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Summary of findings and public health

de Salud), accounting for roughly one-third of all hospitals in the country [33]. To enhance our analysis, we supplemented this dataset with age-specific population data from Mexico's 2020 census, obtained from the National Institute of Statistics and Geography (*INEGI*) [26]. The *INEGI* data was used to calculate the average number IPV cases per 100,000 children and adolescents.

Study population

All children and adolescents aged 0 to 17 years old who were victims of IPV, classified either as family or non-family violence, were included. The World Health Organization defines violence against children as all forms of violence against people under 18 years old [19]. Victims of unintentional traffic accidents, self-inflicted injuries, human trafficking or those with unspecified circumstances as well as victims, whose age or sex data were missing, were excluded.

Study outcome and variables

The primary outcome of the study was the number of IPV cases, defined as incidents of physical, sexual, or mental abuse (Supplementary Table 1). To analyze the demographic characteristics of IPV victims, several categorical variables were examined, including sex (male and female), children's age (less than 5 years, 5–9 years, 10–14 years, and 15–17 years, as grouped by the National Institute of Child and Human Development, USA [34]. Additionally, education level was categorized as not educated, primary education, secondary education, beyond secondary education and missing, while literacy status, indigenous background, disability status, and pregnancy status were recorded as dichotomous (yes or no) variables. This allowed for a comprehensive understanding of the socio-demographic context of IPV victims. The forms of IPV were categorized into physical, sexual, and mental violence using ICD-10 codes recorded in the *Lesiones* dataset. IPV was classified based on the type of violence as family violence (occurring within familial relationships) or non-family violence (occurring between unrelated individuals such as acquaintances or strangers).

The analysis further considered the location of the incident, grouping it into residential areas (private homes), schools, recreational locations, transportation, commercial locations, workplaces, and unspecified. Key event-related variables included whether the incident occurred on a festive day, whether the violence was recurrent, and whether the victims received prehospital medical care known to improve outcomes in severe trauma cases. To examine healthcare responses, the study assessed the medical services provided that were categorized into external consultations, hospitalizations, emergency consultations, specialized violence care services and other.

The roles of healthcare providers—physicians, psychologists, and social workers—were also analyzed, alongside the victims' post-treatment destinations, which included returning home, transfer to another medical unit, specialized violence care services, external consultations, subsequent hospitalization, deceased and other. Characteristics of aggressors, such as sex (male, female, unspecified), age (less than 18, 18–30, 31–50, 51–70, more than 70, or unspecified), and their relationship with the victim (biological parent, spouse/partner/boyfriend, other relative, stepfather/mother, non-family acquaintance, other and unspecified) were included to provide a holistic understanding of the dynamics and contexts of IPV cases. The inclusion of the Mexican state variable enabled the assessment of regional variations in IPV cases.

Statistical analysis

We conducted stratified analysis to explore the demographics and clinical characteristics of the victims of IPV and the characteristics of their aggressors. Categorical variables were summarized using frequencies and percentages. We used the Chi-square test to compare proportions between male and female groups. We utilized SankeyMATIC to create a Sankey flow diagram for detailed visualization of the distribution of forms of violence across age and sex categories. We generated a heatmap to visually represent the average IPV cases per 100,000 children and adolescents across Mexican states. Geographic shapefiles of Mexican states were sourced from the University of Texas Libraries'geodata repository (Format: Shapefile—University of Texas Libraries GeoData Search Results). Incidence rates were calculated using data for children and adolescents aged 0–17 years, extracted from *INEGI* [26]. STATA V18 (College Station, Texas, USA) was used for statistical analysis.

Ethical considerations

This project was submitted to the Institutional Review Board and considered non-human subjects research (protocol #IRB23-0178) since we analyzed secondary de-identified data that are publicly available.

Results

Among the 116,287 IPV victims, 36,385 (31.3%) were male and 79,902 (68.7%) female (Table 1). The majority were aged 15–17 years ($n = 62,616$; 53.8%), followed by those aged 10–14 years ($n = 34,234$; 29.4%), 5–9 years ($n = 12,219$; 10.5%), and under 5 years ($n = 7,218$; 6.2%). Most had a secondary education ($n = 32,509$; 28.0%), and literacy levels were high, with 86,858 (74.7%) reported as literate. 2.0% ($n = 2,274$) self-identified as Indigenous, and 1.3% ($n = 1,472$) reported having disabilities. Among

Table 2 Gender-based breakdown of clinical characteristics and management of IPV victims ($n = 116,287$)

	Male 36,385 (31.3%)		Female 79,902 (68.7%)		Total 116,287 (100.0%)		p-value
	n	%	n	%	n	%	
Type of injury							
Physical abuse	26,743	73.5	12,412	15.5	39,155	33.7	< 0.001
Sexual abuse	3,026	8.3	35,347	44.2	38,373	33.0	
Mental abuse	6,616	18.2	32,143	40.2	38,759	33.3	
Type of violence							
Family violence	11,251	30.9	55,156	69.0	66,407		

n number of patients, % percentage

3,433) of males and 63.2% ($n = 15,855$) aged 10–14 years, and 14.3% ($n = 2,720$) of males and 71.2% ($n = 31,019$) aged 15–17 years (Supplementary Table 2–5).

Physical abuse among males increased with age, affecting 47.8% ($n = 1,441$) of those under 5 years, 40.1% ($n = 2,087$) aged 5–9 years, 64.6% ($n = 5,899$) aged 10–14

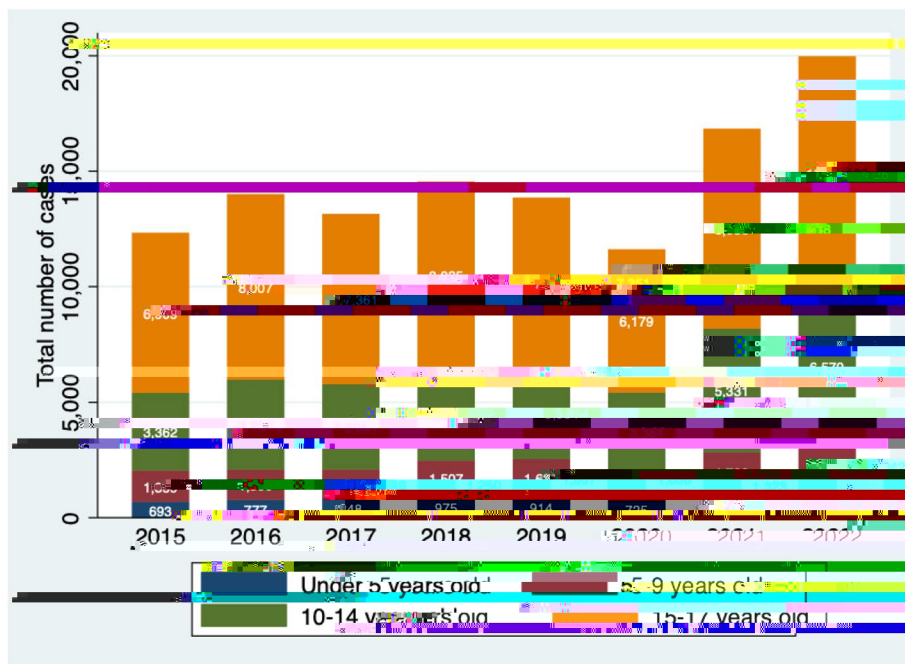


Fig. 2 Number of IPV cases among Mexican children and adolescents (n = 116,287)

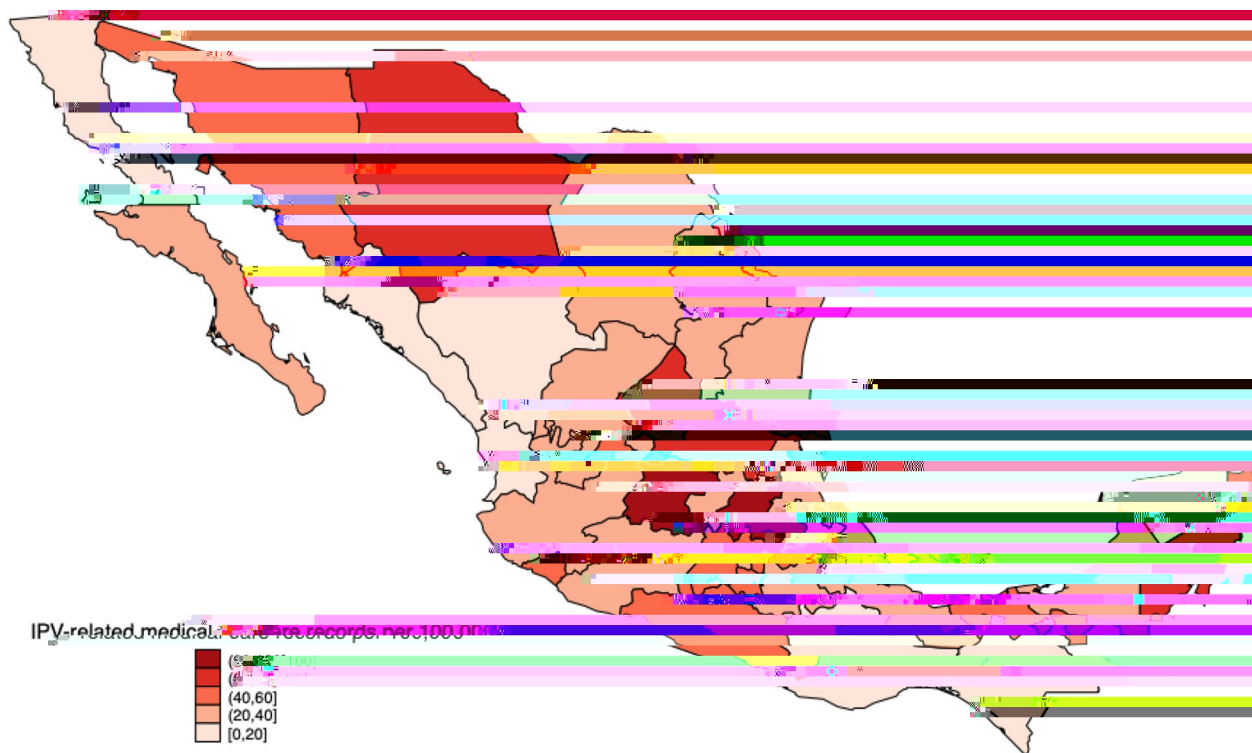


Fig. 3 Heatmap of average number of IPV cases per 100,000 children and adolescents from 2015–2022 (n = 116,287)

[35]. Research conducted in the United States has documented higher instances of physical abuse among male

pandemic, likely due to underreporting by mandatory reporter [\[71\]](#)

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12889-025-22990-z>.

Supplementary Material 1.

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Not applicable.

Research context

This study explores the epidemiology of interpersonal violence medical records among children and adolescents aged 0–17 years in Mexico. It aims to understand the demographic characteristics, relationship with the aggressor, and the immediate medical and mental consequences faced by these young victims. The research focuses on analyzing data to provide insights into the patterns and contexts of interpersonal violence affecting children and adolescents in different regions of Mexico.

Authors' contributions

TUL, SJK and MG conceived the study design. MG conducted the data analysis under the supervision of SJK and TUL. MG, TUL and SJK drafted the manuscript. All authors (MG, DDdV, LNC, TN, TW, TD, ACT, SJK, and TUL) discussed and revised the manuscript.

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Data availability

The Lesiones database, as stated and cited in the methods, which provides comprehensive data on injuries in Mexico, is publicly accessible at <https://www.datos.gob.mx/busca/dataset/lesiones>.

Declarations

Ethics approval and consent to participate

This project was submitted to the Institutional Review Board of the Harvard Faculty of Medicine and considered non-human subjects research (protocol #IRB23-0178) since we analyzed secondary de-identified data that are publicly available.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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