

Est.  
1841

YORK  
ST JOHN  
UNIVERSITY

Bolarinwa, Obasanjo ORCID logoORCID:  
<https://orcid.org/0000-0002-9208-6408>, Odimegwu, Clifford, Okeke, Sylvester R, Ajayi, Kobi V and Sah, Rajeeb Kumar ORCID logoORCID: <https://orcid.org/0000-0001-8430-5343> (2023) Barriers and facilitators to accessing and using sexual and reproductive health services during the COVID-19 pandemic outbreak in Africa: a protocol for a systematic review and meta-analysis. *BMJ Open*, 13 (6).

Downloaded from: <https://ray.yorks.ac.uk/id/eprint/8275/>

The version presented here may differ from the published version or version of record. If you intend to cite from the work you are advised to consult the publisher's version:

Research at York St John (RaY) is an institutional repository. It supports the principles of open access by making the research outputs of the University available in digital form. Copyright of the items stored in RaY reside with the authors and/or other copyright owners. Users may access full text items free of charge, and may download a copy for private study or non-commercial research. For further reuse terms, see licence terms governing individual outputs. [Institutional Repository Policy Statement](#)

# RaY

Research at the University of York St John

For more information please contact RaY at [ray@yorks.ac.uk](mailto:ray@yorks.ac.uk)

# BMJ Open Barriers and facilitators to accessing and using sexual and reproductive health services during the COVID-19 pandemic outbreak in Africa: a protocol for a systematic review and meta-analysis

Obasanjo Afolabi Bolarinwa <sup>1,2</sup>, Clifford Odimegwu,<sup>3</sup> Sylvester R Okeke,<sup>4</sup> Kobi V Ajayi,<sup>5</sup> Rajeeb Kumar Sah <sup>6</sup>

**To cite:** Bolarinwa OA, Odimegwu C, Okeke SR, *et al.* Barriers and facilitators to accessing and using sexual and reproductive health services during the COVID-19 pandemic outbreak in Africa: a protocol for a systematic review and meta-analysis. *BMJ Open* 2023;**13**:e071753. doi:10.1136/bmjopen-2023-071753

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2023-071753>).

Received 13 January 2023  
Accepted 07 June 2023



© Author(s) (or their employer(s)) 2023. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

For numbered affiliations see end of article.

## Correspondence to

Obasanjo Afolabi Bolarinwa;  
bolarinwaobasanjo@gmail.com

## ABSTRACT

**Introduction** Access and utilisation of sexual and reproductive health services remain an important component in averting adverse sexual and reproductive health outcomes. However, the unprecedented emergence of the 2019 coronavirus disease (COVID-19) left most of these services disrupted in Africa. Thus, this protocol study seeks to conduct a systematic review and meta-analysis of barriers and facilitators to accessing and using sexual and reproductive health services during the COVID-19 pandemic outbreak in Africa.

**Method and analysis** An open electronic database search will be conducted in African journals online, PubMed, CINAHL, EMBASE and PsycINFO to identify potentially eligible studies published between January 2020 and December 2022. Two authors from the research team will screen the title and abstract of the potential studies, and another two authors will independently assess the full articles based on the inclusion or exclusion criteria. Studies will be selected if they examine barriers and facilitators to accessing and using sexual and reproductive health services, including family planning counselling and services, sexually transmitted infections (STIs)/HIV testing, consultation, and treatment, and provision of abortion services during the COVID-19 pandemic outbreak in Africa. The data extracted from the included studies will be analysed using Review Manager (RevMan V.5) and Meta-Analysis software V.3. Each outcome measure will be analysed separately against barriers and facilitators; the dichotomous data will be presented in odd ratios with a 95% CI, while mean and standardised mean differences will be employed to present the continuous data. We envisage that the potential results of this study will identify the barriers and facilitators to family planning counselling and services, STIs/HIV testing, consultation, and treatment, and provision of abortion services during the COVID-19 pandemic outbreak in Africa, which can be used to develop required interventions and policies to curb identified barriers.

**Ethics and dissemination** Ethical approval is not required for a systematic review and meta-analysis. Findings from this study will be disseminated through conferences and peer-reviewed publication.

**PROSPERO registration number** CRD42022373335.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This review protocol provides transparency on the adopted methods and processes to ensure the elimination of bias.
- ⇒ This review will use the Preferred Reporting Items for Systematic Reviews and Meta-Analyses in reporting the results statements.
- ⇒ This review will exclude published reviews, editorials, meta-analysis protocols and conference presentations.
- ⇒ This study will not include any other study published in languages other than English, and due to multiple recognised official languages in Africa, some important studies may not be included.

## INTRODUCTION

The 2019 coronavirus disease (COVID-19) pandemic worldwide led to catastrophic consequences on global health system delivery and services. Reports of unprecedented disruption in essential and non-essential health services (eg, cancer care, long-term health conditions care, sexual reproductive health services) led to a devastating loss of lives; as of 19 November 2022, over 6.6 million deaths have been recorded.<sup>1-4</sup> However, as COVID-19 continues to mutate, wreaking havoc along its path, the adverse effect of the virus, that is, long-haul COVID-19 has further compounded its consequences.<sup>5</sup> What is clear is that COVID-19 has (1) exposed a substantial weakness in global health systems, (2) widened existing health inequities and (3) eroded the potential of achieving the World Health Organisation (WHO)'s Triple Billion targets to improve health for billions of people by 2023 and the United Nations (UN) sustainable development goals (SDGs) by 2030.<sup>6</sup>

Sexual and reproductive health (SRH), while a significant component and driver of health outcomes, was deemed non-essential at the outset (2019–2021) of the pandemic.<sup>2</sup> As a result, there was a complete or partial halt to SRH services, such as contraceptive commodities leading to an uptick in sexually transmitted infections (STIs), including HIV/AIDS, unwanted pregnancies and lack of access to family planning and abortion services.<sup>2–7</sup> For example, one study approximated that continued disruption in family service for 1 year alone may lead to the loss of modern contraceptives for some 51 million women, leading to 15 million pregnancies.<sup>8</sup> These statistics are troubling, considering that unmet modern contraception methods are a global health priority.<sup>9,10</sup>

Access to SRH services in Africa mirrored those from other regions worldwide. However, the pandemic's effect was magnified in the African region due to the prevalence of weak health systems indexes and metrics.<sup>7</sup> In a recent study conducted as part of the 2019 African Epidemiological Association Annual Scientific Meeting, Oleribe *et al* found that the leading problems within the healthcare services in Africa were clustered around the WHO recommended building blocks of health systems: (1) poor leadership and governance, (2) inadequate healthcare workforce, (3) substandard healthcare service delivery, (4) poor financing, (5) suboptimal health information systems and poor access to essential medicines.<sup>11</sup> Relatedly, Africa accounts for only 3% of the global health workers and 1% of the world's financial resources yet contributes to more than 22% of the worldwide disease burden.<sup>12</sup>

Indeed, existing health systems delivery problems in Africa compounded by the pandemic translated to substantial gaps in access to SRH services. In Zimbabwe, COVID-19 substantially disrupted access to HIV and SRH services, such as discontinuity of family planning services due to border lockdowns, restricted movements and limited youth-friendly contraceptive service options compared with before the pandemic in a community health programme for youths.<sup>13</sup> Dyer *et al*<sup>14</sup> also reported that youths in Kenya faced challenges refilling their medications or keeping to their healthcare appointments, which was exacerbated by efforts that were outrightly against comprehensive SRH messages and SRH communication by policy-makers and decision-makers, religious organisations, and parents.<sup>15</sup> Even in South Africa, about 22.4% of adults could not access condoms during the first wave of the COVID-19 pandemic,<sup>16</sup> while utilisation of family planning services declined during the lockdown.<sup>17</sup> Furthermore, in Uganda, researchers found that during the lockdown, there was a complete 4 week hiatus in antenatal care services, including vaccination services. Even when antenatal care was restored, antenatal attendance remained significantly lower than before the pandemic, accounting for approximately 370 fewer visits per month.<sup>18</sup> Lack of access to contraceptives because of the pandemic was associated with pregnant women's inability to delay

or avoid getting pregnant in Nepal and Uganda.<sup>19</sup> Access and utilisation to SRH and maternal and infant and adolescent services in Nigeria also drastically declined by 2% and 6% but increased to a 10% decline after the lockdown.<sup>20</sup> However, contrary to Burt *et al*,<sup>18</sup> Adelekan *et al*<sup>20</sup> and Adelekan *et al*<sup>17</sup> findings suggesting negative consequences of the COVID-19 on SRH services lingered after the lockdown, longitudinal studies conducted in Burkina Faso and Kenya found relatively stable contraceptive access during and after the lockdown. The authors found that women embraced more effective contraception methods after the lockdown than prepandemic.<sup>21</sup> What is clear is that, to a large extent, the COVID-19 pandemic adversely affected access to and the utilisation of SRH services in Africa. However, the pandemic's true effect on SRH services in Africa remains unknown.

Even before COVID-19, there was evidence of variations in access to SRH services among African regions. For example, a preponderance of evidence indicates that age, place of residence, ethnicity, cultural and religious norms, wealth index, access to mass media, educational level, and other health system factors (eg, health insurance access) influenced the availability and use of SRH services.<sup>22–23</sup> These factors, although magnified by the pandemic's impact, have remained consistent during the pandemic.<sup>16</sup>

Based on this premise, it is important to fully understand the extent of the COVID-19 pandemic on SRH services in Africa to inform public health efforts during the pandemic while also setting proactive emergency response measures to mitigate the direct or indirect effect of the pandemic on SRH care and services. While several reviews have been conducted on this topic,<sup>7,24</sup> a comprehensive systematic synthesis and meta-analysis have not yet been performed. As a result, there are gaps in knowledge of the true effect of the pandemic on SRH in Africa. Therefore, this study seeks to conduct a systematic review and meta-analysis of the barriers and facilitators of the pandemic's influence on SRH in Africa by investigating the barriers and facilitators to accessing and using SRH services.

## METHOD AND ANALYSIS

This review protocol is registered in the international Prospective Register for Systematic Reviews (PROSPERO) database, with registration number: CRD42022373335. This protocol for the proposed systematic review and meta-analysis is reported in accordance with the updated Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement guide.<sup>25</sup>

### Patient and public involvement

No patient will be involved in this study.

### Information sources and search strategies

The authors will conduct an open electronic database search in African journals online, PubMed, PsycINFO,

CINAHL and EMBASE. The authors of this review will consult librarians about developing a comprehensive search strategy. Searching relevant databases will involve combining key search terms in line with the review focus and MeSH terms. Proposed key terms combinations will include Barriers [All Fields] AND facilitator [All Fields] AND Accessing[All Fields] AND utilisation[All Fields] AND (“sexual behavior”[MeSH Terms] OR (“sexual”[All Fields] AND “behavior”[All Fields]) OR “sexual behavior”[All Fields] OR “sexual”[All Fields]) AND (“reproductive health services”[MeSH Terms] OR (“reproductive”[All Fields] AND “health”[All Fields] AND “services”[All Fields]) OR “reproductive health services”[All Fields]) AND (“covid-19”[MeSH Terms] OR “covid-19”[All Fields] OR “covid-19 pandemic”[All Fields]) AND (“africa”[MeSH Terms] OR “africa”[All Fields]). This proposed combined key search terms will be applied to all databases considered in this protocol, and the full details of the search strategies can be found in online supplemental file within this protocol. Another key strategy for a comprehensive search of relevant studies would be a manual check of all references in selected studies.

## Inclusion and criteria

### Types of studies

This review will cover all spectrums of SRH services reported during the COVID-19 outbreak in Africa. All types of studies that reported findings on SRH services during COVID-19 in Africa will be included. Specifically, the review will involve every type of study that reports findings based on primary or secondary data around family planning counselling and services, STIs/HIV testing, consultation and treatment, and abortion services during the outbreak of the COVID-19 pandemic. We will exclude reviews, editorials, meta-analysis protocols and conference presentations. We will include only studies conducted in Africa between January 2020 and December 2022. On the other hand, we will exclude all studies conducted outside Africa.

### Types of participants

This review will involve all participants in the respective studies that will be selected for the systematic review and meta-analysis. No participant or study will be excluded based on age, sex/gender or any other sociodemographic variables as long as they meet the inclusion criteria for this study.

### Types of outcomes

The three primary outcome variables of interest include:

- ▶ Family planning counselling and services.
- ▶ STIs/HIV testing, consultation and treatment.
- ▶ Provision of abortion services.

### Study selection

The PRISMA 2020 flow diagram will guide studies to be included in this systematic review and meta-analysis. This diagram will specify studies included and excluded at

each stage and the justification for each exclusion. The citations of selected studies, following the systematic search of databases, shall be imported to the EndNote V.20 reference manager for the dual purpose of screening out duplicates and for storage. After cleaning out duplicates, two reviewers will independently screen the titles and abstracts of the remaining studies for selection based on the prestated inclusion and exclusion criteria. Studies eligible for full-text review shall be selected and independently assessed by two reviewers for inclusion or exclusion. Discrepancies will be resolved through discussion, and if there is no consensus about any study, another author/reviewer, who is not part of the assessors, will adjudicate. Explicit reasons for exclusion, based on predetermined inclusion and exclusion criteria, shall be documented for any study not selected at this full-text review stage.

### Data extraction and management

Authors will develop a standardised data extraction form to characterise included studies based on authors' name, year of publication, country of publication, sample size, age group, SRH services covered, identified barriers and identified facilitators of access and utilisation of reported SRH services. In instances where relevant data are missing, reviewers will contact the author of the studies for missing or additional data. Should this not yield the desired outcome, missing data shall be calculated through imputation, that is, using available information.

### Assessment of risk of bias

The risk of bias assessment of the included studies will be assessed independently by two authors using the Cochrane Risk of Bias Assessment Tool for Non-Randomised Studies (RoBANS) 2.0 for non-Randomised Controlled Trials (RCTs).<sup>26</sup> This tool will be used to evaluate the quality of selected studies in eight areas: target group comparisons, target group selection, confounders, exposure measurement, blinding of assessors, outcome assessment, incomplete outcome data and selective outcome reporting. Each component of the RoBANS 2.0 tool will be judged as acceptable, low and high risk of bias.

### Data analysis and synthesis

The potential eligible studies will be characterised in a table showing the author, year of publication, sample size, age group, SRH services covered, identified barriers and facilitators of access and utilisation of reported SRH services. The systematic review and meta-analysis will consider barriers to SRH services as associated factors/determinants that hinder or halt accessing and using required/needed SRH services during the COVID-19 pandemic in Africa, while facilitators to SRH services will be defined as associated factors/determinants that enables accessing and using SRH services during COVID-19 pandemic in Africa.

The odds ratio (OR) and confidence intervals (CIs) of barriers and facilitators reported in the potential eligible





studies will be extracted and considered in measuring the overall effects of the considered outcomes (Family planning counselling and services, STIs/HIV testing, consultation, and treatment, and provision of abortion services). The Comprehensive Meta-Analysis Software V.3, and Review Manager (RevMan) software V.5, will be used to measure the effect size of the eligible studies.

The authors will analyse each outcome measure, compute the effects of barriers and facilitators separately and present the results as relative risk with 95% CIs for dichotomous data, while continuous data will be presented as mean differences and standard mean differences with corresponding 95% CIs. Suppose the authors observe different time points of measurement. In that case, we will compare the different barriers and facilitators experienced during COVID-19 in all the SRH services considered within this protocol, and in the case of substantive statistical heterogeneity, we will consider incorporating random effects models in the statistical analysis.

## DISCUSSION

As evidence surrounding the neglect of SRH concerns to focus on COVID-19 in the past 2 years continue to emerge, the result of this review is expected to bolster this emerging body of evidence. Importantly, even though the COVID-19 pandemic is no longer designated as a global health emergency by the WHO, its lingering effects on population health and well-being are far from over.<sup>27 28</sup> As such, the result of this review could provide critical insights to address barriers to accessing and using SRH services on the one hand and strengthen the facilitators of access and utilisation on the other hand. Moreover, the present review could also serve as a resource base or 'guidebook' in adapting SRH services during local, national, regional or international public health emergencies. However, it is important to note that the results of this review will be caveated by some factors beyond the control of the reviewers. For instance, notwithstanding that systematic review and meta-analysis follow robust and regimented procedures and methodologies, the results of such reviews may be impacted by the quality of studies under review. There is also the likelihood of missing key studies that may be of significant value in improving the outcome of this review.

### Ethical consideration and dissemination of results

Considering this is a systematic review and meta-analysis protocol, it is unlikely that there may be ethical concerns, as such concerns would have been addressed in the studies under review. This systematic review and meta-analysis will be disseminated through peer-reviewed academic journals, conferences and other academic and public health gatherings such as workshops, symposiums, etc.

### Author affiliations

<sup>1</sup>Department of Public Health Medicine, University of KwaZulu-Natal, Durban, South Africa

<sup>2</sup>Department of Public Health, York St John University, London, UK

<sup>3</sup>Demography, University of the Witwatersrand, Johannesburg-Braamfontein, Gauteng, South Africa

<sup>4</sup>Centre for Social Research in Health, UNSW, Sydney, New South Wales, Australia

<sup>5</sup>Department of Health Behavior, Texas A&M University System, College Station, Texas, USA

<sup>6</sup>Department of Public Health, University of Huddersfield, Huddersfield, UK

**Twitter** Obasanjo Afolabi Bolarinwa @obax21

**Acknowledgements** We acknowledged the support from the Union African for Population Studies (UAPS) and the Royal Society for Tropical Medicine and Hygiene (RSTMH) towards the overall objective of this study. We also thanked the University of the Witwatersrand, Johannesburg, South Africa for supporting with the payment of this protocol article publication charges.

**Contributors** OAB conceived the study. OAB designed the study protocol. OAB, KVA and SRO drafted the initial manuscript. RKS and CO critically revised the protocol for methodological and intellectual content. All authors read and approved the final version of the manuscript before submission.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**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.

**Open access** This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

### ORCID iDs

Obasanjo Afolabi Bolarinwa <http://orcid.org/0000-0002-9208-6408>

Rajeeb Kumar Sah <http://orcid.org/0000-0001-8430-5343>

## REFERENCES

- Richards M, Anderson M, Carter P, *et al*. The impact of the COVID-19 pandemic on cancer care. *Nat Cancer* 2020;1:565–7.
- Mickler AK, Carrasco MA, Raney L, *et al*. Applications of the high impact practices in family planning during COVID-19. *Sex Reprod Health Matters* 2021;29:1881210.
- Hopman J, Allegranzi B, Mehtar S. Managing COVID-19 in low-and middle-income countries. *JAMA* 2020;323:1549–50.
- John Hopkins University & Medicine. COVID-19 dashboard; 2022.
- Phillips S, Williams MA. Confronting our next national health disaster—long-haul Covid. *N Engl J Med* 2021;385:577–9.
- World Health Organisation. Triple billion dashboard; 2022.
- Bolarinwa OA, Ahinkorah BO, Seidu A-A, *et al*. Mapping evidence of impacts of COVID-19 outbreak on sexual and reproductive health: a Scoping review. *Healthcare (Basel)* 2021;9:436.
- Riley T, Sully E, Ahmed Z, *et al*. Estimates of the potential impact of the COVID-19 pandemic on sexual and reproductive health in low-and middle-income countries. *Int Perspect Sex Reprod Health* 2020;46:73–6.

- 9 Alkema L, Kantorova V, Menozzi C, *et al*. National, regional, and global rates and trends in contraceptive prevalence and unmet need for family planning between 1990 and 2015: a systematic and comprehensive analysis. *Lancet* 2013;381:1642–52.
- 10 John C, Kazuyo M. Unmet need for family planning: past achievements and remaining challenges. *Semin Reprod Med* 2015;33:11–6.
- 11 Oleribe OO, Momoh J, Uzochukwu BS, *et al*. Identifying key challenges facing healthcare systems in Africa and potential solutions. *Int J Gen Med* 2019;12:395–403.
- 12 WHO. The global health Observatory; 2022.
- 13 Mavodza CV, Bernays S, Mackworth-Young CRS, *et al*. Interrupted access to and use of family planning among youth in a community-based service in Zimbabwe during the first year of the COVID-19 pandemic. *Stud Fam Plann* 2022;53:393–415.
- 14 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.
- 15 Eboi A, Ismail A, Hamid N. New media strategies' model for sexual reproductive health & rights campaigns among young people in informal settlements: mitigating the challenges. *Eur J Mol Clin Med* 2020;2020:1455–73.
- 16 Bolarinwa OA. Factors associated with access to condoms and sources of condoms during the COVID-19 pandemic in South Africa. *Arch Public Health* 2021;79:186.
- 17 Adelekan T, Mihretu B, Mapanga W, *et al*. Early effects of the COVID-19 pandemic on family planning utilisation and termination of pregnancy services in Gauteng, South Africa: March–April 2020. *WJCM* 2020;2:91.
- 18 Burt JF, Ouma J, Lubyayi L, *et al*. Indirect effects of COVID-19 on maternal, neonatal, child, sexual and reproductive health services in Kampala, Uganda. *BMJ Glob Health* 2021;6:e006102.
- 19 Brunie A, Austin G, Arkin J, *et al*. Women's experiences with family planning under COVID-19: a cross-sectional, interactive voice response survey in Malawi, Nepal, Niger, and Uganda. *Glob Health Sci Pract* 2022;10:e2200063.
- 20 Adelekan B, Goldson E, Abubakar Z, *et al*. Effect of COVID-19 pandemic on provision of sexual and reproductive health services in primary health facilities in Nigeria: a cross-sectional study. *Reprod Health* 2021;18:166.
- 21 Karp C, Wood SN, Guiella G, *et al*. Contraceptive dynamics during COVID-19 in sub-Saharan Africa: longitudinal evidence from Burkina Faso and Kenya. *BMJ Sex Reprod Health* 2021;47:252–60.
- 22 Haider TL, Sharma M. Barriers to family planning and contraception uptake in sub-Saharan Africa: a systematic review. *Int Q Community Health Educ* 2013;33:403–13.
- 23 Tessema GA, Streak Gomersall J, Mahmood MA, *et al*. Factors determining quality of care in family planning services in Africa: a systematic review of mixed evidence. *PLoS One* 2016;11:e0165627.
- 24 Polis CB, Biddlecom A, Singh S, *et al*. Impacts of COVID-19 on contraceptive and abortion services in low-and middle-income countries: a scoping review. *Sex Reprod Health Matters* 2022;30:2098557.
- 25 Page MJ, McKenzie JE, Bossuyt PM, *et al*. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Syst Rev* 2021;10:89.
- 26 Kim SY, Park JE, Lee YJ, *et al*. Testing a tool for assessing the risk of bias for nonrandomized studies showed moderate reliability and promising validity. *J Clin Epidemiol* 2013;66:408–14.
- 27 Wise J. Covid-19: WHO declares end of global health emergency. *BMJ* 2023:1041.
- 28 WHO. Statement on the fifteenth meeting of the IHR (2005) emergency committee on the COVID-19 pandemic. 2023.