

# Female homicide in Rio Grande do Sul, Brazil

## *Homicídios femininos no Rio Grande do Sul, Brasil*

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**ABSTRACT:** This study aimed to assess the female homicide rate due to aggression in Rio Grande do Sul, Brazil, using this as a “proxy” of femicide. This was an ecological study which correlated the female homicide rate due to aggression in Rio Grande do Sul, according to the 35 microregions defined by the Brazilian Institute of Geography and Statistics (IBGE), with socioeconomic and demographic variables access and health indicators. Pearson's correlation test was performed with the selected variables. After this, multiple linear regressions were performed with variables with  $p < 0.20$ . The standardized average of female homicide rate due to aggression in the period from 2003 to 2007 was 3.1 obits per 100 thousand. After multiple regression analysis, the final model included male mortality due to aggression ( $p = 0.016$ ), the percentage of hospital admissions for alcohol ( $p = 0.005$ ) and the proportion of ill-defined deaths ( $p = 0.015$ ). The model have an explanatory power of 39% (adjusted  $r^2 = 0.391$ ). The results are consistent with other studies and indicate a strong relationship between structural violence in society and violence against women, in addition to a higher incidence of female deaths in places with high alcohol hospitalization.

**Keywords:** Homicide. Female. Aggression. Cause of death. Violence against women. Epidemiology.

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**RESUMO:** O objetivo do estudo foi analisar a mortalidade feminina por agressão no Estado do Rio Grande do Sul, Brasil, utilizando-a como um “marcador” do femicídio. Estudo ecológico que relacionou a mortalidade feminina por agressão no Rio Grande do Sul, segundo as 35 microrregiões do Instituto Brasileiro de Geografia e Estatística, com variáveis socioeconômicas e demográficas, de acesso e de saúde. Foi realizada correlação de Pearson entre as variáveis selecionadas e após, regressão linear múltipla com as variáveis que apresentam  $p < 0,20$ . O coeficiente de mortalidade feminina por agressão padronizado no período 2003 a 2007 foi de 3,1 óbitos para cada 100 mil. Após a regressão linear múltipla, permaneceram no modelo final o coeficiente de mortalidade masculina por agressão ( $p = 0,016$ ), o percentual de internação por álcool ( $p = 0,005$ ) e a proporção de óbitos mal definidos ( $p = 0,015$ ). O modelo tem capacidade explicativa de 39% ( $r^2$  ajustado = 0,391). Os resultados são compatíveis com outros estudos e indicam uma forte relação entre a violência estrutural da sociedade e a violência dirigida contra as mulheres, além da maior ocorrência de mortes femininas em locais onde a hospitalização por consumo de álcool é maior.

**Palavras-chave:** Homicídio. Feminino. Agressão. Causas de morte. Violência contra a Mulher. Epidemiologia.

## INTRODUCTION

Violence against women has been recognized as a public health issue since the 1990s<sup>1</sup>, and although there have been advancements in public policies, there is still much to do especially in regard to the prevention of the most severe forms. This type of violence, now called gender-based violence, occurs on a continuum whose extreme situations include torture, mutilations, sexual violence and gender-based murder, defined as femicide<sup>2-4</sup>.

The term femicide was first used in 1976 by Diana Russell in an International Tribunal on Crimes against Women<sup>4</sup>. She conceptualized femicide as murders based on gender, in which women are killed solely because they are women.

In the Americas, there was a discrepancy in the translation/adaptation of the concept. Countries like Mexico and Chile began using the term femicide to characterize any murders of women, and the term feminicide to characterize gender-based murders. On the other hand, activists of Central America have used the term femicide to characterize misogynist murders of women. In any case, both expressions can be used with the same meaning<sup>3,5,6</sup>.

The concept of femicide is political and represents a continuous and systemic violation of women's rights, representing a form of domination, exercise of power and control<sup>7,8</sup>. In recent years, several countries have introduced criminal laws against this type of crime, whether using the term femicide or treating them as feminicides. Among these countries are El Salvador, Costa Rica, Guatemala, Chile, Peru, Mexico and Nicaragua<sup>9</sup>.

Studies show that approximately 60 – 70% of female homicides may be considered femicides, in addition to the fact that more than a third of women murdered are killed by their partners, while only 3% of male homicides are carried out by women, and the majority occurs in situations of self-defense<sup>3,5,7</sup>.

Violence against women has been more prevalent in situations of gender inequality, in places and scenarios where the patriarchal order is more rigid. Feminist scholars believe that misogyny, sexism and control of women arising from the patriarchal system are predisposing factors to violence and femicide<sup>10</sup>.

On the other hand, non-feminist authors consider that femicides are perpetrated regardless of gender perspective, and that they increase in the presence of structural violence<sup>11,12</sup>. Femicide occurs at higher rates in areas where the state is not present. Besides, many offenders have involvement with drug trafficking and other criminal activities<sup>3,13</sup>.

Regional and international differences have been observed in the rates and types of femicide. In the United States and Canada, the majority of femicides is perpetrated by partners or ex-partners; in Mexico, they have been linked to drug trafficking and urban violence; in Guatemala, femicide rates reached epidemic levels that remain due to impunity for perpetrators<sup>10,14</sup>.

Brazil, a country of continental dimensions, shows marked differences in the coefficients of female mortality due to aggression. Over the past 30 years, more than 90,000 women were murdered. Data available on the Violence Map shows that female homicides increased from 2.3 per 100,000 in 1980 to 4.4 in 2010<sup>15</sup>. Although these data have not been standardized, most deaths correspond to younger women.

In this scenario, Rio Grande do Sul has an average of 3 deaths per 100,000 women. Rio Grande do Sul is a Brazilian region with a predominantly agro-pastoral economic activity, and traditional gaucho culture follows a patriarchal model, anchored in the notion of honor<sup>16</sup>. The principles of the culture of honor reinforce the differences in gender roles, leaving the men to care for the moral and sexual behavior of women. In this context, women belong to men who will correct them through violence when they violate social norms of gender, such as being unfaithful to their husbands, leaving them or even showing to be too independent<sup>17</sup>.

This study aimed to analyze the female mortality due to aggression in the state of Rio Grande do Sul, relating it to socioeconomic, demographic and health factors, as well as factors related to access to services.

## METHODOLOGY

This is an ecological study that related female mortality due to aggression according to the microregions of the state of Rio Grande do Sul, Brazil, with demographic, socioeconomic, health and access to services variables for the period from 2003 to 2007. It is part of a

larger research called “Femicide and Gender-Based Killings in Rio Grande do Sul”<sup>\*</sup> and it continues the ecological analysis of female mortality due to aggression in the Units of the Brazilian Federation<sup>18</sup>.

As in the previous study<sup>18</sup>, the total of female homicides was used as an “indicator or marker of femicide”, considering that 60 to 70% of female deaths due to aggression are femicides<sup>3,5,7</sup>. Working with the total female deaths due to aggression may overestimate the actual values of the event. However, it is believed that this possible overestimation can compensate the ill-defined diagnoses, in which female homicides were classified as other types of violent deaths (suicides or accidents). This may occur even in Rio Grande do Sul, where the quality of the Mortality Information System (SIM) of the Unified Health System (SUS) is considered good and the coverage is close to 100%<sup>19</sup>.

The coefficient of female mortality due to aggression was used as the dependent variable, including those corresponding to the X85 - Y09 range from the International Classification of Diseases (ICD-10). This data was obtained in the SIM, using as the denominator population data provided by DATASUS. The coefficient was calculated from the 35 microregions of Rio Grande do Sul for the period 2003-2007, thus reducing temporal fluctuations common in events of small magnitude. Mortality rates were standardized using the population provided by the World Health Organization (WHO) for the period 2000-2025 as the standard population<sup>20</sup>.

Independent variables were obtained through secondary data published by the Statistics Economics Foundation of Rio Grande do Sul (FEE-RS)<sup>21</sup>, the Ministry of Health/DATASUS<sup>22</sup> and the Brazilian Institute of Geography and Statistics (IBGE)<sup>23</sup>.

The independent variables were composed of 23 indicators, divided into the following classifications: (a) socioeconomic and demographic: Socioeconomic Development Index (SDI) (total, income, education, sanitation and households, health). The SDI is a synthetic index, inspired by the Human Development Index (HDI), which covers a range of social and economic indicators, classified into four thematic areas: education, income, sanitation/households and health, which aims to measure and monitor the level of development of the state<sup>21</sup>. The other indicators were: literacy (percentage of literate population, percentage of illiterate voters and percentage of female voters); female conjugality (coefficient of married women and coefficient of separated/divorced women); birth rate (number of live births per thousand inhabitants); agglomeration (percentage of household members according to strata: 1 – 3, 3 – 6, and more than 7); women heads of household (percentage); religion (percentage of Catholics and Evangelicals); race/color (percentage of whites and blacks); (b) access: urbanization (percentage of urban population); communication (number of telephone lines in service according to population, number of vehicles registered according to population, distance in kilometers from the capital); (c) health: coefficient of male mortality due to aggression, coefficient of infant mortality, coefficient of mortality by breast cancer and cervical cancer, coefficient of mortality by acquired immunodeficiency syndrome (AIDS) (male and female),

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proportion of ill-defined deaths (male and female), life expectancy, coverage of the Family Health Strategy (percentage), number of medical consultations/inhabitant and coefficient of hospitalization for alcohol (hospitalizations according to population).

The data were compiled and evaluated using SPSS version 18.0. Standardized coefficients of female mortality due to aggression according to the microregions of the state for the period 2003 – 2007 were related to other variables through Pearson's correlation coefficient, and then a multiple linear regression, with variable selection by backward stepwise method, was performed. Eight variables with  $p$  values  $< 0.20$  in the Pearson correlation, and excluding those that showed multicollinearity, were included in the multivariate model: Residents per household, proportion of ill-defined female deaths, tested using the variance inflation factor.

This study was approved by the Research Ethics Committee of the School of Public Health, Department of Health of Rio Grande do Sul State, under protocol no. 473/09. There is no conflict of interest related to this research.

## RESULTS

In Rio Grande do Sul, in the period 2003-2007, the average standardized coefficient of female mortality due to aggression was  $3.1 \pm 1.4$  deaths/100,000. Figure 1 shows the average standardized coefficients of female mortality due to aggression under the 35 microregions of the state. The regions showing the highest rates in the period were: Frederico Westphalen (6.2), Ijuí (5.6), Vacaria (5.2), Campanha Meridional (4.7), Passo Fundo (4.2), Cruz Alta (4.1) e Porto Alegre (4.1).

Table 1 presents the 23 independent variables selected in the study, according to the source, year of acquisition the data, mean, standard deviation and maximum and minimum values.

Table 2 presents the bivariate correlations between female mortality due to aggression in the microregions of Rio Grande do Sul in the period 2003-2007 and the independent variables. Among the socioeconomic and demographic variables analyzed, there was an association with income measured by the SDI, number of household members (1 to 3 and 3 to 6), women conjugality and Catholic religion. The variables related to access were not associated and, in relation to health, the coefficient of male mortality due to aggression, the coefficient of hospitalization for alcohol, the coverage of the Family Health Strategy and the proportion of ill-defined deaths in men were significant.

Variables with  $p < 0.20$ , excluding those in which there was multicollinearity, were included in the multiple linear regression model: agglomeration (number of household members) and ill-defined deaths in women. The following variables remained in the final multiple regression model, explaining the female mortality due to aggression, the coefficient of mortality due to aggression by males ( $p = 0.016$ ), hospitalization for alcohol ( $p = 0.005$ ) and male mortality from ill-defined causes ( $p = 0.015$ ), which, in the final model, showed a negative association ( $\beta = -0.348$ ). (Table 3). Together, these three variables explain mortality due to aggression in women by 39% (adjusted  $r^2 = 0.391$ ).

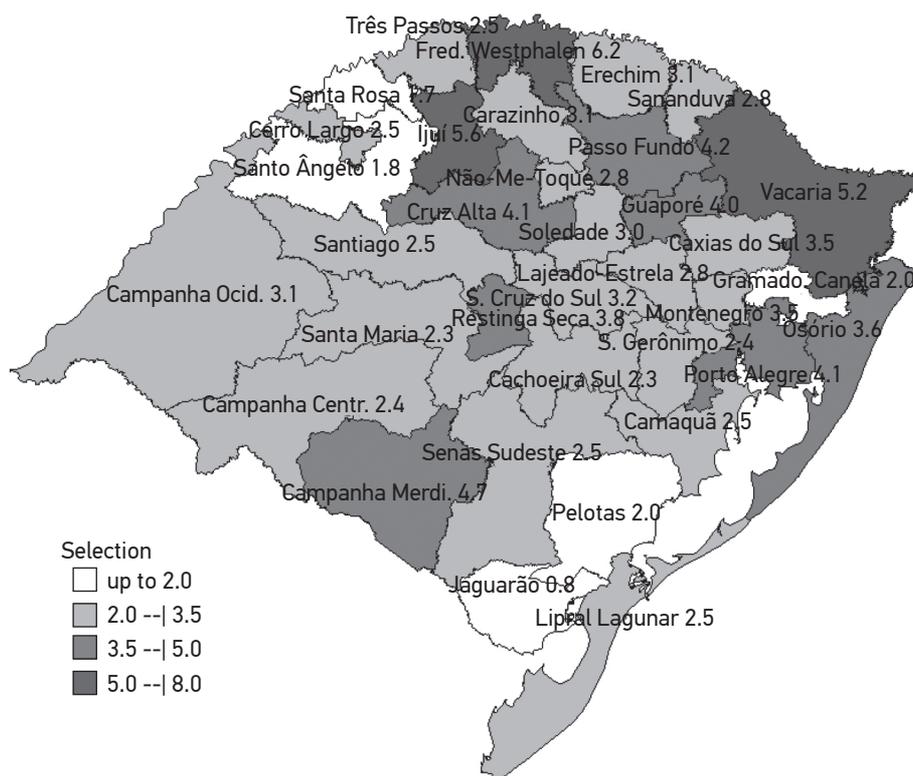


Figure 1. Coefficient of female mortality due to aggression according to the microregions of the state of Rio Grande do Sul, 2003 – 2007.

Table 1. Independent variables of the study, source of acquisition, mean, standard deviation, maximum and minimum values.

Type of variables	Source, year	Mean	Standard deviation	Minimum/Maximum
Socioeconomic and demographic				
SDH	FEE, 2006 <sup>21</sup>	0.73	0.03	(0.68 – 0.81)
SDH, education	FEE, 2006 <sup>21</sup>	0.85	0.01	(0.80 – 0.89)
SDH, income	FEE, 2006 <sup>21</sup>	0.73	0.05	(0.63 – 0.83)
SDH, sanitation and household	FEE, 2006 <sup>21</sup>	0.50	0.09	(0.34 – 0.71)
Demographic density (inhabitants/km <sup>2</sup> )	FEE, 2009 <sup>21</sup>	54.4	111.1	(7.1 – 668.6)
Literacy (%)	DATASUS, 2000 <sup>22</sup>	82.0	2.4	(74.0 – 86.1)
Illiterate voters (%)	FEE, 2007 <sup>21</sup>	4.4	1.7	(1.5 – 9.6)
Female voters (%)	FEE, 2007 <sup>21</sup>	50.9	0.9	(49.2 – 52.8)
Coefficient of married women/1.000 women	FEE, 2007 <sup>21</sup>	7.3	6.7	(1.3 – 44.9)
Coefficient of separated women/1.000 women	FEE, 2007 <sup>21</sup>	3.2	4.3	(0.2 – 27.4)

Continue...

Table 1. Continuation.

Type of variables	Source, year	Mean	Standard deviation	Minimum/Maximum
Birth rate	SIDRA/IBGE, 2000 <sup>23</sup>	11.9	1.2	(8.8 – 14.2)
Residents per household (1 – 3) (%)	SIDRA/IBGE, 2000 <sup>23</sup>	44.7	2.3	(39.0 – 50.8)
Residents per household (3 – 6)(%)	SIDRA/IBGE, 2000 <sup>23</sup>	50.5	2.2	(45.9 – 54.3)
Residents per household (> 7) (%)	SIDRA/IBGE, 2000 <sup>23</sup>	4.7	1.2	(1.8 – 7.9)
Women heads of household (%)	SIDRA/IBGE, 2000 <sup>23</sup>	14.6	14.2	(1.6 – 92.0)
Catholic population (%)	SIDRA/IBGE, 2000 <sup>23</sup>	78.7	9.3	(50.7 – 96.1)
Evangelic population (%)	SIDRA/IBGE, 2000 <sup>23</sup>	14.7	6.8	(3.0 – 31.4)
White population (%)	SIDRA/IBGE, 2000 <sup>23</sup>	86.9	3.4	(79.7 – 94.2)
Black population (%)	SIDRA/IBGE, 2000 <sup>23</sup>	12.2	3.3	(5.5 – 19.3)
<b>Access</b>				
Urbanization (%)	FEE, 2006 <sup>21</sup>	72.4	13.6	(46.2 – 96.9)
Coefficient of telephone terminals	FEE, 2007 <sup>21</sup>	154.8	42.5	(87.2 – 279.8)
Coefficient of registered vehicles	FEE, 2007 <sup>21</sup>	353.5	57.8	(256.8 – 493.3)
Distance from Porto Alegre (km)	FEE, 2008 <sup>21</sup>	283.4	149.5	(0 – 642.0)
<b>Health</b>				
Coefficient of male mortality due to aggression	DATASUS, 2007 <sup>22</sup>	20.4	11.5	(3.3 – 66.5)
Coefficient of infant mortality	FEE, 2007 <sup>21</sup>	13.3	2.8	(8.3 – 18.7)
Coefficient of mortality by AIDS (men)	DATASUS, 2007 <sup>22</sup>	13.7	18.6	(0.6 – 75.8)
Coefficient of mortality by AIDS (women)	DATASUS, 2007 <sup>22</sup>	10.9	15.7	(0.3 – 52.5)
Coefficient of mortality by cervical cancer	DATASUS, 2007 <sup>22</sup>	6.4	5.1	(0.6 – 26.3)
Coefficient of mortality by breast cancer	DATASUS, 2007 <sup>22</sup>	17.2	5.0	(9.3 – 29.3)
Coefficient of male mortality by ill-defined causes (%)	DATASUS, 2007 <sup>22</sup>	4.9	3.1	(0.7 – 12.8)
Coefficient of female mortality by ill-defined causes (%)	DATASUS, 2007 <sup>22</sup>	5.1	2.8	(0.6 – 11.8)
Life expectancy at birth	FEE, 2007 <sup>21</sup>	71.9	1.7	(68.3 – 75.3)
Coverage of the Family Health Strategy (%)	DATASUS/SIAB, 2007 <sup>22</sup>	42.0	17.7	(8.4 – 74.6)
Medical consultations per inhabitant/year	DATASUS/SIAB, 2007 <sup>22</sup>	1.5	0.3	(0.3 – 2.0)
Coefficient of hospitalization for alcohol	DATASUS/SIAB, 2007 <sup>22</sup>	79.7	57.7	(11.5 – 294.1)

SDH: Socioeconomic Development Index; FEE: Statistics Economics Foundation of Rio Grande do Sul; DATASUS: Information Technology Department of the Brazilian Unified Health System; IBGE: Brazilian Institute of Geography and Statistics; SIDRA/IBGE: Automatic Recovery System for IBGE; SIAB: Information System for Primary Care; AIDS: Acquired Immunodeficiency Syndrome.

Table 2. Correlations between female mortality due to aggression (2003 – 2007) and independent variables, Rio Grande do Sul.

Type of variables	r	p-value
<b>Socioeconomic and demographic</b>		
SDH	0.560	0.768
SDH, income	0.270	0.112
SDH, education	0.430	0.807
SDH, sanitation and households	-0.082	0.639
Demographic density (inhabitants/km <sup>2</sup> )	0.155	0.375
Literacy (%)	0.320	0.859
Illiterate voters (%)	-0.081	0.644
Female voters (%)	-0.020	0.911
Married women/1.000 women	0.222	0.199
Separated women/1.000 women	0.273	0.113
Birth rate	0.530	0.762
Residents per household (1 – 3)	-0.478	0.004
Residents per household (3 – 6)	0.445	0.007
Residents per household (> 7)	0.109	0.542
Women heads of household (%)	-0.200	0.249
Catholics (%)	0.240	0.165
Evangelicals (%)	0.078	0.658
White population (%)	-0.201	0.246
Black (and brown) population (%)	0.150	0.391
<b>Access</b>		
Urbanization (%)	-0.113	0.512
Telephone terminals (per 100,000 inhabitants)	0.163	0.349
Coefficient of registered vehicles	0.112	0.521
Distance from Porto Alegre (Km)	-0.071	0.683
<b>Health</b>		
Coefficient of male mortality due to aggression	0.397	0.018
Coefficient of infant mortality	0.010	0.957
Life expectancy at birth	-0.019	0.913
Coverage of the Family Health Strategy	0.224	0.196
Medical consultations per inhabitant/year	-0.032	0.720
Coefficient of hospitalization for alcohol	0.406	0.015
SDH, health	-0.610	0.726
Coefficient of mortality by AIDS (men)	-0.121	0.502
Coefficient of mortality by AIDS (women)	-0.173	0.375
Coefficient of mortality by cervical cancer	-0.028	0.874
Coefficient of mortality by breast cancer	-0.123	0.482
Mortality by ill-defined causes (men)	0.416	0.013
Mortality by ill-defined causes (female)	0.335	0.490

SDH: Socioeconomic Development Index; AIDS: Acquired Immunodeficiency Syndrome.

## DISCUSSION

The standardized coefficient of female mortality due to aggression found in Rio Grande do Sul in 2003-2007 (3.10 deaths/100.000) was lower than that found in Brazil in the same period (4.10/100,000)<sup>15</sup>. However, in 7 microregions of the state, higher values than those of the country were found.

The microregions that presented the highest rates of female mortality due to aggression are the most economically significant regions in the agriculture of the State of Rio Grande do Sul, such as Passo Fundo (3<sup>rd</sup> place), Vacaria (5<sup>th</sup> place), Cruz Alta (6<sup>th</sup> place) and Frederico Westphalen (7<sup>th</sup> place)<sup>24</sup>. It is known that, in livestock farming regions, there is a high appreciation of the male gender roles, in which the courage, strength and virility of men are exalted and considered essential to work with cattle, which often extends to gender relations and daily life. Moreover, not only Rio Grande do Sul, but other Brazilian rural regions that have the same economic matrix, still strongly maintain traditional patriarchal values that stimulate sexism and the submission of women to men<sup>25</sup>.

When analyzing the “male aspect” of violence against women, it has been associated to the very construction of masculinity, present in the socialization of boys, in the connection between masculinity and violence emphasized by gender roles and the principles of cultures governed by honor<sup>16</sup>.

Femicides have been frequent in situations of gender inequality and discrimination, patterns of the hegemonic masculinity expressed by aggressiveness and by sexism<sup>3,9,10</sup>. In Rio Grande do Sul, as well as in Brazil<sup>18</sup>, the male and female mortalities due to aggression were associated, showing the greater prevalence of violence against women in places where violence between men is also high. This association between an indicator of structural violence (male homicides) and an indicator of gender-based violence (female deaths due to aggression), corroborates the perception that both types of violence have become inextricably linked, that is, wherever society is more violent, women are more penalized. Other studies have shown that structural violence and social disorganization are factors that increase the vulnerability of women, and in territories disputed by drug traffickers, armed conflicts and human rights violations, gender-based crimes are frequent<sup>3,9,14</sup>.

We believe, therefore, that these situations are not mutually exclusive and that the structural violence enhances gender-based violence. We then consider that male mortality due to aggression reflects conditions of violence in society, a scenario that exacerbates gender inequality, including femicides, perpetrated by intimate partners and strange men in public places.

In this study, a relationship between the coefficient of hospitalization for alcohol and female deaths due to aggression was found. Several studies have found a higher consumption of licit and illicit drugs in families where there is violence towards women or when the offender uses alcohol and drugs<sup>26-28</sup>, characterizing alcohol consumption as a risk factor for violence against women.

Table 3. Multivariate linear regression model, entry variables and final model with the dependent variable female mortality due to aggression.

Variables	Standardized $\beta$	$\beta$ (95%CI)	p-value
Entry model			
SDH, income	- 0.170	(-7.620 – 6.980)	0.918
Coefficient of female separations and divorces	- 0.159	(-1.250 – 0.376)	0.278
Coefficient of female marriages	0.154	(-0.498 – 1.360)	0.346
FHS coverage	- 0.004	(-0.250 – 0.250)	0.983
Coefficient of male mortality due to aggression	0.321	(0.001 – 0.062)	0.041
Coefficient of hospitalization for alcohol use	0.399	(0.000 – 0.016)	0.049
Male mortality by ill-defined causes	- 0.340	(-0.249 – -0.004)	
Final model			
Coefficient of male mortality due to aggression	0.346	(0.007 – 0.062)	0.016
Coefficient of hospitalization for alcohol use	0.402	(0.003 – 0.013)	0.005
Male mortality by ill-defined causes	-0.348	(-0.232 – -0.270)	0.015

$\beta$ : beta coefficient; 95%CI: 95% confidence interval; SDH: Socioeconomic Development Index; FHS: Family Health Strategy.

The relationship between alcohol consumption and crime is recognized as a serious social and public health issue, because alcohol, due to pharmacological stimulation, acts as a releasing factor for aggression, and has been used as justification for abusive behavior by both the perpetrators and the professionals and institutions<sup>28,29</sup>.

However, in recent years, researchers have criticized the causal attribution of violence to addictive behaviors such as alcohol and drugs, showing that it can minimize the sociocultural character of violence<sup>17,30</sup>. It should be noted that alcohol is not a determining factor to violence and to assume this causality means to mask the social and structural causes of this phenomenon<sup>29</sup>. In any case, the fact of finding an association between alcoholism and violence does not mean that alcohol is the cause of aggression against women, but that alcohol abuse and aggression may be responding to common determinants<sup>30</sup>.

One last relationship found in this study was a negative association between deaths from ill-defined causes in men and female mortality due to aggression. This indicates that where there is a higher percentage of ill-defined deaths due to difficult access to health care and poor quality of the information system, there is a higher prevalence of female deaths due to aggression.

## CONCLUSION

This investigation is part of a larger research project whose objective was to analyze the female deaths due to aggression under the quantitative perspective, using secondary data. The idea was to verify the existence of associations between female homicides and variables that can signal to higher risk scenarios for the occurrence of femicides.

Structural violence expressed by the high rate of male homicides and hospitalization for alcohol use were the main factors associated with female mortality due to aggression. These findings support the idea that addressing violence cannot occur only based on individual factors of victims and perpetrators.

This is an ecological study, and therefore, subject to ecological fallacies arising from the very design of the investigation, such as limitations on the use of secondary data. In any case, ecological studies allow the exploration of macrostructural aspects in the distribution of determinants of violence, since this is a social phenomenon, and moreover, are exempt from individualist or atomistic<sup>31,32</sup> fallacies that affect studies whose unit of observation is individuals.

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