fam. Comm.	69982	41.02%
Educ. Cult. Sp. and Leis.	60210	35.29%
Lib. Resp. Dig.	27031	15.84%
Life and health	11779	6.90%
Prof. e Prot. Labor.	1597	0.94%
Indigenous Rights	0	0.00%

Source: Authors.

The map below (Figure 1) shows how the rate of violation of the rights of children and adolescents varies according to the region of the state. The distributions of the rates of violation of the rights of children and adolescents, in the regions of the state of Paraná, are similar. This distribution may indicate similar spatial, social, economic and cultural conditions. very high, pointing to the increasing need for public policies aimed at protecting this vulnerable portion of the population. In addition, they highlight the importance of data as fundamental elements for the implementation of public policies for the protection of

children and adolescents. Although the absolute data indicate a higher frequency of violations of children's rights, specific rates of violation were higher among adolescents. This was because the population of children was larger than that of adolescents.

Figure 1. Spatial distribution of violence rates in children and adolescents, Paraná, Brazil, 2009 to 2015. A) Rate of violence per 100,000 children B) Rate of violence per 100,000 adolescents



Source: Authors.

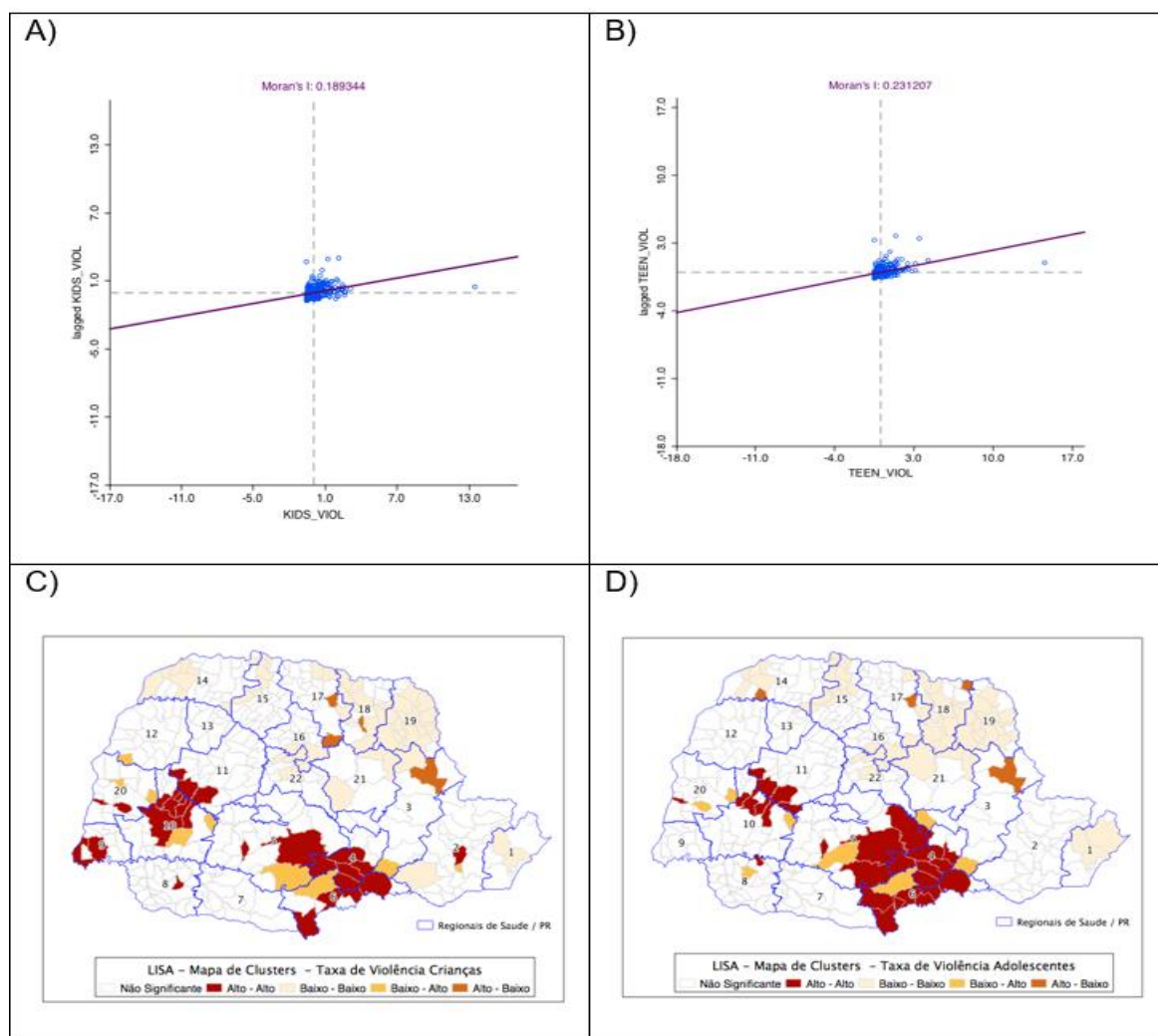
The univariate analysis (Figure 2) showed positive spatial autocorrelation ($I= 0.189344$) (3A) and ($I= 0.231207$) (3B) indicating that municipalities with high rates of violation of the rights of children and adolescents did not present a random distribution, but rather, that they are surrounded by municipalities also with high rates of violation of the rights of children and adolescents.

The LISA analysis identified “clusters” whose similarity allowed us to classify the municipalities according to the following characteristics: high-high, low-low, low-high and high-low.

In relation to DEVDc, the following clusters were detected: high-high in the 2nd (Curitiba), 4nd (Irati), 5nd (Guarapuava), 6nd (União da Vitória), 8nd (Francisco Beltrão), 9nd (Foz do Iguaçu), 10nd (Cascavel), 11nd (Campo Mourão) and 20nd (Toledo) Health Regionals, that is, cities with high rates of violation of children's rights, surrounded by cities also with high rates of violation; low-low in the 1nd (Paranaguá), 2nd (Metropolitan), 3nd (Ponta Grossa), 14nd (Paranavaí), 15nd (Maringá), 16nd (Apucarana), 17nd (Londrina), 18nd (Cornélio Procópio), 19nd (Jacarezinho), 21nd (Telêmaco Borba), 22nd (Ivaiporã) Health Regionals, meaning that cities with low rape rates border cities with low rape rates; low-high in the 2nd, 3rd, 5nd, 6nd, 10nd, 12nd, 20nd Health Regionals, indicating that cities with low violation rates border cities with high violation rates and the high-low cluster in the 3rd, 17nd, 18nd Health Regionals, showing that cities with high rape rates are bordering cities with low rates.

Regarding DAVT, the following clusters were detected: high-high in the 4nd, 5nd, 6nd, 8nd, 10nd, 11nd, 20nd Health Regionals; low-low in the 1nd, 14nd, 15nd, 16nd, 17nd, 18nd, 19nd, 21nd, 22nd Health Regionals; low-high in the 3rd, 5nd, 6nd, 8nd, 10nd, 20nd and 22nd Health Regions and high-low in the 3rd, 14nd, 17nd and 18nd Health Regions

Figure 2. A-B = Moran scatter plot (univariate analysis) of the rate of violence for children (A) and adolescents (B) (axis X: Rate of violence by city, axis Y: Weighted average rate of neighboring cities). C-D = LISA: formation of clusters according to the rate of violence for children (C) and adolescents (D). (Cluster types: high-high, low-low, low-high, high-low).



Source: Authors.

Regarding the Moran I coefficient of violence rates, Table 2 shows that there was an association between the rates of violation of children's and adolescents' rights and the socioeconomic variables: illiteracy, Gini, income and degree of urbanization.

Table 2. Moran I Global Coefficient of violence rates for children and adolescents and socioeconomic indicators of cities in the period from 2009 to 2015. Maringa, 2017

Variable	Children		Adolescents	
	I	p value	I	p valor
HDI	0.0290	0.0700	-0.0126	0.2430
Illiteracy	-0.1650	0.0010	-0.1294	0.0010
GINI	0.0766	0.0010	0.1151	0.0010
Income	0.0834	0.0010	0.1259	0.0010
Grade of urbanization	-0.0559	0.0010	-0.1135	0.0010

Source: Authors.

4. Discussion

The present study, as far as is known, is the first research on the violation of the rights of children and adolescents in the entire state of Paraná using spatial distribution and having as source the SIPIA database, which is still little explored.

The results revealed that there was a predominance of violation of children's rights in absolute numbers when compared to adolescents. However, specific rates of violation of rights were higher for adolescents. These data show the magnitude of the phenomenon, revealing the vulnerability of both age groups. Nunes and Sales (2016) comment that vulnerability to the risk of violence is directly proportional to the age of the child, since the younger the child, the more dependent they are on the caregiver for basic survival activities. However, adolescents are also vulnerable segments of society (Assis et al., 2012). Studies on sexual violence against children and adolescents indicate that the most affected age group is young people over twelve years old (Soares et al., 2016).

The main violators of the rights of children and adolescents are family members (Reis et al; 2018; Platt et al., 2018; Silva et al., 2020; Silva et al; 2021), with nuclear family members being the authors predominant cases. This value is compatible with the main violated right: family and community coexistence. Studies show that the relationship of dependence, affection and coexistence are risk factors for violence, due to proximity (Maia et al., 2017; Malta et al., 2017). A potential aspect of this risk is the cultural process of "educating" from punishment and threats, which often predominates in the universe of the nuclear family responsible for this function (Mascarenha et al., 2010).

The rates of violation of children's and adolescents' rights found in this study were compared with the rates of interpersonal/self-inflicted violence from the Information System for Notifiable Diseases (SINAN), since there is no rate of violation of children's and adolescents' rights prepared by public bodies. officials that could serve as a parameter to measure its magnitude.

The survey of violence data from SINAN did not allow calculating the rate by age group 0 to 11 years and 12 to 17 years. Even so, the violence rate of two age groups was calculated, from 0 to 9 years old and from 10 to 19 years old. Comparative results showed a high rate of notification of violations of children's rights (42.57), when compared with SINAN data (11.39). The rate of violation of adolescent rights (57.62) had the same behavior in relation to the rate of SINAN (12.32). These data reveal that the reality of notification of violence by SINAN is far below the notification of violation of children's rights. and the teenager.

The high-high and low-high “clusters” of violation of the rights of both children and adolescents were concentrated in the South and Midwest regions.

In the tri-border region, a high-high cluster of violations of the rights of children was identified. A study carried out by Andrade et al. found high rates of homicide mortality in young people in the triple border, a fact that also points to the vulnerability of the child population in this region.

The high-low clusters were concentrated in the northwest, north and east regions and the low-high clusters were concentrated in the south and southeast regions. The low-low clusters are spread across the eastern, central, north and northwest regions, which may not represent the real situation of violation of the rights of children and adolescents, since in these regions the largest number of municipalities that did not feed the SIPIA system.

Regarding the relationship between child and adolescent rape rates and the socioeconomic variables detected in this study, França et al. (2015) found data that corroborate the assumptions that youth homicide/violence rates have some degree of association with the socioeconomic conditions of the children. counties

In municipalities where social inequality is high, higher medians of the triennial averages of homicide rates were found (Mansano et al., 2013). Studies indicate that inequality in income distribution is related to higher homicide rates (Justino et al., 2011; Soares et al., 2016).

It is also observed that more urbanized municipalities, with greater size and population growth, present a greater risk for violence (Mansano et al., 2010). The increase in urban outskirts, often motivated by rapid, disorderly and uncontrolled population growth, together with the inefficiency of the State in relation to public policies of protection and services for the population, contribute to the increase in homicide rates (Andrade et al., 2012; Souza & Minayo, 2009).

Among the limitations of the research, the present study used the variables that the literature shows to be more common in the case of violence against children and adolescents, since the SIPIA has a lot of information.

The database is flawed, with incomplete information and municipalities that do not record cases of violence. Regarding the filling out of the SIPIA, the state of Paraná joined the system in 2000. A study found that there was a peak in the SIPIA supply in 2006 and, from then on, a lag process in the updating of data, which only became more intense with from 2009. It should be clarified that this fact is not conditioned to the lack of Guardianship Councils, since in all municipalities in the state of Paraná there is at least one formation of Guardianship Councils. The same study raised the hypothesis that a standard procedure is not followed in filling in the data, which would indicate the need for training of guardianship counselors and articulation between the instances that use the system. The government, through the Secretary of State for Family and Social Development, since 2012, has resumed training for filling out the SIPIA in its web version, which has a continuous character, which can improve the quality of the data (Paraná, 2013).

Even knowing that the present study does not represent the full dimension of the problem, the data serve as an alert for the competent authorities, health professionals, especially in the pediatric area, as well as for the family and community, in order to reflect on the conduct taken and future perspectives. to solve this health problem.

5. Conclusion

The violation of children's and adolescents' rights is still strongly present in Paraná society, despite the current legislation. The spatial distribution of the violation of children's and adolescents' rights proved to be homogeneous. Violation rates may be high, especially when compared to SINAN, with some regions showing more worrying rates than others. Difficulties and weaknesses of SIPIA and underreporting by municipalities were still observed, even with the presence of Guardianship Councils.

Thus, it is necessary to invest in public policies, through specific programs, considering the characteristics of each municipality, in order to minimize the vulnerability of children and adolescents to violence. At the same time, investing in the permanent education of guardianship counselors and their training for the correct feeding of the system, making the information reliable, serving as subsidies for the elaboration of more effective public policies. This fact also alerts to the need for greater involvement of researchers in the area of nursing, in the development of studies on spatial distribution, exploring topics such as the notification of violence and the spaces of care for children and adolescents who are victims of violence

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