Female Homicides and Femicides in Ecuador: A Nationwide Ecological Analysis From 2001-2017

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Abstract

Background: Gender-based violence is a major public health concern arising from the structural discrimination of women and girls. In 2014, Ecuador criminalized acts of femicide in response to a growing crisis across the region. As no epidemiological studies on the state of female homicides have been published, we estimated trends occurring between 2001 and 2017.

Methods: Using data from the National Institute of Census and Statistics we estimated the annual mortality rates, cumulative incidence and incidence risks differences for female homicides, from 2001 – 2017. The impact of aggressions, assaults and violence on years of life lost due to premature mortality was estimated using the Human Capital method.

Results: Over the period, at least 3,236 cases of female homicides were reported. The highest murder rate occurred in the province of Sucumbíos (6·5 per 100,000) and in the Putumayo canton (12·5 per 100,000). The most common way to murder their victims was using firearms (38%). The highest incidence risk was estimated for women aged between 25-29, at 4·5 (3·9 – 5·1), of primary school attainment at 17·2 (14·6 - 20·3) and of Afro-Ecuadoran descent 18·1 (10·5- 30·9). Femicide-related costs reached, on average, \$35 million per year and more than \$500 million lost from 2001 to 2017.

Conclusions: The high rates, distribution and cost indicate that investments are urgently needed to address the structural causes and reduce the impact of femicides in Ecuador; thereby protecting the livelihood and well-being of their women and girls.

Introduction

Gender-based violence is a major public health concern and violation of women's human rights that affects communities all over the world (1). An estimated 1.2 billion women – 30% of the female population – have experienced either physical and/or sexual intimate partner violence or non-partner sexual violence in their lifetime (2). When such violence results in an assassination, or *femicide*, societies experience the most extreme form of violence against women (3). Several human rights bodies have characterized femicides as a particular type of crime, that occurs in the 'context of structural discrimination against women and girls.' (4) Femicides are therefore not isolated occurrences; they result from systematic and structural phenomenon, enrooted in social behaviours and accepted stereotypes. (5,6). Studies attribute several risk and protective factors to the risk of a femicide occurring. These include intra-familial relationships, intimate partner violence, alcohol or drugs consumption, level of education, poverty, religious beliefs and other cultural aspects, that vary from region to region (5,7–12).

Global estimates suggest that at least 87,000 women were assassinated in 2017, representing more than six women killed every hour (3). The African continent has the highest standardised murder rate with 1·6 per 100,000 cases, followed by the Americas with 1·3 per 100,000 and Oceania with 1·3 per 100,000 (3). Empirical evidence on the global demographics and epidemiological distribution still remain rare (2). In Latin America, a region with high levels of civil violence, very few countries have reported the overall impact of violence towards women at a national level (13–16). In 2014, Ecuador criminalised femicide through the inclusion of Article 141 of the Organic Criminal Code (OCC). As one of the last countries in the region to provide such protection to women and girls, this was an important milestone and the result of intense lobbying and activism by women's rights advocates and organizations. The legislation for femicide has become intimately linked with acts of gender-based violence in

Ecuador and (17) states that *“the person who, as a result of power relations manifested in any type of violence, kills a woman due to the fact that she is or because of her gender, they will be punished with imprisonment from 22 to 26 years”*. (18)

In Ecuador, although sociological manuscripts, legal interpretations and other historical evidence are available, an epidemiological study of the prevalence of femicide has never been attempted. This study aims to address the gap in the literature on crimes against women, specifically female homicides and femicides, occurring in Ecuador from 2001–2017; thereby creating further awareness on a stark reality that, until now, has been poorly analysed within the national context. Specifically, we aim to examine the social, economic, geographical and demographic patterns of femicides nationally and the burden of femicides through years of life lost and economic cost.

Methods

Data Source

We extracted mortality data from the National Institute of Census and Statistics (INEC) of Ecuador, which is responsible for generating and reporting the official national statistics for decision making in public policy. The country is divided into four geographical regions: the coastal region; the highlands or sierra region; the amazon region and; the insular region (Galapagos Islands). The extracted data included available information (2001-2017) from the 24 provinces and the 223 cantons in the country, where cantons are political subdivision of a province in the country. In 2017 the population of Ecuador was estimated at 16,624,424 inhabitants based on the latest available census data from 2010 and its projections (19). The dataset contains information on age, civil status, educational status, ethnicity, date of death, gender, place of registration (urban or rural) and the underlying cause of death coded using the International Classification of Diseases, tenth revision (ICD-10). To validate the data, comparisons were made against the official records held by the national police to ensure accuracy in reporting through the INEC database. The dataset is readily available as comma-separated values (CSV) or dBase database file (DBF) format in the public INEC's domain: <https://aplicaciones3.ecuadorencifras.gob.ec/sbi-war/>

Data Analysis

Using the ICD-10 classifications (see Appendix), we estimated the annual mortality rate for female homicides per 100,000 population. These were age-standardized using projection data by canton and province according to the available information from the INEC Census in 2010 (19). Mortality rate was calculated by dividing the number of new cases per year, by the total population at risk during each year. We calculated the incidence risk for female homicides per 100,000 population and 95% CI by 5-year age group (5-9, 10-14, 15-19, 20-24, 25-29... 65 years and older) compared to the youngest age group (0-4 years) and to male homicides within the same period. Analysis of incidence risk of female homicides by social, economic and demographic variables was calculated using ethnicity (indigenous, afro-ecuadorian/ afro-descendant, montubia, mixed, white, other) highest educational attainment achieved (primary school, secondary school (incomplete), high school, postgraduate) and civil status (united by law, single, married, divorced, separated, widowed). Trends by region and province were estimated using cumulative incidence across the years 2001 – 2017. Cumulative incidence was estimated by dividing the number of cases with the population at risk (gender and age per year) and then producing a final average estimate.

The ICD-10 codes for assault and aggression (see Appendix) were categorized into nine groups representing underlying cause of death by: chemicals, strangulation, drowning, sexual aggressions, firearms, fire-related mechanisms, sharp objects (e.g. knife), blunt objects and other. Comparison of cause of female deaths against cause of male deaths were made using these codes. All statistical analysis accepted significance with a p-value <0.05. Calculations were completed using IBM SPSS Statistics for Windows, Version 24.0 and R Core Team software 2018 version 3.5.1. Cartography was generated using QGIS Development Team, version 2.8.

Burden of femicides

To analyse the impact of femicides we calculated the overall impact of aggressions, assaults and violence on years of life lost due to premature mortality (YLL). YLL were calculated as the number of deaths multiplied by life expectancy of the woman at the age of death, considering a life expectancy at birth of 86.2 years according to the Global Burden of Disease. This methodology has been described by Murray and colleagues and previously used in similar analysis; no time discount, nor age weighting were added to the calculations (20). Indirect costs were calculated using the human-capital (HC) method to value productivity losses. The HC method considers the person's hours of productivity that are lost until their retirement age. Since it was not possible to ascertain the level of income of each of the deceased women, we based our estimates at the official basic salary for women of productive age at the time of their death. The official minimum wage, which varies accordingly to the GDP per capita, ranges from \$370 to \$390 USD per month. To estimate the total productivity losses, we multiplied the number of YLL in woman aged 15 to 64 years old by the official GDP per capita at the age of death.

Results

We analysed data from 17 years of available data (2001-2017), which included 3,236 cases of female homicides. Since 2014, where femicide began to be classified as such, 249 cases of femicide have been registered, increasing from 18% in 2014 to 57% in 2017. The annual homicide rate per 100,000 varied from 1.8/100,000 to 3.8/100,000 (Figure 1).

The majority of deaths occurred among young women between 20 and 30 years old, representing more than 28% of the total number of violent deaths amongst women. The mean age of women in the overall period was 33. The youngest victims were observed in the group of sexual related assaults (10 years median 95% CI, 6-16) and the oldest victims were killed by blunt objects (33 years median 95% CI, 28-44). The youngest victim reported was 1-year-old and the oldest 99 years.

Female homicides were most prevalent in urban areas (84% - $N = 2,718$) compared to rural areas. The region with the highest cumulative incidence rate 100,000 people was the amazon region (48.1/100,000), followed by the coast (43.2/100,000), the highlands (31.3/100,000) and the Galapagos islands, where no murders against women have been reported. Of the 24 provinces, the highest rate was Sucumbíos (6.5/100,000), Esmeraldas (4.6/100,000), Santo Domingo de los Tsachilas (4.3/100,000), Bolivar (3.8/100,000), and El Oro (3.6/100,000) (Figure 2).

Of the 223 cantons, the top five most violent in terms of the overall (2001-2017) homicide rate per 100,000 were Putumayo (12.5/100,000), San Lorenzo (11.1/100,000), Palestina (10.5/100,000), Las Lajas (9.9/100,000) and Lago Agrio (9.3/100,000) (Figure 3). In the overall 17 years of data, 32 cantons did not report any homicide or femicide.

Compared to the youngest group, women from 25 to 29 years old had the highest incidence risk at 7.0 (95% CI 5.6 – 8.8). Compared to males, females had a lower incidence risk of homicide at each age category, although this difference was less apparent amongst younger age groups.

Table 1 Incidence risk of female homicide in Ecuador by age category, 2001 – 2017

Age group	Population	Cases (n)	Rate per 100,000 population [CI]	Incidence risk compared to lowest age group [CI]	Incidence risk compared to male homicides at same age group [CI]
0-4	826,528	89	0.68 [0.48 – 0.88]	Ref.	0.79 [0.58 -1.09]
5 – 9	799,393	92	0.73 [0.47 – 1.00]	1.07 [0.79 – 1.43]	0.84 [0.61 -1.14]
10 – 14	759,419	106	0.90 [0.60 – 1.15]	1.30 [0.97 -1.71]	0.54 [0.41 -0.71]*
15-19	708,354	331	2.56 [2.08 – 3.03]	4.34 [3.43 – 5.48]*	0.14 [0.12 -1.16]*
20-24	656,390	450	4.14 [3.68 – 4.61]	6.36 [5.06 – 7.98]*	0.09 [0.08 -0.11]*
25-29	612,107	463	4.47 [3.86 – 5.08]	7.02 [5.59 – 8.80]*	0.09 [0.08 -0.11]*
30-34	562,150	342	3.50 [2.93 – 4.07]	5.65 [4.47 – 7.13]*	0.07 [0.06 -0.08]*
35-39	501,112	290	3.47 [2.91 – 4.02]	5.37 [4.23 – 6.81]*	0.09 [0.08 -0.12]*
40-44	442,537	260	3.48 [2.93 – 4.04]	5.45 [4.28 – 6.93]*	0.12 [0.08 -0.11]*
45-49	386,889	199	3.28 [2.60 -3.97]	4.78 [3.71 – 6.13]*	0.90 [0.08 -0.11]*
50-54	326,634	149	2.70 [2.10 – 3.29]	4.23 [3.25 – 5.50]*	0.11 [0.08 -0.12]*
55-59	266,079	93	1.92 [1.44 – 2.40]	3.24 [2.42 – 4.33]*	0.09 [0.07 -0.12]*
60-64	212,730	85	2.34 [1.69 – 2.98]	3.71 [2.75 – 4.99]*	0.13 [0.11 -0.17]*
>65	508,031	286	2.57 [2.09 – 3.05]	4.10 [3.01 – 5.58]*	0.16 [0.12 -0.21]*
Total	7,568,353	3,235	N/A	N/A	N/A

*p-value *** < 0.05; ** < 0.01; * <0.001

Compared to those who completed postgraduate education, the incidence risk of femicides was 17.2 (95% CI 14.6 – 20.3) for those that attended primary school. Being of Afro-Ecuadorian/ Afro- descent had a incidence risk of 18.1 (95% CI 10.5 – 30.9) compared to being of White ethnicity.

Table 2: Incidence risk of femicide in Ecuador with social, economic and demographic variables

	Cases, n (%)	Incidence risk [CI 95%]
Civil status		
United by law ⁱ	573 (18)	0.66 [0.60 – 0.73]
Single	1,419 (44.0)	Ref.
Married	850 (26.0)	0.62 [0.56 - 0.67]
Divorced	105 (3.0)	1.05 [0.86 - 1.28]
Separated	27 (1.0)	0.10 [0.07 - 0.15]
Widowed	263 (8.0)	1.08 [0.95 - 1.23]
Highest level of educational attainment		
None	276 (8.5)	0.82 [0.67 - 0.99]
Primary school	1,102 (34.1)	17.2 [14.6 - 20.3]
Incomplete secondary school	866 (26.7)	0.25 [0.21 - 0.30]
Complete High school	105 (3.3)	0.08 [0.07 - 0.11]
Postgraduate	161 (5.0)	Ref.
No information	726 (22.4)	4.49 [3.78 - 5.33]
Ethnicity		
Indigenous	75 (2.3)	4.64 [2.62 - 8.21]
Afro-Ecuadorian / Afro-descendant	290 (8.9)	18.1 [10.5- 30.9]
Montubia	9 (0.3)	0.58 [0.24 - 1.33]
Mixed	979 (30.3)	5.91 [3.49 - 10.0]
White	14 (0.4)	Ref.
Other	4 (0.1)	5.25 [1.72 - 15.96]
No information	1,865 (57.6)	N/A

Notes: ⁱ Ecuador being married entitles all the civil rights, whereas united by law is a legal status acquired after the couple have spent two years living together and on signing a free union form.

The most common cause of death were firearms (38%), followed by sharps objects (30%) and strangulation (14%) (Table 3). Compared to males, females had a 4.33 incidence risk (95% CI 1.63 – 11.4) of death due to sexual aggressions.

Table 3: Cause of death

	Cases (n)	Age Mean [95% CI]	Age Median [95% CI]	Incidence risk compared to males [CI 95%]
Chemicals	46 (1)	25 [19-32]	22 [19-32]	0·10[0·06-0·17]
Strangulation	444 (14)	36 [34-39]	28 [26-32]	0·42[0·37-0·46]
Drowning	16 (0)	38 [29-46]	26 [22-42]	0·06[0·03-0·10]
Sexual Aggressions	22 (1)	25 [9-40]	10 [6-16]	4·33[1·63-11·4]
Firearms	1,222 (38)	33 [32-34]	30 [29-32]	0·06[0·06-0·06]
Fire related	18 (1)	34 [19-49]	30 [17-45]	0·36[0·21-0·62]
Sharp Objects	960 (30)	36 [35-37]	32 [31-34]	0·15[0·14-0·16]
Blunt Object	83 (3)	39 [33-45]	33 [28-44]	0·17[0·13-0·21]
Others	425 (13)	37 [34-39]	31 [29-34]	0·27[0·24-0·29]
Total	3,263	33·6	26·8	N/A

In most cases of femicides in Ecuador, women were young. The vast majority of women killed were under 35 years of age (57·9%), so the economic burden due to lost lives is significant, reaching an average of 9,675 years of life lost prematurely per year, and more than 164,000 years in the last 17 years of available data. Femicide-related costs attributed to femicide reached, on average, \$35 million per year and more than \$500 million lost from 2001 to 2017 (Table 4).

Table 4: Years of life lost (YLL) due to female homicide in Ecuador, 2001 and 2017.

Year	Cases/year	YLL*	Economic Losses (US\$) **
2017	177	9,025	50,143,307
2016	179	9,242	47,448,887
2015	162	8,076	39,547,989
2014	151	7,457	41,455,658
2013	159	7,751	40,789,337
2012	201	9,956	49,850,610
2011	226	11,222	53,612,987
2010	189	9,715	40,401,612
2009	194	10,262	36,924,730
2008	200	10,256	36,835,534
2007	231	11,611	32,948,806
2006	219	11,501	29,601,214
2005	189	10,045	25,545,668
2004	211	10,717	21,319,347
2003	170	8,416	16,741,380
2002	201	10,387	18,178,711
2001	177	8,840	13,903,903
Total	3,236	164,479	595,249,680

* Based on Life Expectancy according to GBD2010, ** Human Capital Method

Discussion

This is the first report conducted on the state of femicides in Ecuador. Gender-based violence is a leading cause of injury and disability worldwide. When such violence culminates in the death of a girl or woman, this has disastrous long-term consequences on communities and societies. Gender-based violence has a huge social and economic cost in Ecuador, estimated at \$35 million per year, and an average of 9,675 years of life lost prematurely per year.

Consistent with other studies, females under the age of 35 were most affected, whilst lower education conferred a greater disadvantage. Although an explanation on the exact mechanism through which lower education influences the likelihood of gender-based violence could not be offered here, other studies suggest that poor access to, and participation in, education promote gender inequalities and female disempowerment (21).

In 2011, The National Survey on family relations and gender violence against women reported that six out of ten women experienced gender-based violence, with those of Indigenous and Afro-Ecuadorian descent being most afflicted. This is consistent with the evidence presented here, which shows that the highest prevalence of femicides occurred amongst Afro-Ecuadorian women. In contrast to the National Survey report, that found the highest rates

of psychological, sexual and physical violence in Morona Santiago, Tungurahua and Pastaza (22), our study shows higher rates of femicides in the provinces of Sucumbios, Esmeraldas, Santo Domingo de los Tsachilas, Bolivar, and El Oro throughout the period of 2001 to 2017. Although most murders generally occurred in urban areas, a closer analysis at the provincial level showed that a number of cantons of smaller populations and higher rurality (such as those in Pastaza and Esmeraldas) had very high rates of femicide. This could in part be explained by recent reports of civil violence at the Ecuadorian borders; it is also plausible that social norms inherent within the rural context, may provide agency for such acts of violence (23–25).

In terms of policy, The Inter-American Court of Human Rights affirm that States are obliged, under International Law, to adopt effective public policy in order to prevent acts of violence towards women before they result in a femicide (26). It was not until 2014 that such actions were brought into discussion in Ecuador (27). Prior to 2014, there was no criminal procedure to hold perpetrators accountable for attacks of violence and discrimination made against women and girls. One of the limitations of this study was therefore that the classification of femicide could not proceed until 2014, when the legislation was put in place, and therefore the information collected from 2001 to 2013 was based on the deaths of women due to homicides.

Another limitation was that some of the social, economic and demographic information reported here were based on reporting from close family members of the deceased and the professionals involved; this may have resulted in mis-classifications or inaccuracies in reporting.

A further limitation was that we lacked information on the perpetrator of the crime, which meant that we could not confirm the rates of intimate partner homicide (27). According to the Ecuadorian State established a Gender Atlas, the most common perpetrators of femicides included people unknown to the victim (30%), cohabitant (30%), former partner (16%), family member (8%), boyfriend (7%), ex-boyfriend (2%) among others (28). Further studies should seek to address this data gap.

Overall these findings demonstrate both the scale and impact of female homicides and femicides in Ecuador. Although not analysed here, other studies elsewhere have reported implementation problems following changes in legislation. Domestic violence laws may not be accompanied by the required budget allocations, for example, or certain authorities involved in law enforcement may be resistant (29). A national strategy to tackle femicide, through community initiatives that address the risk factors of violence (such as the acceptability of violence) alongside better enforcement of laws is recommended. For example, group educational training that target inequitable gender norms, and address underlying expectations around female and male behaviour, have been shown to be effective within targeted populations in LMICs. Evidence also shows that community mobilization programmes - complex interventions involving many community stakeholders - can also promote changes in norms, discourse and practice through communication channels such as radio and television.

Femicide is a global human rights violation that until now has received very little attention and research in Ecuador. Policy makers should consider the devastating impact of femicides on the national economy, and fund further investment into the enforcement of new legislation, as well as national and local programmes that address gender inequality; thereby protecting the livelihood and well-being of their women and girls.

Declarations

Ethical approval and consent to participate

The research study was a secondary data analysis of publicly available, non-identifiable, anonymized data. Therefore according to local regulations did not require ethical approval.

Role of the funding source

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Consent for publication

Not applicable

Availability of data material

The datasets can be accessed from: <https://aplicaciones3.ecuadorencifras.gob.ec/sbi-war/>

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Competing interests

We declare no competing interests.

Authors' Contributions

EOP contributed towards the conception and design of the whole project, obtained full access to the data from the National Institutes of Statistic in Ecuador, and was primarily accountable for all aspects of work, ensuring integrity and accuracy of the research as well as of the drafting of the manuscript, and the final responsibility for the decision to submit for publication.

PV, KSR and LGB contributed towards the data acquisition, the geographical display of the data and the elaboration of the tables.

ALM and ARH undertook the burden of femicide analysis and the economic impact of femicide in Ecuador.

AMD, CEM and VAV manually retrieved the sociodemographic variables from 2001-2003 and obtained the 2001-2017 population projections for the mortality rate analysis.

MDM offered legal interpretation on femicides, including the analysis of the legal code and provided input on the legal aspects of the literature and methodology, and critically reviewed the manuscript.

SM critically reviewed and edited the manuscript, providing input towards the reporting of the data, and its interpretation.

All authors have read and approved the manuscript.

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Figures

Figure 1

Annual female homicide rate per 100,000 population in Ecuador, 2001 - 2017.

Figure 2

Cumulative incidence of female homicides by region and province, 2001 – 2017. (The map was created by using ArcGIS. No permissions were required to use this image.)

Figure 3

Cumulative incidence of female homicides by region and canton, 2001 – 2017. (The map was created by using ArcGIS. No permissions were required to use this image.)

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