COVID-19 and Women and Girls' Health in Low and Middle-Income Countries: An Updated Review of the Evidence

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Abstract

In an updated review of how the COVID-19 pandemic has been affecting women's and girls' health in low- and middle-income contexts, we examine 247 studies between January and March 2021 (peer-reviewed papers, pre-prints, and working papers that met specific search terms, and contained empirical analyses and findings). This collection of evidence largely reinforces previous findings that in many areas, women are bearing the greatest burdens of the crisis. Evidence continues to mount that there has been disruption of access to and utilization of maternal health services and contraceptive services, disproportionately worse mental health for women versus men, as well as worsened mental health for pregnant women during the pandemic. This review also identifies new research indicating mixed evidence on COVID-19-related knowledge and behaviors and COVID-19 morbidity and mortality by gender. Gaps remain on several health issues (e.g., non-communicable diseases, infectious diseases other than HIV). Existing research also focuses primarily on describing and quantifying the burden of these gendered health impacts, rather than sharing effective mitigation strategies.

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Introduction

The impacts of the COVID-19 pandemic have been far-reaching and extend well beyond the direct health consequences of morbidity and mortality. Indirect impacts span multiple aspects of health and highlight many existing vulnerabilities and inequalities that compromise the well-being of women and girls relative to that of men and boys. Understanding how these vulnerabilities and inequalities manifest in compromised health outcomes for women and girls globally is essential in designing effective policy and programmatic responses able to mitigate the impact of the COVID-19 pandemic and promote an inclusive and equitable recovery.

CGD' COVID-19 Gender and Development Initiative seeks to deepen decision-makers' understanding of the gendered impacts of the COVID-19 crisis and related policy responses, as well as propose evidence-based solutions to support an inclusive recovery. Recognizing that the academic and policy dialogue around gender inequality in the COVID-19 context has largely emphasized challenges faced by women and girls in high-income settings, our analysis centers on low- and middle-income countries. As donor institutions and governments seek to provide relief and support recovery from the COVID-19 pandemic and global recession, our work aims to ensure that their policy and investment decisions equitably benefit women and girls.

In April 2021, our team of researchers published an initial set of working papers that examined the social, economic, and indirect health impacts of the COVID-19 crisis from a gender perspective. We synthesized findings from studies published between March and December 2020 focused on gender gaps in work and employment, including entrepreneurship, wage, and salaried work, formal and informal work, work in subsistence and commercial agriculture, and unpaid housework and care work. We also compiled studies examining implications of the COVID crisis for poverty, food insecurity, gender-based violence, and access to essential health services.

In a joint effort, the Evidence-based Measures of Empowerment for Research on Gender Equality (EMERGE) group based at the Center on Gender Equity and Health in the University of California San Diego and the Center for Global Development (CGD) have collaborated to update prior reviews on the gendered indirect health effects of COVID-19 conducted by both organizations with evidence from the first quarter of 2021 (disseminated by EMERGE for July-September 2020 and October-December 2020) and by CGD in the working paper Addressing the COVID-19 Crisis's Indirect Health Impacts for Women and Girls. Key information about the literature search is provided in Box 1. In this report, we discuss some of the highlights and emerging findings on the health impacts of the COVID-19 pandemic for women and girls, encompassing maternal and child health, mental health, sexual and reproductive health, and knowledge, attitudes, and practices related to COVID-19, and select COVID-19 clinical outcomes. An accompanying report published on August 18 summarizes the pandemic's gendered social and economic impacts.

This evidence review is designed to summarize recent evidence on how the COVID-19 pandemic affects the health of women and girls living in low and middle-income countries (LMICs).

Box 1. Search Approach

Database search and search dates: EconLit, PsycInfo, Pubmed, RePEc, NBER, and Web of Science (search ran between Jan. 1–March 31, 2021)

Search terms: (covid OR coronavirus OR SARS-CoV-2) AND (gender OR women OR woman) AND (maternal OR pregnant OR birth OR antenatal OR reproductive OR sexual OR "family planning" OR psychological OR mental OR anxiety OR stress OR menstrual OR "health worker" Or nurse OR midwife OR knowledge OR information)

Inclusion criteria: must contain empirical analyses, complete methods sections, findings on the gendered health impacts of the pandemic, include at least one low- or middle-income country (LMIC), and be a peer-reviewed publication, manuscript pre-print, or working paper.

Search frequency: weekly

Total papers on gendered health impacts of COVID-19 pandemic: 247

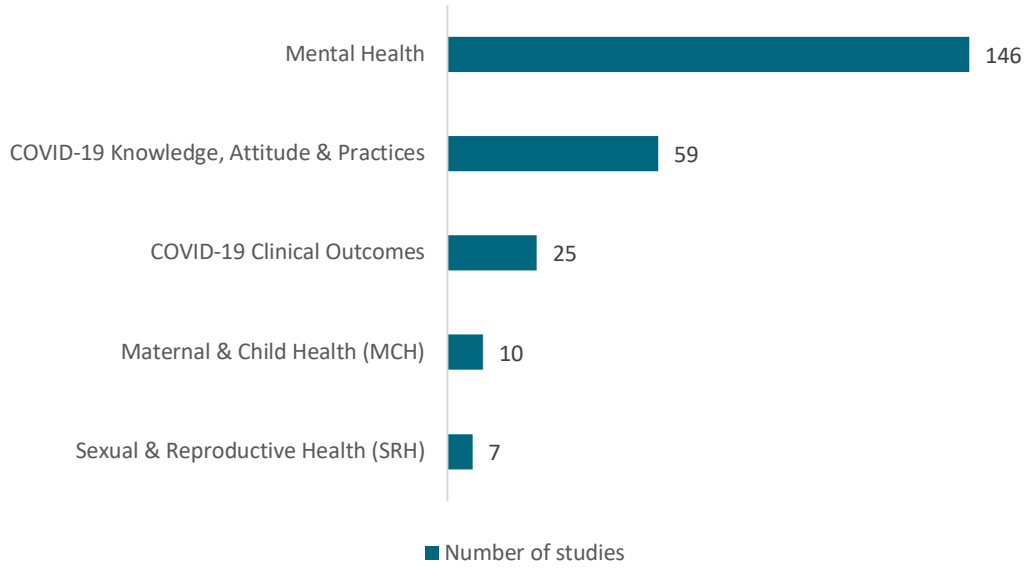
In an accompanying database, we document each study's title, author(s), abstract, URL, publication date, topic, country and region of focus, income level of the country, the population of focus (e.g., adolescent girls, migrant women), study design, data collection approach and timeline, and sample size.

We draw upon these underlying data to highlight key trends in studies' coverage and findings. In Section 1, we provide an overview of this literature by topic and geographies, while Section 2 offers an updated review of the literature.

1. Scope of new literature

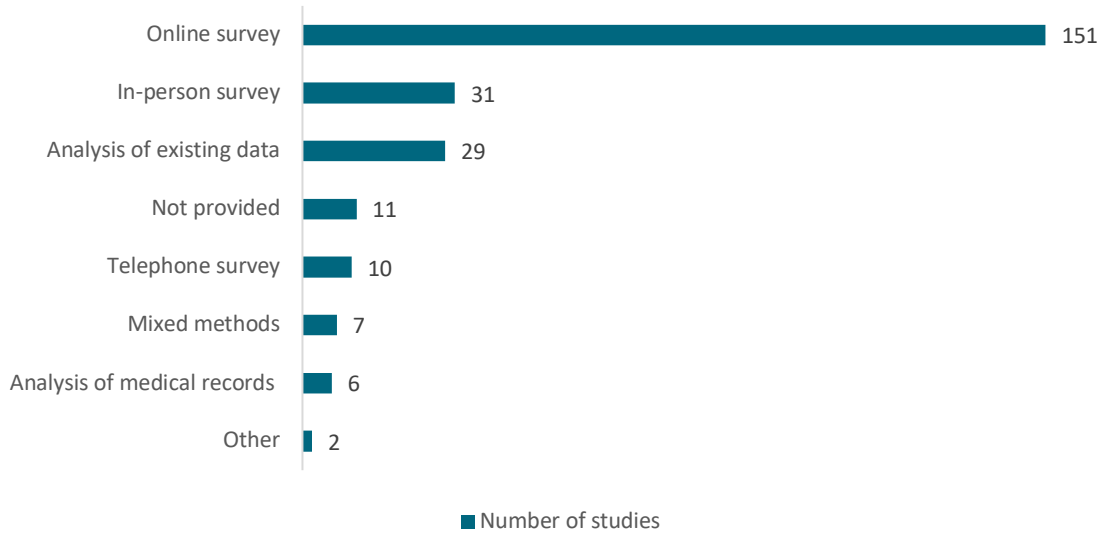
From January through March 2021, we find 247 studies that meet outlined criteria, covering a wide variety of health impacts. The majority of studies (146 articles) focus on the impacts of the COVID-19 pandemic on women's and girls' mental health, followed by 59 studies on COVID-19 knowledge, attitudes, and practices (including preventive behaviors), 25 studies on COVID-19 clinical outcomes, ten studies on maternal and child health, and seven studies on sexual and reproductive health (Figure 1). The mental health papers identified explored both adverse outcomes (depression, anxiety) as well as indicators of psychological well-being across diverse populations. It is worth noting that papers often covered several areas of health (and sometimes health as well as non-health outcomes); in these instances, the paper was classified based on the primary outcomes of interest reported in the results.

Figure 1. Number of studies by topic



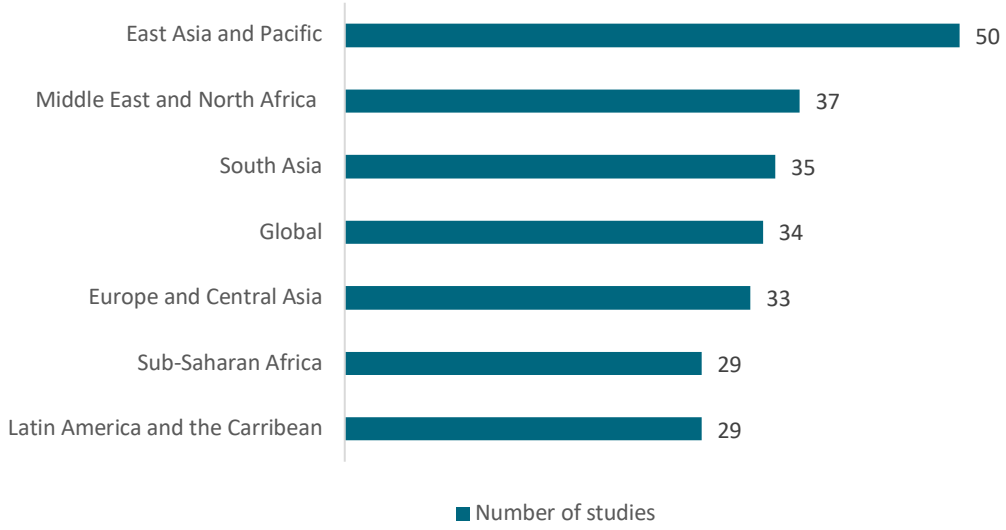
Nearly all identified papers (96%) were peer-reviewed; our review included only two working papers and eight pre-prints. From the sample of papers reviewed, 219 used a cross-sectional study design, 14 were reviews or meta-analyses, six employed a longitudinal study design, five used a serial cross-sectional study design, two used a cohort study design, and one used an experimental study design. In terms of data sources, most studies employed primary data collection across a range of modalities, while 29 studies used data from pre-existing data sets (Figure 2).

Figure 2. Number of studies by data source



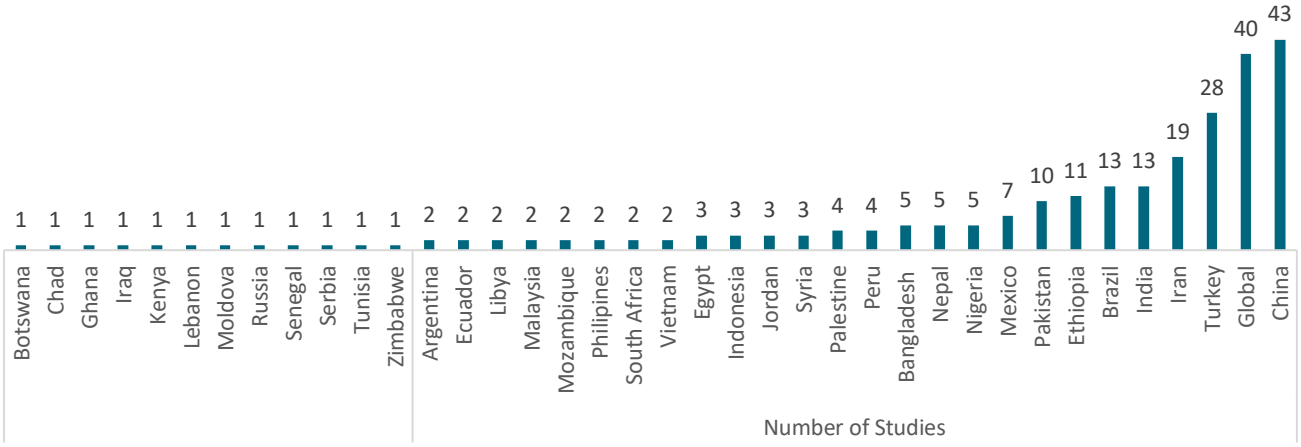
Regionally, about one-fifth of our sample of studies focused on East Asia & Pacific (50), followed by the Middle East and North Africa (37), South Asia (35), Global (34), Europe and Central Asia (33), sub-Saharan Africa (29), and Latin America and the Caribbean (29) (Figure 3).

Figure 3. Number of studies per region



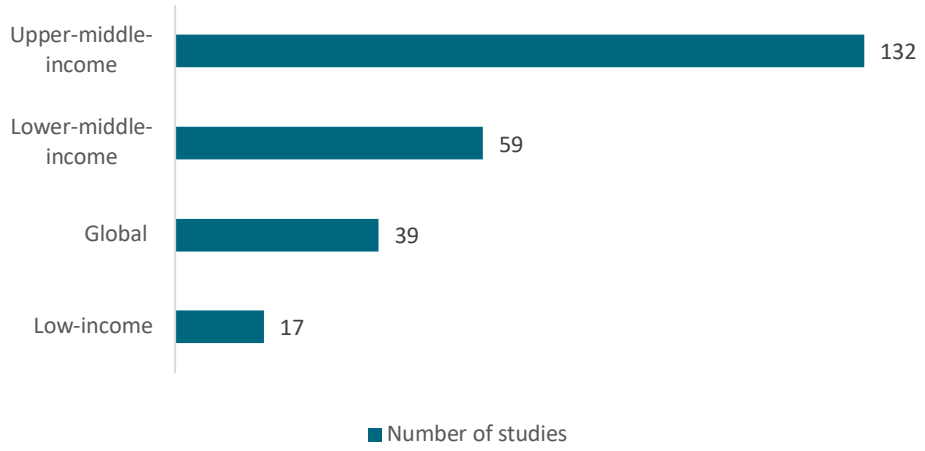
Studies were conducted in 38 different countries, with the most frequently represented countries being China (43), Turkey (28), and Iran (19) (Figure 4).

Figure 4. Number of studies per country



Disaggregated by income level, over half of the total research papers on the gendered health impacts of COVID-19 were single-country studies in upper-middle-income countries (132), 59 in lower-middle-income countries, 39 conducted globally, and few studies (17) were focused on a low-income setting. Only five low-income countries were covered in those studies (Chad, Ethiopia, Mozambique, Syria, Burkina Faso).

Figure 5. Number of studies by country income level



2. Review update: the indirect health impacts of the COVID-19 pandemic on women and girls

Sexual and reproductive health

Consistent with previous evidence, this review shows that **sexual and reproductive health care delivery was disrupted by COVID-19.** Compared to pre-pandemic levels, utilization of health services by women in Mozambique, Moldova, and Jordan showed a decrease in both access to, and receipt of, contraceptives (Leight et al., 2021; Aolymat et al., 2020 and Emery et al., 2021). In contrast, longitudinal research from Kenya and Burkina Faso showed that while most women did not change their contraceptive use during the pandemic, those who did were more likely to switch to more effective, long-acting contraception than discontinue use (Karp et al., 2021). This study also noted that deteriorating economic circumstances and food insecurity influenced increased contraceptive use.

In addition to the changes in the delivery of health care services, a small-scale study from Turkey and research from Egypt found increases in stress and anxiety during the pandemic which adversely impacted female sexual function and satisfaction (Ugurlucan et al., 2021; Omar et al., 2021).

Maternal and child health

Globally, around 200 million women are pregnant each year and nearly half (90 million) give birth in facilities. Pandemic-induced disruptions in routine health care services, especially in countries with weaker health systems, can threaten global progress toward reducing maternal and child morbidity and mortality. As highlighted by Krubiner et al. (2021), emerging evidence indicates mixed impacts on maternal and child health service utilization and outcomes. The literature identified through this review (10 papers) confirms this trend.

First, **many countries continue to record substantial reductions in healthcare utilization by pregnant women**. This affects antenatal care, as well as skilled birth attendance and postnatal care. In Ethiopia, half of a sample of pregnant women in the country's northeast either missed or were late to start, antenatal care during the pandemic (Tadesse et al., 2020). Similarly, Temesgen et al. (2021) surveyed 844 women in the West Shoa zone (Central Ethiopia) and found that 33% of women surveyed did not access antenatal care services during the pandemic. In Peru, research from more than 50 communities in the Amazon showed that 65%-85% of local health facilities had suspended antenatal and postnatal routine consultations and only attended to emergencies and imminent births (Reinders et al., 2020). In India, a survey in a tertiary care center also indicated decreases in the number of women who attended the adequate number of prenatal visits (Kumar et al., 2020).

Second, as with previous reviews, **the evidence around birth outcomes (mother and child) is somewhat mixed.** Among deliveries at a single hospital in India, there was a significant increase in stillbirths between March and September 2020 compared to the same period in 2019 (Kumar et al., 2020). On the other hand, research from Botswana showed a decrease in adverse birth outcomes during and after the country's lockdown compared to birth outcomes in the same months from 2017 to 2019. Authors hypothesize that this may have been attributed to more limited exposure to infectious diseases and environmental contaminants, as well as reduced physical labor (Caniglia et al., 2020).

Finally, this body of evidence shows again that **the causes of disruptions in health service utilization are multifactorial and complex**. Pregnant women in northeast Ethiopia noted increased transportation costs as a barrier to accessing care (Tadesse et al., 2020). Qualitative and quantitative findings from China, Ethiopia, Iran, and Turkey reported that a significant share of pregnant women feared contracting COVID-19 during antenatal care visits and childbirth (Mo et al., 2021; Temegsen et al., 2021; Mortazavi et al., 2021; Korukcu et al., 2021). In addition to fear of contracting COVID-19, research from Ethiopia also indicated decreased service utilization due to perceived poor quality of maternal care from pandemic response resource diversions (Hailemariam et al., 2021) and to lack of infection control measures at facilities (Temegsen et al., 2021).

Restrictions on freedom of movement, as well as fear of contracting COVID-19, underscore the importance of exploring alternative means of bolstering health information delivery for pregnant and recently delivered women and their children. Research from China explored one means of telehealth innovation and found that the use of text messaging and social

media to access antenatal health care information decreased the rate of anxiety and depression among pregnant women (Jiang et al. 2020).

Mental health

Again consistent with prior reviews, **assessed studies show that women generally have experienced worse mental health during the COVID-19 pandemic than men**. Factors contributing to this compromised status in Brazil, China, Iran, and Malaysia include increased financial and health risks faced during the pandemic, increased burden of unpaid care, job and income loss, marital problems, and lockdown restrictions (Smith et al., 2021; Feter et al., 2020; Silva et al., 2020; Balakrishnan et al., 2021; Mousavi et al., 2020).

Women were more likely to report depression, anxiety, post-traumatic stress disorder, and suicidal risk, as well as less psychological resilience, than men in Argentina, Bangladesh, Brazil, China, Haiti, Indonesia, Iran, Malaysia, Mexico, Pakistan, Palestine, Peru, and Turkey (Steinmetz et al., 2020; Sayeed et al., 2020; Feter et al., 2020; Yan et al., 2021; Sun et al., 2021; Elvira et al., 2021; Meda-Lara et al., 2021; Cénat et al., 2021; Yasin et al., 2020; Al Zabadi et al., 2020; Caycho-Rodriguez et al., 2021; Canlı et al., 2020). These results are not uniform: a small-scale study of COVID-positive adults in India found higher levels of depression and anxiety among men than women (Bharti et al., 2021), and research from Iran found no differences between men and women in terms of COVID-19-related fear (Zamanian et al., 2020). Decreased monthly income, working from home, marital issues, lack of physical activity, and unemployment are among some of the predictors of worsened mental health among women compared to men identified in this review (Feter et al., 2020; Silva et al., 2020; Balakrishnan et al., 2021). Importantly, the majority of these studies examining gender differences in mental health outcomes are cross-sectional in design, hindering causal conclusions regarding COVID-19's differential impact on men's and women's mental health.

As we and others have noted, previous studies suggest that the **mental health of female health workers has been disproportionally impacted compared to male health workers.** Our review corroborated these findings as female health workers reported higher levels of anxiety, depression, insomnia, post-traumatic stress disorder, and distress than male counterparts in China, Egypt, India, Kenya, Mexico, Philippines, Russia, Turkey, Pakistan, and Sri Lanka (Shen et al., 2020; Ahmed et al., 2021, Wilson et al., 2020; Onchonga et al., 2021; Robles et al., 2020; De Los Santos et al., 2021; Mosolova et al., 2020; Ceri et al., 2020; Saeed et al., 2021). These findings are not universal, however; studies in India, Nigeria, and Romania showed no gender difference in mental health outcomes between male and female health workers (Meesala et al., 2020; Lawal et al., 2020; Rotărescu et al., 2020).

Finally, **there were a high number of resources documenting worsening mental health among pregnant women**. This is an emerging area of research compared to previous reviews. In Brazil, pregnant women had high levels of COVID-19-related anxiety (Nomura et al., 2021), and levels of depression among a cohort of postpartum women worsened after delivery (Lorentz et al., 2020). Two studies in China found that a third of women reported depressive symptoms during their pregnancy (Sun et al., 2020; Li et al., 2021), similar to findings from a small-sample, online study in Serbia (Stojanov et al., 2020). In a cross-

sectional study of 300 pregnant women, Saadati et al. (2021) found that anxiety was much higher in the third trimester (compared to the first). As discussed above, declines in well-being and increases in depression and anxiety among pregnant women seem to arise from a combination of factors. Many of the women reported fear of not having anyone accompany them during delivery and fear of contracting the disease in Brazil (Nomura et al., 2021). Further, research from Turkey found an increase in anxiety and antenatal depression caused by the fear of being infected or infecting their babies with COVID-19 during hospital appointments (Korukcu et al., 2021; Akgor et al., 2021; Guvenc et al., 2020). In Iran, low family income and fear of contracting COVID-19 were predictors of poor psychological well-being and increased worry among pregnant women (Mortazavi et al., 2021; Masjoudi et al., 2021).

COVID-19-related morbidity and mortality

As mentioned in previous publications (see previous EMERGE review and CGD working paper), **there are gender differences in disease severity and death from COVID-19, with men generally at higher risk than women**. While research from many settings (China, Mexico, India, Afghanistan, and Bangladesh) confirms this trend (Rahman & Sathi, 2020; Murillo-Zamora et al., 2020; Priya et al., 2021; Shah et al., 2021), three papers found no differences in COVID-19 mortality and morbidity between men and women in Brazil, Maldives, Nepal, and Pakistan (Sena et al., 2021; Shah et al., 2021). It is worth noting though that those studies are not necessarily comprehensive or widely representative: for instance, Sena et al. (2021) focus exclusively on children and adolescents in their study conducted in Brazil. There is a need for more widespread and representative research to more concretely understand differentials in COVID-19 related mortality and morbidity across different population groups.

There is mixed evidence on post-COVID-19 complications. In a multi-country study (covering China, Cuba, Ecuador, Spain, Italy, and Germany), the prevalence of cardiac disease for male patients discharged from hospital was significantly higher than for female patients. In Iran, women were more likely to experience asthenia, abnormal physical weakness, or lack of energy following COVID-19 infection (Simani et al., 2021). Given the recent nature of this pandemic, this is an area in which we anticipate an expanding body of research in coming years.

COVID-19 knowledge, attitude, and practices

There is mixed evidence on COVID-19-related knowledge and behaviors by gender. Research from a range of countries (Bangladesh, Brazil, China, Ethiopia, India, Indonesia, Iran, Nigeria, Palestine, South Africa, Vietnam) indicates that women had both higher knowledge of, and adherence to, COVID-19 preventive practices, including hand-washing, social distancing, practice isolation, and mask-wearing, than men (Guimarães et al., 2021; Islam et al., 2021; Guo et al., 2020; Tan et al., 2020; Ahmed et al., 2021; Shamim et al., 2021; Sulistyawati et al., 2021; Shati et al., 2020; Iorfa et al., 2020; Qutob et al., 2021; Do et al., 2020; Majam et al., 2021). Fear of COVID-19, age, living in urban areas, and higher

education were associated with increased COVID-19 knowledge and COVID-19 preventive practices among women compared to men (Degu et al., 2021; Kassie et al., 2021; Apanga et al., 2021; De Los Santos et al., 2020). In contrast, men in Chad, Ethiopia, Nepal, Pakistan, Syria and adolescent men in India showed higher COVID-19 preventive knowledge, attitude, and practices compared to women (Dzomo et al., 2021; Gebretsadik et al., 2021; Pinchoff et al., 2020; Devkota et al., 2021; Ali et al., 2021; Al Ahdab et al., 2021). Poor educational support, increase in time spent at home doing chores rather than seeking COVID-19 health-related information, lower media exposure, lower access to mobile phones are some factors responsible for the increased preventive knowledge and practices in men than women (Gebretsadik et al., 2021; Pinchoff et al., 2020).

Among health workers, evidence from Ethiopia and Nepal suggest that male health workers were more likely to seek information on COVID-19 than female health care workers (Kalayou et al., 2020; Tamang et al., 2020), while female medical students in Iran had better COVID-19 related knowledge compared to male students (Zandian et al., 2021). In Nigeria, male and female healthcare workers had similar levels of COVID-19-related knowledge (Tsiga-Ahmed et al., 2021).

In terms of information sources, the internet and television served as the primary sources of COVID-19 information for women in Bangladesh (Anwar et al., 2020).

Conclusion

This body of research from the first three months of 2021, examining the gendered health effects of the COVID-19 pandemic in low- and middle-income countries, underscores how women's health and well-being are generally being more adversely impacted than men's. There continues to be a large volume of studies produced that aim to explicate the differential ways these impacts are manifesting across populations, contexts, and health outcomes.

This research confirms many of the findings from earlier in the pandemic, including the disruption of the delivery and utilization of sexual, reproductive, and maternal health care delivery, and more compromised mental health among women than men. As more research is produced, the effects of the pandemic in specific populations become clearer; this round of review identified more studies addressing the mental health of female health workers and pregnant women than our previous review.

Importantly, there remain some important gaps in research on the ways that the COVID-19 pandemic has affected the health of women and girls. There is a dearth of research focusing on low-income countries, thus hindering funding, policy, and programmatic responses with a lack of information on which populations are being affected, and in which ways, in these settings. Additionally, the majority of research remains focused on identifying basic prevalence estimates and associations between COVID-19 and various health factors, rather than exploring means of mitigating these devasting effects through programmatic and policy interventions. As this pandemic continues to evolve, it is critical that research on the ways

that the health of women and girls in low and middle-income settings is affected shifts to a more responsive and prospective body of work.

The gendered impacts of the COVID-19 pandemic on women's and girls' health are substantial and will be felt for years to come. Policy responses must consider these differential impacts, as well as the unique needs of vulnerable and marginalized populations, to change the gendered tide of compromised health and well-being created by this pandemic.

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