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

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November 17, 2023

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 incipient but rapidly growing literature that evaluates the effects of stay-at-home measures to reduce the spread of COVID-19 on VAW. We focus on low and middle-income countries and classify existing studies into three categories according to the quality of the data used and the reliability of the empirical methodology: not causal, less causal, and causal. Overall, the most rigorous literature for low- and middle-income countries offers mixed evidence about the VAW effects of stay-at-home measures, although increases in VAW have been more frequently observed where stay-at-home measures were stricter. Important reasons for the mixed evidence found in the literature seem to be the different types of violence analyzed (physical, sexual, psychological, or economic) and the difficulties associated with the reporting of these types of VAW. The main methodological challenges faced by this literature relate to data availability and the reliability of the methods employed to separate the effects of social isolation on VAW, from those VAW effects associated with the income and emotional shocks induced by the COVID-19 pandemic. Innovative methods and data can help improve our understanding of the unintended VAW consequences of movement restrictions, including its key pathways, so as to reliably inform the design of better 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"
- Four out of nine causal studies report higher increases in indicators of violence against women where stay-at-home measures were stricter
- 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) is 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 (**UNWomen2021**).

Domestic violence (DV), also known as intimate partner violence (IPV), 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; **UNWomen2021**).[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 or 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]

[1] Domestic violence 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).

VAW is a major public health problem. The UN estimates that 1 in 3 women experience physical and/or sexual violence in their lifetime, mainly by an intimate partner (**world2013**). 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 are found to be at an increased risk of depression, alcohol disorders, low birth-weight baby, and contracting sexually transmitted diseases (World Health Organization, 2013). Figure A1 in the appendix shows the percentages of ever-partnered women who ever suffered intimate partner physical and/or sexual violence in 2019 using data from **world2013**. 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 for instance.

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 the 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

[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.

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 responding to the restrictions introduced to address the spread of COVID-19, in particular to social distancing measures such as stay-at-home advice, quarantines and lockdowns. 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). 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 bring about 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. We also identify the main challenges for disentangling the underlying mechanisms linking social isolation to VAW. Our review builds on the work by

Peterman, O'Donnell, and Palermo (2020), who advocate 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 useful to guide appropriate policy responses, if the underlying empirical investigation has been designed and conducted with the intention, and ability, of identifying causal effects. 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.

Previous reports (Peterman, O'Donnell, and Palermo, 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 differs from these previous (basically 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 follow the organizing principle suggested by Channa and Faguet, 2016, and classify existing studies according to the quality of their data and the reliability of their identification strategies.

The remainder of this paper is divided in four sections. Section 2 describes how we selected the literature and the criteria we adopted to classify the studies. It distinguishes 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, as well as of the key methodological challenges for research on the topic. Section 4 summarizes what we have learned so far from the existing evidence and the main knowledge gaps. Section 5 concludes.

2 Methodology of review

2.1 Identifying the literature

Since violence against women is a topic of interest for researchers in various fields, we broadened our search to include papers from disciplinary fields extending from Economics to the social sciences more generally and beyond (e.g. global health, criminal justice). To this end, we used as a basis the articles listed in the research round up reviews by Petterman and others, covering 100 studies as outlined in the following table:

Table 1: Categories into which Peterman's works are divided

Groups	Studies	LMICs	Children
A: Impacts of COVID-19 or associated response measures on VAW/C[5]	59	27	14
B: Surveys of service providers' perceptions and public attitudes towards VAW/C[6]	10	2	1
B': VAW/C dynamics during COVID-19[7]	5	1	0
B": VAW/C experiences and risk factors during COVID-19[8]	26	21	5
Total	100		

List of papers available at Bourgaut et al., 2021; Peterman and O'Donnell, 2020a,b; Peterman, O'Donnell, and Palermo, 2020

We then went through the National Bureau of Economic Research (NBER) working paper series, which keeps track of the emerging economics research output related to the COVID pandemic[9]. We opted for this strategy because much of the emerging literature of interest is unlikely to have been published already in peer-reviewed journals, given the typical timelines for publication e.g. in social science outlets.[10] Finally, we searched the Econlit[11] database for published and unpublished papers, using the search term "domestic violence covid". From the latter we were able to find six additional papers.

Of the 106 studies in total identified from our search strategy, we excluded those that focus on violence against children and those that were not concerned with the impacts of COVID 19 or associated response measures on VAW. This selection resulted in the list of 65[12] papers detailed in Appendices A1 and A2. We then further narrowed down the selection of papers to include only those referring to LMICs. As it is clear from the series of research round-ups by Peterman and colleagues, the literature for LMICs has followed with some lag the one for high-income countries. In the first round up only one out of 12 studies was about VAW on LMICs, while the fourth research round up was devoted mainly to a review of the evidence for LMICs (for example, all 15 new studies added focused on identifying trends in domestic violence in LMICs). This process resulted in a final selection of 25 papers for the purposes of our assessment of the quality of methodological identification strategy and in-depth review. These papers are outlined in the last column of the list in Appendices A1 and A2.

[5] All rounds up
[6] First and second round up
[7] Second round up
[8] Third and fourth round up
[9] Available at https://www.nber.org/nber-studies-related-covid-19-pandemic-topic-area
[10] More than 480 working papers related to the pandemic were available in the NBER repository by the end of October 2021.
[11] EconLit is a well known and respected bibliographical database of studies in the Economics and related literature.
[12] 59 from Peterman's works corresponding to studies mentioned in line A of Table 1 and 6 additional from NBER and Econlit.

2.2 Assessing the quality of the identification strategy

For assessing 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 the empirical approaches used, based on two important criteria: the (quality and type) of the data used and the econometric identification strategy. We constructed a three point scale: *not causal*, *less causal* and *causal*. The papers classed as *not causal* do not attempt to establish causal effects but provide descriptive evidence accompanied by some simple statistical tests. These papers also do not tend to discuss the limitations of the data used, and often rely on a single dataset (e.g. online surveys) that are not representative of the larger population of interest. The papers classified as *less causal* are the ones that make attempts 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.

The 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 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 make attempts to identify the mechanisms through which social distancing policies affect VAW: 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 country-wide administrative data sets, and ideally combine these with other sources of data, for example, surveys specifically designed to investigate VAW.

2.3 Final classification of the papers: not causal and less causal studies

By applying the above criteria, we classified as *not causal* 12 studies.

Socea et al., 2020 for Romania and Zsilavecz et al., 2020 for South Africa present annual comparisons of trauma cases associated to domestic violence before and after COVID-19, without attempting to attribute these changes to the lockdown policies. Rashid et al., 2020 use data from 51 interviews (44 women and 7 men) conducted with residents of six selected slums in Dhaka, Bangladesh. Halim et al., 2020 collect phone survey data across 6 provinces in Indonesia; unfortunately, in addition to not being nationally representative, the survey does not ask direct questions about violence, using proxy questions instead. Aolymat, 2021 use data from an online self-administered survey of 200 women in Jordan and discuss self-reported trends.

Pattojoshi et al., 2020 provide descriptive statistics from an eight-day online survey in India. Mahmud and Riley, 2021 use a sample of households in rural Uganda that were surveyed in-person right before the lockdown and followed in May 2020 by phone. They ask respondents about the impact of the lockdown on their wellbeing measured by the incidence of any major argument with the spouse. They also ask respondents how many times per month they think a man in their village physically abused his wife. By combining the responses to these two questions, the authors conclude that there is suggestive evidence that DV increased, although the survey does not have any direct question about own experience of IPV. **UNWomen2021** examine big data about people's search behavior on VAW related topics for Bangladesh, India, Indonesia, Malaysia, Nepal, Thailand, The Philippines and Singapore. The different rates of internet penetration and use across countries, along with the increase in internet usage after the pandemic, are two important limitations for the validity and generalization of the study results.

Three other studies include some form of statistical testing. Mahmood et al., 2021 analyze information from an online survey among 346 women in the Kurdistan region of Iraq. However, the sample in this study is likely to under-represent women who did not have internet access and who may be particularly vulnerable to violence (less educated women, lower paid, and women living in rural areas). Sharma and Khokhar, 2021 conduct a cross-sectional study with 94 individuals for India, collecting data through an online questionnaire

using Google Forms. Adding to the small sample size, there is also an inevitable selection bias as only literate people with internet access could answer the questionnaire. Venter et al., 2021 compare the volume of trauma cases due to interpersonal violence observed between 1 February 2020 and June 2020 to the same period in 2019. However, the sample is very restricted, namely cases from an academic tertiary hospital in an urban setting (Guateng Province, South Africa). Hamadani et al., 2020 use a sample from a cohort of families previously enrolled in a randomised controlled trial of children to participate in a program of iron supplementation in Rupganj Upazila, rural Bangladesh. They evaluate the effects of COVID 19 on several aspects, including IPV. Yet while the authors provide some statistical tests for other outcomes, they report only descriptive statistics (self-reported trends) for IPV among mothers.

We classified four studies as *less causal*.

Abuhammad, 2021 uses cross-sectional data gathered through an on-line self administered survey of the Jordanian population to investigate VAW during the spread of the COVID-19 outbreak. This study focuses only on measuring the incidence of VAW between May and July 2020 and determining general predictors of VAW using a multiple regression test, without investigating changes in trends of VAW.

By contrast, Dai et al., 2021 study the changes in police calls before, during and after the lockdown in a city in the Hubei province, China.[13] They employ a combination of time-series approaches. Firstly, they use ANOVA tests to evaluate if the changes in the average number of calls before-during-after lockdown are statistically different. Secondly, 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 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.

Fereidooni et al., 2023 follow up Iranian women that answered a population-based intimate partner violence survey conducted before the pandemic. Whilst the authors compare the prevalence of IPV pre-pandemic and six months into the pandemic, they do so through simple comparison of means that cannot be interpreted as establishing a causal relationship. Another limitation is the use of data for just one city (Isfahan). Nonetheless, a distinctive characteristic of the paper is the concern with the potential mechanisms for IPV risk during the pandemic, which the authors attempt to investigate through a multivariate binary

[13] They examine different types of calls: crime-related calls, public security-related calls, traffic-related issues, domestic violence calls, dispute-related calls, others.

logistic regression to identify the effects of main exposure variables (own job loss, partners' job loss, and pre-pandemic socioeconomic status) on IPV, controlling for several variables.

Qin et al., 2020 test the hypothesis that the effects of the pandemic are not immediate, but instead lagged for countries that experienced the pandemic earlier. They use two different data sets. First, the official daily data on help-seeking related to domestic violence from Southern China. Second, Google Trends search data as proxies for domestic violence incidence in Australia, Canada, the United Kingdom and the United States. They conduct a series of linear regressions where daily domestic violence data are regressed on daily new COVID 19 cases from t-1 to t-90 days. The authors do not add control variables and do not attempt to address the influence of other unobservable factors that may be driving domestic violence.

3 Review of the available causal evidence for LMICs and challenges for the related literature

3.1 Overview

Only nine out of 25 studies are classified as *causal* according to the criteria previously defined.

Although, in most of the nine causal studies, higher increases in VAW were identified where social distancing policies were stricter, the differences in the magnitude of VAW impacts reported highlight the importance of contextual factors, as well as of variations in the nature of the VAW data examined. Specifically, Agüero, 2021 found an increase of 48% in the incidence rate of calls to a domestic violence hotline in Peru. For Argentina, Perez-Vincent and Carreras, 2020 identified a rise of 32% in the overall number of calls to the domestic violence hotline, and Gibbons et al., 2021 increases between 12% and 35% in reports of intimate partner violence through a confidential web-based survey, depending on the type of violence (emotional, physical or sexual). An increase of 30% in the Google search intensity index for topics related to domestic violence was found for the five largest Latin American countries (Argentina, Brazil, Chile, Colombia and Mexico), United States and the five largest European countries (Berniell and Facchini, 2021). On the other hand, Asik and Nas Ozen, 2021 found a reduction of about 57% in the probability of an intimate partner killing a woman in Turkey, while Poblete-Cazenave, 2020 identified a decrease of 67% in crimes against women reported at police stations of the Bihar Police Department in India.

In total, four of the nine causal studies report a rise in different indicators of VAW, whilst another three studies found reductions in alternative VAW measures. The latter group includes a study for Mexico where a

non-linear pattern of change in VAW is identified (a U-shaped trend), resulting in overall reductions for the study period of 20% and 13%, respectively, in femicides and domestic violence episode reports per 100,000, registered in the National Public Security System. (Hoehn-Velasco et al., 2021). The remaining two other studies either find mixed results – an increase in complaints received by the National Commission for Women but a reduction in Rape Sexual Assault episodes for India (Ravindran and Shah, 2023) – or, for Mexico, no changes in domestic violence-related hotline calls, accompanied by a U-shaped trend in the number of official police reports of domestic violence, with an initial decrease followed by a rise in that number (e.g. Silverio-Murillo et al., 2020).

Only three studies explore the broader effects of COVID-19 on crimes against women beyond domestic violence (Hoehn-Velasco et al., 2021; Poblete-Cazenave, 2020; Ravindran and Shah, 2023), whereas only two studies offer evidence on the mechanisms for the observed evidence of changes in crime reporting (Hoehn-Velasco et al., 2021; Silverio-Murillo et al., 2020).[14]

While all nine 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.

In terms of data, most papers focusing on LMICs exploit call center service data as the main source of information (Silverio-Murillo et al., 2020, for Mexico City; Agüero, 2021, for Peru; and Perez-Vincent and Carreras, 2020, for Argentina). This is followed by data from complaints to the National Comission for Women (Poblete-Cazenave, 2020 and Ravindran and Shah, 2023, for India), survey data (Gibbons et al., 2021, for Argentina; and Ravindran and Shah, 2023, for India), administrative data from public offices (Hoehn-Velasco et al., 2021, for Mexico) and police reports (Poblete-Cazenave, 2020, for India). Most of the studies use data covering the entire country (all states or all municipalities)[15], as opposed to most of the available studies for high-income countries.[16] Among the studies we classified as causal, only one uses

[14]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, Segal, and Spencer, 2020, Mohler et al., 2020, Piquero et al., 2020, McCrary and Sanga, 2021.

[15]Only Perez-Vincent and Carreras, 2020 and Silverio-Murillo et al., 2020 used data for a single city (Buenos Aires and Mexico city, respectively).

[16]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, **anderberg2020** on London, Piquero et al., 2020 on Dallas and Miller, Segal, and Spencer, 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 be representative of trends in the general population and, therefore, their external validity is uncertain.

cross-country data (Berniell and Facchini, 2021).

Regarding estimation methodology, only one study adopted a regression discontinuity design and fixed effects model, another employed multivariate regression, and seven other studies estimated a difference-in-differences/event study model. Table 2 provides a summary of the characteristics of the nine *causal* papers selected for in-depth review; further details of their characteristics and conclusions are presented in the next subsection.

3.2 Impacts of COVID-19 social distancing measures on VAW and explanatory mechanisms

We discuss each of the nine selected causal articles in this subsection, focusing mainly on the quality of the identification strategy adopted and evidence generated.

1. Using administrative data from Línea Mujeres[17], Silverio-Murillo et al., 2020 find that stay-at-home measures did not have any effect, on average, on IPV-related calls in the 16 municipalities of Mexico City. However, there is evidence of heterogeneity in the effects. IPV calls requesting psychological services and legal services did not change immediately, but increased and decreased, respectively, after some weeks of confinement. Starting from the third week of confinement, six municipalities implemented measures restricting alcohol sales, but the authors are not able to find evidence that the prohibition imposed on alcohol sales had any effect on IPV calls[18].

2. Using administrative data from Línea 100[19], a domestic violence hotline in Peru, Agüero, 2021 finds evidence that the incidence rate of these calls between April and July 2020 was 48% higher than pre-lockdown and accelerated with the duration of the stay-at-home policy. This rise did not seem to be driven by any specific state or by baseline characteristics.

3. Using administrative data from Línea 137, the national domestic violence hotline in Buenos Aires (Argentina)[20] Perez-Vincent and Carreras, 2020 find evidence that the lockdown led to a significant

[17]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.

[18]There is a strand of literature that argues that alcohol-related restrictions can reduce violence against women. Livingston, 2010 finds evidence that the density of liquor licenses is positively associated with IPV in Melbourne, Australia. Cunradi et al., 2011 find an association between off-premise alcohol outlets and increase in IPV-related police calls and crime reports in California.

[19]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 (Centros de Emergencia Mujer).

[20]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.

Table 2: Papers classified as Causal

Authors	Location	Data	Methods	Indicator(s)	Finding	Measures of social isolation
Silverio-Murillo et al.2020	Mexico City, Mexico	Domestic violence call center data	Event study estimator	Domestic violence calls for psychological services	Increases	-
		Domestic violence call center data	Event study estimator	Domestic violence calls	No change	
		Domestic violence call center data	Event study estimator	Domestic violence calls for legal services	Decreases	
Agüero, 2020	Peru	Phone calls to the national hotline	Difference-in-difference	Domestic violence	Increase	Google's Community Mobility Report
Gibbons et al. 2020	Argentina	Primary survey data (online survey)	Multivariate regression	Any IPV	Increase	-
				Emotional IPV	Increase	
				Sexual IPV	Increase	
				Physical IPV	Increase	
Perez-Vincent & Carreras 2020	Buenos Aires, Argentina	Phone calls to the national hotline	Difference-in-difference	Domestic violence	Increase	-
Ravindran & Shah, 2020	India	District-level administrative data on complaints paired with Google data	Difference-in-difference	Domestic violence	Increase	Google Community Mobility Reports
				Cybercrime	Increase	
				Rape	Decrease	
				Sexual assault	Decrease	
Berniell & Facchini 2020	Argentina; Brazil; Chile; Colombia; France; Germany; Italy; Mexico; Spain United Kingdom; United States	Google search data; google mobility data	Event study analysis; difference-in-difference	Domestic violence	Increase	Google Mobility Data
Poblete-Cazenave	India	Police reports	RDD, Fixed Effects	IPV	Decrease	Strigency Index
Hoehn-Velasco	Mexico	National Public Security System	Event study analysis	Femicide	Decrease	-
				Domestic Violence	Decrease	
Asik-Nas Ozen 2021	Turkey (81 cities and 15 Metropolitan cities)	Female homicides, "Male Violence Monitoring Portal", by Bianet, an independent media outlet	Difference-in-difference + Event Study	probability that a woman is killed on a given day in a given city	Decrease	Google COVID-19 Community Mobility Reports

increase of 32% in the calls, which could be due primarily to an increase in the reporting of psychological violence, not necessarily physical violence. They also find a substitution in reporting channels, as reports at police stations became almost impossible due to stay-at-home orders. Calls to the hotline received from the police fell 62% after the lockdown, while calls made directly by the victims increased 127%.

4. Gibbons et al., 2021 use data from a confidential web-based survey in Argentina[21]. The identification strategy exploits the variability in partners' exposure to stay-at-home measures. Although Argentina was under a complete compulsory national lockdown, certain services continued to operate normally (health care services and food sales). All women in the sample are under quarantine orders, whilst a part of the men is under quarantine, and a part is not. The authors argue that the non-quarantine group (men employed in quarantine-exempted activities, women at home) is a good counterfactual for the quarantine group (men at home, women at home) in the absence of quarantine, conditional on the set of pre-lockdown variables.[22] The results indicate that women whose partners are at home are more likely to report domestic violence. This effect is general for all types of violence, although the sizes of the estimated effects are quite different (emotional, sexual and physical violence reports were 12%, 35% and 23% higher, respectively). The study also explores the channels through which the lockdown could have affected domestic violence[23]. The effect of lockdown on domestic violence seems to be explained only by the increased time spent together, which might have amplified tensions and opportunities to engage in violent behaviour.

5. Ravindran and Shah, 2023 explore temporal and spatial variation in the intensity of lockdowns in India, as the government moved towards different restrictive measures, classifying districts using colors according to the severity of stay-at-home orders (green, red, and orange zones). Using data on complaints made to the National Commission for Women (NCW), the authors consider a broad set of indicators of violence and crimes against women. They find evidence of an increase in domestic violence and cyber-crimes by 131% and 184%, respectively, with higher increases in districts under the strictest movement restrictions. The authors also find reductions in rape, and sexual assault complaints, with a possible explanation being the reduction in the number of people in public spaces and public transportation.

[21] 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.

[22] From the survey, the authors obtained self-reported information on marital status, number of children, number of rooms in the home, number of people cohabitating, own age, partner's age, own maximum level of education, partner's maximum level of education, and the province of residence.

[23] Five potential pathways are considered: increase in time spent together, increase in alcohol and drug consumption, change in the number of household members, decrease in the family's income, and reduction in the partner's income.

They also use data from the National Family Health Survey to explore the role of attitudes toward domestic violence in explaining the changes in complaints during lockdown.[24]. Attitudes toward domestic violence seem to play an important role in the incidence and reporting of domestic violence during the pandemic. Greater increases in domestic violence complaints received by the NCW were observed for districts in which a greater proportion of husbands viewed domestic violence as justified.

6. Poblete-Cazenave, 2020 analyzes two different databases. Using the First Information Report (FIR)[25] for the state of Bihar, India, the author finds that the initial lockdown substantially reduced some types of crimes. The subsequent relaxation of restrictions towards three differently stringent stay-at-home orders led to changes in the picture. The more restrictive red zones experienced an increase in economically-motivated crimes (theft and burglary), but not on violent crimes (murder and robbery), than less restrictive zones (orange and green zones). The more restrictive lockdowns also produced a larger increase in VAW compared to less restrictive zones.

   Using the NCW data for all Indian districts, the same database used by Ravindran and Shah, 2023, the author finds that the lockdown initially decreased VAW. VAW episodes increased, however, by 108

7. Using data from Mexico's National Public Security System (NPSS)[26], Hoehn-Velasco et al., 2021 find that lapses in alimony, sexual crimes, and domestic violence decreased during the lockdown by 59%, 28% and 20%, respectively. However, after reaching a minimum, these offences returned to levels observed before the pandemic. Femicides did not show this U-shaped trend and remained relatively constant during the whole period of study. As for the mechanisms behind changes in VAW, the study finds that after the ban on the sale of alcohol, the drop in domestic violence was more significant. Fear of infection seems to have reduced the reporting of domestic violence, judged by an observed decline in reported episodes in areas with a higher prevalence of COVID-19 cases. The authors argue that a lower likelihood of victim-criminal match due to isolation, especially in larger cities where the number of daily social interactions tends to be higher, and the increased risk of COVID infection, can explain the reduction in sexual offences. The banning of alcohol sales also seems to have contributed to reduced

[24]The survey gathers self-reported responses to questions posed separately to husbands and wives. It asks whether a husband is justified in hitting or beating his wife in a number of situations, including neglect of the house or children, improper cooking, disrespect for in-laws, and refusal to have sex.

[25]FIR 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.

[26]NPSS is a national repository for all crime reports in Mexico at the municipal level. Regarding crimes against women, it includes failure to pay alimony, sexual crimes (rape and sexual assault), domestic violence, and femicides.

reports of sexual assault and rape. The only statistically robust decline found in femicides occurred in states with higher losses in male employment.

8. Berniell and Facchini, 2021 use a sample of 11 high-income and Latin American countries with different incidences of domestic violence before the pandemic and varied lockdown intensities.[27] In order to overcome the absence of comparable cross-country data about domestic violence incidence, the authors use a Google search intensity index about domestic violence-related topics. They find evidence of an increase in search intensity for domestic violence topics after the stay-at-home orders. The increase in such search intensity tended to be greater in high-income countries than in Latin American countries.

9. Asik and Nas Ozen, 2021 use information about female homicides from the "Male Violence Monitoring Portal", a database specifically dedicated to violence against women in Turkey, maintained by Bianet, an independent media outlet. The authors employ difference-in-differences and event study modellings to estimate the probability that a woman was killed on a given day in a given city. Their results indicate a decrease in this probability mainly for intimate ex-partners as perpetrators, and no impact for other perpetrator types.

3.3 Challenges faced by the existing literature

3.3.1 Data challenges

Knowledge of the scale of the VAW problem is the first step to guide 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 (**piqueroriddell2020**; 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 given that 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

[27] Argentina, Brazil, Chile, Colombia, Mexico, France, Germany, Italy, Spain, the United Kingdom and the United States.

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.[28] 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).[29] 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 (**anderberg2020**; Babvey et al., 2021; Bueno et al., 2020). Despite its innovative nature, this type of 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 have been spending more time at home during the pandemic, they may be more likely 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 are likely to be more representative of wealthier, urban populations, rather than rural populations or those living in poverty.[30]

[28] 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).

[29] 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.

[30] **anderberg2020** 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.

3.3.2 Estimation challenges

As outlined in Appendices A1 and A2, most of the papers reviewed here 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 start 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.[31]

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.[32]

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 in the absence of (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 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 systemic 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

[31] 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.

[32] 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.

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 have 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.[33] 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.

4 Lessons learned from the available evidence

4.1 The 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; Poblete-Cazenave, 2020; Ravindran and Shah, 2023).

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.

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, Segal, and Spencer, 2020 compare several measures of

[33] 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 modelling of a relevant variable that explains both adherence to lockdown (D) and the explained variable of 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.

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, therefore, it seems important for studies in the field to rely on alternative sources and types of data to offer a more fine-grained picture of the phenomenon, in line with the messages from our discussion in subsection 3.3.1 and as advocated previously by Miller, Segal, and Spencer, 2020. A related lesson is that future applied research should pay more attention to 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, Segal, and Spencer, 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 is a perceived higher risk of becoming infected with COVID-19 in prison if the perpetrator is arrested. Finally, increased attention to the issue of domestic violence after the pandemic outbreak might have led to an increase in the reporting rates 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.

4.2 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 evidence available: 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.[34]. 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, women's 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 female.

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, Valli, et al., 2022).

[34]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.

Quarantine measures have also been identified as a potential determinant affecting VAW during the COVID-19 pandemics. Self-isolation has been associated with an increased risk of anxiety and mental health disorders, and 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 aclohol 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. Economic insecurity, employment, self-isolation, anxiety and uncertainty about the future have all been triggered at once by the COVID-19 pandemics. As they are often interrelated, and limited data availability often prevents the analyses from exploiting clear variations of each channel to produce causal estimates.

5 Conclusions and directions for future research

In this paper, we revise the incipient but growing 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 also emerge directly from the pandemic. Few papers explore 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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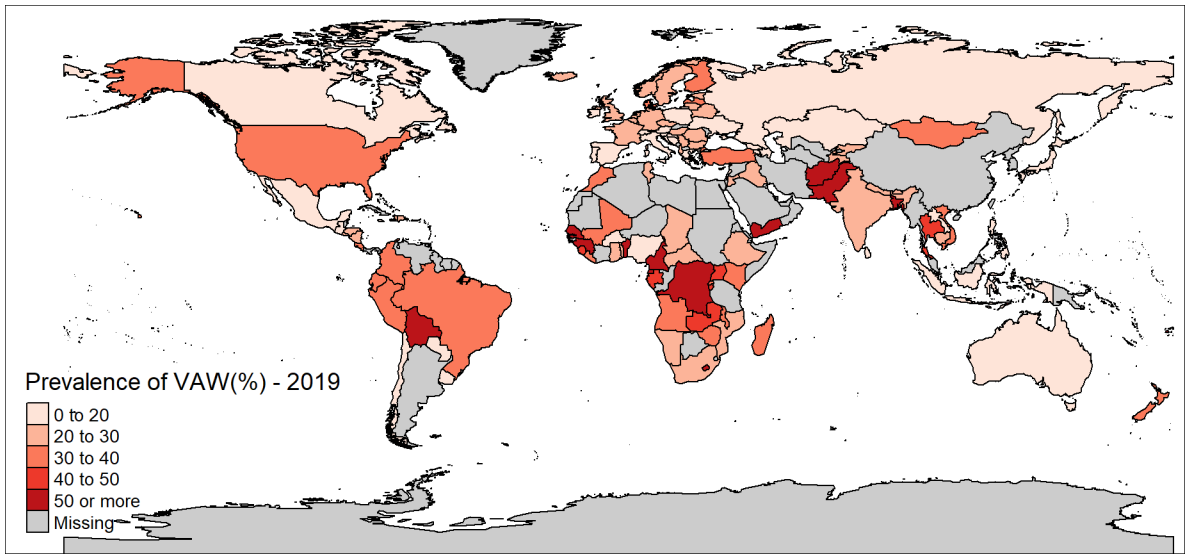
Appendices

Figure A1: 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

Table A1: List of Papers - part 1

Number	Authors	Location	Data	Methods	Indicator(s)	Finding	LMICs	Only children?	Only Risk factors?	Measures of social isolation	Selected Studies
1	Leslie & Wilson, 2020	15 cities, United States	Police service calls	Difference-in-difference	Domestic violence	Increases	No	No	No	SafeGraph (cellphone data), Unacast (cellphone data), OpenTable (restaurant reservation), Google search on "social isolation"	
2	Mohler et al. 2020	Los Angeles & Indianapolis, United States	Police service calls & reported crime	Difference-in-difference	Domestic violence	Increases	No	No	No	Google residential mobility indices	
3	Rashid et al. 2020	Dhaka, Bangladesh	In-depth interviews	Qualitative	Domestic violence	Increases	Yes	No	No	-	Yes
4	Ashby 2020(a)	Seven cities, United States	Police service calls	ARIMA	Domestic violence/ family disputes	Increases in 3 cites; decreases in 1 city; no change in 3 cities	No	No	No	-	
5	Beland et al. 2020	Canada	Primary data (random sample of Canada's Labor Force Survey)	Cross-sectional regression	Concern over domestic violence*	Financial stress & concern in ability to maintain social ties correlated with increased concern for domestic violence	No	No	No	-	
6	Silverio-Murillo et al.2020	Mexico City, Mexico	Domestic violence call center data Domestic violence call center data Domestic violence call center data	Event study estimator Event study estimator Event study estimator	Domestic violence calls for psychological services Domestic violence calls Domestic violence calls for legal services	Increases No change Decreases	Yes	No	No	-	Yes
7	Ashby 2020(b)	16 cities, United States	Police recorded crime data	SARIMA	Serious assault inside the home	No change	No	No	No	-	
8	Campedelli et al. 2020	Los Angeles, United States	Public reported crimes	BSTS	Intimate partner violence & homicide	No change	No	No	No	Mobility Trends Reports, Apple	
9	Payne & Morgan, 2020	Queensland, Australia	Open data on violent crime records	ARIMA	Sexual offence, domestic violence order breach rates	No change	No	No	No	Google Mobility Report	
10	Baron et al. 2020	Florida, United States	Child hotline allegations	Adaptation of bunching estimator	Child maltreatment	Decreases	No	Yes	No	-	
11	Center for Criminal Justice Research, Policy and Practice 2020	Chicago, United States	Public crime data	BSTS	Domestic violence	Decreases	No	No	No	-	
12	Manell et al. 2020	Sweden	Police reported crime	Trend analysis using police algorithm	Indoor assault	Decreases	No	No	No	-	
13	Agüero, 2020	Peru	Phone calls to the national hotline	Difference-in-difference	Domestic violence	Increase	Yes	No	No	Google's Community Mobility Report	Yes
14	Anderberg et al. 2020	London, United Kingdom	Police reported crime data & Google search data	Year-month-day, trend & seasonality fixed effects regression	Domestic violence (reported) Domestic violence (searched) Psychological IPV (victimization)	Increase Increase Increase	No	No	No	Citimapper, Google, Apple, and Transport for London	
15	Davis et al. 2020	United States	Primary survey data (online survey)	Multivariate regression	Physical IPV (victimization) Psychological IPV (perpetration) Physical IPV (perpetration)	No change Increase Increase	No	No	No	-	
16	Gibbons et al. 2020	Argentina	Primary survey data (online survey)	Multivariate regression*	Any IPV Emotional IPV Sexual IPV Physical IPV	Increase Increase Increase Increase	Yes	No	No	-	Yes
17	Gosangi et al. 2020	Boston, United States	Women's clinical assessments at the Brigham & Women's Hospital	Multivariate regression	Incidence of physical IPV Severity of IPV-related injury	Increase Increase	No	No	No	-	
18	Hamadani et al. 2020	Rupganj upazila, Bangladesh	Primary survey data (phone-based)	Self-reported trends (descriptive)	Emotional IPV Physical IPV Sexual IPV	Increase Increase Increase	No	No	No	-	Yes
19	Hsu & Henke, 2020	United States	Dispatch & crime data from 28 police departments paired with mobile device tracking data	Event study	Domestic violence	Increase	No	No	No	SafeGraph, Device Exposure index by PlaceIQ	
20	Mahmud & Riley, 2020	Kagadi & Kyenjojo districts, Uganda	Primary survey data (phone-based)	Individual fixed-effects (pre & post lockdown)	Perceptions of village frequency of domestic violence	Increase	Yes	No	No	-	Yes
21	Perez-Vincent & Carreras 2020	Buenos Aires, Argentina	Phone calls to the national hotline	Difference-in-difference	Domestic violence	Increase	No	No	No	-	Yes
22	Sidpra et al. 2020	London, UK	Children's clinical assessments at the Hospital for Children NHS Foundation Trust	Annual comparison of cases per year (over four years)	Children's suspected abusive head trauma	Increase	No	Yes	No	-	
23	Arenas-Arroyo et al. 2020	Spain	Primary survey data (online survey)	Multivariate regression*	Any IPV Sexual IPV Psychological IPV Physical IPV	Increase Increase Increase No change	No	No	No	Survey Data	
24	Bullinger et al. 2020a	Chicago, United States	Intimate partner homicide records Administrative 911 calls paired with crime & cell-phone activity data	Event study Difference-in-difference	Female homicide Domestic violence (service calls) Domestic violence (reports & arrests)	Decrease Increase Decrease	No	No	No	SafeGraph	
25	Jetelina et al. 2020	United States	Primary survey data (online survey)	Self-reported trends (descriptive)	IPV	Mixed (with higher % reporting decreases as compared to increases)	No	No	No	-	
26	Ravindran & Shah, 2020	India	District-level administrative data on complaints paired with Google data	Difference-in-difference	Domestic violence Cybercrime Harassment Sexual assault	Increase Increase Decrease Decrease	Yes	No	No	Google Community Mobility Reports	Yes
27	Piquero et al. 2020	Dallas, United States	Police department reports	Trend analysis & ARIMA modeling	Domestic violence	No change	No	No	No	Google Community Mobility Reports	
28	Abrams, 2020	Austin, Chicago, Nashville & San Francisco, United States	Police crime data, paired with Google mobility data	Difference-in-difference	Domestic violence Rape	Decrease Decrease	No	No	No	Google Community Mobility Reports	
29	Bullinger et al. 2020b	Indiana, United States	Child maltreatment reports paired	Difference-in-difference	Child maltreatment (reports) Child maltreatment (substantiated)	Decrease Decrease	No	Yes	No	-	
30	Cabrera-Hernández & Padilla-Romo, 2020	Mexico City	with mobile phone Crime reports movement data	Synthetic control paired with difference-in-difference	Child maltreatment	Decrease	Yes	Yes	No	- GPS data by Google	
31	Babvey et al. 2020	Cross-country	Twitter (16 countries); Reddit (United States)	Machine Learning algorithm; Temporal analysis	Abusive and hateful language; Cyberbullying Family violence	Increase Increase	No	No	No	Stringency Index	
32	Kovler et al. 2020	Maryland, United States	Clinical chart review at John Hopkins Children's Center	Annual comparison of cases	Physical child abuse	Increase	No	Yes	No	-	
33	Sanga & McCrary 2020	United States	Police 911 calls, paired with mobility data	Regression with day-hour fixed effects	Domestic violence	Increase	No	No	No	Mobile device data from SafeGraph	
34	Socea et al. 2020	Bucharest, Romania	Clinical chart review at Surgery Departments	Annual comparison of cases	Domestic violence	Increase	Yes	No	No	-	Yes
35	Takaku & Yokoyama, 2020	Japan	Survey data (online)	Regression Discontinuity Design	Domestic violence (any, March) Domestic violence (any, August) Domestic violence (frequently, March) Domestic violence (frequently, August)	No change No change Increase No change	No	No	No	-	
36	Qin et al. 2020	Guangdong Province, China Australia, Canada, United Kingdom, United States	Women's Federation (government) Google search trends data	Hierarchical linear regression Hierarchical linear regression	Domestic violence Domestic violence hotline (searches)	Increase Increase	Yes	No	No	-	Yes

Table A2: List of Papers - part 2

Number	Authors	Location	Data	Methods	Indicator(s)	Finding	LMICs	Only children?	Only Risk factors?	Measures of social isolation	Selected Studies
37	Zsilavecz et al. 2020	Pietermaritzburg, South Africa	Clinical chart review of trauma patients at Grey's Hospital	Annual comparison of cases	Penetrating trauma and blunt assault (total) Penetrating trauma and blunt assault (female proportion)	No change Increase	Yes	No	No	-	Yes
38	Ivandic et al. 2020	London, United Kingdom	Police service data (crimes)	Event study analysis	Domestic abuse (partner) Domestic abuse (other family member) Domestic abuse (all relationships) Domestic abuse (ex-partner)	Increase Increase No change Decrease	No	No	No	-	
39	McKay et al. 2020	United States	Gun Violence Archive (firearm incidents)	Poisson pseudo maximum likelihood models with state-time fixed effects	Child-involved shootings in the home Domestic violence shootings School shootings Workplace shootings Total firearm injuries and deaths	Increase No change Decrease Decrease Initial decreases, subsequent increases	No	No	No	-	
40	Miller et al. 2020	Los Angeles, United States	Police 911 calls, crime incidents, arrests and domestic violence hotline calls	Difference-in-difference	Domestic violence (police 911 calls) Domestic violence (hotline calls) Domestic violence (arrests) Domestic violence (crimes)	Increase Increase No change Decrease	No	No	No	Mobile device data from SafeGraph	
41	Petrowski et al. 2020	Cross country	Survey of 48 child helplines; media reports	Before-and-after comparison	Contacts to helplines (overall) Contacts to helplines (violence-related) Media reporting on changes in violence	Increase Mixed Mixed	No	No	No	-	
42	Barboza et al. 2020	Los Angeles, United States	Police reported crime data, paired with mobility data	Negative binomial regression; Spatiotemporal analysis	Child abuse and neglect	Decrease	No	Yes	No	-	
43	Bullinger et al. 2020	Georgia, United States	County-level referrals to the Division of Family and Child Services	Fixed effects regression	Child abuse or neglect referrals	Decrease	No	Yes	No	- Cell phone tracking data from SafeGraph	
44	Rapoport et al. 2020	New York City, United States	Administration for Children's Services data	SARIMA	Child maltreatment allegations Investigations warranting preventative services	Decrease Decrease	No	Yes	No	-	
45	Abuhammad 2020	Jordan	Survey data (online)	Descriptive statistics; multivariate regression	Violence against women	Increase	Yes	No	No	-	Yes
46	Aolymat 2021	Jordan	Survey data (online)	Self-reported trends (descriptive)	Domestic violence	Increase	Yes	No	No	-	Yes
47	Berniell & Facchini 2020	Argentina; Brazil; Chile; Colombia; France; Germany; Italy; Mexico; Spain United Kingdom; United States	Google search data; google mobility data	Event study analysis; difference-in-difference	Domestic violence	Increase	Yes	No	No	Google Mobility Data	Yes
48	Dai et al. 2021	Hubei, China	Police service calls	Descriptive statistics; local regression; one-way ANOVA; ARIMA models	Domestic violence	Increase	Yes	No	No	-	Yes
49	Fabbri et al. 2020	Nigeria; Mongolia; Suriname	Survey data (face-to-face)	Multivariate regression	Violent discipline	Increase	Yes	Yes	No	-	
50	Fereidooni et al. 2021	Isfahan, Iran	Survey data (face-to-face pre-pandemic and phone during pandemic)	Comparison of means during COVID-19 to prepandemic (January and February 2020) levels; multivariate regression	Intimate partner violence (IPV)	Increase	Yes	No	No	-	Yes
51	Guglielmi et al. 2020	Bangladesh	Survey data (phone); qualitative interviews (telephone)	Self-reported trends (descriptive); thematic analysis	Gender-based violence; police violence	Increase	Yes	No	No	-	
52	Halim et al. 2020	Indonesia	Survey data (phone)	Self-report trends (descriptive); machine learning	IPV, violence against children, harassment (all reported "in the community")	Increase	Yes	No	No	-	Yes
53	Mahmood et al. 2021	Kurdistan region, Iraq	Survey data (online)	Self-reported trends (descriptive)	Spousal violence	Increase	Yes	No	No	-	Yes
54	Pattojoshi et al. 2020	India	Survey data (online)	Self-reported trends (descriptive)	Spousal violence (physical, sexual, verbal, emotional)	Increase	Yes	No	No	-	Yes
55	Pinchoff et al. 2021	Nairobi, Kenya	Survey data (phone)	Descriptive statistics; multivariate regression	Household violence; violence outside the home	Increase	Yes	No	Yes	-	
56	UNFPA et al. 2021	Bangladesh, India, Indonesia, Malaysia, Nepal, Thailand, Philippines, Singapore	Social media data; Internet search data	Social media discourse analysis; temporal analysis	Violence against women	Increase	Yes	No	No	-	Yes
57	Sharma & Khokhar 2021	India	Survey data (online)	Self-reported trends (descriptive)	Domestic violence	Mixed	Yes	No	No	-	Yes
58	Egger et al. 2021	Kenya	Survey data (phone)	Comparison of means during COVID-19 to prepandemic (March 2020) levels	IPV; violence against children	No change	Yes	No	Yes	-	
59	Venter et al. 2020	Johannesburg, South Africa	Hospital clinical assessments	Annual comparison of cases	Interpersonal violence; trauma cases	No change	Yes	No	No	-	Yes
60	Poblete-Cazenave	India	Police reports	RDD, fixed effects	IPV	Decrease	Yes	No	No	Strigency Index	Yes
61	Hoehn-Velasco	Mexico	National Public Security System	Event study analysis	Initial lockdown Transition	Decrease Increase	Yes	No	No	-	Yes
62	Ivandić et al. 2020	Greater London	crime records and calls-for-service	Event study	domestic abuse	Mixed (increase by parteners and decrease by ex-partners)	No	No	No	-	
63	Hsu-Henke 2021	United States	police dispatch and crime data from 36 police and sheriff's departments	Fixed effects	count of domestic violence cases	Increase	No	No	No	Mobile device tracking data	
64	Berlin et al. 2020	Sweden	Violent crimes reported to the police for the period 1985-2009								
64	Asik-Nas Ozen 2021	Turkey (81 cities and 15 Metropolitan cities)	female homicides, "Male Violence Monitoring Portal", by Bianet, an independent media outlet	Difference-in-difference + Event Study	probability that a woman is killed on a given day in a given city	Decrease	Yes	No	No	Google COVID-19 Community Mobility Reports	Yes
65	Chalfin et al. 2021	Detroit	911 calls	Poisson regression models fixed effects	count of calls	Increase	No	No	No	-	