


# Sexual health (excluding reproductive health, intimate partner violence and gender-based violence) and COVID-19: a scoping review

Navin Kumar ,<sup>1</sup> Kamila Janmohamed,<sup>1</sup> Kate Nyhan,<sup>2,3</sup> Laura Forastiere,<sup>4</sup> Wei-Hong Zhang,<sup>5,6</sup> Anna Kågesten,<sup>7</sup> Maximiliane Uhlich,<sup>8</sup> Afia Sarpong Frimpong,<sup>1</sup> Sarah Van de Velde,<sup>9</sup> Joel M Francis,<sup>10</sup> Jennifer Toller Erausquin ,<sup>11</sup> Elin Larrson,<sup>7,12</sup> Deton Callander,<sup>13</sup> John Scott,<sup>14</sup> Victor Minichiello,<sup>14,15</sup> Joseph Tucker<sup>16,17,18</sup>

► Additional material is published online only. To view, please visit the journal online (<http://dx.doi.org/10.1136/sextrans-2020-054896>).

For numbered affiliations see end of article.

## Correspondence to

Navin Kumar, Yale University, New Haven, CT 06511, USA; [navin183@gmail.com](mailto:navin183@gmail.com)

Received 30 November 2020  
Revised 20 February 2021  
Accepted 27 February 2021  
Published Online First  
29 March 2021

## ABSTRACT

**Objectives** The COVID-19 pandemic has exposed and exacerbated existing socioeconomic and health disparities, including disparities in sexual health and well-being. While there have been several reviews published on COVID-19 and population health disparities generally—including some with attention to HIV—none has focused on sexual health (ie, STI care, female sexual health, sexual behaviour). We have conducted a scoping review focused on sexual health (excluding reproductive health (RH), intimate partner violence (IPV) and gender-based violence (GBV)) in the COVID-19 era, examining sexual behaviours and sexual health outcomes.

**Methods** A scoping review, compiling both peer-reviewed and grey literature, focused on sexual health (excluding RH, IPV and GBV) and COVID-19 was conducted on 15 September 2020. Multiple bibliographical databases were searched. Study selection conformed to Joanna Briggs Institute (JBI) Reviewers' Manual 2015 Methodology for JBI Scoping Reviews. We only included English-language original studies.

**Results** We found that men who have sex with men may be moving back toward pre-pandemic levels of sexual activity, and that STI and HIV testing rates seem to have decreased. There was minimal focus on outcomes such as the economic impact on sexual health (excluding RH, IPV and GBV) and STI care, especially STI care of marginalised populations. In terms of population groups, there was limited focus on sex workers or on women, especially women's sexual behaviour and mental health. We noticed limited use of qualitative techniques. Very few studies were in low/middle-income countries (LMICs).

**Conclusions** Sexual health research is critical during a global infectious disease pandemic and our review of studies suggested notable research gaps. Researchers can focus efforts on LMICs and under-researched topics within sexual health and explore the use of qualitative techniques and interventions where appropriate.

## INTRODUCTION

The COVID-19 pandemic disproportionately affects the sexual health of people of colour,<sup>1</sup> ethnic minority groups,<sup>2</sup> women,<sup>3</sup> and sexual and gender minority (SGM)<sup>4</sup> populations. Sexual health research, broadly defined, is the study of an individual's physical, emotional, mental and social

well-being in relation to sexuality; it goes beyond the absence of disease, dysfunction or infirmity.<sup>5</sup> In this respect sexual health has psychosocial dimensions, in addition to physical dimensions. Sexual health research includes studies that centre on sexual minorities as a population and comprises sexual behaviour and access to high-quality sexual healthcare. For the purposes of this review, due to a lack of research and that systematic reviews on these areas are currently being conducted, reproductive health (RH), intimate partner violence (IPV) and gender-based violence (GBV) were not considered components of sexual health.

Regulations restricting mobility or movement, the resulting economic impact on individuals and families, and the need to shift healthcare resources (including money, clinical space and staff) towards the COVID-19 response may have affected sexual health. Certain marginalised populations may be even more affected. For example, a decrease in economic opportunities may reduce access to sexual healthcare resulting in reduced STI/HIV testing and treatment. This may be especially pronounced among marginalised populations such as SGM. Similarly, sex workers worldwide may not seek medical care due to reduced healthcare provision. In some countries, such as the USA, SGM individuals are also less likely to have health insurance, possibly exacerbated by economic pressures due to the pandemic, increasing negative economic impacts if they acquire COVID-19. These factors may increase socioeconomic marginalisation and further decrease access to sexual health services.

While several reviews have sought to synthesise existing and fast-changing evidence on COVID-19 and health outcomes, little attention has been paid to the pandemic's effects on sexual health and well-being. There have been, however, several reviews focused on HIV specifically,<sup>6–8</sup> but not on sexual health more broadly. Sexual health is a central feature in overall health and well-being, and in the socioeconomic development of communities and countries<sup>9</sup>; understanding if and how the COVID-19 pandemic has affected sexual health is, therefore, critically important.

Drawing on the WHO's holistic definition of sexual health, this review sought to include a broad range of sociobehavioural factors and outcomes



© Author(s) (or their employer(s)) 2021. No commercial re-use. See rights and permissions. Published by BMJ.

**To cite:** Kumar N, Janmohamed K, Nyhan K, et al. *Sex Transm Infect* 2021;**97**:402–410.

relative to sexual health,<sup>5</sup> excluding RH, IP and GBV. This scoping review compiled peer-reviewed and grey literature in the field to identify gaps in current knowledge of sexual health (excluding RH, IPV and GBV) and COVID-19, support public health efforts, and guide intervention efforts and resource distribution. The broad research questions were, ‘What has been reported on sexual health (excluding RH, IPV and GBV) in the COVID-19 era?’ and ‘What are the gaps in the current knowledge base on sexual health (excluding RH, IPV and GBV) and COVID-19 across marginalised populations?’

## METHODS

A scoping review of both peer-reviewed and grey literature was conducted by 14 individuals: 13 researchers from several universities worldwide, from a range of disciplines (eg, medicine, sociology, demography, public health, criminology, economics, psychology, epidemiology), and an informationist from the Harvey Cushing/John Hay Whitney Medical Library at Yale University. We chose to conduct a scoping review rather than use other methods of research synthesis because scoping reviews are appropriate for mapping an area of research<sup>10</sup>; we were not examining the effect of an intervention on an outcome of interest, as per a systematic review; and sexual health research outcomes (excluding RH, IPV and GBV) were not sufficiently similar to each other to warrant pooling or formal meta-analysis regarding a specific outcome. Research objectives, inclusion criteria and methodological techniques were determined before study commencement using the Joanna Briggs Institute (JBI) Reviewers’ Manual 2015 Methodology for JBI Scoping Reviews.<sup>11</sup> Our process adhered to the JBI framework: (1) identifying research question; (2) identifying relevant studies; (3) developing comprehensive search strategy; (4) selecting studies; (5) charting data; and (6) collating, summarising and reporting results. The study team developed a search strategy as recommended by the 2015 Methodology for JBI Scoping Reviews.<sup>11</sup> Reporting of results conformed to Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews.<sup>12</sup> We published a study protocol<sup>13</sup> and registered the study on the Open Science Framework (osf.io/PRX8E) to enhance methodological transparency and improve reproducibility of results and evidence synthesis.

### Study selection criteria

Published researches (peer reviewed and grey literature where primary data were collected such as reports, research letters and briefs) investigating sexual health (excluding RH, IPV and GBV) and COVID-19 in all populations, settings and study designs, for example, studies with small samples, quantitative and qualitative studies, were eligible for inclusion (see online supplemental file 1 for more detail).

### Study selection

Two independent reviewers (ASF, KJ) screened each title and abstract using the inclusion/exclusion criteria. Inter-rater reliability estimates were calculated and a third reviewer (NK) acted as a tie breaker when there was lack of consensus. We obtained full-text articles of all potential eligible studies and evaluated article eligibility, similar to the abstract screening phase. If only abstracts and not full texts were available, we contacted authors where necessary if the abstracts did not provide sufficient information.<sup>14</sup>

### Search method

Studies were reviewed across 12 databases focusing primarily on peer-reviewed literature. We searched the literature published

from January 2020, which was the month in which the first COVID-19 report was provided to the WHO,<sup>15</sup> until September 2020 (see online supplemental file 1 for more detail).

### Data extraction

Reviewers underwent practice exercises and then separately extracted study details from studies. Reviewers abstracted the study details using a pretested data extraction template (see online supplemental file 1 for more detail).

## RESULTS

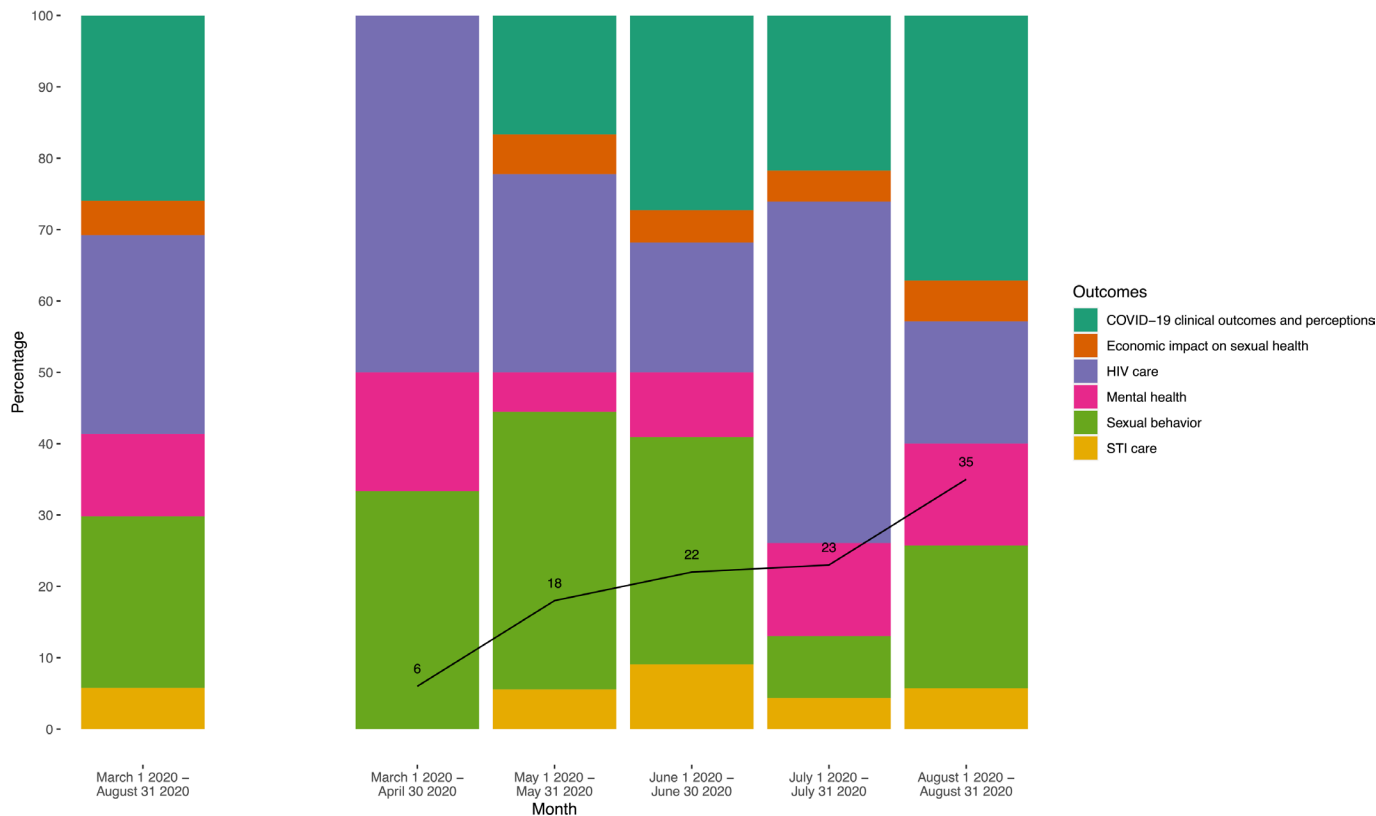
Our search yielded 7776 results (databases: 7684, grey literature: 92) with 1529 duplicates, resulting in 6247 articles that were subjected to title and abstract review. Of those, 5934 were excluded at the abstract screening phase as they did not meet our inclusion criteria, most were excluded as they were not relevant to our research questions. Three hundred and twenty-six full-text articles were then screened and 194 were removed because they were case reports (84) or not relevant to the research question (110). The remaining 119 articles were included in the scoping review (online supplemental figure 1). Online supplemental table 1 showed the distribution of study setting, methodology and sample size for the included studies across 71 countries. Studies were published from March 2020 to September 2020, with an increasing proportion published July 2020 onward. Thirty per cent (N=36) of studies were conducted in the USA, 10% (N=12) in Italy and 7% (N=8) each in China, South Africa and the UK.

Studies assessed a variety of outcomes, such as HIV care (27%, N=32), sexual behaviour (24%, N=29), COVID-19 clinical outcomes and perceptions (23%, N=29), mental health (16%, N=19), STI care (6%, N=7) and the economic impact on sexual health (excluding RH, IPV and GBV) (3%, N=4). These outcomes were mainly assessed among people living with HIV (PLHIV) (41%, N=49), SGM (27%, N=32), the general public (24%, N=28), sex workers (4%, N=5) or women (4%, N=5). Of the studies included, 39% (N=47) were cross-sectional observational quantitative studies, 25% (N=30) were prospective observational cohort quantitative studies, 18% (N=21) were retrospective observational cohort quantitative studies, 8% (N=9) were qualitative studies, 4% (N=5) were mixed methods and 5% (N=6) were modelling studies. No interventions were found, and some quantitative studies had small samples (<20), possibly affecting quality of results.

Online supplemental table 2 presented a synthesis of results organised by the six outcomes and the five populations. [Figure 1](#) indicated outcomes over time, and [figure 2](#) detailed populations over time. Studies at the beginning of the pandemic mostly concerned COVID-19 clinical outcomes and HIV care, but outcomes such as STI care and the economic impact on sexual health (excluding RH, IPV and GBV) became more prominent as the pandemic progressed. Research generally detailed the general public and PLHIV at the advent of COVID-19, but included other populations such as women and sex workers with pandemic progression.

### Overview of research by outcomes and populations

Overall, we found some notable themes. First, we found that after an initial decrease, men who have sex with men (MSM) may be moving back toward pre-pandemic levels of sexual activity.<sup>16</sup> Then, we noted that STI and HIV testing rates seemed to have decreased,<sup>17 18</sup> perhaps due to reduced test seeking but not necessarily reduced sexual activity.



**Figure 1** Outcome breakdown for all studies (1 March 2020–31 August 2020) and for each month. Each colour within a bar represents: N of studies representing a particular outcome/total N of studies in that time period. Studies with no date reported were not included. Total number of studies per month indicated by the black line. Studies after 31 August were not included in the above figure as our literature search did not cover the full month of September.

### COVID-19 clinical outcomes and perceptions

Twenty-eight studies addressed COVID-19 clinical outcomes and perceptions.<sup>15 19–44</sup> Most (75%, N=21) were retrospective observational quantitative studies exploring clinical outcomes of COVID-19 among PLHIV.

#### People with HIV

Twenty-five studies addressed PLHIV.<sup>15 19–41</sup> Most of these compared COVID-19 health outcomes between PLHIV and the general population. Ten studies found no difference in COVID-19 risk or outcomes between PLHIV and the general population,<sup>15 21 23 28 32 34 37 38 40 41</sup> while other studies found that PLHIV with COVID-19 were more likely to have comorbidities such as diabetes and hypertension.<sup>26 29 31 35 36</sup>

#### Sexual and gender minorities

Three studies centred on SGM.<sup>42–44</sup> A Taiwanese cross-sectional observational quantitative study found that sexual minorities were more likely to demonstrate health anxiety with regard to COVID-19 compared with heterosexual individuals.<sup>42</sup> A cross-sectional US study found that most MSM believed COVID-19 could be transmitted sexually.<sup>44</sup>

#### Economic impact on sexual health

Four studies evaluated the economic impact on sexual health (excluding RH, IPV and GBV), exploring the impact of the pandemic on sex workers.<sup>45–50</sup> A retrospective observational quantitative study with a global sample found a decrease in the number of active online sex worker profiles during the pandemic and an increase in risk-reduction strategies such as the cessation of in-person services

and enhanced sanitary practices.<sup>46</sup> A qualitative study conducted in Singapore also found a decline in sex work-related activities due to facility closures during the pandemic.<sup>48</sup>

#### HIV care

Thirty-four studies assessed outcomes related to HIV care.<sup>17 18 51–80</sup> Several (42%) were cross-sectional observational quantitative studies assessing the effect of the pandemic on HIV clinic attendance and procedures.

#### General public

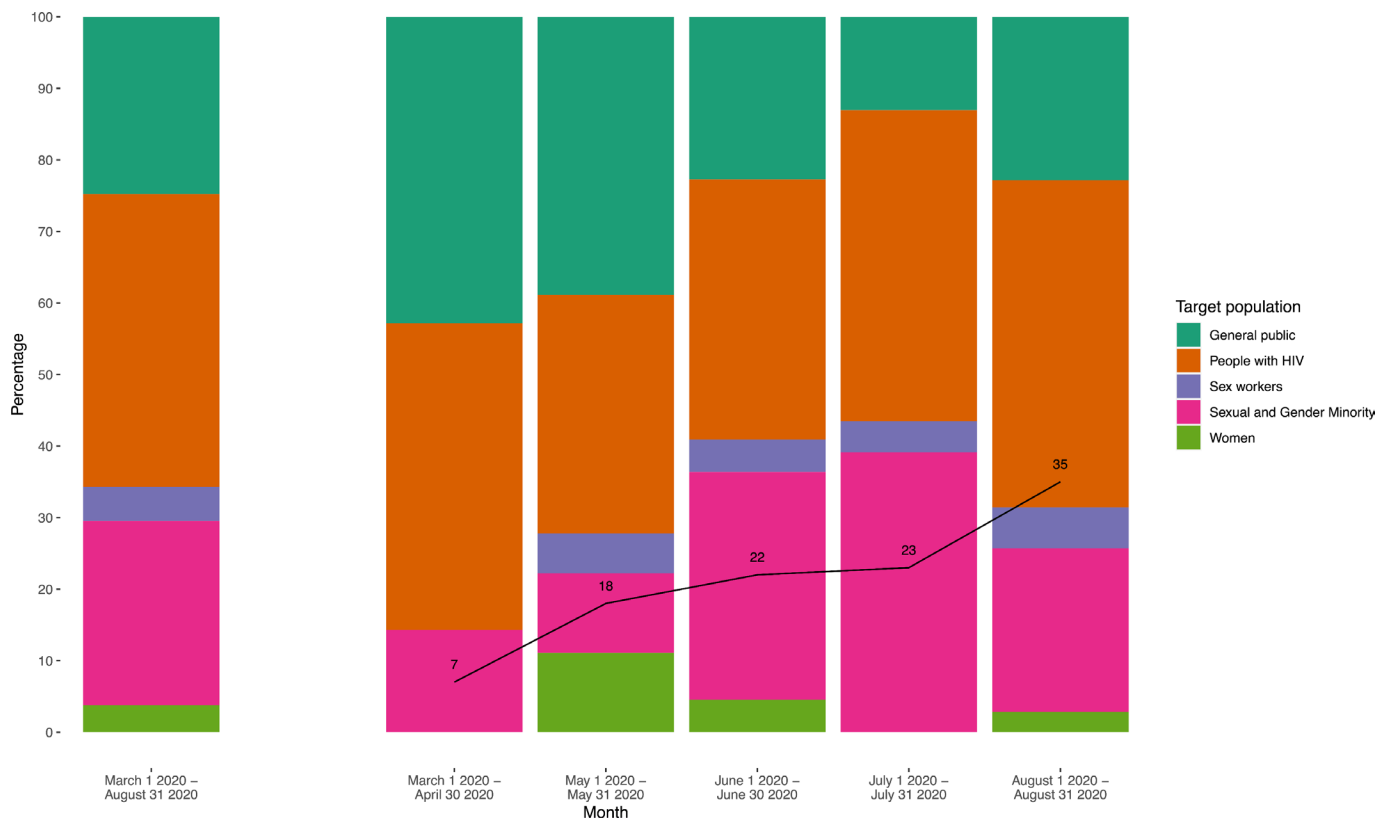
Five studies focused on the general public.<sup>17 18 51–53</sup> All reported a decline in interaction with HIV care services following the pandemic. Two retrospective observational quantitative studies, conducted in Belgium and China, respectively, reported a decrease in the number of HIV tests conducted with pandemic progression.<sup>18 52</sup>

#### People with HIV

Nineteen studies assessed PLHIV.<sup>54–72</sup> Three modelling studies predicted a significant increase in HIV-related deaths in African countries due to treatment disruption with the pandemic.<sup>61–63</sup> A US retrospective observational quantitative study found that shelter-in-place orders had a negative impact on antiretroviral therapy adherence, especially among homeless PLHIV.<sup>71</sup>

#### Sex workers

A qualitative study conducted in Kenya found that sex workers experienced greater HIV risk due to limited condom access during the pandemic.<sup>75</sup>



**Figure 2** Population breakdown for all studies (1 March 2020–31 August 2020) and for each month. Each colour within a bar represents: N of studies representing a particular population/total N of studies in that time period. Studies with no date reported were not included. Total number of studies per month indicated by the black line. Studies after 31 August were not included in the above figure as our literature search did not cover the full month of September.

### Sexual and gender minorities

Eight studies evaluated HIV care outcomes among SGM.<sup>76–80</sup> Two cross-sectional observational quantitative studies, one in Australia and the other global, reported a decline in pre-exposure prophylaxis (PrEP) use among sexual minority individuals during lockdown.<sup>77–80</sup> A global study found that MSM experienced greater difficulty in accessing condoms during lockdown.<sup>74</sup>

### Women

One prospective observational study conducted among women in South Africa reported an increase in missed PrEP appointments during lockdown.<sup>50</sup>

### Mental health

Fifteen studies evaluated mental health outcomes.<sup>81–85</sup> Most (67%) were cross-sectional observational quantitative studies detailing the mental health impact of the pandemic on SGM.

### People with HIV

Five studies detailed PLHIV.<sup>81–85</sup> A cross-sectional observational quantitative study conducted in Turkey found a relationship between generalised anxiety levels and COVID-19-related anxiety among clinical patients with HIV.<sup>85</sup> A US-based study found that the decision to social distance was associated with COVID-19-related stigma and fears.<sup>81</sup>

### Sexual and gender minorities

Ten studies detailed SGM.<sup>86–94</sup> Most reported an increase in anxiety or depression during the pandemic.<sup>86–92</sup> A cross-sectional observational quantitative study found an increase in

experiences of mental distress, anxiety or depression among American SGM college students.<sup>89</sup> A Brazilian cross-sectional quantitative study found an association between low psychological well-being and non-compliance with shelter-in-place orders.<sup>86</sup> A qualitative study of US lesbian, gay, bisexual and transgender youth reported an increase in distress from being confined at home with unsupportive parents.<sup>87</sup>

### Sexual behaviour

Thirty-one studies detailed sexual behaviour.<sup>16 95–125</sup> Most (65%) were cross-sectional observational quantitative studies detailing decreased sexual activity during the pandemic.

### General public

Seventeen studies assessed sexual activity and desire during the pandemic among the general public.<sup>95–111</sup> Ten studies indicated that the pandemic had affected participants' sexual lives.<sup>97–109</sup> A Chinese cross-sectional observational quantitative study found that the number of sexual partners decreased during the pandemic.<sup>108</sup> An Australian cross-sectional study reported decreased sexual activity during the pandemic.<sup>101</sup> A cross-sectional observational quantitative study conducted in the USA found that respondents (nationally representative US sample) experienced conflict with their romantic partners due to the pandemic.<sup>109</sup> This may have contributed to less frequent sex.<sup>109</sup> A US cross-sectional study found that a majority of respondents (Indian convenience sample) believed kissing could spread COVID-19, but that unprotected sexual intercourse could not.<sup>111</sup>

### Sexual and gender minorities

Ten studies evaluated SGM.<sup>16 112–121</sup> Few (30%, N=6) reported an increase in risky sexual behaviour during the pandemic.<sup>16 119 121</sup> One cross-sectional observational quantitative study found an increase in casual sexual encounters during the pandemic among Brazilian and Portuguese MSM.<sup>16</sup> The increase in casual sex encounters may be due to MSM feeling isolated due to the long sheltering period and then seeking a larger need for social contact.<sup>94</sup> A Welsh prospective observational quantitative study reported a decrease in the frequency of condomless sex among MSM.<sup>113</sup>

### Women

Four studies detailed sexual behaviour in women, generally centring on reduced sexual function.<sup>122–125</sup> A Polish prospective observational quantitative study reported an increase in female sexual dysfunction.<sup>122</sup>

### STI care

Seven studies addressed STI care outcomes.<sup>126–132</sup> Three of these were prospective observational quantitative studies.

### General public

Six studies assessed the general public.<sup>126–131</sup> A Ugandan cross-sectional observational quantitative study found reduced access to STI testing and treatment during lockdown<sup>128</sup> and two other studies (Italy, Spain) found a decline in the number of STI cases reported since the onset of the pandemic.<sup>126 127</sup>

### Sexual and gender minorities

One prospective observational quantitative study reported an increase in the number of syphilis diagnoses among MSM in Italy.<sup>132</sup>

## DISCUSSION

In this scoping review, we provided a comprehensive synthesis of the published literature on sexual health (excluding RH, IPV and GBV) in the COVID-19 era. This work builds on previous reviews on specific sexual health issues and COVID-19, which generally focused on the intersection of HIV and COVID-19 and did not examine sexual health more broadly.<sup>6–8</sup> We found that MSM may be moving back toward pre-pandemic levels of sexual activity. Abstinence-based strategies to limit HIV transmission are generally ineffective<sup>133</sup> and it is not reasonable to expect people to refrain from sexual activity amid a pandemic. Thus, strategies to manage STI and HIV transmission during COVID-19 transmission should hinge on safer sexual activities rather than abstinence, for example, engaging in sex after quarantine has been completed and all parties asymptomatic.<sup>134</sup> We noted that STI and HIV testing rates seem to have decreased, perhaps due to reduced test seeking but not necessarily reduced sexual activity. As the pandemic progresses, we suggest that self-testing for STIs and HIV may be a useful tool given reduced clinic attendance. However, we recognise the limitations of this approach, for example, where this requires accessing tests/services online, then for those with low digital literacy, this could potentially worsen health inequalities.

The bulk of included studies here centred on outcomes such as HIV care and COVID-19 clinical outcomes and perceptions, with minimal focus on outcomes such as the economic impact on sexual health (excluding RH, IPV and GBV) and STI care, especially STI care of marginalised populations, due to a lack of research. The limited focus of the economic impact on sexual health (excluding RH, IPV and GBV), in line with COVID-19, may be due to the

immediate focus on the purely health aspects of the pandemic and an economic focus may arise as COVID-19 progresses. In this vein, there have been calls to focus specifically on the economic aspects of COVID-19.<sup>135</sup> The minimal research on STI care is reflective of the limited research on STI care (eg, gonorrhoea and chlamydia) compared with HIV care.<sup>136</sup> Similarly, several nations, such as China, have well-supported testing provision for HIV, but lack similar infrastructure for STI testing.<sup>136</sup>

In terms of population groups, studies tended to focus on PLHIV and SGM; there was limited focus on sex workers or on women. There was a dearth of published studies on women's sexual behaviour and mental health. The limited focus on women may in part be due to the exclusion of RH, IPV and GBV in our selection criteria and also due to the male-as-norm bias prevalent in health research,<sup>137</sup> where men are the standard for research studies. There have been calls to reduce the male bias in COVID-19 research,<sup>138</sup> and our work provides evidence for a potential bias regarding the intersection of women and sexual health research (excluding RH, IPV and GBV). The limited research on sex workers and COVID-19 may be because most in-person sex work has largely stopped due to social distancing and lockdown measures, or continued as a 'black market', at least in the USA. However, the pandemic may increase stigma, discrimination and violence for sex workers, and thus research can focus on whether policing of sex workers has changed during the pandemic, and whether the number or characteristics of people involved in sex work has changed during the pandemic, so that adequate and appropriate health, economic and social services can be made available for persons involved in sex work.

A broad range of methods were applied to study sexual health (excluding RH, IPV and GBV) during the COVID-19 pandemic. However, we noticed limited use of qualitative techniques. The limited qualitative research may be due to the relatively limited funding for COVID-19-specific qualitative research, and the complexities of conducting qualitative research in a pandemic, usually involving face-to-face meetings. Limited qualitative work around sexual health (excluding RH, IPV and GBV) and COVID-19 may obscure understanding on how marginalisation and structural forces shape sexual health within the pandemic, as qualitative research can aid understanding of natural phenomena with an emphasis on the lived experiences around disease, care and pandemic responses.

None of the studies identified in our scoping review were interventions. The lack of intervention studies may be because the research was conducted in the early phases of the pandemic and interventions, especially randomised controlled trials, take time to design, conduct, analyse and disseminate; and that research resources are increasingly allocated to COVID-19. Randomised controlled trials are key to determining efficacy of interventions and are essential to improving sexual health during the pandemic. We propose that researchers incorporate more qualitative techniques and conduct interventions, to complement existing quantitative research on sexual health and COVID-19. We suggest community-based crowdsourcing interventions for augmenting sexual health during the pandemic. Crowdsourcing involves non-experts and experts collaborating to solve an issue and then sharing solutions publicly.<sup>139</sup> Crowdsourcing has been implemented in resource-scarce settings to improve sexually transmitted testing uptake,<sup>136</sup> among other uses.<sup>140</sup>

Studies were conducted in a large range of nations, aligned to regions where the impact of the pandemic was relatively severe, but the largest proportions were in high-income nations, with very few in low/middle-income countries (LMICs). The paucity of sexual health (excluding RH, IPV and GBV) research in LMICs

may be due to limited resources, lack of equitable research and funding partnerships, redistribution of resources amid COVID-19, among other factors. Recent work has expressed concerns regarding limited COVID-19 research centred in LMICs,<sup>141</sup> which could worsen pandemic progression when combined with LMICs' inadequate healthcare infrastructure potentially leading to long-term consequences such as increasing numbers of HIV-related deaths. We build on these findings, indicating the lack of COVID-19 research in the sexual health context within LMICs. We suggest that the limited work around sexual health (excluding RH, IPV and GBV) and COVID-19 in LMICs could reduce sexual healthcare provision in LMICs, such as HIV programmes,<sup>61</sup> and by not measuring changes in sexual health during the pandemic we may miss important shifts and lose prior achievements regarding sexual health in LMICs.

Our findings should be read in line with some limitations. Although we searched several databases and grey literature sources, we may have missed some studies. Not all authors we reached out to responded and we thus may have missed some unpublished work. Our definition of sexual health did not include RH, IPV and GBV, and we were unable to provide evidence on these areas of sexual health.

The main strengths of the study are that we synthesised the research on sexual health (excluding RH, IPV and GBV) during COVID-19 and used a reproducible and clear procedure for the scoping review. We indicated the outcome, location, methodology, sample characteristics, along with data extraction and search strategies. Moreover, we centred solely on the scope of sexual health (excluding RH, IPV and GBV) and COVID-19 research. Although we noted several limitations, our review has important implications for interventions around mitigating poor sexual health due to the pandemic.

## CONCLUSION

We found that after an initial decrease, MSM may be moving back toward pre-pandemic levels of sexual activity, and that STI and HIV testing rates seemed to have decreased. We found limited work on key outcomes such as the economic impact on sexual health (excluding RH, IPV and GBV) and STI care, and populations such as women (in part due to exclusion of RH, IPV and GBV) and sex workers. Sexual health research is critical during COVID-19, and we indicated that some areas were clearly understudied potentially limiting adequate treatment for patients. There were a range of methodologies applied within sexual health (excluding RH, IPV and GBV) and COVID-19 research, but qualitative techniques and interventions were not commonly used. There was also limited research within LMICs. Researchers can focus efforts on LMICs and under-researched topics within sexual health and explore the use of qualitative techniques and interventions where appropriate.

## Key messages

- ▶ The scope of sexual health (excluding reproductive health, intimate partner violence and gender-based violence) and COVID-19 research was broad, but there was limited work on outcomes such as the economic impact on sexual health and STI care.
- ▶ Research should focus on low/middle-income countries and research gaps within sexual health.
- ▶ Researchers should explore the use of qualitative techniques and interventions where appropriate.

## Author affiliations

- <sup>1</sup>Department of Sociology, Yale University, New Haven, Connecticut, USA
- <sup>2</sup>Harvey Cushing/John Hay Whitney Medical Library, Yale University School of Medicine, New Haven, Connecticut, USA
- <sup>3</sup>Department of Environmental Health Sciences, Yale School of Public Health, New Haven, CT, USA
- <sup>4</sup>Department of Biostatistics, Yale School of Public Health, New Haven, CT, USA
- <sup>5</sup>School of Public Health, Free University of Brussels, Brussels, Belgium
- <sup>6</sup>International Centre for Reproductive Health, Department of Public Health and Primary Care, Ghent University, Ghent, Belgium
- <sup>7</sup>Department of Global Public Health, Karolinska Institutet, Stockholm, Sweden
- <sup>8</sup>Department of Psychology, University of Fribourg, Fribourg, Switzerland
- <sup>9</sup>Department of Sociology, Centre for Population, Family and Health, University of Antwerp, Antwerp, Belgium
- <sup>10</sup>Department of Family Medicine and Primary Care, School of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg-Braamfontein, Gauteng, South Africa
- <sup>11</sup>Public Health Education, University of North Carolina at Greensboro, Greensboro, North Carolina, USA
- <sup>12</sup>Department of Women's and Children's Health, Karolinska Institutet, Stockholm, Sweden
- <sup>13</sup>Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY, USA
- <sup>14</sup>School of Social Justice, Queensland University of Technology, Brisbane, Queensland, Australia
- <sup>15</sup>Faculty of Medicine and Health, University of New England, Armidale, New South Wales, Australia
- <sup>16</sup>University of North Carolina at Chapel Hill School of Medicine, Chapel Hill, North Carolina, USA
- <sup>17</sup>School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA
- <sup>18</sup>Faculty of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, London, UK

**Handling editor** Bea Vuylsteke

**Acknowledgements** The authors thank the reviewers and editors for their assistance.

**Contributors** NK, KN, KJ and ASF conducted searches. NK and KJ wrote the first draft. NK, KN, KJ, ASF, LF, DC, VM, JS, JMF, SVdV, MU, W-HZ, AK, EL, JTE and JT contributed to the manuscript write-up and review.

**Funding** The study was funded by the Fund for Lesbian and Gay Studies, Yale University.

**Disclaimer** The funding body had no role in the design, analysis or interpretation of the data in the study.

**Competing interests** None declared.

**Patient consent for publication** Not required.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Supplemental material** This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

This article is made freely available for use in accordance with BMJ's website terms and conditions for the duration of the covid-19 pandemic or until otherwise determined by BMJ. You may use, download and print the article for any lawful, non-commercial purpose (including text and data mining) provided that all copyright notices and trade marks are retained.

## ORCID iDs

Navin Kumar <http://orcid.org/0000-0003-4502-069X>

Jennifer Toller Erasquin <http://orcid.org/0000-0003-4271-6077>

## REFERENCES

- 1 Stephenson J. COVID-19 Outbreaks Among Food Production Workers May Intensify Pandemic's Disproportionate Effects on People of Color. *JAMA Health Forum* 2020;1:e200783.
- 2 Tai DBG, Shah A, Doubeni CA. The disproportionate impact of COVID-19 on racial and ethnic minorities in the United States. *Clin Infect Dis* 2020:ciaa815.

- 3 Burki T. The indirect impact of COVID-19 on women. *Lancet Infect Dis* 2020;20:904–5.
- 4 Phillips I G, Felt D, Ruprecht MM, *et al.* Addressing the disproportionate impacts of the COVID-19 pandemic on sexual and gender minority populations in the United States: actions toward equity. *GBT Health* 2020;7:279–82.
- 5 World Health Organization and others. Sexual health and its linkages to reproductive health: an operational approach, 2017. Available: [https://www.who.int/reproductivehealth/publications/sexual\\_health/sh-linkages-rh/en/](https://www.who.int/reproductivehealth/publications/sexual_health/sh-linkages-rh/en/)
- 6 Cooper TJ, Woodward BL, Alom S, *et al.* Coronavirus disease 2019 (COVID-19) outcomes in HIV/AIDS patients: a systematic review. *HIV Med* 2020;21:567–77.
- 7 Mirzaei H, McFarland W, Karamouzian M, *et al.* COVID-19 among people living with HIV: a systematic review. *AIDS Behav* 2021;25:85–92.
- 8 Prabhu S, Poongulali S, Kumarasamy N. Impact of COVID-19 on people living with HIV: a review. *J Virus Erad* 2020;6:100019.
- 9 World Health Organization and others. Developing sexual health programmes: a framework for action. World Health organization, 2010. Available: [https://www.who.int/reproductivehealth/publications/sexual\\_health/rhr\\_hrp\\_10\\_22/en/](https://www.who.int/reproductivehealth/publications/sexual_health/rhr_hrp_10_22/en/)
- 10 Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol* 2005;8:19–32.
- 11 Joanna Briggs Institute. *Joanna Briggs institute reviewers' manual 2015—methodology for JBI scoping reviews*. Joanna Briggs Institute, 2015.
- 12 Tricco AC, Lillie E, Zarin W, *et al.* PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med* 2018;169:467–73.
- 13 Kumar N, Janmohamed K, Nyhan K, *et al.* Sexual health and COVID-19: protocol for a scoping review. *Syst Rev* 2021;10:1–5.
- 14 Scherer RW, Saldanha JJ. How should systematic reviewers handle conference Abstracts? A view from the trenches. *Syst Rev* 2019;8:264.
- 15 Huang C, Wang Y, Li X, *et al.* Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet* 2020;395:497–506.
- 16 de Sousa AFL, Oliveira L, Queiroz A. Casual sex among MSM during the period of sheltering in place to prevent the spread of COVID-19: results of national online surveys in Brazil and Portugal. *medRxiv* 2020.
- 17 Ponticciello M, Mwanga-Amumpaire J, Tushemereirwe P, *et al.* "Everything is a Mess": How COVID-19 is Impacting Engagement with HIV Testing Services in Rural Southwestern Uganda. *AIDS Behav* 2020;24:3006–9.
- 18 Darcis G, Vaira D, Moutschen M. Impact of coronavirus pandemic and containment measures on HIV diagnosis. *Epidemiol Infect* 2020;148:e185.
- 19 SeyedAlinaghi S, Ghadimi M, Hajiabdolbaghi M, *et al.* Prevalence of COVID-19-like symptoms among people living with HIV, and using antiretroviral therapy for prevention and treatment. *Curr HIV Res* 2020;18:373–80.
- 20 Bhaskaran K, Rentsch CT, MacKenna B, *et al.* HIV infection and COVID-19 death: a population-based cohort analysis of UK primary care data and linked national death registrations within the OpenSAFELY platform. *Lancet HIV* 2021;8:e24–32.
- 21 Charre C, Icard V, Pradat P, *et al.* Coronavirus disease 2019 attack rate in HIV-infected patients and in preexposure prophylaxis users. *AIDS* 2020;34:1765–70.
- 22 Del Amo J, Polo R, Moreno S, *et al.* Incidence and Severity of COVID-19 in HIV-Positive Persons Receiving Antiretroviral Therapy : A Cohort Study. *Ann Intern Med* 2020;173:536–41.
- 23 Di Biagio A, Ricci E, Calza L, *et al.* Factors associated with hospital admission for COVID-19 in HIV patients. *AIDS* 2020;34:1983–5.
- 24 Davies MA. HIV and risk of COVID-19 death: a population cohort study from the Western Cape Province, South Africa. *medRxiv* 2020.
- 25 Etienne N, Karmochkine M, Slama L, *et al.* HIV infection and COVID-19: risk factors for severe disease. *AIDS* 2020;34:1771–4.
- 26 Geretti AM, Stockdale A, Kelly S. Outcomes of COVID-19 related hospitalisation among people with HIV in the ISARIC who clinical characterisation protocol UK protocol: prospective observational study. *medRxiv* 2020.
- 27 Gervasoni C, Meraviglia P, Riva A, *et al.* Clinical features and outcomes of patients with human immunodeficiency virus with COVID-19. *Clin Infect Dis* 2020;71:2276–8.
- 28 Guo W, Ming F, Dong Y, *et al.* Driving force of Covid-19 among people living with HIV/AIDS in Wuhan, China. *Res Sq* 2020;08. doi:10.21203/rs.3.rs-53351/v1. [Epub ahead of print: 10 Aug 2020].
- 29 Hadi YB, Naqvi SFZ, Kupec JT, *et al.* Characteristics and outcomes of COVID-19 in patients with HIV: a multicentre research network study. *AIDS* 2020;34:F3–8.
- 30 Ho H-E, Peluso MJ, Margus C, *et al.* Clinical outcomes and immunologic characteristics of coronavirus disease 2019 in people with human immunodeficiency virus. *J Infect Dis* 2021;223:403–8.
- 31 Iciararte A, Gonzalez-Cordon A, Rojas J, *et al.* Clinical characteristics, risk factors, and incidence of symptomatic coronavirus disease 2019 in a large cohort of adults living with HIV: a single-center, prospective observational study. *AIDS* 2020;34:1775–80.
- 32 Karmen-Tuohy S, Carlucci PM, Zervou FN, *et al.* Outcomes among HIV-positive patients hospitalized with COVID-19. *J Acquir Immune Defic Syndr* 2020;85:6–10.
- 33 Liu J, Zeng W, Cao Y, *et al.* Effect of a previous history of antiretroviral treatment on clinical picture of patients with co-infection of SARS-CoV-2 and HIV: a preliminary study. *Int J Infect Dis* 2020;100:100.
- 34 Maggiolo F, Zoboli F, Arosio M, *et al.* SARS-CoV-2 infection in persons living with HIV: a single center prospective cohort. *J Med Virol* 2021;93:1145–9.
- 35 Meyerowitz EA, Kim AY, Ard KL, *et al.* Disproportionate burden of coronavirus disease 2019 among racial minorities and those in congregate settings among a large cohort of people with HIV. *AIDS* 2020;34:1781–7.
- 36 Miyashita H, Kuno T. Prognosis of coronavirus disease 2019 (COVID-19) in patients with HIV infection in New York City. *HIV Med* 2021;22:e1-e2.
- 37 Nagarakanti SR, Okoh AK, Grinberg S, *et al.* Clinical outcomes of patients with COVID-19 and HIV coinfection. *J Med Virol* 2021;93:1687–93.
- 38 Sigel K, Swartz T, Golden E, *et al.* Coronavirus 2019 and people living with human immunodeficiency virus: outcomes for hospitalized patients in New York City. *Clin Infect Dis* 2020;71:Ciaa880:2933–8.
- 39 Shalev N, Scherer M, LaSota ED, *et al.* Clinical characteristics and outcomes in people living with human immunodeficiency virus hospitalized for coronavirus disease 2019. *Clin Infect Dis* 2020;71:Ciaa635:2294–7.
- 40 Stoeckle K, Johnston CD, Jannat-Khah DP, *et al.* COVID-19 in hospitalized adults with HIV. *Open Forum Infect Dis* 2020;7:ofaa327.
- 41 Vizcarra P, Pérez-Eliás MJ, Quereda C, *et al.* Description of COVID-19 in HIV-infected individuals: a single-centre, prospective cohort. *Lancet HIV* 2020;7:e554–64.
- 42 Ko N-Y, Lu W-H, Chen Y-L, *et al.* Cognitive, affective, and behavioral constructs of COVID-19 health beliefs: a comparison between sexual minority and heterosexual individuals in Taiwan. *Int J Environ Res Public Health* 2020;17:4282.
- 43 Rhodes T, Stimson GV, Moore D, *et al.* Qualitative social research in addictions publishing: creating an enabling Journal environment. *Int J Drug Policy* 2010;21:441–4.
- 44 Stephenson R, Chavanduka TMD, Rosso MT, *et al.* Contrasting the perceived severity of COVID-19 and HIV infection in an online survey of gay, bisexual, and other men who have sex with men during the U.S. COVID-19 epidemic. *Am J Mens Health* 2020;14:155798832095754.
- 45 Belete YM. Uncovering the effects of COVID-19 responses on the lives of commercial sex workers: a phenomenological study in Bahir Dar City administration, Ethiopia. *Research Square* 2020.
- 46 Callander D, Meunier Étienne, DeVeau R, *et al.* Investigating the effects of COVID-19 on global male sex work populations: a longitudinal study of digital data. *Sex Transm Infect* 2021;97:93–8.
- 47 Callander D, Meunier Étienne, DeVeau R, *et al.* Sex workers are returning to work and require enhanced support in the face of COVID-19: results from a longitudinal analysis of online sex work activity and a content analysis of safer sex work guidelines. *Sex Health* 2020;17:384–6.
- 48 RKJ T, Lim J, Lo J. Impact of the coronavirus disease (COVID-19) on the sex work industry in Singapore: recommendations for policymakers, 2020. Available: [https://www.researchgate.net/publication/341068662\\_Impact\\_of\\_the\\_Coronavirus\\_Disease\\_COVID-19\\_on\\_the\\_sex\\_work\\_industry\\_in\\_Singapore\\_Recommendations\\_for\\_policymakers](https://www.researchgate.net/publication/341068662_Impact_of_the_Coronavirus_Disease_COVID-19_on_the_sex_work_industry_in_Singapore_Recommendations_for_policymakers)
- 49 Torres T, Hoagland B, Bezerra D. Impact of COVID-19 pandemic on sexual minority populations in Brazil: an analysis of Social/Racial disparities in maintaining social distancing and a description of sexual behavior. *AIDS Behav* 2020;1573–3254.
- 50 Davey DLJ, Bekker L-G, Mashele N, *et al.* PrEP retention and prescriptions for pregnant women during COVID-19 lockdown in South Africa. *Lancet HIV* 2020;7:e735.
- 51 Sánchez-Rubio J, Vélez-Díaz-Pallarés M, Rodríguez González C, *et al.* HIV postexposure prophylaxis during the COVID-19 pandemic: experience from Madrid. *Sex Transm Infect* 2021;97:100.
- 52 Shi L, Tang W, Hu H. The impact of COVID-19 pandemic on HIV care continuum in Jiangsu, China, 2021. Available: <https://www.researchsquare.com/article/rs-135421/v1>
- 53 Siedner MJ, Kraemer JD, Meyer MJ, *et al.* Access to primary healthcare during lockdown measures for COVID-19 in rural South Africa: a longitudinal cohort study. *medRxiv* 2020. doi:10.1101/2020.05.15.20103226. [Epub ahead of print: 20 May 2020].
- 54 Algarin AB, Varas-Rodríguez E, Valdivia C, *et al.* Symptoms, stress, and HIV-related care among older people living with HIV during the COVID-19 pandemic, Miami, Florida. *AIDS Behav* 2020;24:2236–8.
- 55 Dyer J, Wilson K, Badia J, *et al.* The psychosocial effects of the COVID-19 pandemic on youth living with HIV in Western Kenya. *AIDS Behav* 2021;25:68–72.
- 56 Ballivian J, Alcaide ML, Cecchini D, *et al.* Impact of COVID-19-Related stress and Lockdown on mental health among people living with HIV in Argentina. *J Acquir Immune Defic Syndr* 2020;85:475–82.
- 57 Siewe Fodjo JN, Villela EFdeM, Van Hees S, *et al.* Impact of the COVID-19 pandemic on the medical follow-up and psychosocial well-being of people living with HIV: a cross-sectional survey. *J Acquir Immune Defic Syndr* 2020;85:257–62.
- 58 Hochstatter KR, Akhtar WZ, Dietz S. Potential influences of the COVID-19 pandemic on drug use and HIV care among people living with HIV and substance use disorders: experience from a pilot mHealth intervention. *AIDS Behav* 2020:1–6.
- 59 Hogan AB, Jewell BL, Sherrard-Smith E, *et al.* Potential impact of the COVID-19 pandemic on HIV, tuberculosis, and malaria in low-income and middle-income countries: a modelling study. *Lancet Glob Health* 2020;8:e1132–41.
- 60 Jarolimova J, Bunda B, Govere S. Experiences of participants in a decentralized HIV medication distribution program in South Africa during the COVID-19 pandemic. *J Int AIDS Soc* 2020;23:178–9.

- 61 Jewell BL, Smith JA, Hallett TB. Understanding the impact of interruptions to HIV services during the COVID-19 pandemic: a modelling study. *EClinicalMedicine* 2020;26:100483.
- 62 Jewell BL, Mudimu E, Stover J. Potential effects of disruption to HIV programmes in sub-Saharan Africa caused by COVID-19: results from multiple mathematical models, 2020. Available: [https://figshare.com/articles/preprint/Potential\\_effects\\_of\\_disruption\\_to\\_HIV\\_programmes\\_in\\_sub-Saharan\\_Africa\\_caused\\_by\\_COVID-19\\_results\\_from\\_multiple\\_mathematical\\_models/12279914/1](https://figshare.com/articles/preprint/Potential_effects_of_disruption_to_HIV_programmes_in_sub-Saharan_Africa_caused_by_COVID-19_results_from_multiple_mathematical_models/12279914/1)
- 63 Jewell BL, Smith JA, Hallett TB. The potential impact of interruptions to HIV services: a modelling case study for South Africa. *medRxiv* 2020.
- 64 Kalichman SC, Eaton LA, Berman M, et al. Intersecting pandemics: impact of SARS-CoV-2 (COVID-19) protective behaviors on people living with HIV, Atlanta, Georgia. *JAIDS J Acquired Immune Deficiency Syndromes* 2020;85:66–72.
- 65 Kowalska JD, Skrzat-Klapaczńska A, Bursa D, et al. HIV care in times of the COVID-19 crisis - Where are we now in Central and Eastern Europe? *Int J Infect Dis* 2020;96:311–4.
- 66 Linnemayr S, Jennings Mayo-Wilson L, Saya U, et al. HIV care experiences during the COVID-19 pandemic: mixed-methods telephone interviews with Clinic-Enrolled HIV-infected adults in Uganda. *AIDS Behav* 2021;25:28–39.
- 67 Odhiambo F, Mulwa E, Ayieko J, et al. Implementation of HIV care in Western Kenya during corona virus disease 2019 response. *AIDS* 2020;34:F1–2.
- 68 Pierre G, Uwizeza A, Dzinamarira T. Attendance to HIV antiretroviral collection clinic appointments during COVID-19 Lockdown. A single center study in Kigali, Rwanda. *AIDS Behav* 2020;24:3299–301.
- 69 Qiao S, Li Z, Weissman S, et al. Disparity in HIV service interruption in the outbreak of COVID-19 in South Carolina. *AIDS Behav* 2021;25:49–57.
- 70 Quiros-Roldan E, Magro P, Carriero C, et al. Consequences of the COVID-19 pandemic on the continuum of care in a cohort of people living with HIV followed in a single center of northern Italy. *AIDS Res Ther* 2020;17:59.
- 71 Spinelli MA, Hickey MD, Glidden DV, et al. Viral suppression rates in a safety-net HIV clinic in San Francisco destabilized during COVID-19. *AIDS* 2020;34:2328–31.
- 72 Stover J, Chagoma N, Taramusi I. Estimation of the potential impact of COVID-19 responses on the HIV epidemic: analysis using the goals model. *MedRxiv* 2020.
- 73 Winston A, De Francesco D, Post F, et al. Comorbidity indices in people with HIV and considerations for coronavirus disease 2019 outcomes. *AIDS* 2020;34:1795–800.
- 74 Santos G-M, Ackerman B, Rao A, et al. Economic, mental health, HIV prevention and HIV treatment impacts of COVID-19 and the COVID-19 response on a global sample of Cisgender gay men and other men who have sex with men. *AIDS Behav* 2021;25:311–21.
- 75 Gichuna S, Hassan R, Sanders T, et al. Access to healthcare in a time of COVID-19: sex workers in crisis in Nairobi, Kenya. *Glob Public Health* 2020;15:1430–42.
- 76 Brawley S, Dinger J, Nguyen C. Impact of COVID-19 related shelter-in-place orders on PrEP access, usage and HIV risk behaviors in the United States. *J Int AIDS Soc* 2020;23:178.
- 77 Chow EPF, Hocking JS, Ong JJ, et al. Changing the use of HIV pre-exposure prophylaxis among men who have sex with men during the COVID-19 pandemic in Melbourne, Australia. *Open Forum Infect Dis* 2020;7:Ofaa275.
- 78 Chow EPF, Hocking JS, Ong JJ, et al. Postexposure prophylaxis during COVID-19 lockdown in Melbourne, Australia. *Lancet HIV* 2020;7:e528–9.
- 79 Junejo M, Girometti N, McOwan A, et al. HIV postexposure prophylaxis during COVID-19. *Lancet HIV* 2020;7:e460.
- 80 Rao A, Rucinski K, Jarrett B. Potential interruptions in HIV prevention and treatment services for gay, bisexual, and other men who have sex with men associated with COVID-19. *medRxiv* 2020.
- 81 Berman M, Eaton LA, Watson RJ, et al. Social distancing to mitigate COVID-19 risks is associated with COVID-19 discriminatory attitudes among people living with HIV. *Ann Behav Med* 2020;54:728–37.
- 82 Krier S, Bozich C, Pompa R, et al. Assessing HIV-related stigma in healthcare settings in the era of the COVID-19 pandemic, Pittsburgh, Pennsylvania. *AIDS Behav* 2020;24:1–3.
- 83 Marbaniang I, Sangle S, Nimkar S, et al. The burden of anxiety during the COVID-19 pandemic among people living with HIV (PLHIV) in Pune, India. *Res Sq* 2020. doi:10.121203/rs.3.rs-45412/v1. [Epub ahead of print: 13 Aug 2020].
- 84 Rozanova J, Shenoi S, Zaviryukha I, et al. Social support is key to retention in care during Covid-19 pandemic among older people with HIV and substance use disorders in Ukraine. *Subst Use Misuse* 2020;55:1902–4.
- 85 Kuman Tunçel Özlem, Pullukçu H, Erdem HA, et al. COVID-19-related anxiety in people living with HIV: an online cross-sectional study. *Turk J Med Sci* 2020;50:1792–800.
- 86 Camargo ELS, Oliveira BID, Siffoni IF. Low psychological well-being in men who have sex with men (MSM) during the shelter-in-place orders to prevent the COVID-19 spread: results from a nationwide study. *medRxiv* 2020.
- 87 Fish JN, McInroy LB, Pacey MS, et al. "I'm Kinda Stuck at Home With Unsupportive Parents Right Now": LGBTQ Youths' Experiences With COVID-19 and the Importance of Online Support. *J Adolesc Health* 2020;67:450–2.
- 88 Flentje A, Obedin-Maliver J, Lubensky ME, et al. Depression and anxiety changes among sexual and gender minority people coinciding with onset of COVID-19 pandemic. *J Gen Intern Med* 2020;35:2788–90.
- 89 Gonzales G, Loret de Mola E, Gavulic KA, et al. Mental health needs among Lesbian, gay, bisexual, and transgender college students during the COVID-19 pandemic. *J Adolesc Health* 2020;67:645–8.
- 90 Kneale D, Becares L. The mental health and experiences of discrimination of LGBTQ+ people during the COVID-19 pandemic: initial findings from the Queerantime study. *MedRxiv* 2020.
- 91 Millar BM, Adebayo T, Dellucci TV, et al. Keeps me awake at night: the potential of the COVID-19 pandemic to affect sleep quality among sexual minority men in the U.S.A. *Psychol Sex Orientat Gen Divers* 2020.
- 92 Pandya AK, Redcay A. Impact of COVID-19 on transgender women Hijra: insights from Gujarat, India. *Res Sq* 2020.
- 93 Quinn KG, Walsh JL, John SA, et al. "I Feel Almost as Though I've Lived This Before": Insights from Sexual and Gender Minority Men on Coping with COVID-19. *AIDS Behav* 2021;25:1–8.
- 94 Sanchez TH, Zlotorzynska M, Rai M, et al. Characterizing the impact of COVID-19 on men who have sex with men across the United States in April, 2020. *AIDS Behav* 2020;24:2024–32.
- 95 Abbas AM. Sexual function among Egyptian healthcare professionals during COVID 19 Pan- demic. *ClinicalTrials.gov*; 2020. NCT04395885. Available: <https://clinicaltrials.gov/ct2/show/NCT04395885>
- 96 Alfaily M. Sexual health and problems during the COVID-19 infection. *ClinicalTrials.gov*, 2020. Available: <https://clinicaltrials.gov/ct2/show/NCT04427813?term=covid&cond=sexual+health&draw=2&rank=1>
- 97 Arafat SMY, Alradie-Mohamed A, Kar SK, et al. Does COVID-19 pandemic affect sexual behaviour? A cross-sectional, cross-national online survey. *Psychiatry Res* 2020;289:e113050.
- 98 Ballester-Arnal R, Nebot-Garcia JE, Ruiz-Palomino E, et al. "INSIDE" Project on Sexual Health in Spain: Sexual Life During the Lockdown Caused by COVID-19. *Sex Res Social Policy* 2020;1–19.
- 99 Cito G, Micelli E, Cocci A, et al. The impact of the COVID-19 quarantine on sexual life in Italy. *Urology* 2021;147:37–42.
- 100 Cocci A, Giunti D, Tonioni C, et al. Love at the time of the Covid-19 pandemic: preliminary results of an online survey conducted during the quarantine in Italy. *Int J Impot Res* 2020;32:556–7.
- 101 Coombe J, Kong FYS, Bittleston H, et al. Love during lockdown: findings from an online survey examining the impact of COVID-19 on the sexual health of people living in Australia. *Sex Transm Infect* 2021;97:357–62.
- 102 Hensel DJ, Rosenberg M, Luetke M. Changes in solo and partnered sexual behaviors during the COVID-19 pandemic: findings from a US probability survey. *medRxiv* 2020.
- 103 Jacob L, Smith L, Butler L, et al. Challenges in the practice of sexual medicine in the time of COVID-19 in the United Kingdom. *J Sex Med* 2020;17:1229–36.
- 104 Jianjun D, Tsingan L, Jiali W. The Effect of COVID-19 Stress on Sexual Compulsivity Symptom: The Mediating Role of Perceived Social Support, 2020. Available: <https://www.researchsquare.com/article/rs-17956/v1>
- 105 Ko N-Y, Lu W-H, Chen Y-L, et al. Changes in sex life among people in Taiwan during the COVID-19 pandemic: the roles of risk perception, general anxiety, and demographic characteristics. *Int J Environ Res Public Health* 2020;17:5822.
- 106 Lehmilller JJ, Garcia JR, Gesselman AN, et al. Less sex, but more sexual diversity: changes in sexual behavior during the COVID-19 coronavirus pandemic. *Leisure Sciences* 2020:1–10.
- 107 Li G, Tang D, Song B, et al. Impact of the COVID-19 pandemic on partner relationships and sexual and reproductive health: cross-sectional, online survey study. *J Med Internet Res* 2020;22:e20961.
- 108 Li W, Li G, Xin C, et al. Challenges in the practice of sexual medicine in the time of COVID-19 in China. *J Sex Med* 2020;17:1225–8.
- 109 Luetke M, Hensel D, Herbenick D, et al. Romantic relationship conflict due to the COVID-19 pandemic and changes in intimate and sexual behaviors in a nationally representative sample of American adults. *J Sex Marital Ther* 2020;46:747–62.
- 110 Michielsen K, Larsson EC, Kågesten A, et al. International sexual health and reproductive health (I-SHARE) survey during COVID-19: study protocol for online national surveys and global comparative analyses. *Sex Transm Infect* 2021;97:88–92.
- 111 Sahoo S, Pattnaik JJ, Mehra A, et al. Beliefs related to sexual intimacy, pregnancy and breastfeeding in the public during COVID-19 era: a web-based survey from India. *J Psychosom Obstet Gynaecol* 2020:1–8. doi:10.1080/0167482X.2020.1807932
- 112 Bais C. Descriptive study on the impact of Covid-19 Lockdown on deviant sexual fantasies. *ClinicalTrials.gov*; 2020. NCT04448405. Available: <https://clinicaltrials.gov/ct2/show/NCT04448405>
- 113 Gillespie D, Knapper C, Hughes D, et al. Early impact of COVID-19 social distancing measures on reported sexual behaviour of HIV pre-exposure prophylaxis users in Wales. *Sex Transm Infect* 2021;97:85–7.
- 114 Hammoud MA, Maher L, Holt M, et al. Physical distancing due to COVID-19 disrupts sexual behaviors among gay and bisexual men in Australia: implications for trends in HIV and other sexually transmissible infections. *J Acquir Immune Defic Syndr* 2020;85:309–15.
- 115 McKay T, Henne J, Gonzales G, et al. The COVID-19 pandemic and sexual behavior among gay and bisexual men in the United States. *SSRN Electronic Journal* 2020.



- 116 Linnemayr S, Barreras JL, Izenberg M, *et al.* Longitudinal assessment of changes in mental and sexual health outcomes due to COVID-19 among Latinx SMM and TGW. *J Acquir Immune Defic Syndr* 2020;85:e90–2.
- 117 Sharma AJ, Subramanyam MA. A cross-sectional study of psychological wellbeing of Indian adults during the Covid-19 lockdown: different strokes for different folks. *PLoS One*;15:e0238761.
- 118 Suen YT, Chan RCH, Wong EMY. Effects of general and sexual minority-specific COVID-19-related stressors on the mental health of lesbian, gay, and bisexual people in Hong Kong. *Psychiatry Res* 2020;292:113365.
- 119 Shilo G, Mor Z. COVID-19 and the changes in the sexual behavior of men who have sex with men: results of an online survey. *J Sex Med* 2020;17:1827–34.
- 120 Starks TJ, Jones SS, Sauermilch D, *et al.* Evaluating the impact of COVID-19: a cohort comparison study of drug use and risky sexual behavior among sexual minority men in the U.S.A. *Drug Alcohol Depend* 2020;216:108260.
- 121 Stephenson R, Chavanduka TMD, Rosso MT, *et al.* Sex in the time of COVID-19: results of an online survey of gay, bisexual and other men who have sex with men's experience of sex and HIV prevention during the US COVID-19 epidemic. *AIDS Behav* 2021;25:40–8.
- 122 Fuchs A, Matonóg A, Pilarska J, *et al.* The impact of COVID-19 on female sexual health. *Int J Environ Res Public Health* 2020;17. doi:10.3390/ijerph17197152. [Epub ahead of print: 30 Sep 2020].
- 123 Schiavi MC, Spina V, Zullo MA, *et al.* Love in the time of COVID-19: sexual function and quality of life analysis during the social distancing measures in a group of Italian reproductive-age women. *J Sex Med* 2020;17:1407–13.
- 124 Talmac MA. Evaluation of pregnant women diagnosed with COVID-19 using Carol postpartum sexual function and dyspareunia scale. *ClinicalTrials.gov*; 2020. NCT04389489. Available: <https://clinicaltrials.gov/ct2/show/NCT04389489>
- 125 Yuksel B, Ozgor F. Effect of the COVID-19 pandemic on female sexual behavior. *Int J Gynaecol Obstet* 2020;150:98–102.
- 126 de Miguel Buckley R, Trigo E, de la Calle-Prieto F, *et al.* Social distancing to combat COVID-19 led to a marked decrease in food-borne infections and sexually transmitted diseases in Spain. *J Travel Med* 2020;27. doi:10.1093/jtm/taaa134. [Epub ahead of print: 23 Dec 2020].
- 127 Cusini M, Benardon S, Vidoni G, *et al.* Trend of main STIs during COVID-19 pandemic in Milan, Italy. *Sex Transm Infect* 2021;97:99.
- 128 Mambo SB, Sikakulya FK, Ssebuufu R. Sexual and reproductive health and rights challenges among Ugandan youth during COVID-19 Pan- demic lockdown: an online cross-sectional study, 2020. Available: <https://www.researchsquare.com/article/rs-48529/v1>
- 129 Nagendra G, Carnevale C, Neu N, *et al.* The potential impact and availability of sexual health services during the COVID-19 pandemic. *Sex Transm Dis* 2020;47:434–6. doi:10.1097/OLQ.0000000000001198
- 130 Sacchelli L, Viviani F, Orioni G, *et al.* Sexually transmitted infections during the COVID-19 outbreak: comparison of patients referring to the service of sexually transmitted diseases during the sanitary emergency with those referring during the common practice. *J Eur Acad Dermatol Venereol* 2020;34:e553–6.
- 131 Simmons R. Assessing sexual and reproductive health access in Utah during the COVID-19 pandemic, 2020. Available: [https://hsrproject.nlm.nih.gov/view\\_hsrproj\\_record/20202451](https://hsrproject.nlm.nih.gov/view_hsrproj_record/20202451)
- 132 Latini A, Magri F, Donà MG, *et al.* Is COVID-19 affecting the epidemiology of STIs? The experience of syphilis in Rome. *Sex Transm Infect* 2021;97:78.
- 133 Underhill K, Operario D, Montgomery P, *et al.* Abstinence-only programs for HIV infection prevention in high-income countries. *Cochrane Database Syst Rev* 2007;13.
- 134 Cabello F, Sánchez F, Farré JM, *et al.* Consensus on recommendations for safe sexual activity during the COVID-19 coronavirus pandemic. *J Clin Med* 2020;9:2297.
- 135 Russell Sage Foundation. Social, political, economic, and psychological consequences of the, 2020. Available: <https://www.russellsage.org/research/funding/covid-19-pandemic>
- 136 Yang F, Zhang TP, Tang W, *et al.* Pay-it-forward gonorrhoea and Chlamydia testing among men who have sex with men in China: a randomised controlled trial. *Lancet Infect Dis* 2020;20:976–82.
- 137 Prakash VS, Mansukhani NA, Helenowski IB, *et al.* Sex bias in interventional clinical trials. *J Womens Health* 2018;27:1342–8.
- 138 Bischof E, Wolfe J, Klein SL. Clinical trials for COVID-19 should include sex as a variable. *J Clin Invest* 2020;130:3350–2.
- 139 Tucker JD, Day S, Tang W, *et al.* Crowdsourcing in medical research: concepts and applications. *PeerJ* 2019;7:e6762.
- 140 Wang C, Han L, Stein G, *et al.* Crowdsourcing in health and medical research: a systematic review. *Infect Dis Poverty* 2020;9:1–9.
- 141 Cattani M, COVID-19 Clinical Research Coalition. Electronic address: nick.white@covid19crc.org. Global coalition to accelerate COVID-19 clinical research in resource-limited settings. *Lancet* 2020;395:1322–5. doi:10.1016/S0140-6736(20)30798-4

This article is made freely available for use in accordance with BMJ's website terms and conditions for the duration of the covid-19 pandemic or until otherwise determined by BMJ. You may use, download and print the article for any lawful, non-commercial purpose (including text and data mining) provided that all copyright notices and trade marks are retained.

<https://bmj.com/coronavirus/usage>