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COVID-19 and violence against women: current knowledge, gaps, and implications for public policy

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Abstract

On a global scale, 1 in 3 women experience physical and/or sexual violence in their lifetime, and women of disadvantaged backgrounds are at an even higher risk. Since the outbreak of COVID-19, data have shown that violence against women (VAW) has intensified. In this paper, we review an emerging literature evaluating the impact of stay-at-home measures implemented to curb the spread of COVID-19 on VAW in low and middle-income countries. We classify existing studies into three categories based on the quality of data and reliability of the empirical methodology: "causal", "less causal" and "not causal. Overall, the most rigorous literature on low- and middle-income countries provides evidence of increases in calls to domestic violence hotlines and drops in police reports. Differences in the types of violence analyzed (physical, sexual, psychological, or economic) and the challenges associated with reporting these types of VAW contribute to the mixed results. The main methodological limitations faced by this literature relate to data availability and the ability to distinguish the effects of social isolation from those associated with income and emotional shocks induced by the COVID-19 pandemic. The paper highlights the need for innovative methods and data to better understand the unintended VAW consequences of movement restrictions and reliably effective policy responses to this major social and public health challenge.

JEL Codes: I18, J16, H12.

Keywords: gender-based violence, violence against women, COVID-19 pandemic, low and middle income countries.

Highlights

- We review studies that assess the effects of COVID-19 stay-at-home measures on violence against

women in low and middle-income countries (LMICs)

- We classify studies according to the quality of their data and methods into three categories: "causal", "less causal" and "not causal"
- COVID-19 brought an increase in calls to domestic violence hotlines and a decrease in police reports
- Mixed evidence found in some LMICs highlights the importance of contextual factors and differences in the types of data examined
- A key challenge for studies is to separate the effects on violence due to social isolation from those due to income/other shocks during the pandemic

1 Introduction

Violence against women (VAW) refers to any act of gender-based violence directed against women, or that affects them disproportionately. VAW encompasses violence occurring in the family, household and in the broader social context; it can take different forms including domestic violence, femicide, sexual violence, human trafficking, female genital mutilation, and online or digital violence (UNW). One of the most common forms of VAW is intimate partner violence (IPV), which refers to any behaviour used by an intimate partner or ex-partner to gain or maintain control over women, and it is the most common form of violence experienced by women globally (World Health Organization (2021); UNW).[1] This form of violence can be physical (to harm or injure using physical force, strength, or weapon), sexual (make a woman engage in a sexual act without her consent, or attempt to complete sexual act with a woman under pressure, under the influence of alcohol or other drugs, who is ill or is disabled), psychological (to control, isolate, humiliate or embarrass) and economic (to deny access or control over basic resources, including own income).[2]

VAW is a major public health problem. The UN estimates that 1 in 3 women have experienced physical and/or sexual violence in their lifetime, mainly by an intimate partner (**?**). The social and economic consequences are enormous: the estimated global cost of violence against women and girls is around US$1.5 trillion, approximately 2% of the global gross domestic product (GDP) (UN Women (2020)). Victims have higher risks of developing depression and alcohol disorders, higher chances of delivering low birth-weight babies, and higher probabilities of contracting sexually transmitted diseases (World Health Organization, 2013).

[1] Another expression used in the literature is Domestic Violence (DV), that can sometimes encompass a broader meaning with the inclusion of any types of violence inside the household (WHO,2012).

[2] The United Nations (UN) defines VAW as "any act of gender-based violence that results in, or is likely to result in, physical, sexual or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life" (United Nations, 1993).

Figure B1 in the appendix shows the percentages of ever-partnered women who suffered intimate partner physical and/or sexual violence in 2019 using data from **?**. Countries in Africa and Asia, particularly those located in the Middle East region, had the highest prevalence rates of intimate partner violence, sometimes exceeding 50%. In Latin America, national prevalence rates were on average higher than those observed in North America and Western Europe. Importantly, there was also significant heterogeneity across regions in the availability of statistical information about VAW, with severe data limitations for North Africa and several Asian countries.

More evidence on the global scale of the issue is provided by two OECD indicators related to VAW: a measure of IPV suffered during a women's lifetime, and an attitude indicator that identifies the percentage of women who say that it is justifiable for a husband or partner to beat his wife/partner, representing therefore a measure of the acceptability of domestic violence.[3] Between 2014 and 2019, the percentage of women who had already suffered intimate partner physical and sexual violence fell from 39.9% to 32.7% in Africa and from 32.1% to 31.9% in Latin America. However, this indicator presented a substantial increase during the same period in Asia (from 28.1% to 35.2%). By contrast, OECD countries showed the smallest prevalence of VAW and a decrease in its trend (from 28.7% to 24.3% prevalence).[4] Finally, despite some reductions in the measured acceptability of domestic violence in all regions, it is noteworthy that a high percentage of women in Africa and Asia that would still accept violence by their partners (45.19% and 33.58%, respectively, in 2019).

The outbreak in early 2020 of the global COVID-19 pandemic has been followed by policies introducing tight movement restrictions that may have had far-reaching consequences on VAW. Since the COVID-19 outbreak, commentators using different sources of data have reported that VAW has intensified, giving rise to a phenomenon that became known as a "shadow pandemic"(UN Women, 2020). According to this UN study, reports of domestic violence and demand for shelter increased in Canada, Germany, Spain, the United Kingdom, and the United States, after the beginning of the COVID-19 pandemic. There was an increase of 30% in the number of reports of domestic violence in France, a 25% increase in emergency calls about domestic violence in Argentina, and an increase of 30% and 33% in calls to helplines in Cyprus and Singapore, respectively.

As a consequence, a rapidly growing literature has been investigating how trends in VAW have been

[3]Definitions available at OECD (2021), Violence against women (indicator). doi: 10.1787/f1eb4876-en (Accessed on 22 October 2021) and link: https://data.oecd.org/inequality/violence-against-women.htm

[4]The data for all countries is available at https://data.oecd.org/inequality/violence-against-women.htm; the percentages referred to in the text correspond to our own rate calculations, weighted by the average population in each region.

responding to the restrictions introduced to address the spread of COVID-19, in particular to social distancing measures such as stay-at-home orders, quarantines and lockdowns.[5] Social distancing measures can increase the length of time women are exposed to violent partners and isolate women from support services and family networks. Household tensions arising from financial pressures due to reduced economic activity, and the income shocks themselves, could constitute other channels whereby movement restrictions to address COVID-19 may exacerbate VAW (Anderberg et al. (2016), Aizer (2010)). Furthermore, quarantines directly bring psychological consequences to individuals such as stress, anxiety, uncertainty and fear, which could further influence the incidence of domestic violence (Angelucci (2008), Card and Dahl (2011)).

The purpose of this paper is to review the evidence on the consequences of COVID-19 social distancing measures on VAW in low- and middle-income countries (LMICs), as well as to offer insights into suitable data and empirical strategies to quantify the effects of interest.[6] We also identify the main challenges for disentangling the underlying mechanisms linking social isolation to VAW. As advocated by Peterman et al. (2020), it is necessary a "shift to more action-oriented studies – those that go beyond identifying trends in rates [of violence against women and children] and begin to pinpoint "what works" to effectively prevent and/or respond to violence" (p. 11). In our review, we highlight that it is only possible to make research actionable and valuable to guide appropriate policy responses if the underlying empirical investigation has been designed and conducted with the intention, and ability, to identify causal effects.

Previous reports (Peterman et al. (2020), Peterman and O'Donnell (2020a), Peterman and O'Donnell (2020b) and Bourgaut et al. (2021)) have summarized studies published since the start of the pandemic that focused on trends in violence against women and children (VAW/C) during the pandemic, risk factors that predict VAW/C, and the experience of service providers (volunteers at shelters, hotlines, information centers). Our review adds to these previous (mainly descriptive) reports in that we discuss the key methodological elements that should be present in rigorous empirical evaluations of the impact of COVID-19 social distancing measures on VAW; we then review the evidence that meets these minimum requirements, drawing conclusions about what we know so far on the topic, and what we have yet to learn. One of our main challenges is the size and diversity of the literature. To address it, we select the papers for our review using predefined criteria established elsewhere, which ensure that our conclusions about the impacts of COVID-19 (and related measures) on VAW are not unduly driven by an arbitrary selection of studies. Specifically, we

[5] Deleterious effects of previous global and regional epidemics on VAW have been documented before (Decker et al., 2013; Pellowski et al., 2013; Programme, 2015) There is also evidence that other rare events, like natural disasters, increase the rate of domestic violence, as well as the severity of abuse (Rahman, 2013; Gearhart et al., 2018)

[6] Although children and LGBTQ+ communities may have also suffered from increased violence as a consequence of COVID-19 policies, we limit the focus of our study to VAW.

first conduct a systematic review of the literature across a wide range of sources, using pre-defined search terms (see subsection 2.1 for details). Then, we follow the organizing principle suggested by Channa and Faguet (2016), and classify the studies we identified according to the quality of their data and the reliability of their econometric identification strategies.

The rationale behind focusing on LMIC settings is twofold. First, these countries were more heavily affected by VAW before the pandemic and might, therefore, have experienced different patterns of changes in violence during the pandemic than high-income countries. Second, VAW disproportionately affects women of disadvantaged backgrounds, putting them at a higher risk of poor physical and mental health, poverty, and potentially exacerbating gender-based inequities. Focusing on LMICs, therefore, allows us to better understand how much social distancing policies could disproportionately affect VAW in areas with large contingents of vulnerable populations. We use the World Bank country classifications by income level (2021-2022) that defines 4 income groups: low, lower-middle, upper-middle and high-income countries. The only countries excluded from our analysis are the ones in the high-income group.[7]

Piquero et al. (2021) conduct a review similar to ours, but they rely mainly on evidence for the United States as they restrict the search to official records. As they point out " We know, for example, that domestic violence is a serious problem in the Americas, and in particular in Low and Middle Income Countries (LMIC) where there is a significant amount of violence, but little is noted in administrative data nor is there much help to aid victims. As a consequence, we anticipate that when researchers carry out sustained analyses of domestic violence in LMIC, they will likely uncover a devastating toll on women and children." (p.5)

The remainder of this paper is divided in four sections. Section 2 describes the systematic literature review we conducted, and the criteria we adopted to classify the studies. We explain how we distinguish between the studies that are able to tease out credible causal effects and others that are less likely to do so. Section 3 reviews and offers a synthesis of the most reliable quantitative evidence about the effects of COVID-19 movement restrictions (and related policies) on VAW. Section 4 discusses the key methodological challenges for research on the topic. Section 5 summarizes what we have learned so far from the existing evidence and the main knowledge gaps. Section 6 concludes.

[7]Three countries (Haiti, Moldova and Tajikistan) moved to a higher category that year, but still remained in the low-and-middle income group. Seven countries moved to a lower category, but only Mauritius, Panama and Romania moved from high-income to upper middle income. None of the papers matching our selection criteria analyze VAW in those countries.

2 Methods

2.1 Identifying the relevant literature

The empirical literature on the relationship between the COVID-19 related restrictions on domestic violence has grown significantly since the start of the pandemic. The aim of this review is to identify trends and insights that have emerged from empirical studies and consider their policy implications. Given the widespread interest in violence against women across a variety of fields, we conducted a systematic literature search spanning disciplinary boundaries, from economics to the social sciences and beyond (e.g. global health, criminal justice).

To ensure the quality of our review, we followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) reporting guidelines. Figure 1 displays the process of the literature review, with the numbers of studies identified, screened, found eligible for inclusion and finally, included, in a PRISMA flow chart. We used the following search terms: "domestic violence" or "intimate partner violence" or "violence against women" combined with "COVID-19" or "SARS-CoV-2" or "coronavirus". We searched various bibliographic databases encompassing health, social and economics-related literature, including Epistemonikos and EMBASE (to find relevant studies from the health sciences), JSTOR, Science Direct, Google Scholar, Scopus, and EconLit databases. We limited our search period to December 2022 and considered both published and unpublished studies written in English.[8]

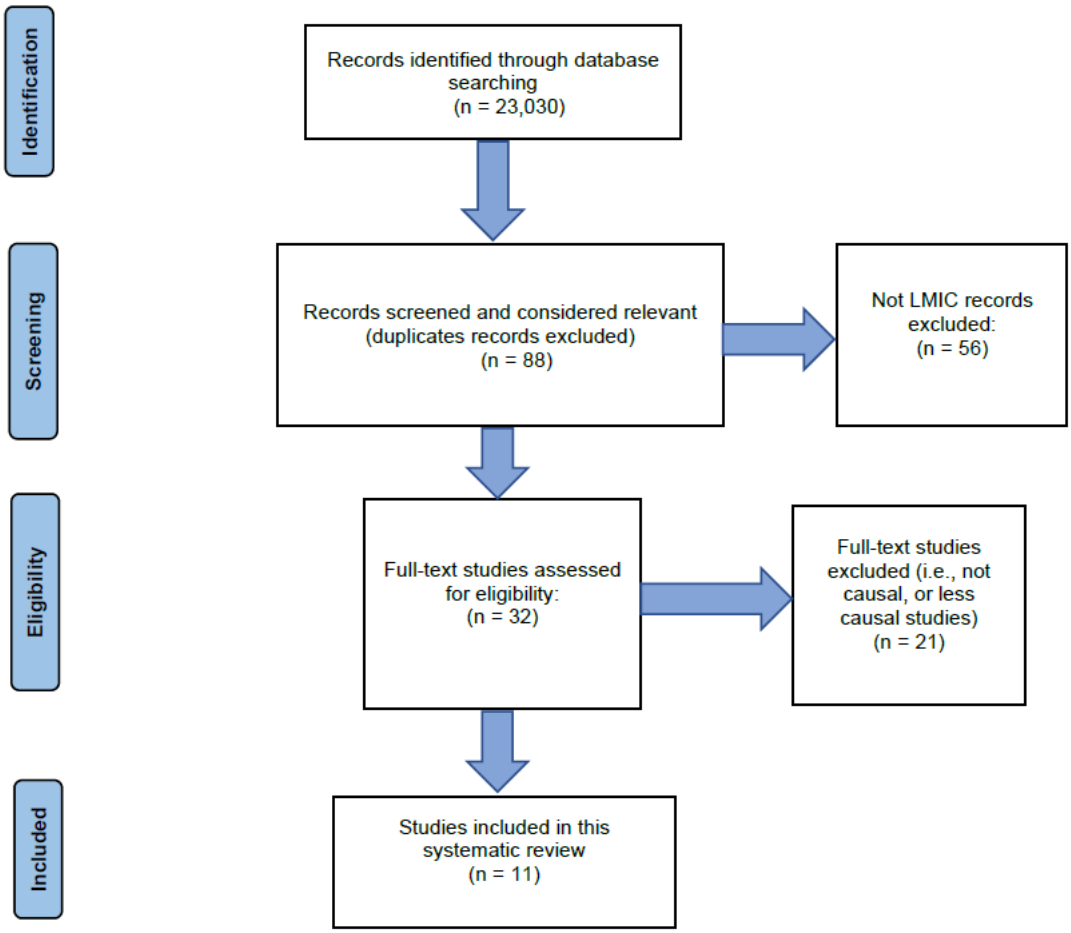
Our review is limited to low-and-middle income countries (LMICs). From a methodological perspective, the focus on LMICs helps us to enhance the comparability of the studies and evidence reviewed. This approach helps to mitigate contextual differences that exist between LMICs and high-income countries, which could impact the relationship between pandemic-related policies and VAW changes: for example, availability of welfare safety networks for families, degrees of social acceptability of violence and abuse reporting, likelihood of actual enforcement of punitive measures, availability of public channels to report VAW, among others. By focusing solely on LMICs, we are able to examine impact evidence and potential pathways for a more comparable set of geographic units in terms of these contextual factors, than would be the case if we included studies for high-income countries. Reducing the variability in contextual factors makes the task of ascertaining the links of interest to be more manageable, facilitating the identification of the common evidence patterns and lessons across studies.

[8] One limitation of our study is the potential bias towards scholars working in Western countries due to the restriction of our search to English language studies.

Finally, in selecting studies for our review, we only considered those that meet our main criterion of identifying a causal effect (see details in Section 2.2). To this end, we focus on empirical papers that use quantitative methods, therefore we exclude qualitative studies, reviews, letters to editors and commentaries, as they do not provide potential evidence on the causal relationship between COVID-19 related policies and domestic violence.

Initially, we identified over 23,000 records (1). After limiting the studies to those concerned with the impacts of COVID-19 or associated response measures on VAW, we were left with 88 studies. Further restricting our review to LMICs led to the exclusion of an additional 56 records. Finally, we assessed 32 studies for eligibility and selected 11 based on our main inclusion criteria related to the quality of the empirical evidence presented. These 11 studies were classified as "causal" according to the credibility of their identification strategy. We detail the specific criteria used to define a study as "causal" in the next section.

Figure 1: Flow Chart of PRISMA reporting guidelines



2.2 Assessing the quality of the identification strategy

To assess the causal nature of the evidence presented in each selected study, we follow the methodological recommendations drawn from the impact evaluation literature (Athey and Imbens, 2017; Cunningham, 2021). We define a hierarchy of empirical approaches based on two important criteria: the quality and type of data used, and the econometric identification strategy. We constructed a three point scale: *not causal*, *less causal* and *causal*. Papers classified as *not causal* do not attempt to establish causal effects but provide descriptive evidence accompanied by simple statistical tests. These papers also tend not to discuss the limitations of the data used and often rely on a single dataset (e.g. online surveys) that is not representative of the larger population of interest. Papers classified as *less causal* are those that attempt to control for confounding factors in their empirical strategy but do not fully address endogeneity or omitted variable concerns. Examples include studies that use regression or matching methods to control for observed confounding, but where, in the particular setting considered, other unobserved sources of bias may remain of concern.

Papers ranked as *causal* make a more convincing use of features of the particular institutional setting to underpin causal inference. Given the nature of the policies of interest for our review, studies seeking causal inference must rely mostly on temporal variations in the introduction of social distancing measures, either using the introduction of these policies as a structural break in the time series of the VAW outcome of interest or using variations in the timing of introduction of policies across geographical units, such as municipalities, as in an event study. To strengthen causal inference, however, an ideal study would also use a carefully constructed control group: either a spatial one, for example some areas of the country which did not introduce the policy at all, or by identifying a population subgroup less likely to be affected by the policy (e.g. women with partners whose jobs are not affected by stay-at-home measures). Ideally, these studies would also conduct careful assessments of pre-policy trends in VAW outcomes to mitigate concerns that the estimated policy impacts are, in fact, the effects of other (omitted) factors, such as the emotional and economic impacts of the COVID-19 pandemic. Other empirical approaches supportive of causal inference include the use of instrumental variables or regression discontinuity designs, whereby specific features of the institutional setting provide exogenous variation in the introduction of social distancing measures. For all the *causal* empirical strategies above, a more informative study (e.g. for policy guidance) would attempt to identify the mechanisms through which social distancing policies affect VAW, either directly (e.g. through increased physical closeness between victim and perpetrator) or indirectly (e.g. through heightened economic stress generated by the policies in cases such as loss of employment). Finally, the most convincing studies

in terms of generalisable causal relationships make use of good quality, representative data sources, such as countrywide administrative data sets, and ideally combine these with other sources of data, for example, surveys specifically designed to investigate VAW.

Channa and Faguet (2016) use a four-level categorization system (very strongly credible, strongly credible, somewhat credible and less credible) to evaluate the credibility of studies. We adapt this system into a three-level categorization system (not causal, less causal and causal) based on a study's capacity to draw causal conclusions about the impacts of social distancing policies on domestic violence. Table 1 outlines the type of methodology and justification for each one of the three categories we define.

Table 1: Assessing the quality of studies in terms of causality claim

Scale	Type of Study	Justification
Causal	Randomized control trials(RCTs) Quasi-experimental techniques such as: Difference-in-differences (DID), natural experiments, instrumental variables (IV), regression discontinuity design (RD), interrupted time-series (ITS) and high-quality panel data estimations using fixed effects	"Gold standard" for assessing causal effects Credible identification strategies
Less Causal	Simple/multiple linear regression analysis	Strong potential pitfalls, lack of valid counterfactuals
Not Causal	Descriptive studies	Do not attempt to establish causal effects: unable to produce a valid comparison group. Provide descriptive evidence accompanied by some simple statistical tests.

Notes: Adapted from Channa and Faguet (2016).

Based on the quality assessment in terms of causality claims, Table 2 shows the studies that were classified as less causal or not causal. Those are 6 and 15 studies, respectively.

Some of the papers with less causal evidence used regression analysis (multiple linear models or logistic models) to examine the determinants of domestic violence or predict VAW during the pandemic, although they explored trends before and after just using descriptive statistics (Abuhammad (2021), Fereidooni et al. (2023), Tadesse et al. (2022), Yari et al. (2021)). Among the less causal studies, we identified two papers that attempted to provide more convincing approaches for causal inference but had methodological limitations. The first paper, Dai et al. (2021), studies the changes in police calls before, during, and after the lockdown in a city in the Hubei province, China, using a combination of time-series approaches. They use ANOVA tests to evaluate if the changes in the average number of calls before-during-after lockdown are statistically different. Then, these changes are further scrutinized through ARIMA models to account for possible effects of seasonality and time dependence, including two dummy variables for the periods before and after the lockdown to assess the effects of implementing and cancelling the lockdown. The study has two important

Table 2: Studies classified as "less causal" and "not causal"

Less causal	Not causal
Abuhammad (2021), Dai et al. (2021), Fereidooni et al. (2023), Qin et al. (2020), Tadesse et al. (2022), and Yari et al. (2021)	Socea et al. (2020), Zsilavecz et al. (2020), Rashid et al. (2020), Halim et al. (2020), Aolymat (2021), Pattojoshi et al. (2020) Mahmud and Riley (2021), UNW, Mahmood et al. (2021) Sharma and Khokhar (2021), Venter et al. (2021), Hamadani et al. (2020), Bagheri Lankarani et al. (2022), Sharma and Khokhar (2022), and Haq et al. (2020)

limitations: the results are for a single city in China and cannot be generalized to other cities in the country; additionally, the length of the series and the balance between the periods before and after the lockdown cast doubt on the power of the models estimated. The second paper, Qin et al. (2020), tests the hypothesis that the effects of the pandemic are not immediate, but instead lagged for countries that experienced the pandemic earlier. The authors use official daily data from Southern China on help-seeking related to domestic violence.[9] They conduct a series of linear regressions in which daily domestic violence data are regressed on daily new COVID-19 cases from t-1 to t-90 days. However, the study does not include control variables or address the influence of other unobservable factors that may be driving domestic violence.

3 Causal evidence for LMICs

3.1 Overview

Table 3 summarizes information on the 11 causal studies that met our inclusion criteria. It presents the study number, author(s), location, time frame, domestic violence outcome measure, and the estimation method. Appendix A provides details on the sources of domestic violence measures.

Three studies explore the broader effects of COVID-19 on crimes against women beyond domestic violence (Poblete-Cazenave, 2020; Ravindran and Shah, 2023; Hoehn-Velasco et al., 2021), while three studies offer evidence on the mechanisms for the observed changes in crime reporting (Silverio-Murillo et al., 2020; Hoehn-Velasco et al., 2021; Bhalotra et al., 2022).[10]

[9] They also use Google Trends search data as proxies for domestic violence incidence in Australia, Canada, the United Kingdom and the United States.

[10] The relevant literature for high-income countries is much more concerned with the identification of possible mechanisms for changes in VAW; for example, see Ashby (2020), Bullinger et al. (2021); Leslie and Wilson (2020), Miller et al. (2020), Mohler et al. (2020), Piquero et al. (2020), McCrary and Sanga (2021).

Table 3: Description of studies classified as Causal

Study #	Authors	Location	Time Frame of Study	VAW Data	Methods
1	Silverio-Murillo et al. (2020)	16 Districts of Mexico City, Mexico	January 2019 to December 2020	Calls to DV hotline (Línea Mujer) Official Police Reports	Event study design and difference-in-differences
2	Agüero (2021)	Peru	April to July, 2020	Calls to DV hotline (Línea 100)	Difference-in-differences
3	Perez-Vincent and Carreras (2020)	Buenos Aires, Argentina	January to April, 2017 - 2020	Calls to DV hotline (Línea 137)	Difference-in-differences
4	Gibbons et al. (2021)	Argentina	May 2020	Primary survey data (online survey)	Multivariate regression
5	Ravindran and Shah (2023)	India	January 2018 to May 2020	Administrative data of DV complaints received by the National Commission for Women (NCW)	Difference-in-differences
6	Poblete-Cazenave (2020)	India	January 1 to July 5, 2020 January 2017 to June 2020	Official Police Reports Administrative data from National Commission for Women (NCW)	Sharp RDD Fixed-effect approach
7	Hoehn-Velasco et al. (2021)	Mexico	January 2019 to December 2020	Crime data from Mexico's National Public Security System	Event study design
8	Berniell and Facchini (2021)	Argentina, Brazil, Chile, Colombia, France, Germany, Italy, Mexico, Spain, United Kingdom, United States, and India	Weeks -10 through 30 from lockdown week	Google search of DV-related topics	Difference-in-differences
9	Asik and Nas Ozen (2021)	Turkey	January 2014 to July 2020	Female homicides	Difference-in-differences and event study design
10	Bhalotra et al. (2022)	Chile	March to September 2020	Police-managed DV helpline (Línea 149) Official Police Reports Occupancy of public shelters	Difference-in-differences Event study design
11	Perez-Vincent and Carreras (2022)	Argentina, Colombia, Costa Rica, Ecuador, Peru, and Uruguay	2018-2020	Calls to DV hotlines DV calls to emergency lines (police) Police/legal reports	Difference-in-differences event study design

Notes: For more details of each VAW Data see Appendix A.

While all eleven causal papers use some temporal variation in policy implementation to estimate the impacts of interest, Ravindran and Shah (2023) and Poblete-Cazenave (2020) are able to exploit a combination of both temporal and spatial sources of variation in the intensity of lockdowns, taking advantage of the fact that India classified districts using colours according to the severity of stay-at-home orders as the country relaxed the restrictions. Since Chile implemented rolling lockdowns, Bhalotra et al. (2022) can also evaluate impacts of both lockdown entry and exit, estimating dynamic impacts under treatment effect heterogeneity.

Most studies use data covering the entire country (all states or all municipalities), except for two studies that use data for a single city, Perez-Vincent and Carreras (2020) and Silverio-Murillo et al. (2020) for Buenos Aires and Mexico City, respectively.[11] Among the studies we classified as causal, only one uses cross-country

[11] As opposed to most of the available studies for high-income countries. For example, Leslie and Wilson 2020 exploit data for 15 large US metropolitan cities or areas; McCrary and Sanga 2021 examine 14 large US cities; Bullinger et al. 2021 focus on the city of Chicago, **?** on London, Piquero et al. 2020 on Dallas and Miller et al. (2020) on Los Angeles. One exception is Arenas-Arroyo et al. (2021), who analyze data for all Spanish autonomous communities. As large cities tend to be the ones where data becomes available faster, and tend to be more urban and richer than the rest of the country, those studies may not

data (Berniell and Facchini, 2021).

Regarding estimation methodology, one study adopted a regression discontinuity design and fixed effects model, another employed multivariate regression, and nine studies estimated a differences-in-differences or event study model.

3.2 Results and discussion

Table 4 provides, among other information on the analysed studies, the estimates of the percentage change in domestic violence. The different patterns between calls to helplines and police reports are particularly noteworthy. While calls to domestic violence hotlines increased, police reports decreased. As pointed out by Perez-Vincent and Carreras (2022), the pandemic seems to have had an important effect on the choice of reporting channels. Mobility restrictions, fear of contracting the disease on a long judicial process, and augmented economic insecurity may explain the reduced incentives in reporting incidents to law enforcement authorities. The relatively greater increase in psychological violence (see Perez-Vincent and Carreras 2020 and Gibbons et al. 2021) can also explain the preference for calls to domestic violence hotlines, as these types of incidents may be perceived by the victims as less urgent. Overall, the pandemic may have changed the benefits and costs of the different reporting channels.

In Perez-Vincent and Carreras (2022), the authors observe an increase in domestic violence hotlines and a decrease in the number of calls to emergency lines. One possible explanation is that a hotline, unlike an emergency line, offers support and information without necessarily leading to legal action or police involvement. The higher relative cost of police reporting can be explained by the low level of trust in the police in Latin America (Sung et al., 2022). According to an opinion survey by Gallup (2018), only 42% of Latin American respondents stated that they trust the local police, compared to 80% of respondents in Western Europe and 82% of respondents in the United States and Canada belief(Perez-Vincent and Carreras (2022), page 817).

As a benchmark, the findings from low and middle-income countries differ substantially from those in higher economies, as predicted by Piquero et al. (2021). For studies conducted in the U.S., the increase in domestic violence ranges from +0.60% to +38.15%, while for the LMICs, the increase ranges from +12% to +131%. In the United States, 15 out of the 25 positive changes are below +12%, six are between 12% and 20%, and only four are above 20%. COVID-19-related restrictions on mobility appear to have had a particularly high toll on women in LMICs.

be representative of trends in the general population and, therefore, their external validity is uncertain.

Table 4: Main characteristics of studies included in the review

Study #	Author(s)	Indicator	Location	Result
1	Silverio-Murillo et al. (2020)	DV hotline	Mexico City	↑ 17%
		DV police reports	Mexico City	↓ 22%
2	Agüero (2021)	DV hotline	Peru	↑ 48%
3	Perez-Vincent and Carreras (2020)	DV hotline	Buenos Aires	↑ 32%
4	Gibbons et al. (2021)	Web-based survey	Argentina	↑ 12% to 35%
5	Ravindran and Shah (2023)	NCW	India	↑ 131% red zone/green zone
6	Poblete-Cazenave (2020)	DV police reports	Bihar (India)	↓ 67%
		NCW	India	↓ 53%
7	Hoehn-Velasco et al. (2021)	NPSS reports	Mexico	↑ 20%
8	Berniell and Facchini (2021)	Google search	Argentina, Brazil, Chile, Colombia, and Mexico	↑ 30%
9	Asik and Nas Ozen (2021)	Probability of femicide	Turkey	↓ 57%
10	Bhalotra et al. (2022)	Calls	Chile	↑ 88%
		Occupancy of public shelters	Chile	↑ 10%
		DV Police reports	Chile	↓ 4.5%
11	Perez-Vincent and Carreras (2022)	DV hotlines	Buenos Aires	↑ 84%
			Colombia	↑ 127%
			Peru	↑ 16%
		Emergency lines	Costa Rica	↓ 10%
			Ecuador	↓ 16%
			Lima (Peru)	↓ 53%
		DV Police reports	Colombia	↓ 40%
			Ecuador	↓ 41%
			Uruguay	↓ 8%

Notes: As Silverio-Murillo et al. (2020) does not provide an aggregate effect for all calls, we present the impact on calls for psychological violence (17%). The results of Perez-Vincent and Carreras (2022) and Perez-Vincent and Carreras (2020) for the city of Buenos Aires differ for two main reasons: Perez-Vincent and Carreras (2022) analyses the period until June 2020 (two more months than Perez-Vincent and Carreras (2020)) and they assess how the effect altered according to the type of relationship between the victim and the perpetrator. Regarding the results for Peru, while Agüero (2021) uses monthly data from Línea 100, Perez-Vincent and Carreras (2022) uses daily data from this same DV hotline. Moreover, Perez-Vincent and Carreras (2022) also uses data from the national emergency line in Peru, Línea 105. The result on Calls (88%) in Chile reported by Bhalotra et al. (2022) is the average effect over the first three months following the lockdown.

4 Challenges faced by the existing literature

4.1 Data challenges

Knowledge of the scale of the VAW problem is the first step to guiding the implementation of adequate policy responses to prevent such violence and support its victims. If the quantification of VAW was already difficult before the pandemic, COVID-19 made it even harder.

Before the pandemic, victimization surveys that asked women about their experiences of violence were

often considered the most reliable source about the incidence and prevalence of VAW (Campedelli et al., 2021; Mohler et al., 2020; Payne and Morgan, 2020; **?**). As those surveys rely on randomly selected (stratified) samples, their results are representative of the general population. They are also more likely to be accurate than records of reported crimes, since they ask about the women's experiences, whether they have reported the violence to authorities or not. As such, these surveys are useful to measure the extent of the problem and to capture trends over time. Multi-country surveys allow comparing the risk of violence that women face in different settings and, as a result, facilitate an understanding of its similarities and differences. One limitation of existing victimization surveys is that they are not available in real-time and often do not gather detailed information about the victim (such as location).

Service-based or administrative data can provide valuable, and more recent, information that is often not obtainable through surveys.[12] Police records are often available with daily frequency or even in real-time, and in many cases contain granular information on location, age, occupation of women as well as about the perpetrators. Yet under-reporting of violence to the police remains an important concern for analyses based on such data (Podaná et al., 2010; UN Women, 2020).[13] Selection bias represents another limitation of administrative databases, as the women who report violence to the police, hospitals or support services tend to constitute the smaller sub-group of most seriously injured victims. Moreover, the pandemic may have changed the reporting behavior itself (Campbell, 2020). Social isolation reduced the opportunities for disclosing abuse: since in-person complaints could not be made, they were often replaced by phone and/or internet complaint channels. Family, churches and other institutions that offer emotional support were no longer available in many regions under stay-at-home orders.

Social media and internet search information have also been used to gauge VAW-related testimonials before and after social restrictions (Babvey et al., 2021; Bueno et al., 2020; **?**). Despite its innovative nature, such data also has limitations. First, users might have increased their internet activity during the pandemic, and as a consequence, posts about all topics might have increased, including testimonials or reports of domestic violence. Furthermore, since people increased their time at home during the pandemic, it may have become more likely for them to witness neighbours quarrelling and to post about such episodes on social media. Finally, as a potentially even more serious issue for analyses in LMIC contexts, social media posts

[12] These are data collected routinely by the public and private agencies that are contacted by women who have suffered violence (e.g. police stations, health centres, courts, shelters).

[13] Palermo et al. (2014) provide some estimated figures about under-reporting. They estimate that actual levels of physical and sexual gender-based violence among women of reproductive ages are likely to be 14 times higher than those estimated from combined formal sources, or 25 times higher than estimates from police reports, 67 times higher than estimates from medical facilities, and 33 times higher than estimates from service sources. The authors use data for 284,281 women in 24 countries, collected between 2004 and 2011.

are likely to be more representative of wealthier, urban populations, rather than rural populations or those living in poverty.[14]

4.2 Estimation challenges

As noted before, most of the causal papers use a canonical difference-in-differences (DD) model and/or a generalization of the canonical DD model (event study) to estimate the effects of social distancing measures, before and after these started to operate, on VAW outcomes. To this end, the studies take advantage of the fact that the policies in question can be considered to have had no specific date previously set for their implementation, or were not announced beforehand. The interest is then on the effects on VAW around or some time after the implementation dates of lockdowns and similar restrictions.[15]

A noteworthy exception is Gibbons et al. (2021). The authors take advantage of features of the Argentinean experience that facilitate an innovative and likely strong identification strategy. As the national government implemented a national and strict lockdown policy to control the disease, only essential activities (health care, food sales and delivery) were allowed to continue in-person. The authors exploit the variability in individual exposure to quarantine induced by this lockdown policy, defining "treatment" according to the quarantine status of women's partners. Through the application of a web-based survey aimed only at women who stayed at home, the authors are then able to compare women whose partners did comply with the stay-at-home order with women whose partners did not, evaluating also potential mechanisms for VAW effects.[16]

Some potential challenges exist, however, for the use of difference-in-differences estimation methods to credibly assess the impacts of COVID-19 movement restrictions on VAW, as pointed out by Goodman-Bacon and Marcus (2020). Firstly, people may decide by themselves to stay at home before any official restrictions take place, and these voluntary precautions can influence the outcomes of interest. Moreover, exposure to constant news about the pandemic, even without (or before) an official adoption of lockdown policies, may cause higher levels of anxiety and uncertainty within households, becoming potentially an additional source of bias for the trends observed in the control group before a lockdown. In the studies reviewed here that

[14] **?** attempt to address the limitations of service-based data about domestic violence by combining daily Google Trends data for a set of domestic violence-related search terms, with data on crimes recorded by the London Metropolitan Police Service. A possible constraint for the adoption of a similar methodological approach in LMIC contexts is the low frequency of Google searches (and of internet penetration more generally) in the poorest and/or rural locations.

[15] Poblete-Cazenave (2020) is an exception, in that the author adopted a sharp regression discontinuity design using the date of policy implementation as the running variable. He also estimated fixed effect regressions to evaluate the impacts of the severity of lockdowns on different types of crimes, including on violence against women.

[16] Increases in time spent with the partner and the partner's income were identified as the key mechanisms. Alcohol and drug consumption do not seem to have played a role.

have adopted an event study methodology, COVID-19 policies such as lockdowns have been treated as the only event that breaks the trend of the series. It is only if there were no other systematic changes over time beyond the policy, that the underlying difference-in-differences assumption of "common trends" in the outcomes of treatment and comparison groups can hold, and thus differences in outcomes between before and after the policy can be interpreted as causal. The fact that governments typically implemented several policies to protect women as soon as increases in VAW episodes began to be reported poses an additional challenge for the validity of causal inference. Clearly, the validity of the "common trends" assumption is not warranted in all contexts and requires careful scrutiny on a case-by-case basis.

While estimates of local average treatment effects at, or soon after, the enactment of social distancing measures are certainly valuable, the persistence of the pandemic has brought about additional challenges for applied research on the topic. As time passed, concerns with unemployment, inequality and poverty issues encouraged many LMICs to relax the restrictions initially imposed, transitioning to the adoption of different levels of restrictions across districts, municipalities or states. Researchers have been adopting promising strategies to deal with similar scenarios. In India, for instance, the initial (severe) restrictions were relaxed after some time, with the central government moving to classifying districts into three types of severity zones according to the number of cases and the level of propagation of the virus. The two papers reviewed here that focus on India exploit, for estimation purposes, the stages of the lockdown (time variation) as well as the geographic variation across districts in the restriction level. Districts in the same country can represent a good control group for empirical purposes if these districts differ from "treatment" areas only by the intensity of the restriction policy (and as long as other key observable confounders are controlled for in the analyses).

In most settings, it is not straightforward to separate the effects of social distancing policies on VAW from the effects of other pandemic-related consequences, such as higher unemployment, which can also lead to an exacerbation of VAW through heightened stress levels in the household and/or an increase in time spent at home (even in the absence of stay-at-home orders). To help address this identification problem, research should attempt to examine - as carefully as feasible given the available data - the specific mechanisms driving VAW changes. One such example is to seek to determine how much of any measured VAW effect of social distancing policies is mediated through a rise in unemployment driven by these same policies, and how much is due to any "direct effects" of unemployment (caused, for instance, by reduced or changed consumption patterns during the pandemic, and lower economic activity). The introduction of emergency fiscal measures, such as the the comprehensive emergency cash transfer policy implemented in Brazil in April

2020, can be exploited to help understand the direct influence of income shocks during the pandemic on VAW. Many countries have implemented similar measures, including Argentina, Chile, China, Colombia, France, Germany, Japan, South Africa, Spain and the United States, among others. Other strategies, such as (changes in) unemployment benefits and the introduction of related social protection measures, could also be used empirically to help disentangle lockdown effects from the impacts of income shocks for workers, as in Bhalotra et al. (2021) and Baranov et al. (2021).

Finally, endogeneity influencing compliance with social distancing policies at the individual level, in addition to measurement errors in the data examined, are potential issues that must be considered by applied researchers in this area.[17] There is a dearth of literature seeking to assess the magnitude of these issues for analyses of VAW patterns in the pandemic context, or otherwise addressing such issues through techniques that are standard in the impact evaluation literature, in particular instrumental variable estimation.

5 Lessons learned from the available evidence

5.1 Synthesis of findings

The discussion above highlights that the existing evidence for LMICs is not unanimous about the effects of social distancing policies on VAW. While increases in VAW have been identified in some contexts, in others the evidence points to no effect or even a reduction in VAW. Although the mixed nature of the evidence hints therefore at the importance of contextual factors tempering the link between social distancing and VAW, in general, most of the literature reviewed here has identified increases in VAW indicators where social distancing policies were stricter (Agüero, 2021; Perez-Vincent and Carreras, 2020; Ravindran and Shah, 2023; Poblete-Cazenave, 2020).

The mixed results for LMICs mirror the evidence for high-income countries, much of which focuses on the US setting. For instance, Leslie and Wilson (2020), McCrary and Sanga (2021) and Mohler et al. (2020) find an increase in domestic violence calls to the police in selected American cities. Ashby (2020) finds more mixed results: a rise in domestic violence police calls in three out of seven cities, with a reduction in one city, and no changes in three cities. Piquero et al. (2020) find that these calls increased during the initial stages of the pandemic and social distancing adoption, with a subsequent decrease.

[17] Endogeneity is also known as the confounding problem in some disciplines. It refers to the correlation between the explanatory variable and the error term, which can occur, for example, by the omission in the estimation model of a relevant variable that explains both adherence to lockdown (D) and incidence of VAW (Y). This situation "confounds" our ability to discern the effect of D on Y in naïve comparisons of outcomes. The same issue can occur if there are measurement problems in the variable D.

The mixed evidence above raises the question of how much the variation in results is due to differences in the particular VAW indicators examined, and how much can be attributed to actual differences in the incidence of VAW across cities/countries. Miller et al. (2020) compare several measures of domestic violence to not only determine the impacts of lockdown policies on domestic violence in Los Angeles, but also to understand the advantages and limitations of using different data available about domestic violence. The authors find that the effects of the initial lockdown differ depending on the VAW measure analyzed: whilst calls to the police and to the domestic violence hotline increased, the incidence of recorded VAW crimes decreased. Similarly, Bullinger et al. (2021) find conflicting results when examining police calls and VAW crime records in Chicago. Ivandic et al. (2020), however, find similar qualitative results (an increase in VAW) by examining either police calls or crime records for London.

As argued by Hoehn-Velasco et al. (2021), the difference between the results obtained for police calls and crime reports can be partially explained by the different features of alternative types of violence, for example due to physical violence being more likely to be the subject of an official crime report than psychological violence. Empirical work has suggested that in some contexts, VAW shifted towards psychological violence and away from physical violence during the pandemic. Arenas-Arroyo et al. (2021) find evidence that the COVID-19 pandemic increased the likelihood of victims suffering psychological violence in Spain, but did not change the likelihood of physical violence. Perez-Vincent and Carreras (2020) also find increased incidence only of psychological violence in Buenos Aires. Mohler et al. (2020) argue that the increase in calls to the police are most probably due to "domestic disturbances without violence". And for femicides, Asik and Nas Ozen (2021) find a decrease in the probability of occurrence, which the authors argue is explained mainly by the difficulties faced by ex-partners to reach victims as a result of the lockdown measures. In light of the existing evidence, future studies should attempt to rely on alternative sources and types of data that offer a more fine-grained picture of the phenomenon, in line with the messages from our discussion in subsection 4.1 and as advocated previously by Miller et al. (2020). A related lesson is that future applied research should carefully address the measurement issue, as high-quality data is crucial to monitor violence trends over time and to identify the most vulnerable victims.

From an alternative - and potentially complementary - perspective, Miller et al. (2020) argue that the ambiguity of the empirical evidence reflects the ambiguity in theory itself. The pandemic increased the costs to victims of reporting crimes to authorities or leaving the household, making it more difficult for victims to access support services as well. Lower reporting rates could, in turn, exacerbate the risk of abuse

(Miller and Segal, 2019) and make it more challenging for authorities to detect and respond to an increase in violence. On the other hand, stay-at-home policies may have reduced violence among ex-partners and among couples who do not live together, while also creating a barrier for new relationships. The expected costs for VAW perpetrators may also have increased if, for example, there was a higher perceived risk of becoming infected with COVID-19 in prison if the perpetrator was arrested. Finally, several new factors triggered by the pandemic may have contributed to changing the pattern of reported violence, such as the appearance of new access to social support, or the increased attention to the issue of domestic violence after the pandemic outbreak which could have affected the perception of VAW by neighbors and victims themselves. The counteracting direction of many of the possible impacts described above implies net effects of the social distancing policies (and of the pandemic itself) on VAW that are uncertain *a priori*, becoming ultimately an empirical matter in most contexts.

In sum, given the often nuanced links between VAW and pandemic-related responses, simply identifying changed trends in violence rates pre- and post-pandemic is hardly sufficient for actionable knowledge generation or policy guidance in a context like the COVID-19 pandemic. There is a need for action-oriented studies that identify and assess the relative importance of possible pathways to VAW, and the effectiveness of alternative mitigation strategies, so that effective public policies can be designed to protect potential victims.

5.2 Pathways

Our previous discussion outlines various pathways through which increases in VAW could occur during the pandemic and due to policies such as social distancing measures. Two of these pathways arise as the most important, judged by the weight of research evidence: the extended contact between VAW victim and her partner (often the potential perpetrator), and economic stress.

Responses to COVID-19 have led to an important decline in economic activity in many settings, with deleterious impacts on employment and income that may drive up the levels of VAW.[18] In poor settings, economic insecurity increases chronic stress and subsequently the risk of violence (Machisa et al., 2017). Yet the relationship between VAW and poverty is complex and also pertains to determinants of gender economic inequalities: while wealth can diminish the risk of VAW, female employment can exacerbate it (Cools and Kotsadam, 2017). Increasing the bargaining power of women can reduce the risk of violence exposure, but should be complemented with measures aiming at changing the subordinate status of women.

[18] Evidence showing that changes in the unemployment rate affect violence against women can be found e.g. in Anderberg et al. (2016). Baranov et al. (2021) provides a survey of the theoretical and empirical literature on the effects of cash transfer programs on intimate partner violence.

The importance of this economic channel and women's empowerment highlights the likely usefulness of initiatives such as targeted financial support packages offered to women within households under financial distress, to mitigate the potential VAW consequences of the pandemic itself and of social distancing policies. Evidence suggests that social protection programs targeted to women among the poorest household can significantly decrease the prevalence and frequency of VAW (Peterman et al., 2022), especially if combined with simultaneous programs aimed at reducing male controlling behaviour over women (Fakir et al., 2016).

Quarantine measures have also been identified as a potential determinant affecting VAW during the COVID-19 pandemic. Self-isolation has been associated with an increased risk of anxiety and mental health disorders, which could have then also triggered a higher level of VAW. Likewise, increased time spent at home is another channel that is often analysed in the literature, and which could dramatically augment the risk of violence through higher confrontations. On the other hand, evidence suggests that the ban on the sale of alcohol is negatively associated with violence.

While these mechanisms have been examined in different contexts across many studies, it remains unclear how changes in VAW can be attributed to each channel. While the COVID-19 pandemics exacerbated socioeconomic disparities, it also increased the risk factors of VAW across different subpopulations. Economic insecurity, employment, self-isolation, anxiety and uncertainty about the future have all been triggered at once by the COVID-19 pandemic. They are often interrelated, and limited data availability often prevents studies from exploiting clear variations in each channel to produce causal estimates.

6 Conclusions and directions for future research

In this paper, we revise the literature that evaluates the impacts of COVID-19 social distancing measures on VAW. One of the most relevant challenges for this literature is that of separating the impact of stay-at-home measures from the income and emotional shocks that have also emerged directly from the pandemic. Few papers have explored the pathways that link social isolation measures to changes in VAW incidence. These are promising avenues of research, where innovative methods and data can help disentangle the channels for the effects on VAW.

For the above, more effort needs to be devoted to the accurate recording and quantification of VAW episodes, especially in times of crisis. While the use of service-based data can be valuable for research in the field, reporting issues with these data sources (including under-reporting and measurement error) need to be well understood in any study context, to help interpret the empirical results and understand the limitations

of the research. The paucity of data sources in some settings can limit the analysis of trends in VAW during the COVID-19 pandemic. Results produced by studies with different types of information sources must be contextualised, for example to account for situations where the number of reports made over the telephone or Internet has increased, while in-person reporting has decreased due to COVID-19 movement restrictions.

Examining high-quality data about the unintended VAW consequences of COVID-19 movement restrictions and other pandemic-related policies, through methodological approaches that allow causal links to be drawn in a given analytical context, is a pressing matter for informing policy options that can address these potential harmful consequences, both in LMICs and globally. The generation of further, robust research evidence in the area is paramount to provide actionable guidance for the tailoring of policies that are able to protect vulnerable women in a specific country, as well as to inform the generalization of conclusions to other national contexts.

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Appendices

A Data Appendix

1. Silverio-Murillo et al. (2020)

   Línea Mujeres: is a call-center service that provides legal, psychological and medical advice to women for a variety of issues such as government procedures, labour inquiries, and domestic violence in Mexico.

2. Agüero (2021)

   Línea 100 is a helpline for victims of domestic violence, which connects the caller to a trained operator who records the call and whenever necessary refers the caller to the nearest women shelters in Peru(Centros de Emergencia Mujer).

3. Perez-Vincent and Carreras (2020)

   Línea 137 is a toll-free service to report domestic or sexual violence. Officially the line has national coverage, but the registered calls for the study were only from the city of Buenos Aires.

4. Gibbons et al. (2021)

   Web-base survey: Confidential web-based survey in Argentina. The survey asks about domestic violence before the lockdown and also two months since the beginning of the lockdown. It has questions on physical, sexual and emotional violence.

5. Ravindran and Shah (2023)

   National Comission for Women - NCW: is the national level organization and statutory body of government of India responsible for promoting the interests of women. Complaints to NCW can be made by phone, emails, social media or in person. During the lockdowns in person registrations were not possible.

6. Poblete-Cazenave (2020)

   FIR (First Information Reports – Bihar Police Deparment): is a document prepared by the police when it receives a report of a criminal offence. Crimes are categorized (murder, theft, robbery, burglary, kidnapping, rioting, violence against women, against public health, as willfully poisoning food or water, for example) and aggregated at the police station-level for each day, based on the date of the incident.

7. Hoehn-Velasco et al. (2021)

   National Public Security System - NPSS or Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública in spanish is a national repository for all crime reports in Mexico that centralizes all information and homologates different states' criminal law.

8. Berniell and Facchini (2021)

   Google search measure: A Google search intensity index of DV-related topics. They calculate this index by analyzing the fraction of all Google searches related to DV matters, for instance, searches for the DV hotline in each country.

9. Asik and Nas Ozen (2021)

   Female homicides: Indicator from the "Male Violence Monitoring Portal", a database specifically dedicated to violence against women in Turkey, maintained by Bianet, an independent media outlet.

10. Bhalotra et al. (2022)

    Línea 149 - Fono Familia: A police-managed DV helpline in Chile.

11. Perez-Vincent and Carreras (2022)

    Línea 105 : national emergency line in Peru.

    Línea 155: a hotline for women victims of domestic violence in Colombia.

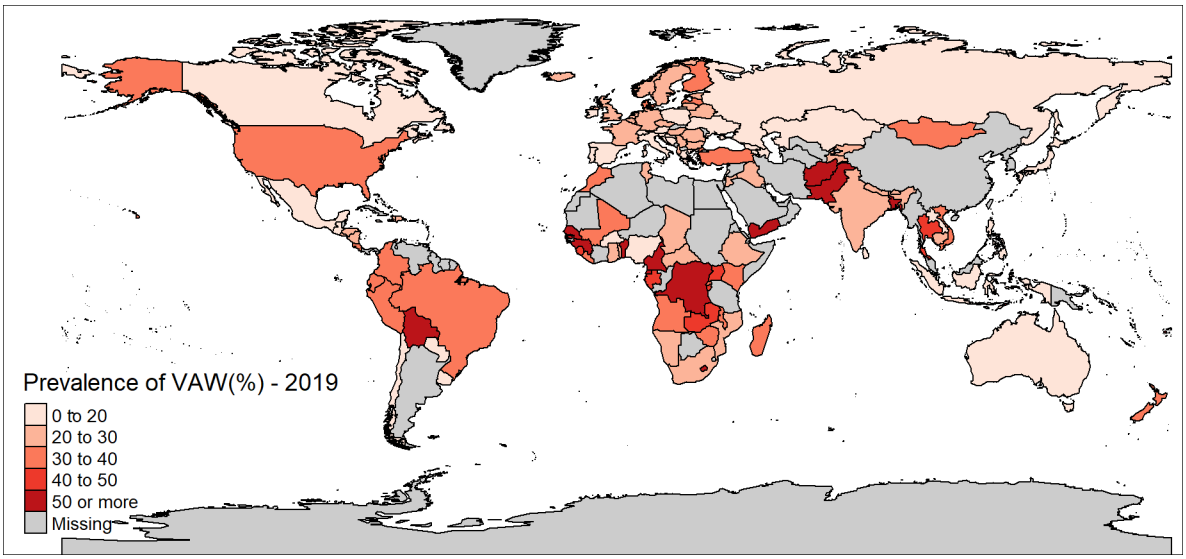
    911 : national emergency line in Costa Rica.

    ECU911: national emergency line in Ecuador.

    Police reports: Colombian National Police adminstrative records, police/legal complaints collect by the Genearal Attonry's Office (Fiscalía General) in Ecuador, reports received by the Ministry of Interior in Uruguay.

B Figures

Figure B1: Percentage of ever-partnered women who ever suffered intimate partner physical and/or sexual violence, 2019.



Source: OECD, accessed in July 2021. Data available here