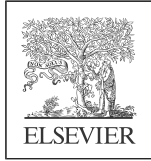




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# Gender inequality and health disparity amid COVID-19

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## ABSTRACT

Gender inequalities could lead to grave human and economic consequences, especially amid global health crises of the coronavirus 2019's (COVID-19) scale. The COVID-19 pandemic exacerbated gender inequalities women face and introduced new challenges that are unprecedented to society at large. Adverse effects of COVID-19, compounded by unintended consequences caused by public health policies such as lockdowns (e.g., delayed or canceled health services), have forced women to face issues ranging from COVID-19 infections and deaths, prolonged unemployment, to unparalleled scale and severity of domestic violence. However, though women face a canopy of debilitating challenges, there is a shortage of research that examines health solutions that can mitigate, if not offset, challenges women experience amid COVID-19. In this paper, we aim to shed light on why timely solutions are needed to mitigate gender inequalities and health disparities women face amid COVID-19 promptly. Furthermore, we underscore the imperative for cost-effective interventions that could shed light on the current health crisis and future pandemics.

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The coronavirus 2019 (COVID-19) is dangerous, debilitating, and deadly; as of August 2, 2021, the pandemic had infected approximately 200 million people and claimed the lives of over 4.22 million across the globe (Johns Hopkins University, 2021). Women are among the hardest-hit communities amid the pandemic, for COVID-19 has exacerbated gender inequality and health

disparity women face and introduced new challenges that are unprecedented to the societies at large (Burki, 2020; United Nations Development Programme, 2020). Findings from a study conducted by the United Nations, for instance, indicate that the pandemic will add approximately 47 million to the staggering pool of 435 million women living in extreme poverty (defined as surviving

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on less than \$1.9 a day), a situation expected to last until 2030 (United Nations, 2020c). Data on unemployment amid COVID-19 paint an even direr picture. In the United States (U.S.) in December 2020, labor statistics show that women count for more than 111% of all the jobs lost in the country; while women lost 156,000 jobs, men gained 16,000 jobs in the same period (U.S. Bureau of Labor Statistics, 2021).

Situations are particularly sobering for marginalized individuals and persons of color, who often suffer the most severe disparities and inequalities when it comes to accessing opportunities in healthcare, education, and social status (Holder, Jones, & Masterson, 2021; Mansour, Golden, & Yeh, 2020; Mehra et al., 2020; White, Xia, & Edwards, 2021; Zimmerman & Anderson, 2019). Research finds that, for instance, compared to non-Latinx Whites, people of color (e.g., Asians and African Americans) are three times more likely to face fluctuations in their access to mental health services (Masters et al., 2021). Analyses further indicate that, while 70% of COVID-19 infections in healthcare workers in countries like the USA, Spain, and Italy are in women (United Nations, 2020b), the confluence of gender and race have subjected female African American healthcare workers to even poorer access to personal protective equipment and medical training (Lotta, Fernandez, Pimenta, & Wenham, 2021).

Gender inequality and health disparity could lead to grave human and economic consequences, especially amid global health crises of COVID-19's scale (United Nations, 2020c). In this context of this study, gender inequality could be understood as women's unequal and unjust lack of access to rights and opportunities in all aspects of social life (Arora, 2012; Baudassé & Bazilier, 2014; Young, Fort, & Danner, 1994). Gender inequality is often both an antecedent to and a consequence of health disparity; defined as an increased burden that exacerbates individuals' health status and wellbeing (Wheeler & Bryant, 2017). While a growing body of evidence shows that women face exacerbated gender inequality and health disparity in the wake of COVID-19, there is a significant lack of research that examines health solutions that can mitigate, if not offset, the hardships women experience. Therefore, in this brief study, we aim to shed light on why timely solutions are needed to mitigate gender inequalities and health disparities women face amid COVID-19. Furthermore, we underscore the imperative for cost-effective interventions that could shed light on the current health crisis and future pandemics.

## COVID-19 Risk Factors for Women

### *Women as Frontline Healthcare Professionals*

Overall, women's vulnerability to COVID-19 is multifaceted and multilayered (Marchand et al., 2016). For starters, two populations that are most susceptible to

COVID-19, are women—frontline healthcare workers and older adults (e.g., nursing home residents) (Mo et al., 2020). Data from the World Health Organization (WHO) on 104 countries worldwide indicate that approximately 70% of the health and social workforce are women (Boniol et al., 2019). An analysis of 9,282 COVID-19 infections among healthcare professionals between February 12th to April 9th, 2020 in the U.S. further shows that 73% of the positive cases were women (CDC COVID-19 Response Team, 2020). It is important to note that healthcare professionals face substantial physical and psychological health challenges amid the pandemic, ranging from inadequate access to personal protective equipment to working under extremely stressful circumstances (e.g., decision-making about how to ration ventilators) (Mesa Vieira, Franco, Gómez Restrepo, & Abel, 2020). Results from meta-analyses found that at least one in every five healthcare professionals experience mental health disorders such as depression and anxiety amid COVID-19 (Pappa et al., 2020). While these insights combined suggest that women as frontline healthcare professionals are disproportionately impacted by COVID-19, occupation is hardly the only risk factor that contributes to women's vulnerability to the pandemic.

### *Women as the Predominant Gender in Older Adults and Nursing Home Residents*

Similar to the gender composition of healthcare workers, the majority of older adults are women (World Health Organization, 2007). According to the WHO, there are 189 women for every 100 men aged 80 and older, and the numbers are even more alarming by age 100 years and older; 385 women for 100 men (World Health Organization, 2007). The same phenomenon can be seen in nursing home residents. In the U.S., for instance, approximately 70.6% of nursing home residents are females (U.S. Department of Health And Human Services, 2019). Older adults, especially those living in nursing homes, often face debilitating health challenges, such as chronic conditions (e.g., cancer), autoimmune disorders (e.g., Rheumatoid arthritis), and cognitive impairments (e.g., dementia); making them more susceptible to COVID-19 infection and death (Guisado-Vasco et al., 2020; Huang et al., 2020; Karagiannidis et al., 2020; Tian et al., 2020). In an analysis of 178,568 COVID-19 deaths, researchers found that compared with adults 54 years and younger, mortality rates are around 8 and 62 times higher for people 55-64 years and 65 years and older age brackets, respectively (Yanez, Weiss, Romand, & Treggiari, 2020). These statistics reveal that, even without counting for the unreported and underreported COVID-19 infections and deaths, which could incorporate a large population (e.g., the state of New York undercounted 3,800 or more than 40% of the death total associated with nursing homes (McKinley & Ferré-Sadurní, 2021), older adults, the majority of which are women, have already been shouldering the brunt of COVID-19 (Johns Hopkins University, 2021).

Further complicating the situation, social concerns experienced by older adults' may further worsen their health status and wellbeing. In addition to physical health disparities, older adults also face pronounced mental health trauma amid the pandemic (Fraser et al., 2020; Jimenez-Sotomayor, Gomez-Moreno, & Soto-Perez-de-Celis, 2020; Su, McDonnell, & Li, 2021; Xiang et al., 2020). Public health measures such as lockdowns and social distancing have made it harder for nursing home residents to access social support and health services, which in turn, could have a detrimental effect on these older adults' mental and physical health amid the pandemic (Su et al., 2021). The prevalence of agist remarks could further aggravate the situation (Fraser et al., 2020; Jimenez-Sotomayor et al., 2020; Xiang et al., 2020). In an analysis of 82,893 tweets about older adults and COVID-19 between January 23rd and May 20th, 2020, researchers found that the daily average of agist content is 18%, with the highest incidence appeared on March 11th, 2020, when 52.8% of the content was disrespectful and discriminatory of older adults (Xiang et al., 2020). These findings combined underscore the undeniable reality that older adults and nursing home residents, most of whom are women, need substantial, systematic, and timely help to better cope with the adverse effects associated with COVID-19.

### Women as Domestic Violence Victims

The majority of domestic violence victims are women (World Health Organization, 2013). Before COVID-19, data from the World Health Organization already painted a grim picture; more than one in three women (35%) has been or will become a domestic violence victim (World Health Organization, 2013). Situations are expected to become substantially worse due to the pandemic, as COVID-19 may have further exacerbated the scale and severity of violence against women (United Nations, 2020a). Europe is witnessing a significant increase in calls to telephone helplines for victims of violence, varying from 25% in Ireland to 694% in Finland (European Union, 2020). Early reports from the United Kingdom (U.K.) further indicate that, compared to data from the past decade, twice as many female domestic violence victims were killed by their abusers between March 23rd and April 12th, 2020 alone (Grierson, 2020).

It is important to note that domestic violence is not unique to European countries such as the U.K. The reason more data are available on women in developed regions than developing countries might be because (a) developed countries have more investments put in place to monitor and report domestic violence issues, (b) people in developed countries are more likely to have the ability to identify domestic violence, and (c) people, especially women, in developed countries are more likely to have the agency needed to report domestic violence cases (World Health Organization, 2013). In other words, it is possible that the scale and severity of domestic violence could be significantly worse in developing countries, especially factoring in the fact that due to COVID-19 (e.g., economic downturns and lockdowns), women with

limited financial resources are more likely to live with their abusers for a prolonged period of time without access to previously available help mechanisms such as shelters (European Union, 2020). As COVID-19 evolves, it is difficult to pinpoint the exact scope and consequences of domestic violence and abuse against women. What is clear is that interventions are needed to address these issues in a timely fashion (Su et al., 2021).

### Women as Unpaid Informal Caregivers Who Also Have Health Needs

Pre-crisis data show that, collectively, women and girls shoulder 70% of the global caregiving hours on unpaid tasks ranging from caring for the young or abled, ill or frail, to shouldering everyday household tasks (Garijo, 2020). Caregiving tasks, especially those that involve patients with cognitive impairments (e.g., dementia), may result in critical physical and mental health burdens in the caregivers (Cheng, 2017; The Lancet, 2020; Wu, Li, & Wu, 2019). Considering the effects of COVID-19 safety measures, such as social distancing and lockdowns, it is possible that caregiving burdens are substantially more pronounced amid the pandemic (Altieri & Santangelo, 2021; Chan et al., 2020; Cohen, Russo, Campos, & Allegri, 2020; Russell, Hutchison, Tambling, Tomkunas, & Horton, 2020). In a study of 84 caregivers of people with dementia, results show that caregivers' levels of depression, anxiety, and burden have significantly worsened during the lockdown compared to pre-lockdown status (Altieri & Santangelo, 2021). It is also important to note that women may face unique healthcare needs while taking care of their loved ones, such as reproductive health challenges (Qiao, 2020).

Emerging evidence shows that, amid the pandemic, expectant mothers often have to endure additional layers of hardships, ranging from COVID-19 complications, lack of access to basic healthcare services, to domestic violence (Ferraro et al., 2017; Qiao, 2020). Factoring in the tsunami of negative information amid COVID-19, fact-based or false news (Su et al., 2021), these insights indicate that even for women not facing the aforementioned risk factors, they still experience substantial caregiving burden that can negatively impact on their physical and mental health (Langer et al., 2015; Swinkels, Tilburg, Verbakel, & Broese van Groenou, 2019; World Health Organization, 2019). As an unhealthy caregiver population could further exacerbate the unmet health needs patients alike face during the pandemic, the fact that women constitute the majority of the caregiving hours further underscore the need for interventions to address gender inequality and health disparity issues women face amid the COVID-19 pandemic.

### The Need for Timely Interventions Amid COVID-19

However, though women face substantial challenges, there is a shortage of research that examines health

solutions that can mitigate, if not offset, hardships women face amid pandemics like COVID-19. The scale and severity of difficulties women experience amid the pandemic can have a long-lasting impact on their physical and mental health (Qiao, 2020), which, in turn, impacts the wellbeing of society. Overall, health solutions, such as government interventions, are needed to safeguard women's health and wellbeing. Interventions that can offer practical and cost-effective solutions for women, such as technology-based interventions, are particularly needed.

### Potential Cost-Effective Solutions

Technology-based interventions have many advantages that make them particularly useful in the COVID-19 context: (a) cost-effectiveness (e.g., little to no need to pay for special programs, as these interventions often can be accessed free via smartphone, tablet, or computer); (b) accessibility (e.g., can be accessed whenever and wherever, and no need for transportation or physical contact); (c) privacy protection (e.g., no need for face-to-face interactions, can be adopted anonymously) (Bachmann, 2020; Cioffi, Cioffi, & Rinaldi, 2020; Fryer, Delgado, Foti, Reid, & Marshall, 2020). Amid the pandemic, ranging from virtual conferences (e.g., Zoom meetings or teleconsultations) to mobile applications (e.g., COVID-19 symptoms monitoring and contact tracing smartphone applications), technology-based interventions have offered timely and cost-effective solutions to a wide range of social issues women face across the globe (Bindra, 2020; Chattu, Lopes, Javed, & Yaya, 2021; Reynolds-Wright, Johnstone, McCabe, Evans, & Cameron, 2021).

Amid COVID-19, Yiwu, a city in China, for instance, has built a technology-based intervention program that allows women to electronically check their partners' domestic violence history before they tie the knot (Kuo, 2020). This facility will enable soon-to-be brides to search their partner's name in an online database to determine whether there is a history of domestic violence. Due to a lack of data, it is difficult to gauge this intervention's full impact on Yiwu's overall domestic violence prevention efforts. However, what is clear is that this government-sponsored solution at least offers women a rare opportunity to stay away from domestic violence abusers amid the pandemic and beyond. To more effectively address the issues such as female abuse and ageism, in addition to government-sponsored solutions, private sectors should also shoulder their share of social responsibility accordingly.

For instance, technology companies like Twitter, Facebook, and Weibo should also pour more attention and resources into better monitoring content shared and spread on their platforms. In what is considered as a swift and welcoming response to the singer-actor's predatory behaviors, Weibo, the Chinese equivalent to Twitter, has blocked the personal and business accounts of Kris Wu, one of China's biggest celebrities who once had over 50 million followers on the platform. This move also resonates with a range of

brands' cessation of endorsement of the celebrity, ranging from international names like Louis Vuitton, Bulgari, to Porsche (Chen, 2021). Perhaps by forming better cooperation and collaboration between the public and the private sectors, society at large could have a better chance at addressing issues like female abuse and ageism swiftly and successfully.

### Important Caveats

While cost-effective solutions, such as technology-based interventions, can address gender inequality and health disparity issues women face in a timely fashion, researchers should pinpoint insights that shed light on the current health crisis and the future pandemics. Technologies and techniques that function in the context of COVID-19 may not necessarily apply to future pandemics, especially factoring in the speed at which science and technologies advance. Therefore, to ensure knowledge and experience gained from COVID-19 can support health experts and government officials prepare for an ever-evolving and comprehensive range of health scenarios, it is imperative for researchers to continue to identify the technologies and techniques that could provide practical solutions to health challenges women face amid and beyond the pandemic.

### Conclusions

Women are, essentially, daughters, mothers, and grandmothers. How societies treat their daughters, mothers, and grandmothers speaks volumes that cannot be unheard; interventions are needed to address challenges women face amid COVID-19 promptly and adequately. The pandemic has exacerbated inequalities and introduced new challenges that are unprecedented to society at large. Safeguarding women's health and well-being should be a priority, as research indicates that they are often indispensable to households and nations' health and well-being. Practical and timely solutions are needed.

### Author Contribution

Zhaohui Su conceived the work, reviewed the literature, drafted, and edited the manuscript. Ali Cheshmehzangi, Dean McDonnell, Sabina Segalo, Junaid Ahmad, and Bindi Bennett reviewed the literature and edited the manuscript. All authors approved the manuscript for submission.

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