Revista Brasileira em Promoção da Saúde
e-ISSN:1806-1230
Original Article
DOI: 10.5020/18061230.2018.7992

VIOLENCE-RELATED DEATHS AMONG YOUNG PEOPLE IN BRAZIL: SPATIAL AND SOCIOECONOMIC INEQUALITY

Mortalidade de jovens por violência no brasil: desigualdade espacial e socioeconômica

Mortalidad de jóvenes por violencia en Brasil: desigualdad espacial y socioeconómica

Ana Edimilda Amador (Lattes)
Federal University of Rio Grande do Norte (Universidade Federal do Rio Grande do Norte - UFRN) - Natal (RN) - Brazil

Marilane Vilela Marques
Natal Municipal Health Secretariat (Secretaria Municipal de Saúde de Natal - SMS) - Natal (RN) - Brazil

Marta Rovery de Souza (OrcID)
Federal University of Goiás (Universidade Federal de Goiás - UFG) - Goiânia (GO) - Brazil

Dyego Leandro Bezerra de Souza (OrcID)
Federal University of Rio Grande do Norte (Universidade Federal do Rio Grande do Norte - UFRN) - Natal (RN) - Brazil

Isabelle Ribeiro Barbosa (OrcID)
Federal University of Rio Grande do Norte (Universidade Federal do Rio Grande do Norte - UFRN) - Natal (RN) - Brazil

ABSTRACT

Objective: To analyze the distribution of violence-related deaths among young people in Brazil according to socioeconomic indicators. **Methods:** This is an ecological study that analyzed 482 Immediate Regions of Urban Articulation in Brazil (Regiões Imediatas de Articulação Urbana – RIAU). The dependent variable was the Standardized Mortality Ratio (SMR) for violence among young people (15-29 years old). We carried out a bivariate analysis to assess the spatial correlation between the outcome variable and the independent variables and the significance of the clusters. Pearson's test was used to check for correlations between the variables. The number of deaths was obtained from the Mortality Information System (Sistema de Informação sobre Mortalidade – SIM) and the population data were retrieved from the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística – IBGE). **Results:** There was a weak spatial correlation between the contextual variables and SMR across the RIAU, with Moran values close to zero. Pearson's test found a weak correlation (r<0.3). However, there were clusters of high mortality rates and worse socioeconomic conditions in the North region in the Northeastern Coastal region. **Conclusion:** There was an unequal distribution of violence-related mortality in Brazil despite the weak correlation to the selected socioeconomic variables.

Descriptors: Mortality; Violence; Social Determinants of Health.

RESUMO

Objetivo: *Analisar a distribuição da mortalidade de jovens por violência no Brasil de acordo com indicadores socioeconômicos.* ***Métodos:*** *Trata-se de um estudo ecológico, cujas unidades de análise foram as 482 Regiões Imediatas de Articulação Urbana (RIAU) do Brasil. A variável dependente foi a Taxa de Mortalidade Padronizada (TMP) por violência em jovens (15-29 anos). Realizou-se a análise bivariada para avaliação da correlação espacial entre a variável desfecho e as variáveis independentes e a significância dos clusters. Também se aplicou o teste de correlação de Pearson, entre as variáveis. Obteve-se o número de óbitos por meio do Sistema de Informação sobre Mortalidade (SIM) e os dados da população por meio do Instituto Brasileiro de Geografia e Estatística (IBGE).* ***Resultados:*** *Constatou-se fraca dependência espacial entre as variáveis contextuais e a TMP nas RIAU, com valores de Moran próximos de zero. Constatou-se fraca correlação de Pearson (r<0,3). Entretanto, observou-se a formação de clusters de altas taxas de mortalidade e piores condições socioeconômicas na Região Norte e no litoral do Nordeste.* ***Conclusão:*** *Foi observada uma distribuição desigual da mortalidade por violência no Brasil, mesmo com fraca correlação com as variáveis socioeconômicas selecionadas.*

Descritores: *Mortalidade; Violência; Determinantes Sociais da Saúde.*

Received on: *05/23/2018*
Revised on: *08/20/2018*
Accepted on: *09/23/2018*

RESUMEN

Objetivo: *Analizar la distribución de la mortalidad de jóvenes por violencia en Brasil según los indicadores socioeconómicos.* ***Métodos:*** *Se trata de un estudio ecológico cuyas las unidades de análisis fueron las 482 Regiones Inmediatas de Articulación Urbana (RIAU) de Brasil. La variable dependiente fue la Tasa de Mortalidad Estandarizada (TME) por violencia en jóvenes (15-29 años). Se realizó un análisis bivariado para evaluar la relación espacial entre la variable desfecho y las variables independientes y la significación de los clusters. También se aplicó el test de correlación de Pearson entre las variables. Se obtuvo el número de óbitos a través del Sistema de Información de Mortalidad (SIM) y los datos de la población a través del Instituto Brasileño de Geografía y Estadística (IBGE).* ***Resultados:*** *Se constató una dependencia espacial débil entre las variables contextuales y la TME en las RIAU con los valores de Moran cerca de cero. Se constató correlación de Pearson (r<0,3) débil. Sin embargo, se observó la formación de clusters con altas tasas de mortalidad y peores condiciones socioeconómicas en la Región Norte y en la costa del Noreste.* ***Conclusión:*** *Ha sido observada una distribución desigual de la mortalidad por violencia en Brasil aunque con correlación débil con las variables socioeconómicas elegidas.*

Descriptores: *Mortalidad; Violencia; Determinantes Sociales de la Salud.*

INTRODUCTION

Historically, violence was mainly linked to crime, which is the subject of legal and social sciences studies. However, due to its rise in modern life, this event became a multidisciplinary and interdisciplinary object of study in other areas of knowledge[1]. The violent death of young people, especially in large urban centers, has been a problem since the 1980s[2].

There is no consensus on the causes associated with violent events. Some factors related to the occurrence of death include: socioeconomic factors; family relations; household environment; age and personality characteristics; the sex of the victim; the ethnicity of the victim; the use of alcohol and chemical substances; and biological and multicausal factors[3].

Violence is inscribed and entrenched not only in social relations. It is rather built within consciousness and subjectivities. Therefore, this phenomenon cannot be treated only as a force external to individuals and groups[4].

Young people are immersed in contexts in which different forms of violence are manifested. Structural violence subjects them to situations of extreme inequality and exclusion due to lack of access to school, quality education and professional training, which prevents them from integrating into the formal labor market and hence lead them to the informal labor market, situations of underemployment, or even idleness[5].

Social inequality refers to situations that imply some degree of injustice, that is, differences that are unfair because they are associated with social characteristics that systematically put some groups at some disadvantage in relation to the opportunity to be and remain healthy[6].

The discussion about violence and its causes becomes imperative in Brazil. The global status report on violence prevention launched in 2014 by the United Nations has pointed out that 10% of homicides occurring in the world are committed in Brazil. The macro causes of homicides in Brazil include the following: organized crime and drug trafficking; patrimonial violence; interpersonal violence and domestic violence; conflicts between police and population; and little presence of the government in the territories[7].

Seeking to intervene in interpersonal violence, the Ministry of Health issued Ordinance MS/GM No. 737, of May 16, 2001, which implemented the National Policy for Reducing Morbidity and Mortality by Accidents and Violence. This policy acknowledges violence as a social and historical problem and therefore seeks to plan actions and policies for health promotion, thus seeking to reduce vulnerability to violence[8].

In this context, the National Health Promotion Policy implemented by Ordinance GM/MS No. 687, dated 03/30/2006, contributes with effective actions for the prevention of accidents and violence and acts on risk and protective factors by promoting safe environments and healthy behaviors and habits in the population to reduce violence and foster solidarity practices and the culture of peace[9].

Young people's vulnerability is considered a risk factor for violent death. Young people are more susceptible to being groomed into drug trafficking, and it is a clear consequence that they will be the most victimized as well. In addition, young Black people are specifically more vulnerable[7].

In this regard, there are many hypotheses and theoretical constructs that deal with the determinants of urban violence, but one especially drew our attention: the one that associates urban crime incidence with different forms

of disorganization and lack of social cohesion. This approach assumes that crime emerges as a consequence of problems associated with mechanisms of social control. Therefore, elements that promote the rupture of the social cohesion and, consequently, of the social control, would indirectly incite criminal practices. Such relationships would be conditioned by social factors, such as economic status, ethnic heterogeneity, residential mobility and, above all, rates of urbanization and migration[10].

Given that, the objective of this study was to analyze the distribution of violence-related deaths among young people in Brazil according to socioeconomic indicators.

MÉTODOS

This is an ecological study of multiple groups whose units of analysis were the Immediate Regions of Urban Articulation) of Brazil. The study analyzed 482 Immediate Regions of Urban Articulation (*Regiões Imediatas de Articulação Urbana – RIAU*) using violence-related mortality as the dependent or response variable Violence-related mortality included the sum of deaths described in categories X85-Y09 and Y35-Y36 (Assault - Legal Intervention - Operations of war) of the Chapter XX of the 10th Revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10), represented by the Standardized Mortality Rate (SMR). The SMR was calculated using the number of deaths in the population aged 15 to 29 years occurred between January 1, 2001 and December 31, 2015, distributed into three quinquennia (2001-2005, 2006-2010 and 2011-2015). Secondary data on the number of deaths were obtained from the Mortality Information System (*Sistema de Informação sobre Mortalidade – SIM*) of the Department of Informatics of Brazil's Unified Health System (*Departamento de Informática do Sistema* Único *de Saúde – Datasus*).

Data on the population distributed by municipality and by age were obtained from the 2010 Census and intercensal estimates on the website of the Brazilian Institute of Geography and Statistics. The crude rates were standardized using the direct method and considering the Brazilian standard population of the half of the period. The rates were described per 100,000 inhabitants per year.

The independent variables, represented by the socioeconomic indicators of the Brazilian municipalities, were: (V1) Municipal Human Development Index (HDI-M); (V2) Dependency ratio; (V3) out-of-school % for children aged 6-14 years; (V4) Illiteracy rate for age 15 and older; (V5) % of poor people; (V6) Gini index; (V7) Unemployment rate; (V8) % of people aged 15-24 years neither working nor studying who are vulnerable in the population within this age range; and (V9) Child Labor Rate. Socioeconomic indicators for the years 2000 and 2010 were collected from the Atlas of Human Development in Brazil developed by the United Nations Development Program (UNDP) (www.atlasbrasil.org.br).

The study variables were analyzed using descriptive statistics and Pearson's correlation test was used to check for correlations between socioeconomic indicators and SMR by violence in Brazil with a significance level set at 0.05. IBM SPSS statistics version 22.0 was used for the processing and statistical analysis of data. The analysis of the first quinquennium was performed using the UNDP contextual variables for the year 2000 as they were closer to the five-year period analyzed (2001-2005); The analysis of the second (2006-2010) and third (2011-2015) quinquennia were performed using the UNDP variables for the year 2010.

Bivariate analysis, Bivariate Local Moran's Index (BLMI), was used to assess the spatial correlation between the outcome variable (Standardized Mortality Rates by violence) and the independent variables. Therefore, thematic maps were constructed with each pair of variables and the autocorrelation values were measured. These analyses were performed using the software GeoDa version 1.6.61 (Spatial Analysis Laboratory, University of Illinois, Urban Champaign, USA).

This research used secondary data available on official websites of Brazil's Ministry of Health without identification of subjects. Therefore, the research was exempt from appreciation by a research ethics committee in accordance with Resolution 466/2012 of the National Health Council.

RESULTS

Table I presents the descriptive statistics for the dependent and independent variables. The descriptive analysis of socioeconomic indicators and mean violence-related SMR (100,000 inhabitants) by sex in the Immediate Regions of Urban Articulation in Brazil revealed that the mean SMR of 13.8 for men and 1.37 for women in the period from

2001 to 2005. From 2006 to 2010, the rates were 16.37 for men and 1.53 for women; and in the period from 2011 to 2015, the rates were 20.05 for mmen and of 1.70 for women.

Thus, the means demonstrate that violence-related mortality in Brazil has increased over the past 15 years among both men and women, and the ratio between the sexes is circa 12:1. The analysis of the contextual variables showed that Brazil still has poor social and economic conditions, although it has presented a considerable improvement in all the indicators over the last decades.

There was an improvement in indicators for the period 2011 to 2015. The MHDI, which was 0.56 in the period from 2001 to 2005, increased to 0.69 in the period from 2010 to 2015. The rate of out-of-school children also improved in the period from 2010 to 2015, when the mean was 2.88; in the period from 2005 to 2010, the mean was 7.61. The illiteracy rate also improved; it went from 21.14 in the first period to 15.63 in the last period of the study. The percentage of poor people went from 39.54 to 22.34; and the rate of vulnerable people went from 18.50 to 14.22. In contrast, the rate of child labor increased from 55.50 to 55.90 in the last period.

Improvements in the HDI and reductions in the rates of out-of-school youth, illiteracy and poor people demonstrate the social progress Brazil has experienced. However, rates are still high for some indicators, such as child labor and number of people vulnerable to poverty.

Table I - Descriptive analysis of socioeconomic indicators and violence-related Standardized Mortality Rate (SMR) (100,000 inhabitants) by sex for Immediate Regions of Urban Articulation in Brazil. Brazil, 2018.

Variables*	Mean			Median			Standard deviation			25th percentile			75th percentile		
	Q1**	Q2**	Q3**	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3
SMR_MAL_FEM	7.59	8.92	10.2	5.53	6.45	8.48	6.40	7.56	8.52	3.17	3.99	4.67	9.32	11.77	14.39
SMR_MAL	13.8	16.37	20.05	9.86	11.41	15.26	12.26	14.60	16.61	5.23	6.74	7.93	17.11	21.64	27.09
SMR_FEM	1.37	1.53	1.70	1.11	1.26	1.60	1.15	1.11	1.07	0.55	0.79	0.92	1.82	2.06	2.31
MHDI	0.56		0.69	0.58		0.70	0.10		0.07	0.47		0.62	0.64		0.74
Dependency	61.87		51.16	60		49.93	10.11		7.33	54.12		45.79	67.83		55.32
Out-of-school	7.61		2.88	6.6		2.54	4.56		1.82	4.86		1.91	8.99		3.22
Illiteracy	21.14		15.63	18.76		13.99	10.20		7.89	12.49		8.87	29.48		22.14
Poor	39.54		22.34	37.1		18.75	18.68		14.75	23.42		9.03	57.39		36.13
GINI	0.54		0.49	0.55		0.49	0.05		0.05	0.52		0.46	0.57		0.52
Unemployment	9.54		6.18	9.54		5.94	3.30		2.44	7.19		4.77	11.52		7.68
Child labor	55.04		55.9	54.82		55.72	6.03		6.6	50.91		51.25	58.37		59.74
Vulnerable	18.5		14.22	19.1		14.12	6.05		6.68	14.31		8.26	22.82		19.63

Source: Mortality Information System (*Sistema de Informação sobre Mortalidade – SIM*); Atlas Brasil, 2017. SMR: Standardized Mortality Rate; MAL: male; FEM: female; * Contextual variables of the year 2000 were used for the period from 2001 to 2005; Contextual variables of the year 2010 were used for the period from 2011 to 2015. ** Period from 2001 to 2005 (Q1), 2006 to 2010 (Q2) and 2011 to 2015 (Q3); MHDI: Municipal Human Development Index

Pearson's correlation coefficient did not show a strong correlation between SMR and socioeconomic variables. However, SMR was significantly associated at 0.05 with MHDI, dependency ratio, percentage of poor people, Gini index, child labor and percentage of vulnerable people. It was significantly associated at 0.01 with unemployment rate. The following variables presented no correlation and no statistical significance: out-of-school rate and illiteracy rate. It should be noted that there were strong correlations between socioeconomic variables, such as the rate of out-of-school children with the percentage of poor people, with a correlation of 0.505; and the rate of out-of-school children with the percentage of vulnerable people, with a correlation of 0.628. There was a very strong correlation between illiteracy rate and percentage of poor people, with a correlation of 0.909; and between percentage of poor people with percentage of vulnerable people, with a correlation of 0.931 (Table II).

The analysis of the Bivariate Local Moran's Index (BLMI) showed a weak spatial correlation between the socioeconomic variables of the study and the violence-related SMR in young individuals, with negative or positive values close to zero.

Table II - Correlation between violence-related Standardized Mortality Rate (SMR) (100,000 inhabitants) for both sexes and socioeconomic variables for Immediate Regions of Urban Articulation in Brazil in the period from 2001 to 2005 (Q1), 2006 to 2010 (Q2) and 2011 to 2015 (Q3). Brazil, 2018.

Variables	Quinquennium	SMR	MHDI	Dependency	Out-of-school	Illiteracy	Poor	Gini	Unemployment	Labor work	Vulnerable
Smr	1st	1	0.123**	-0.075	-0.029	-0.068	-0.065	-0.106*	-0.002	0.032	-0.056
	2nd	1	-0.089*	0.016	0.024	-0.008	0.048	-0.013	0.008	-0.031	0.023
	3rd	1	-0.200**	0.097*	0.037	0.052	0.094*	0.086	0.137**	-0.106*	0.108*
Mhdi	1st		1	-0.322**	-0.209**	-0.296**	-0.353**	-0.255**	-0.151**	0.326**	-0.319**
	2nd		1	-0.323**	-0.208**	-0.296**	-0.354**	-0.256**	-0.153**	0.327**	-0.319**
	3rd		1	-0.323**	-0.225**	-0.304**	-0.353**	-0.280**	-0.255**	0.345**	-0.384**
Dependency	1st			1	0.754**	0.832**	0.885**	0.549**	0.104*	-0.625**	0.761**
	2nd			1	0.751**	0.833**	0.885**	0.544**	0.104*	-0.625**	0.760**
	3rd			1	0.619**	0.773**	0.893**	0.705**	0.418**	-0.691**	0.820**
Out-of-school	1st				1	0.599**	0.625**	0.475**	0.001	-0.451**	0.629**
	2nd				1	0.597**	0.624**	0.469**	-0.001	-0.450**	0.628**
	3rd				1	0.415**	0.505**	0.475**	0.195**	-0.391**	0.476**
Illiteracy	1st					1	0.924**	0.462**	0.060	-0.681**	0.790**
	2nd					1	0.924**	0.458**	0.059	-0.679**	0.789**
	3rd					1	0.909**	0.612**	0.501**	-0.766**	0.869**
Poor	1st						1	0.551**	0.060	-0.686**	0.821**
	2nd						1	0.548**	0.059	-0.684**	0.819**
	3rd						1	0.758**	0.545**	-0.788**	0.931**
Gini	1st							1	0.113*	-0.434**	0532**
	2nd							1	0.110*	-0.430**	0.526**
	3rd							1	0.441**	-0.592**	0.704**
Unemployment	1st								1	-0.392**	0.300**
	2nd								1	-0.392**	0.301**
	3rd								1	-0.687**	0.655**
Child labor	1st									1	-0.848**
	2nd									1	-0.848**
	3rd									1	-0.885**
Vulnerable	1st										1
	2nd										1
	3rd										1

Source: Mortality Information System (*Sistema de Informação sobre Mortalidade - SIM*); Atlas Brasil, 2017; *Significant correlation at 0.05; ** Significant correlation at 0.01; MHDI: Municipal Human Development Index

With regard to the spatial analysis through the Bivariate Moran's Index between violence-related Standardized Mortality Rates and the socioeconomic variables of the RIAU in the three periods (2001-2005, 2006-2010 and 2011-2015), cluster maps showed high-high spatial associations: RIAU with high SMR and high percentage of poor; high SMR in regions with high illiteracy rates; high SMR with high percentage of vulnerable people; and high SMR in RIAU with high rates of out-of-school children. This pattern was verified in the immediate regions of articulation that are located within the North, Northeast and Southeast regions of Brazil.

DISCUSSION

The results of the present study indicate that there is no strong spatial correlation between violence and socioeconomic conditions, but there are clusters of high mortality rates and worse socioeconomic conditions in the North, Northeast and Southeast regions of the country, thus showing that the socioeconomic context is one of the explanatory factors for the distribution of lethal violence in Brazil.

Patterns of mortality in the Northern Region of the country were found and they were, to a large extent, related to the social conflicts of the exploitation of natural resources coupled with the advance of the agricultural frontier. In the Southeastern Region, there were areas consolidated with high homicide rates, such as the Metropolitan Regions of Rio de Janeiro and Vitória, with a criminal corridor that extends across the coast of Rio de Janeiro[11].

Among the Brazilian regions, the Northeast Region stands out for exhibiting the highest homicide rates in Brazil in recent years, with a mean homicide rate of 33.76 per 100,000 inhabitants. Countries with a history of civil war, such as the Congo (30.8), and countries with high homicide rates associated with drug trafficking, such as Colombia (33.4), have lower rates than Northeastern Brazil[7].

In the Northeast Region, most of the municipalities experienced an increase in homicide rates, with an intensification of the phenomenon in Salvador and southern Bahia, which includes municipalities like Porto Seguro, Vitória da Conquista and Itabuna. The phenomenon is also influenced by the expansion of tourism and by the growth of the cocoa industry, which generate economic opportunities, attracts migrants, reveals social problems and increases the potential for conflicts. It should also be noted that municipalities in Maranhão are crime spots just like the countryside of Ceará and coastal cities in the states of Pernambuco and Alagoas, particularly in Recife and Maceió, respectively.

Homicide, especially that which affects youth, has been considered by researchers a marker of social violence. Contradictorily, it is not treated as a priority by society or the Brazilian government[12]. One way of noticing the consequences of violent sociability is the lack of government agencies that offer peaceful alternatives for conflict mediation and resolution[7] while the government has been increasingly focusing on structural adjustments driven by the financial market that directly affect the labor market and all dimensions of life as they produce the trivialization of the human[13].

Experts from the Brazilian Forum on Public Safety pointed out that the accumulation of social vulnerabilities and the lack of public policies are risk factors for homicidal violence[7].

In a study carried out in Foz do Iguaçu, Paraná, occupation in the informal sector and occupation in the formal sector presented respectively negative (I = –0.2574; P = 0.0360) and positive (I = 0.2574; P = 0.0310) spatial correlation, thus demonstrating that the higher the number of informal jobs in a given area, the lower the homicide rate in neighboring areas[14]. Another study carried out in Maringá, Paraná, found that the spatial distribution of violence occurred predominantly on the outskirts of the city, with residents living in poor areas with scarce urban services being the most exposed to violent death. On the other hand, the privileged social classes, i.e., individuals who lived in the most economically advantaged places of the city, were those mostly protected from this type of violence[15].

In Brazil, homicide as a cause of mortality among young men aged 15-29 accounted for 47.8% of all deaths in 2015. This is a tragedy that has implications for health, demographic dynamics and, consequently, the process of economic and social development[16]. This fact is relevant because it affects a large part of the working age population and has serious consequences that involve high social, emotional and economic costs necessary for treatment and rehabilitation in addition to generating several harms to victims and families[17].

The mortality of young people in Brazil can happen selectively. According to the 2014 Report on Youth Vulnerability to Violence, homicide rate in Black youth is 155% higher than that in White youth[18]. The racial aspect is also a major issue when it comes to incarceration in Brazil. According to the Map of incarceration: the youth of Brazil, the rate of Black individuals imprisoned has gradually increased compared with White individuals[19]. The association between violence, poverty and citizenship, which spans the territorial dimension, has interrupted the lives of a generation of young people in the country[20].

Thus, the improvement of social and economic indicators in Brazil has not been enough to reduce homicide rates in the country. A study carried out in the Northeast region from 2001 to 2005 found that the impact of the Gini Index and per capita household income on youth homicide rates are insignificant. Despite the fact that in recent years there has been a reasonable reduction in income inequality, mainly because of the improvement of the Gini Index, homicides have continued to be committed and, in many cases, there has been a positive increase in its rates and numbers in the Northeast Region[21].

This fact demonstrates that the fight against violence does not require exclusive attention to tackle social vulnerability. It also implies overcoming the sectoral and disjointed approaches of most social policies and of the policies aimed at tackling violence in the country. In addition to the country's unequal social and economic structure, there is the lack of political efforts to implement public policies aimed at guaranteeing the right to life, thus revealing a situation of omission in which the youth is subjected to violent situations[22].

In fact, the government itself acts, in large part, as a direct or indirect violator of the law. The lack of political efforts in the implementation of public policies aimed at guaranteeing the right to life reveals an omission. In addition to these factors, there is the country's unequal social and economic structure in which the most disadvantaged people are the preferential victims of violence[22].

Experts from the Brazilian Forum on Public Safety pointed out that the accumulation of social vulnerabilities and the lack of public policies are risk factors for homicidal violence[23]. The Youth Vulnerability Index (YVI) provides a summary of the indicators: school attendance rate, education, labor market insertion, mortality rate from external causes, mortality rate from violent causes, monthly household income and Whites' and Blacks' relative risk of being victims of homicide[18].

In Brazil, 71% of homicides are perpetrated with the use of legal or illegal firearms. When associated with a violent society, the lethality of and easy access to firearms increase the risk of conflicts of different natures resulting in deaths[7]. In the Brazilian scenario, men are almost the exclusive victims of homicides by firearm (HFA) – the national rate is 94.4%[24].

In general, policies in Brazil have been marked by repression, imprisonment and extermination, with poor youth being commonly criminalized and stigmatized, blamed and held accountable for their health and safety in such a way as to exonerate social bodies and public policies from being responsible for the demands of youth[25].

One of the factors associated with the increase in violence since the 2000s is the increase in the use of prohibited psychoactive drugs, particularly crack, which led to the growth of illicit markets, especially in the Northeastern states[26]. The existence of gangs and the use and trafficking of drugs have been pointed out, in different perspectives, as causes of homicide[27].

Recognizing social inequalities in health, seeking to understand the processes that produce them, and identifying the different aspects that establish the mediation between macro-social processes and the epidemiological profile of different social groups is an indispensable condition for the search for ways of tackling violence within the framework of public policies or in everyday life[6].

The development of an effective public safety policy is a challenge that is renewed every year. However, the elaboration and implementation of public policies requires the ability to gather information for the production of diagnoses and indicators that can support the process of formulating, executing, monitoring and evaluating governmental actions[28].

Therefore, there is a need for studies and public policies aimed at the processes that guarantee citizenship rights, especially the rights of the young, black, and poor men who live in the outskirts of the cities as they are the main victims of lethal violence in Brazil. The association between violence, poverty and citizenship, which spans the territorial dimension, has interrupted the lives of a generation of young people in the country. There is an urgent need to address social inequality issues so that strategies for the access to the rights and citizenship of this generation can be effectively discussed[20].

It is known that violence is a multicausal problem that demands intersectoral attention. Thus, the National Health Promotion Policy points to the need for articulation with other public policies to discuss joint interventions and promote a culture of peace[9].

In addition to intersectoral articulation and profound changes in the structure of Brazilian society, it is necessary to work with collective intelligence to understand the complex situation of violence and to think of a more egalitarian and fair social structure with a reduction of social inequities. Achieving this goal is also conducive to the development of a culture of peace in an integrated way and in line with the great desired changes – social justice; equality between the sexes; elimination of racism; religious tolerance; respect for minorities; comprehensive education and health;

ecological balance and political freedom. The implementation of alternative comprehensive and, above all, inclusive policies targeted at young people could reduce rates of violence and therefore solve a considerable part of the problem. However, it is also necessary to carry out a deep reflection on the values, forms of socialization and the construction of masculine and feminine identities in today's societies.

The limitation of this study is related to the use of secondary data on mortality. Although it has been recognized in recent years that Brazil's Mortality Information System (*Sistema de Informação sobre Mortalidade – SIM*) has significantly improved information quality, secondary data are subject to underreporting. Another limitation refers to the design of the study. The possibility of ecological bias is always remembered as a limitation in the use of ecological correlations.

The contributions of this study are in turn related to the subsidies provided by public policies focused on territorially determined promotion and prevention actions, which can be used as a criterion for a more equitable distribution of public resources, thus prioritizing the regions that have the worst indicators.

The results of the present study facilitate the understanding of the characteristics of violence in Brazil and contribute with information that can be used to direct intersectoral public policies and to make intervention proposals based on diagnoses that take into account the specific characteristics of each region, thus prioritizing the regions which have the worst indicators so that this prioritization will avoid preventable losses.

CONCLUSION

The spatial distribution of homicidal violence has proved to be an important source of discoveries for the analysis of the factors that affect its production and reproduction. This study allowed to identify important characteristics related to violence-related deaths and changes in the patterns of spatial distribution in the 15 years analyzed. There is an unequal distribution of violence-related mortality in Brazil, even though it is poorly correlated with the selected socioeconomic variables.

REFERENCES

1. Gawryszewski VP, Kahn T, Mello Jorge MHP. Informações sobre homicídios e sua integração com o setor saúde e segurança pública. Rev Saúde Pública. 2005; 39(4):627-33.
2. Ruotti C, Almeida JF, Regina FL, Massa VC, Peres MFT. A vulnerabilidade dos jovens à morte violenta: um estudo de caso no contexto dos "Crimes de Maio". Saúde Soc. 2014;23(3):733-48.
3. Martins CBG, Jorge MHPM. Óbitos por causas externas em Cuiabá, 0 a 24 anos: perfil das vítimas e famílias segundo a intencionalidade. Rev Bras Epidemiol. 2013;16(2):454-68.
4. Minayo MCS. A Violência Social sob a Perspectiva da Saúde Pública. Cad Saúde Públ, 1994;10(Supl 1):S7-S18.
5. Silva JG. Homicídio de jovens no Brasil: o desafio de compreender a consequência fatal da violência [tese]. Rio de Janeiro: Escola Nacional de Saúde Pública Sergio Arouca; 2014.
6. Barata RB. O que queremos dizer com desigualdades sociais em saúde? In: Como e por que as desigualdades sociais fazem mal à saúde. Rio de Janeiro: FIOCRUZ; 2009. (Temas em Saúde collection). p. 11-21.
7. Ministério da Justiça (BR). Diagnóstico dos homicídios no Brasil: subsídios para o Pacto Nacional pela Redução de Homicídio. Brasília: Ministério da Justiça; 2015.
8. Patrício AP. O papel da violência interpessoal compreendida como a manifestação de uma endemia social: uma análise geográfica sobre o fenômeno no Brasil e Rio Grande do Norte [dissertation]. Natal: Universidade Federal do Rio Grande do Norte; 2014.
9. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde, Secretaria de Atenção à Saúde. Política Nacional de Promoção da Saúde: PNPS: revisão da Portaria MS/GM nº 687, de 30 de março de 2006. Brasília: Ministério da Saúde; 2015.
10. Diniz AMA. Migração, desorganização social e violência urbana em Minas Gerais. Rev RA´EGA. 2005;9:9-23.
11. Waiselfisz JJ. Mapa da violência 2011: os jovens do Brasil. Brasília. Instituto Sangari; 2011.

12. Costa DH, Schenker M, Njaine K, Souza ER. Homicídios de jovens: os impactos da perda em famílias de vítimas. Physis (Rio de J). 2017;27(3):685-705.

13. Guilherme RC, Reis CN. Plano Estratégico de Ação Social do MERCOSUL: a transferência de renda em contexto de ofensiva neoliberal. Rev Katálysis. 2018;21(1):108-24.

14. Andrade L, Nihei OK, Pelloso SM, Carvalho MDB. Homicídios juvenis e informalidade em um município brasileiro da tríplice fronteira Brasil, Paraguai e Argentina. Rev Panam Salud Publica. 2012;31(5):380-7.

15. Fonzar UJV, Soares DFPP, Santil FLP. Espacialização das três principais causas de morte no município de Maringá, Estado do Paraná, em 1996. Acta Sci Health Sci. 2002;24(3):765-74.

16. Cerqueira D, Lima RS, Bueno S, Valencia LI, Hanashiro O, Machado PHGM, et al. Atlas da Violência 2017. Rio de Janeiro: IPEA; 2017 [accessed on 2018 May 7]. Available from: http://ipea.gov.br/atlasviolencia/

17. Sousa ASB, Silva SC, Cavalcante MFA. Mortalidade por causas externas em adultos jovens em Teresina-PI no período de 2001-2011. Rev Interd. 2016;9(1):57-65.

18. Secretaria Geral da Presidência da República (BR), Secretaria Nacional de Juventude, Ministério da Justiça. Índice de vulnerabilidade juvenil à violência e desigualdade racial 2014. Brasília: Presidência da República; 2015. (Série Juventude Viva).

19. Barbosa KS, Coelho NMMS. A questão étnico-racial do sonho americano: o encarceramento dos pobres e negros no Estado policial. Rev Bras Segur Pública. 2017;11(1):164-82.

20. Medeiros TJ, Malfitano APS. Entre a violência e a cidadania: um olhar sobre a mortalidade juvenil. Mundo Saúde. 2015;39(1):62-73.

21. Nobrega JM. A queda da desigualdade de renda no Brasil e os homicídios na Região Nordeste. Rev Espaço Acadêmico. 2009;9(98):72-80.

22. Malta DC, Minayo MCS, Soares AM Filho, Silva MA, Montenegro MMS, Ladeira RM, et al. Mortalidade e anos de vida perdidos por violências interpessoais e autoprovocadas no Brasil e Estados: análise das estimativas do Estudo Carga Global de Doença, 1990 e 2015. Rev Bras Epidemiol. 2017; 20 Supl 1:142-56.

23. Câmara dos Deputados (BR). Relatório Final Comissão Parlamentar de Inquérito Homicídios de Jovens Negros e Pobres. Brasília: Câmara dos Deputados; 2015 [accessed on 2018 May 7]. Available from: http://www.camara.gov.br/proposicoesWeb/prop_mostrarintegra?codteor=1361419

24. Waiselfisz JJ. Mapa da Violência 2016: homicídios por armas de fogo no Brasil. Brasília: FLACSO; 2016.

25. Sinhoretto J. A filtragem racial na seleção policial de suspeitos: segurança pública e relações raciais. In: Figueiredo I. Segurança pública e direitos humanos: temas transversais. Brasil: Ministério da Justiça; 2014. p. 121-59.

26. Cerqueira D. Causas e consequências do crime no Brasil [thesis]. Rio de Janeiro: PUC; 2014.

27. Waiselfisz J. Mapa da Violência 2014: os jovens no Brasil. Brasília: FLACSO; 2014.

28. Figueira MG. Proposta de uma matriz de indicadores para as ações de gestão de informação da SENASP. Rev Bras Segur Pública. 2015;9(2):110-28.

Mailing address:
Ana Edimilda Amador
Universidade Federal do Rio Grande do Norte - UFRN
Av. Senador Salgado Filho, 3000
Bairro: Lagoa Nova
CEP: 59078-970 - Natal - RN - Brasil
E-mail: edimilda-amador@hotmail.com