



Using gender analysis matrixes to integrate a gender lens into infectious diseases outbreaks research

Rosemary Morgan^{1,*}, Sara E Davies², Huiyun Feng², Connie C R Gan², Karen A Grépin³, Sophie Harman⁴, Asha Herten-Crabb⁵, Julia Smith⁶ and Clare Wenham⁵

¹Department of International Health, Johns Hopkins Bloomberg School of Public Health, 615. North Wolfe Street, Baltimore, MD 21205, USA

²School of Government and International Relations, Griffith University, 170 Kessels Road, Brisbane, QLD 4111, Australia

³School of Public Health, Li Ka Shing Faculty of Medicine, The University of Hong Kong, G/F, Patrick Manson Building (North Wing), 7 Sassoon Road, Pokfulam, Hong Kong

⁴School of Politics and International Relations, Queen Mary University of London, Mile End Road, London E1 4NS, UK

⁵Department of Health Policy, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, UK

⁶Faculty of Health Sciences, Simon Fraser University, Blusson Hall, Room 11300, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

*Corresponding author. Department of International Health, Johns Hopkins Bloomberg School of Public Health, 615. North Wolfe Street, Baltimore, MD 21205, USA. E-mail: rosemary.morgan@jhu.edu

Accepted on 10 December 2021

Abstract

Evidence shows that infectious disease outbreaks are not gender-neutral, meaning that women, men and gender minorities are differentially affected. This evidence affirms the need to better incorporate a gender lens into infectious disease outbreaks. Despite this evidence, there has been a historic neglect of gender-based analysis in health, including during health crises. Recognizing the lack of available evidence on gender and pandemics in early 2020 the Gender and COVID-19 project set out to use a gender analysis matrix to conduct rapid, real-time analyses while the pandemic was unfolding to examine the gendered effects of the coronavirus disease 2019 pandemic. This paper reports on what a gender analysis matrix is, how it can be used to systematically conduct a gender analysis, how it was implemented within the study, ways in which the findings from the matrix were applied and built upon, and challenges encountered when using the matrix methodology.

Keywords: Gender, gender analysis, COVID-19, pandemics, infectious diseases outbreaks

Key messages

- If policies and programmes are to effectively address gender inequities, how gender inequities manifest to affect health and well-being must be understood.
- More systematic tools are needed to incorporate gender into infectious disease outbreak responses. Gender analysis matrixes allow researchers to comprehensively and systematically integrate evidence and data to identify priorities for policy response.
- Gender analysis matrixes can be used to systematically integrate gender analysis in any health or health systems and policy research.

Introduction

Infectious disease outbreaks are not gender-neutral, meaning that women, men and gender minorities are differentially affected (Smith, 2019; Gebhard *et al.*, 2020; Wenham *et al.*, 2020; 2020a). Evidence of the gendered effects of

COVID-19 has been increasingly documented (Betron *et al.*, 2020; Dasgupta *et al.*, 2020; Gebhard *et al.*, 2020; Wenham *et al.*, 2020; 2020b; Morgan *et al.*, 2021). Studies have shown that while severe disease and mortality have been overall greater among men (Baker *et al.*, 2020; Betron *et al.*, 2020; Smith *et al.*, 2020; Morgan *et al.*, 2021), the economic, social and security impacts have disproportionately affected women and gender minorities (Wenham *et al.*, 2020; Harman, 2021b; Morgan *et al.*, 2021). Women, e.g., have not only faced greater economic insecurity and job losses but also have incurred a greater amount of the care work (Morgan *et al.*, 2021). They have also been subject to increased rates of gender-based violence throughout the pandemic (Mittal and Singh, 2020; Van Gelder *et al.*, 2020). Sexual and gender minorities have experienced increased rates of depression and anxiety combined with reduced access to social support and medical care, including gender affirming surgery (Morgan *et al.*, 2021). An intersectional perspective also shows that marginalized women, men and sexual and gender minorities experience greater negative outcomes compared with those with more privileged identities (Dasgupta *et al.*, 2020; Morgan *et al.*, 2021). Similar gendered affects have

been seen in previous pandemics, including Ebola and Zika (Wenham *et al.*, 2020).

This evidence has affirmed the need to better incorporate a gender lens into infectious disease outbreaks. Despite this evidence, there has been a historic neglect of gender-based analysis in health, including during health crises (Smith, 2019; Harman *et al.*, 2021a; Wenham and Davies, 2021). The reasons for this are multifaceted, including the conflation of gender with women and a lack of prioritization and political will accompanied by a lack of resources. This lack of prioritization has resulted in a lack of data to measure gendered effects, which further inhibits evidence-based responses and political prioritization of the needs of those most affected (Ahmed and Dumanski, 2020).

Recognizing the lack of available evidence on gender and pandemics, in early 2020, the Gender and COVID-19 project set out to use a gender analysis matrix to conduct rapid, real-time analyses while the pandemic was unfolding to examine the gendered effects of COVID-19. This paper reports on what a gender analysis matrix is, how it was implemented within the study, ways in which the findings from the matrix were applied and built upon, and challenges encountered when using the matrix methodology.

What is a gender analysis matrix?

A gender analysis matrix is a tool to assist researchers and programme implementers in conducting a systematic gender analysis. There are other steps in addition to using a gender analysis matrix that should be implemented to effectively carry out a gender analysis. A recent toolkit¹ published by the Special Programme for Research and Training in Tropical Diseases titled ‘Incorporating intersectional gender analysis into research on infectious diseases of poverty: a toolkit for health researchers’ (WHO, 2020) outlines many of these steps, including: disaggregating data by sex or gender and other social stratifiers, using gender frameworks, developing gender analysis questions and indicators and developing an intersectional gender analysis matrix. The work that supported this toolkit emerged out of a recognition that guidance on how to integrate a gender lens into public and global health research and interventions is often vague, leading to unsystematic implementation. It is important to note here that a gender analysis matrix is only a starting point that should be developed in parallel to wider research methods, which is aligned with the emphasis feminist researchers place on mixed methodologies and the need for an iterative research process where different methodologies work together (Sweetman *et al.*, 2010; Cole and Stewart, 2012; Hesse-Biber and Griffin, 2015).

A gender analysis matrix is a tool that seeks to explore how gender power relations manifest to create inequities between and among women, men and gender minorities. Specifically, a gender analysis matrix is a way to organize information systematically through the use of a gender framework and topic-specific domains. The development of the gender analysis matrix emerged partly from the desire to have a more systematic approach to gender analysis, which was grounded in both evidence and experience, but also due to a need to systematize gender analysis within health policy and systems research

(Morgan *et al.*, 2016). The gender analysis matrix presented here advances standardized approaches to conducting gender analysis, including matrixes originally developed by the WHO (WHO, 2011a; 2011b). The matrix presented here differs from the WHO matrixes in that it distinguishes between sex and gender-disaggregated data and data that examine gender power relations, consciously uses an evidence-based gender framework to consider the ways in which gender power relations manifest as inequities and encourages an intersectional lens. It is also the first time that a matrix such as this has been applied to an infectious disease outbreak.

A gender analysis matrix is at its core a table that explores how gender power relations interact to affect a specific topic. To develop a gender analysis matrix applicable for the analysis of the gendered effects of infectious disease outbreaks, we started with recognized gender frameworks that identify how power relations manifest as inequities, such as through: access to resources; roles and practices; norms and beliefs; decision-making and autonomy, and policies, institutions and laws (JHPIEGO, 2016; Morgan *et al.*, 2016). As the ways in which gender power relations manifest as inequities are multifaceted, these gender domains allow for the identification of factors that could be used as proxies to better understand how gender power relations manifest (WHO, 2020). For topic-specific domains, we selected those known to be relevant for infectious disease transmission and control, including risk and vulnerability, illness and treatment, health systems and services, social and economic impacts, and security effects (WHO, 2011b).

Within the table, the rows were the topic-specific domains, and the columns were the gender analysis domains. Table 1 provides a template of the gender analysis matrix. We used the matrix for two purposes: to brainstorm and record the different ways in which gender power relations affect infectious disease outbreaks. The initial matrix included questions in each cell, which were posed for further reflection and analysis related to the intersection of each topic-specific domain and gender analysis domain. For example, questions under risk and vulnerability and access to resources included: ‘To what extent do men, women, and gender minorities have access to knowledge about disease prevention?’ and ‘To what extent do men, women, and gender minorities have access to financial resources to purchase equipment and material needed to protect themselves from infection?’ These questions were meant to direct the researcher to see if they could find evidence related to how men, women and gender minorities have differential access to knowledge about disease prevention or resources to purchase needed supplies (and why) and how this might affect their vulnerability to infection. As such they were exploratory, aimed at scoping available sources and identifying gaps. By using a gender framework, researchers can systematically look across the different ways in which gender power relations manifest as inequities as this may affect how they are impacted by COVID-19. Including these questions across the domains aims to remove some subjectivity and individual interpretation within a team of researchers as it allows more direct guidance and examples of what should be included in each matrix domain. An example gender analysis matrix that was created for COVID-19 is included on the Gender and COVID-19 project website (Gender and COVID-19 Project, 2021).

Table 1. Gender analysis matrix template

Topic domains	Sex-/gender-disaggregated data	Gender analysis domains				
		Access to resources	Distribution of labour, practices, roles	Norms, values, beliefs	Decision-making power, autonomy	Policies, laws, institutions
Vulnerability to disease/illness						
Exposure						
Response to illness/treatment						
Health system—facilities and infrastructure						
Economic impacts						
Social impacts						
Security impacts						

Implementing the matrix methodology: using media sources to collect real-time data

One of the key challenges in an emergency scenario is to have real-time information on the effects of a crisis and of policies introduced to manage it, otherwise considerations of gendered sensitivities can be obscured to policymakers. Each crisis is unique and unpredictable, demanding the rapid collection and synthesis of new evidence. Typically, policy evaluation occurs once a policy has been implemented and uptake has begun; however, in a crisis, policymakers do not have the luxury of post-implementation evaluation or more formal qualitative or quantitative analyses. Therefore, the sense of urgency that accompanies a crisis often results in the prioritization of what can be completed quickly and simply (Smith, 2019). Gender-based analysis is not known for either characteristic, often requiring context-specific, in-depth analysis and drawing on research methods, such as ethnography, that are difficult in crisis contexts. The risk of waiting for such analysis is that the damage will have been done already, and efforts to mitigate gendered impacts of policy decisions are too little and/or too late.

Recognizing the lack of available evidence on gender and pandemics, we conducted rapid, real-time analyses while the pandemic was unfolding to both inform the ongoing response and future outbreaks. To do so, we developed and deployed a gender analysis matrix to examine the gendered effects of the COVID-19 pandemic, with a particular focus on women and marginalized groups. We used the gender analysis matrix to assess media sources and grey literature, which provided a useful source of information to understand the real-world effects of political responses and government policy. Using a gender analysis matrix as a tool, and media sources and grey literature as information sources (compared to more traditional sources of data), proved to be particularly useful given the rapidly changing nature of the epidemic and the need to collect information quickly in a structured way. Given routine bias in the media, a matrix methodology also allowed for a systematic analysis of themes across media sources and outlets. Overall, the gender matrix proved to be a useful tool for rapid, real-time analysis to synthesize what evidence is readily available, identify policy gaps and advocate for change. Below, we critically reflect on the use of the gender analysis matrix to capture the gendered nature of the initial COVID-19 response in four case studies, which were on the forefront of the first wave of the pandemic, and have differing approaches to gender policy: Canada, China, Hong

Kong and the UK. While this methodology was predominantly used in high-income country contexts, it can easily be adapted to low-to-middle income country contexts. Although we focus on media sources and grey literature, gender analysis matrixes can be used to systematically integrate gender analysis into any health or health system and policy qualitative or quantitative research.

Case study methodology

Each case study used a similar but context-specific approach to analyse the gender content of media stories and grey literature. We recognize that, as D'Ignazio and Klein write in *Data Feminism*, 'media reportage and crowdsourcing are imperfect ways of collecting data, but they fill a vacuum' (D'Ignazio and Klein, 2020, p. 36). In the case of a pandemic response, this vacuum not only reflects the historic neglect of gender-disaggregated and related data collection but also the urgency of a pandemic response and practical challenges of conducting research in the context of lockdown. While researchers were struggling to develop online surveys and interview platforms, and journalist and civil society groups were reporting lived experiences, as well as initial results from what research was being conducted. By crowdsourcing these data, we aimed to scope some of the initial gendered effects of the pandemic (Morrow *et al.*, 2014). We recognize that this is a limitation and that the data only reflect the stories written, which may lead to bias in relation to what makes a good news story and, indeed, what journalists are aware of, which in and of itself is subject to numerous intersectional biases.

Each country team searched local and context-specific news sources in English and Mandarin (China), including the Canada Newstream database within Canada, open access Chinese newspapers and media websites such as the state council information office, China News, China Daily and XinHua Net in China, a Lexis Nexis search of the top eight popular national newspapers within the UK, and within Hong Kong, the China Daily, Hong Kong Free Press, Radio Television Hong Kong and the South China Morning Post. Relevant government sites were also searched for sex- and gender-disaggregated findings, including press releases and census data. Snowball sampling was used to follow specific references mentioned in news articles and blog posts to identify additional sources. The search period coincided with when COVID-19 was declared a public health emergency and restrictions were put in place within each context. In Canada and the UK, content was searched between March and June

2020, and in China and Hong Kong, the content was searched between January and June 2020. In all cases, initial search terms included COVID OR coronavirus AND women OR gender (in Mandarin: ‘新型冠状病毒肺炎’ OR ‘新冠病毒’ AND ‘女性’ OR ‘性别’). These were then supplemented with broader searches conducted to include intersectional issues (with search terms varying slightly by context) over the same time.

Searches did not aim to be exhaustive but rather a rapid scoping. Such scoping methods are useful for analysing emerging evidence when it is still unclear what more specific questions can be posed and valuably addressed by a more precise analysis (Munn *et al.*, 2018). Documents were selected if they provided examples, as opposed to predictions or assumptions, of how specific genders or priority populations are impacted by the COVID-19 outbreak and response and originated from an established, reputable media source, organization or government body. For media sources, this meant legitimate and respected journalistic outlets, registered with government authorities and widely read by the general population (as opposed to personal blogs or sites dedicated to advancing a specific agenda). Documents from organizations that were registered with the appropriate authorities in that context and met corresponding transparency and reporting requirements were included. From these sources, data points demonstrating specific and differential gendered effects were extracted. Data points could be statistics or examples based on lived experience. Credibility was determined by evaluating the documentation source, comparing the finding with complementary or contradictory data and fact-checking any citation (such as to government statistics) present. Content identified through the above scoping was coded and recorded within the gender analysis matrix using thematic analysis based on the gender analysis and topic-specific domains as a coding framework.

Applying and building on the gender matrix

Overall, the matrix facilitated the rapid collection and synthesis of evidence on the gendered effects of COVID-19 and can be used in other crises. When published quickly, the evidence can be used by decision-makers and other researchers to inform their processes and projects amid a crisis (as opposed to waiting for the results of more intensive methods). Considering the neglect of gender-based analysis during prior health crises, having a tool to systematically and clearly demonstrate the wide-ranging gendered effects is valuable in itself. This is particularly relevant in health emergencies where positivist epidemiological methods are used as the ‘gold standard’ of data collection. Gender analysis matrixes can also be useful tools within all types of health and health systems research and are therefore relevant for those not working on health crises.

Using the matrix to identify gaps

As within all research, what is not included can be just as important as what is included. In our case study, the matrix served to organize data from mainstream media and government sources and, consequently, there were less data included from groups underrepresented in such sources. For example, within the Canadian matrix, there are only two references to effects on gender-diverse people (Donato, 2020; Morin, 2020). Data from Hong Kong revealed a lack of consideration

of gender effects and inequities within policies aimed at alleviating the economic effects of the pandemic (Carvalho, 2020; Phila, 2020). In China, the matrix drew attention to the fact that ethnic minority populations’ experiences were mostly missing. While some reports were referring to the stigma and exclusion of rural migrant workers in Hubei, they appeared in the early stages of the outbreak and did not reappear (Yu, 2020). Also, very few reports of domestic violence were reported compared to other case study countries (Wanqing, 2020). It is therefore important to recognize that the content of such searches will reflect what is currently prioritized and often sensationalized in the mainstream media.

Limits to intersectional analysis and the organization of what we already know point to a wider question of how to identify the unseen issues, margins and silences in knowledge that are fundamental to gendered power relations. As feminist researchers argue, it is within these hidden spaces that gender power relations often reside and are reproduced (Crenshaw, 1991; Fine, 1992; Parpart, 2010; Enloe, 2014; Harman, 2019; D’Ignazio and Klein, 2020). The gender analysis matrix helps us identify and analyse gendered patterns of pandemic response and impact that can fill some of these gaps. It can create new knowledge in identifying trends or stories. However, in regard to our case study, it can only capture those issues that are already visible by the media.

Using the matrix to inform further research

Matrix results from all four case studies were used to inform further research tools. Semi-structured interview guides followed the structure of the gender domains, asking about access to resources, labour/roles, norms and beliefs, autonomy and decision-making and policies and specific questions informed by the findings of the matrix. For example, interviews with newcomers in Canada specifically asked about access to benefits, language classes and support for online learning, as these challenges had been noted during the matrix analysis process. Findings also informed purposive sampling of key informants. For example, numerous media reports on rises in gender-based violence led to interviews with organizations supporting women leaving violent homes. In China, policy interviews have also been informed by the matrix. The interviewers have been able to enquire specifically about the reports of mental illness amongst health care workers, gender stereotypes within the health care sector and gendered practices amongst first-response health care workers. The low number of domestic violence reports uncovered in the matrix for China has also been discussed in interviews.

As a result, as our case study example shows, the matrix can be used to identify a particular set of concerns or patterns that become the established set of gender issues related to health emergencies. Within our example, identifying gaps becomes just as important as identifying what is present so as to not reproduce a potential confirmation bias within findings that may distort wider attention and focus to specific issues, e.g., gender-based violence or health care worker protection, to the exclusion of unseen or minority issues.

Challenges encountered when using the matrix methodology

There are a number of challenges that we encountered when using the gender analysis matrix methodology, including:

finding and organizing data, potential for minimizing complexity and ensuring the matrix is intersectional.

Finding and organizing data

Data did not always fit neatly into each domain, and in some cases, it was clear that data cut across multiple domains. For example, a report that escorts in the city of Edmonton, Canada, could access the federal financial relief programme (unlike sex trade workers elsewhere) due to its licensing system could have been placed in the ‘Labour-Economic Impacts’ domain (Zoledziowski, 2020). However, as it was specifically reporting on how legislation structured access for this women-dominated profession, it was placed in the ‘Institutions/Laws-Economic Impacts’ domain. Similar issues arose in the China case study when a large volume of reports referred to women health care workers as ‘stressed’ and suffering nervous breakdowns (Yu and Sun, 2020; Huang *et al.*, 2020). This could have been placed under ‘Labour or Norms/Beliefs’ as, in China, there is a higher number of women in the health workforce (Feder, 2020) than men, which may account for more women reporting post-traumatic stress. However, it may also be indicative of gender stereotypes (i.e. norms/beliefs) as men are not expected to suffer stress or anxiety. When filling in the matrix, researchers had to make judgement calls about where best to place evidence or choose to place evidence in multiple domains if relevant.

Potential for minimizing complexity

Exploring and understanding the manifestation of gender power relations is complex due to the multifaceted way in which gender power relations are produced and reproduced. A challenge of the matrix is that it can reduce the complexity of the social construction of gender and how gender issues relate to each other. This is particularly relevant when adapting the matrix for use in languages other than English. The concern here is practical—how to categorize what goes where within the matrix—and also analytical—how to capture the overlapping and intricate ways in which gender is constructed and reproduced during a health emergency.

However, researchers need to put categories and boundaries on what they are researching in order to make sense of the data. Evidence-based frameworks are often used as analytical guides to help researchers further organize thinking, frame studies, questions, data collection and analysis—and are in essence a way to put categories on what is being researched. The matrix helps to conduct this process in a systematic way. In addition, such matrixes allow for transparency, especially when sources are cited within the matrix, as is the case with our matrix which was published online.

Ensuring the matrix is intersectional

The matrix serves primarily as an organizing framework for evidence of the gendered effects of an outbreak. The first round of searches for the matrix used the general search terms of women and gender, later incorporating search terms relevant to priority populations and gender-diverse people, which produced much richer results. We found that without an intersectional lens that intentionally includes typically excluded groups, the analysis may result in prioritizing the gendered issues felt by the most privileged in society (most likely to be covered in media stories), thus further marginalizing those made more vulnerable and failing to represent a diverse range

of experiences. For example, in the UK, in the illness and treatment topic domain, we saw a lot of material covering the risks to pregnancy posed by COVID-19 infection, but intersectional considerations in the matrix also illuminated that half of the pregnant women in hospital with COVID-19 were Black, Asian or minority ethnic (Mathers, 2020). The ramifications of excluding an intersectional lens while using this method as a first step to gather data can have additional downstream impacts on these populations who would then be further excluded from policy development and implementation considerations. In the UK, Black people were fined more than White people under coronavirus laws, and so this implementation must be questioned (Busby and Gidda, 2020).

Future matrixes could better incorporate an intersectional analysis by tailoring the domains, as well as search terms, to better reflect how numerous identity factors structure the experiences of pandemic response. For example, under the ‘Illness/Treatment - Labour/Roles’ domains questions might include: ‘Who is caring for the ill both in formal health-care settings and at home?’ ‘To what extent are women, and particularly women who are Black, indigenous or people of colour (BIPOC), providing care to the ill?’ ‘Do conditions of care work differ among genders and across other identity factors?’ In addition, we recommend including an additional column next to the sex- and gender-disaggregated data column labelled ‘intersectional experiences’. This column could be populated with questions and/or evidence (depending on what stage the matrix is being used) in regard to intersectional experiences. A blank cell after the matrix has been populated would indicate that gender was treated in a monolithic manner without taking intersectional experiences into account.

Conclusion

A gender analysis matrix is a tool that facilitates systematic gender analysis. We used the matrix to study the gendered impacts of COVID-19, but it could also be used for any health emergency, as it allows for rapid, real-time analysis of media and government sources, which allowed us to identify gaps and feed into our additional qualitative research. Gender analysis matrixes can also be used to inform more traditional forms of primary data collection, including interviews, focus group discussion and surveys, and adapted to other research topics to ensure gender-inclusive research or interventions. If policies and programmes are to effectively address gender inequities, we need to first explore and identify how gender inequities manifest to affect health and well-being—a gender analysis matrix allows us to do so systematically and comprehensively.

Data availability

The data underlying this article will be shared on reasonable request to the corresponding author.

Funding

This work was supported by the Canadian Institutes of Health Research under [grant number OV7-170639]. Sophie Harman’s work has also been supported by the Leverhulme

Trust. Rosemary Morgan's work was supported by the Bill & Melinda Gates Foundation under investment INV-017300.

Author contributions

- Conception or design of the work: RM
- Data collection: SED, HF, CCRG, KAG, SH, AH-C, JS, CW
- Data analysis and interpretation: SED, HF, CCRG, KAG, SH, AH-C, JS, CW
- Drafting the article: RM, SED, HF, CCRG, KAG, SH, AH-C, JS, CW
- Critical revision of the article: RM
- Final approval of the version to be submitted: RM, SED, HF, CCRG, KAG, SH, AH-C, JS, CW

Ethical approval. Ethical approval for this type of study is not required by our institute.

Conflict of interest statement. No potential conflict of interest was reported by the authors.

Note

1. The methodology outlined within the toolkit was developed by one of the authors of this paper.

References

- Ahmed SB, Dumanski SM. 2020. Sex, gender and COVID-19: a call to action. *Canadian Journal of Public Health* 111: 980–3.
- Baker P, White A, Morgan R. 2020. Men's health: COVID-19 pandemic highlights need for overdue policy action. *Lancet* 395: 1886–8.
- Betron M *et al.* 2020. Men and COVID-19: adding a gender lens. *Taylor & Francis* 15: 1090–2.
- Busby M, Gidda M. 2020. BAME People Fined More than White Population Under Coronavirus Laws. *The Guardian*, 26 May. <https://www.theguardian.com/world/2020/may/26/bame-people-fined-more-than-white-population-under-coronavirus-laws>, accessed 6 September 2021.
- Carvalho R. 2020. Hong Kong Domestic Workers 'Angry' at Exclusion from Coronavirus Relief Measures. *South China Morning Post*, 9 April. <https://www.scmp.com/week-asia/politics/article/3079281/hong-kong-domestic-workers-angry-exclusion-coronavirus-relief>, accessed 6 September 2021.
- Cole ER, Stewart AJ. 2012. Narratives and numbers: feminist multiple methods research. In: Hesse-Biber S (ed.) *Handbook of Feminist Research: Theory and Praxis*. Los Angeles: SAGE Publications, Inc, 386–7.
- Crenshaw K. 1991. Mapping the margins: intersectionality, identity politics, and violence against women of color. *Stanford Law Review* 43: 1241.
- D'Ignazio C, Klein LF. 2020. *Data Feminism*. MIT Press. <https://data-feminism.mitpress.mit.edu/>, accessed 6 September 2021.
- Dasgupta J *et al.* 2020. Axes of alienation: applying an intersectional lens on the social contract during the pandemic response to protect sexual and reproductive rights and health. *International Journal for Equity in Health* 19: 130.
- Donato A. 2020. Health-Care Access was Already Hard for Trans Canadians. *Then COVID-19 Came*. *HuffPost Canada Life*, 25 March. https://www.huffingtonpost.ca/entry/covid19-trans-canadians_ca_5e7b896fc5b6b7d80959c06a?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS88&guce_referrer_sig=AQAAAEcz15FyQvRxb2TTLdkIb7sWQ4JLO3wfvnuTWD2AZRDufeqOnndRz0P7qABQPWFfCaLfySpUg3znPPbm2SXO7LJ1XR8bvd6V-UPBTBy0pDlNqYTXRaNsvGkO8aq6VLuffRxZBoC02IO6k6MbhfMrfVvPelzVpireGLswxL12aQJG, accessed 6 September 2021.
- Enloe C. 2014. *Bananas, Beaches and Bases*. University of California Press, Berkeley, Los Angeles, London.
- Feder S. 2020. *Frontline Healthcare Workers in China Report High Rates of Anxiety, Stress, Depression, and Insomnia Since the Coronavirus Outbreak Began*. *Business Insider Australia*, 24 March. <https://www.businessinsider.com.au/chinese-nurses-report-anxiety-depression-during-coronavirus-outbreak-2020-3>, accessed 6 September 2021.
- Fine M. 1992. *Disruptive Voices: The Possibilities of Feminist Research*. Ann Arbor: The University of Michigan Press.
- Gebhard C *et al.* 2020. Impact of sex and gender on COVID-19 outcomes in Europe. *Biology of Sex Differences* 11: 29.
- Gender and COVID-19 project. 2021. *Gender Matrix*. <https://www.genderandcovid-19.org/matrix/>, accessed 20 December 2021.
- Harman S. 2019. *Seeing Politics: Film, Visual Method, and International Relations*. Montreal & Kingston: McGill-Queen's University Press.
- Harman S *et al.* 2021a. COVID-19 vaccines and women's security. *The Lancet* 397: 357–8.
- Harman S. 2021b. Threat not solution: gender, global health security and COVID-19. *International Affairs* 97: 601–23.
- Hesse-Biber SN, Griffin AJ. 2015. Feminist approaches to multimethod and mixed methods research: theory and praxis. In: Hesse-Biber SN, Johnson RB (eds), *The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry*. New York: Oxford University Press, 72–90.
- Huang *et al.* 2020. Mental health survey of medical staff in a tertiary infectious disease hospital for COVID-19. *Chin Ind Hyg Occup Dis* 38: 192–5.
- JHPIEGO. 2016. *Gender Analysis Toolkit for Health Systems*. <http://reprolineplus.org/system/files/resources/Gender-Analysis-Toolkit-for-Health-Systems.pdf>, accessed 19 April 2016.
- Mathers M. 2020. *Coronavirus: Half of Pregnant Women in UK Hospitals with Covid-19 from BAME Background, Study Finds* | *The Independent*. *The Independent*, 9 June. <https://www.independent.co.uk/news/uk/home-news/coronavirus-pregnant-women-hospital-bame-black-ethnic-minority-study-a9556461.html>, accessed: 6 September 2021.
- Mittal S, Singh T. 2020. Gender-based violence during COVID-19 pandemic: a mini-review. *Frontiers in Global Women's Health* 1: 4.
- Morgan R *et al.* 2016. How to do (or not to do)... gender analysis in health systems research. *Health Policy and Planning* 31: 1069–78.
- Morgan R *et al.* 2021. Beyond a zero-sum game: how does the impact of COVID-19 vary by gender? *Frontiers in Sociology* 6: 126.
- Morin S. 2020. *COVID-19 Forces Closing of Fredericton's only LGBTQ Nightclub*. *CBC News*, 29 June. <https://www.cbc.ca/news/canada/new-brunswick/fredericton-nightclub-boom-lgbtq-covid-19-1.5630681>, accessed 6 September 2021.
- Morrow O, Hawkins R, Kern L. 2014. *Feminist research in online spaces*. *Routledge* 22: 526–43.
- Munn Z *et al.* 2018. Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology* 18: 143.
- Parpart JL. 2010. Choosing silence: rethinking voice, agency and women's empowerment. In: Ryan-Flood R, Gill R (eds), *Secrecy and Silence in the Research Process*. London and New York: Routledge, 15–29.
- Phila S. 2020. *Coronavirus: Hong Kong Casual Workers and Unemployed to Miss Out on Government Relief Measures During Covid-19 Pandemic*. *Europe Solidaire Sans Frontières*, 10 April. <http://www.europe-solidaire.org/spip.php?article52889>, accessed 6 September 2021.
- Smith J. 2019. Overcoming the 'tyranny of the urgent': integrating gender into disease outbreak preparedness and response. *Gender and Development* 27: 355–69.

- Smith J *et al.* 2020. COVID-19, equity and men's health. *International Journal of Mens Social and Community Health* 3: e48–64.
- Sweetman D, Badiie M, Creswell JW. 2010. Use of the transformative framework in mixed methods studies. *SAGE PublicationsSage CA* 16: 441–54.
- Van Gelder N *et al.* 2020. COVID-19: reducing the risk of infection might increase the risk of intimate partner violence. *EClinicalMedicine* 21: 100348.
- Wanquing Z. 2020. *Domestic Violence Cases Surge During COVID-19 Epidemic*. Sixth Tone, 2 March. <https://www.sixthtone.com/news/1005253/domestic-violence-cases-surge-during-covid-19-epidemic>, accessed 6 September 2021.
- Wenham C *et al.* 2020. Women are most affected by pandemics - lessons from past outbreaks. *Nature* 583: 194–8.
- Wenham C, Davies SE. 2021. WHO runs the world – (not) girls: gender neglect during global health emergencies. *International Feminist Journal of Politics*. 10.1080/14616742.2021.1921601.
- Wenham C, Smith J, Morgan R. 2020a. COVID-19: the gendered impacts of the outbreak. *Lancet* 395: 846–8.
- Wenham C, Smith J, Morgan R. 2020b. COVID-19: the gendered impacts of the outbreak. *The Lancet* 395: 846–8.
- WHO. 2011a. *Gender Mainstreaming for Health Managers: A Practical Approach*. Geneva.
- WHO. 2011b. *Taking Sex and Gender into Account in Emerging Infectious Disease Programmes: An Analytical Framework*. Geneva: World Health Organization. <https://hiip.wpro.who.int/portal/Reportspublications/TabId/83/ArticleID/1151/ArticleID/161/Taking-sex-and-gender-into-account-in-emerging-infection-disease-programmes-An-analytical-framework.aspx>, accessed 29 April 2018.
- WHO. 2020. *Incorporating Intersectional Gender Analysis into Research on Infectious Diseases of Poverty: A Toolkit for Health Researchers*. World Health Organization. <http://www.who.int/tdr/publications/year/2020/tdr-intersectional-gender-toolkit/en/>, accessed 13 November 2020.
- Yu H. 2020. *Anti-Epidemic War: We has won the Victory in the Fight Against the Epidemic and People are Returning to Work. Please do not Discriminate Against Wuhan People*. 「抗疫战」抗疫告捷，全国各地迎来返工潮，请不要歧视武汉人！海峡要闻 <https://baijiahao.baidu.com/s?id=1663496692791705089&wfr=spider&for=pc> [Chinese].
- Yu WL, Sun DY. 2020. Intervention of mental health risks of female nurses engaged in nursing patients with COVID-19. *Occupational Health and Emergency Rescue* 38: 106–8.
- Zoledziowski A. 2020. *Sex Workers Can Access Financial Coronavirus Aid in This Canadian City*. *Vice World News*, 17 June. https://www.vice.com/en/article/qj4v4v/sex-workers-can-access-financial-coronavirus-aid-in-this-canadian-city?utm_campaign=share-button&fbclid=IwAR3nXyHWroWZViT06yd-ZiUF68aGb6AXqrwQTs3Hp6Huan1-ExpFTWSi0mw, accessed 6 September 2021.