ACCSCIENCE PUBLISHING

ISSN: 2424-8150 (Print)
ISSN: 2424-8606 (Online)
Volume 10 · Issue 1
January 2024

INTERNATIONAL JOURNAL OF POPULATION STUDIES

ACCSCIENCE PUBLISHING

International Journal of Population Studies

Print ISSN: 2424-8150

Online ISSN: 2424-8606

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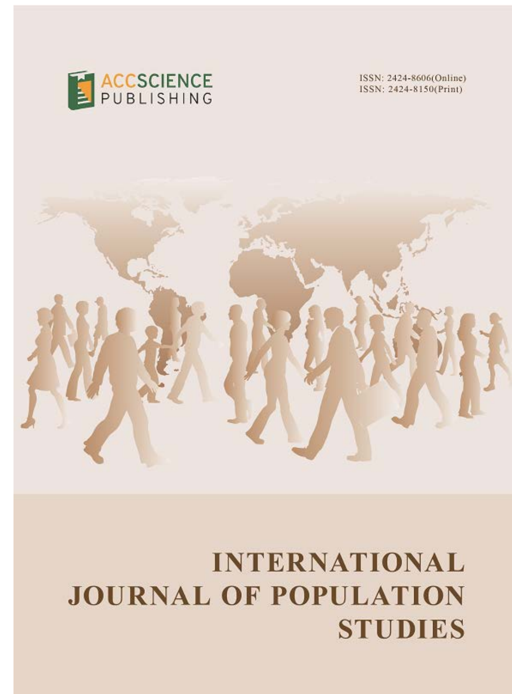

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Volume 10 • Issue 1 • January 2024
ISSN 2424-8150 (print) ISSN 2424-8606 (online)

INTERNATIONAL JOURNAL OF POPULATION STUDIES

Editor-in-Chief
Danan Gu
United Nations, New York, United States

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International Journal of Population Studies

ISSN: 2424-8150 (print)

ISSN: 2424-8606 (online)

Editorial and Production Credits

Publisher: AccScience Publishing
Managing Editor: Alicia Tian
Production Editor: Sharmila Velapasamy
Special Issue Commissioning Editors: Alicia Tian, Eva Liu
Article Layout and Typeset: Sinjore Technologies (India)
Cover Design: ProPub (China)

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Supplementary files of articles can be obtained at https://accscience.com/journal/IJPS/10/1.

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EDITORIAL

Population and reproductive health dynamics under COVID-19 in Sub-Saharan Africa: Insights from scientific evidence

Yemi Adewoyin[1,2†*], Joshua Odunayo Akinyemi[1,3†], Akanni Ibukun Akinyemi[4†], and Clifford O. Odimegwu[2†]

[1]Demography and Population Studies Programme, Schools of Public Health and Social Sciences, University of the Witwatersrand, Johannesburg, South Africa

[2]Department of Geography, University of Nigeria, Nsukka, Nigeria

[3]Department of Epidemiology and Medical Statistics, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Nigeria

[4]Department of Demography and Social Statistics, Obafemi Awolowo University, Ile-Ife, Nigeria

(This editorial belongs to the *Special Issue: Population and Reproductive Health Dynamics under Covid-19 in Sub-Saharan Africa*)

[†]These authors are the guest editors for this Special Issue.

***Corresponding author:**
Yemi Adewoyin
(yemiadewoyin@yahoo.com)

Citation: Adewoyin, Y., Akinyemi, J.O., Akinyemi, A.I., & Odimegwu, C.O. (2024). Population and reproductive health dynamics under COVID-19 in Sub-Saharan Africa: Insights from scientific evidence. *International Journal of Population Studies*, 10(1):1-4. https://doi.org/10.36922/ijps.2535

Received: December 26, 2023

Published Online: January 12, 2024

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Through the relentless efforts of the public health communities worldwide, the coronavirus disease 2019 (COVID-19) pandemic has eventually been brought under control. Such a feat provides invaluable insights into controlling disease outbreaks in the future. In this regard, the unique population and reproductive health dynamics in Sub-Saharan Africa (SSA) provide a lens for looking at disease outbreaks at the present and in the future. With the lowest case fatality rate amidst a fragile health system and a diverse population characterized by complex sociocultural norms, beliefs, and health behaviors, this subject area will continue to deepen as the scientific community prepares for the next outbreak. Many studies have reported on how the COVID-19 outbreak and the attendant control measures impacted access to sexual and reproductive health (SRH) services. The findings in this regard are varied, depending on the context and research design. This Special Issue aims to provide insights into the population and reproductive health dynamics in the SSA during the COVID-19 pandemic.

The papers in this special issue were selected from those presented at the Conference on Population and Reproductive Health Dynamics under COVID-19 in SSA that was hosted virtually by the Demography and Population Studies Programme, University of the Witwatersrand, South Africa, from March 14 to 16, 2022. Thematic areas of focus include access to family planning, sexual and reproductive health services; intimate partner violence (IPV); and COVID-19 vaccine hesitancy.

Before the conference, owing to a dearth of primary and secondary data, most studies primarily focused on the likely/potential association between COVID and reproductive health with findings that were largely hypothetical and, in some cases, drawn from very small samples that could not be generalized. The papers presented at the conference, however, provide actual, rather than hypothetical or potential, impacts on the association. In total, 10 articles from the conference that were accepted after a rigorous peer-review process are published in this Special Issue. The articles cover critical areas of the COVID-19 pandemic and utilize different methodologies to draw lessons learned during the pandemic.

Adedini *et al.* (2024) reported findings from a scoping review on the impact of COVID-19 on access to family planning among women in the SSA. They concluded that lockdowns and movement restrictions posed barriers to accessing family planning services. The authors also emphasized the need for public health measures to control disease outbreaks in a way that ensures existing interventions and services are not disrupted, preventing the reversal of prior gains.

Another scoping review by Ikutejijo *et al.* (2024) focused on the demand and supply of sexual and reproductive healthcare (SRH) services for adolescents and young people in the SSA during the COVID-19 pandemic. This study highlighted an increased demand for SRH services during the pandemic, which was however not met due to the serious disruptions to the supply chain. Despite these challenges, program managers and leaders in several SSA countries played crucial roles to circumvent the obstacles. Furthermore, adolescents and young people resorted to alternative means, including the use of alternative medicine, to endure the time when SRH services and commodities were in short supply. This paper also revealed useful strategies to bridge the demand-supply gap in SRH services during public health emergencies.

Asogwa *et al.* (2024) reported findings from a qualitative study based in rural Southeast Nigeria regarding the access of adolescents to SRH services during the COVID-19 pandemic. The in-depth interviews conducted by the authors revealed that limited access to SRH products and services during the pandemic, which was exacerbated by fear and non-utilization of qualified healthcare services, resulted in increased cases of unintended pregnancies.

The age pattern of deaths during the COVID-19 pandemic revealed that older adults constitute the greatest portion of the casualties. One explanation for this was the high prevalence of chronic and degenerative diseases that were often complicated by multimorbidity in older persons. This provides a justification as to why most countries prioritized administration of COVID-19 vaccines to senior citizens when the vaccines were first rolled out. In their paper, Ebimgbo *et al.* (2024) reported the perceptions of older adults in Southeast Nigeria toward the COVID-19 vaccine, using "a descriptive phenomenology design." Typical of rural African older adults, they manifested strong hesitancy or resistance to vaccination for the reasons "they were not sick" and "the vaccine itself would cause other diseases." The work described in this paper is distinct from other works surrounding the theme of population and reproductive health, which predominantly focus on studying women and adults aged 15 – 49 years, leaving out older adults. The inclusion of this paper in this Special Issue aligns with the Sustainable Development Goals that emphasize inclusiveness and espouse the spirit of "leaving no one behind." The development and mass rollout of COVID-19 vaccines were major breakthroughs in face of the enormous threats posed by the scourge. In view of antecedents about attitudes toward children's immunization in parts of Nigeria, it was essential to assess the level of vaccine hesitancy so that approaches to addressing misconceptions and misinformation through public health education and advocacy can be formulated.

The paper by Olaleye and Akande (2024) reported a cross-sectional survey conducted among internet users. Almost half of the participants expressed hesitancy about the COVID-19 vaccine and doubts about its safety and efficacy. Despite the potential bias in the selection of survey participants, the results portray a fair depiction of the general perception about the vaccine. Therefore, the findings provide useful information that can be leveraged for advocacy and health education programs regarding outbreak prevention and control.

A fresh and innovative perspective on this topic was provided in a paper by Adewoyin and Odimegwu (2024), which explored the drivers of vaccination willingness among South Africans. The findings from a national survey showed that risk beliefs, self-reported health status, and knowing someone infected by COVID-19 were the main factors associated with willingness to be vaccinated. These results provide insights into what should be addressed in risk communications during pandemics and disease outbreaks.

Parent-adolescent communication plays a pivotal role in SRH education and intergenerational transfer of sociocultural norms, values, and practices. A qualitative study by Odii (2024) (2024) in Southeast Nigeria explored how parent-adolescent communication played out during the COVID-19 outbreak. Very often, parents receive information about health safety and disease prevention from electronic media and then pass it on to their adolescent children. This paper also showed that compliance with the COVID-19 control measures by the children at home could be achieved by threatening and educating using religious ethos. Nevertheless, the author argued that this may not be healthy for the psychosocial well-being of the adolescents; therefore, adolescent-friendly approaches are needed for risk communications during disease outbreaks.

The Global Compact on Safe, Orderly and Regular Migration (GCM) emphasizes the critical roles of data in migration management. Taking a cue from this treaty endorsed by 152 countries, Muyonga (2024) conducted a systematic review of how migration data and statistics were deployed by the East African Community (EAC)

during COVID-19 pandemic. This interesting systematic review of 18 papers selected following a rigorous search revealed that routine administrative migration data were rarely deployed during COVID-19 response planning or implementation in the EAC, mostly because the relevant data were not available. However, the mobility data generated by digital technologies and the like can be put to innovative use, as clearly demonstrated in many of the papers reviewed, to formulate the pandemic/epidemic responses. This evidence provided pointers to how low- and middle-income countries can utilize mobility and migration data in planning and responding to disease outbreaks in the future.

Gender-based violence has been a prominent issue in the SRH ecosystem. The prevention and control of gender-based violence are complicated by the sociocultural context in the African settings, which are predominantly patriarchal, with gender roles and stereotypes that are not women-friendly. In the scoping review paper by Agunbiade *et al.* (2024), this subject was explored in the context of the COVID-19 pandemic. Findings suggested that the public health threats occasioned by IPV persisted, with incidences among minors. Responses by "state" and "non-state" actors were at sub-optimal levels. Public health awareness about IPV and other prevention and control strategies needs to be included in the response package during disease outbreaks.

In a systematic review, Ononokpono and Uzobo (2024) provide a fresh perspective to the discourse on IPV using the gender symmetry theory proposed in the 1970s. The main tenet of this theory is that both men and women are affected by IPV. Although there have been several arguments on the veracity of the theory across sociocultural divides, this paper showed that both men and women are affected by IPV, thus confirming the relevance of the theory during the COVID-19 pandemic. Both women and men experienced various forms of abuse during the pandemic, with physical abuse being more prevalent among women while psychological abuse being more common among men. This systematic review emphasized that interventions for curbing IPV should be provided and in place to assist both genders, especially during public health emergencies.

Obviously, these 10 articles are not sufficient to cover the breadth and depth of the scientific discourse on the subject of population and reproductive health dynamics under the circumstance of COVID-19 pandemic in the SSA. However, the selected papers, which report evidence from studies conducted at the peak of the pandemic in SSA, showcase diversity in geographical coverage and context with a complementary and interesting blend of research methodologies, such as surveys, qualitative studies, and scoping and systematic reviews. These findings provide invaluable insights for informing the development of programs and the management of public health emergencies.

Conflict of interest

The authors declare no conflict of interest.

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https://doi.org/10.36922/ijps.376

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International Journal of Population Studies

REVIEW ARTICLE

COVID-19 and access to family planning among women of reproductive age in sub-Saharan Africa: A scoping review

Sunday A. Adedini[1,2]*, Hassan Ogunwemimo[3], and Clifford O. Odimegwu[2]

[1]Department of Demography and Social Statistics, Faculty of Social Sciences, Federal University Oye-Ekiti, Oye-Ekiti, Ekiti, Nigeria

[2]Demography and Population Studies Programme, Schools of Public Health and Social Sciences, University of the Witwatersrand, Johannesburg, Gauteng, South Africa

[3]Centre for Data Science and Health Metrics, University of Medical Sciences, Ondo City, Ondo, Nigeria

(This article belongs to *Special Issue: Population and Reproductive Health Dynamics under Covid-19 in Sub-Saharan Africa*)

Abstract

This study examined the impact of COVID-19 on access to family planning for women of reproductive age (defined as ages 15 – 49) in sub-Saharan Africa (SSA). Employing a scoping review methodology, we retrieved relevant literature spanning the pre-COVID-19 and COVID-19 eras, drawing information from major electronic databases. Inclusion criteria required studies addressing family planning and sexual and reproductive health among women of reproductive age in SSA. This review encompassed 36 published studies, with two-thirds of these originating from the pre-COVID-19 period. The majority of the studies utilized quantitative methodology (89%). While some evidence corroborates our hypothesis regarding the impact of COVID-19 on family planning services in SSA, initial findings somewhat downplayed this impact. However, a sensitivity bias test revealed a discernible effect of the COVID-19 pandemic on women's access to family planning services. The results of this review hold significance for policymakers and program implementers striving to mitigate the impact of COVID-19 on access to family planning services among women in SSA.

Keywords: Family planning; Access to family planning; COVID-19; Women; Scoping review; Sub-Saharan Africa

***Corresponding author:**
Sunday A. Adedini
(sunday.Adedini@fuoye.edu.ng)

Citation: Adedini, S.A., Ogunwemimo, H., Odimegwu, C.O. (2024). COVID-19 and access to family planning among women of reproductive age in sub-Saharan Africa: A scoping review. *International Journal of Population Studies,* 10(1):5-20. https://doi.org/10.36922/ijps.365

Received: September 19, 2022

Accepted: December 1, 2023

Published Online: December 21, 2023

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1. Introduction

The coronavirus disease 2019 (COVID-19) has adversely impacted the public health and socioeconomic conditions of individuals, families, and societies across the world (Buheji *et al.*, 2020; Das *et al.*, 2022). Various stakeholders and multilateral organizations, including the International Monetary Fund (IMF), World Bank, and World Health Organization (WHO), have issued warnings regarding the potentially devastating consequences of the COVID-19 pandemic (WHO, 2020). This pandemic represents the most significant global public health emergency since the Spanish flu that ravaged the world in the 20th century (Dasgupta *et al.*, 2020). Before the widespread

distribution of COVID-19 vaccines, many countries across the world implemented stringent control measures, such as the lockdown of socioeconomic activities, restrictions on local movements, and the suspension of international travel, aimed at curbing human contacts and mitigating the spread of the disease.

The COVID-19 measures effectively contained the transmission of infections and mortality, preventing the health-care systems of many countries from reaching a catastrophic situation (Gummerson *et al*., 2021). However, these COVID-19 restrictions brought forth unintended consequences, including the loss of livelihood and income, disruptions in education, engagement in unsafe sexual behaviors, and a decline in access to health-care services, including essential sexual and reproductive health services such as family planning (Bahamondes & Makuch, 2020; Dasgupta *et al*., 2020; Gummerson *et al*., 2021; Herawati *et al*., 2020). Globally, health-care systems faced heightened strain as COVID-19 spread, resulting in the prioritization of pandemic-related health-care provision and the suspension of numerous routine health-care services in many countries (Sharma *et al*., 2020).

Women and girls in low- and middle-income countries have been recognized as a vulnerable group in the context of the COVID-19 pandemic (Burzynska & Contreras, 2020; Connor *et al*., 2020). Scholars posit that COVID-19 risk factors exhibit gendered patterns rather than being gender-neutral, highlighting that females face increased vulnerability to risk exposure and encounter greater disadvantages in accessing essential life-saving resources (Siriwardhane & Khan, 2021; Spagnolo *et al*., 2020; Stanton & Bateson, 2021). Moreover, many international organizations have articulated that the gender dimension of the pandemic and its control measures may exert a long-lasting impact on the health and well-being of millions of women and girls in low- and middle-income countries. Researchers contend that the COVID-19 pandemic, along with various restrictive measures implemented to curb its spread, could leave considerable numbers of women and girls without access to critical sexual and reproductive health-care services (Dasgupta *et al*., 2020; Stanton & Bateson, 2021).

Before the outbreak of COVID-19, prevailing power dynamics in many sub-Saharan African (SSA) societies predominantly disadvantaged women and girls (Adedini *et al*., 2014; Aina, 1998; Odimegwu *et al*., 2015). The region's culturally laden gender norms carried adverse implications for reproductive health and various outcomes among women and girls (Adedini *et al*., 2014; Adeleke, 2016). Additionally, existing studies indicate that preceding epidemics, such as human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS), Ebola virus disease (EVD), and Middle East respiratory syndrome (MERS), exerted a disproportionately greater impact on marginalized and vulnerable groups, particularly women and girls (Fan, 2020). The unequal distribution of resources, limited access to health-care services, diminished decision-making authority, lower educational status, and restricted mobility collectively impede women's capacity to meet their socioeconomic needs and access health-care services during pandemics (FAO, 2017). In light of the sociocultural values and practices that underpin gender inequalities within households, women and girls often experience heightened tensions during pandemics, elevating their vulnerability to domestic violence (IASC, 2015; 2020). Such circumstances may further impede their access to family planning services amid a pandemic.

Family planning, encompassing pregnancy planning, child spacing, and limiting, aims to enhance the overall well-being and quality of life for women and their children (Sharma *et al*., 2020). We posit that the COVID-19 pandemic may detrimentally impact the circumstances of women and girls, particularly by restricting their access to family planning services in SSA, where health-care systems exhibit relative fragility compared to the global north. The challenges faced by women in accessing family planning services are likely exacerbated by the impact of the COVID-19 pandemic. Against this background, we pose the following question: What is the impact of COVID-19 on the access to family planning services among women of reproductive age (defined as ages 15 – 49) in SSA? The study furnishes essential insights derived from a review of published studies focused on the access and utilization of family planning methods among women in their reproductive years during the pre-COVID-19 and COVID-19 eras in SSA. Consequent to the potential impact of the two major COVID-19 spread preventive moves – lockdowns and shutdowns – implemented globally, including in SSA, which restricted movements, our hypothesis posits that COVID-19 would adversely affect women's access to family planning services and constrain their utilization of these services.

2. Materials and methods

We conducted a scoping review of relevant literature, adhering to the Joanna Briggs Institute's guidelines for scoping reviews. We synthesized and analyzed evidence from relevant studies published during the pre-COVID-19 period (2010 – 2019) as well as those published from 2020 to the end of March 2022. To compile our comprehensive review, we systematically searched and retrieved relevant literature from major electronic databases, including Web of Science (WoS), MEDLINE, African Journals Online, and

Bioline International. All study designs were considered for inclusion, with the exception of opinion pieces, protocols, and review articles. To meet our inclusion criteria, studies were required to specifically address the aspects of access to or utilization of family planning and/or contraception among adolescent girls and women of reproductive age in SSA.

2.1. Searching for eligible studies

The study sought to examine the impact of COVID-19 on access to family planning services among adolescent girls and women of reproductive age in SSA through a scoping review. Guided by Joanna Briggs Institute (JBI)'s Population, Concept and Context (PCC) approach (Peters *et al.*, 2015), we conducted a literature search using relevant keywords in the search strategy, supplemented, where applicable, by the use of Medical Subject Headings (MeSH). Specifically, the databases searched for relevant articles included MEDLINE, WoS, African Journals Online (AJOL), and Bioline. Additionally, Google Scholar was explored for related articles. Ab initio, keywords such as "access," "family planning services," "women," and "sub-Saharan Africa" were employed in searches on AJOL and MEDLINE. Identified studies were subjected to pre-review to locate synonymous keywords used by authors addressing similar concepts. Subsequently, additional related keywords for each concept were identified and incorporated into subsequent extended searches. For instance, alongside "access," related keywords included "use," "uptake," "utilization," "practice," and "going for." Adhering to the PCC guide during the general search across the databases, synonymous keywords were employed in the "Population" category, corresponding to women in this study. These included "girls," "adolescent girls," and "female." In the "Concept" category, which pertains to family planning services in this study, keywords such as "Family Planning" and "Contraception" were used. Both "family planning services" and "Contraception" were truncated to ensure the retrieval of all relevant articles. Additionally, within the "Context" category, along with "sub-Saharan Africa," each of the 47 countries was employed. Where applicable among the databases, the Boolean operator OR was applied within a concept and its related keywords, while AND was used to combine all themed concepts in the searches.

2.2. Identification of relevant studies

Specifically, 1,404 articles were retrieved from WoS, and AJOL returned a total of 100 relevant articles. Bioline returned 24 articles, and 3,888 articles were retrieved from MEDLINE (PubMed). These numbers of articles resulted from our consideration of the time COVID-19 disease was detected, which was late in 2019. To mitigate potential selection bias and avoid presumptions about an increase in family planning issues due to the recent renewed interest in linking family planning to development in SSA (Harpham *et al.*, 2021), we confined our consideration to articles published between 2010 and the end of March 2022. This strategy means that articles published from 2010 to 2019 would represent the pre-COVID-19 period. From other sources, such as Google Scholar, we retrieved 14 articles. Therefore, the total number of retrieved articles amounted to 5,430. All articles published in languages other than English language were excluded to facilitate ease of access.

2.3. Inclusion and exclusion criteria

To be eligible for inclusion in this review, articles must, firstly, address the topics of access or use (or related keywords) of family planning (or similar keywords) among women and must have been conducted in one or more countries in SSA. Additionally, all articles must represent primary research conducted between 2010 and the end of March 2022. This temporal criterion ensured that the data for analysis in such studies were current and roughly indicative of the level of access to family planning services at the time of publication. Essentially, studies included in the review adhered to cross-sectional designs. In contrast, studies categorized as mere commentaries, reviews, or those focusing on subjects other than reproductive adolescent girls and women were excluded. Additionally, articles that relied on secondary data in their analyses were excluded to avoid the duplication of findings from the same dataset. Furthermore, studies involving subjects inherently disadvantaged in access to family planning services, such as refugees, sex workers, pastoralists, and others, were excluded. This exclusion aimed to mitigate potential biases associated with extreme access levels among these populations.

2.4. Selection of studies for review

From the total pool of retrieved articles (5,430) resulting from restrictions on the period of interest, we conducted an assessment of article titles and removed duplicates to ensure a focused examination of all concepts of interest. This process yielded 226 articles. Subsequently, after reviewing abstracts and method sections to further ascertain the relevance of articles to the current review, 113 articles were selected. At the final stage, a thorough examination of the full texts was undertaken to confirm each remaining study as primary research, focused on adolescent girls and women, and in compliance with all other inclusion criteria. This comprehensive review culminated in the final inclusion of 36 articles for this review paper. The details of the article selection process are depicted in Figure 1.

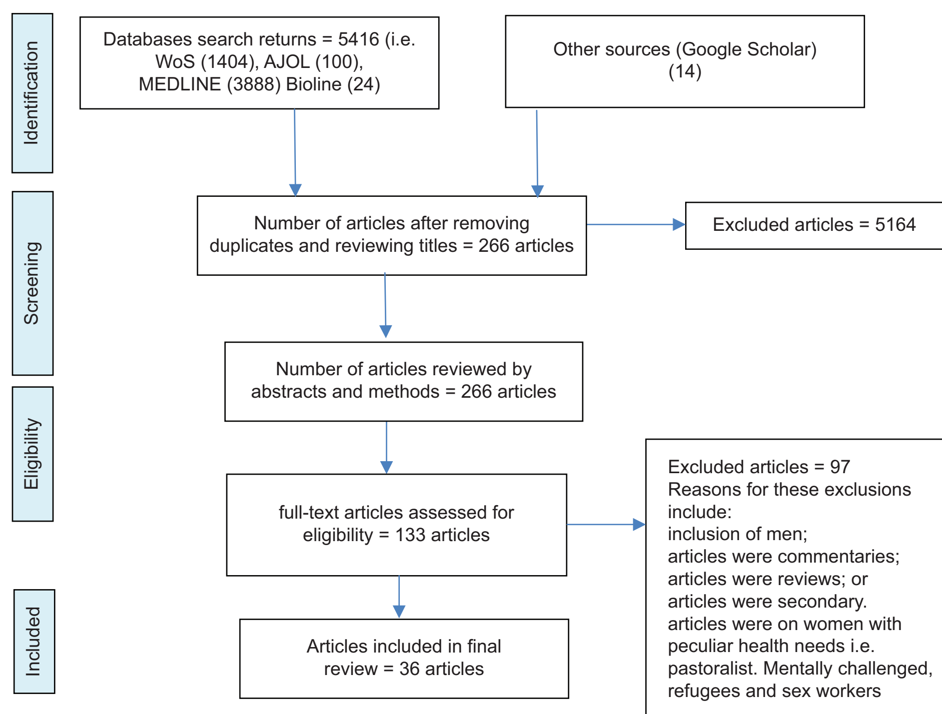

Figure 1. Flow chart of the article selection process

2.5. Characteristics of selected studies

As illustrated in **Table 1**, the studies selected for this review originated from nine countries in SSA, with the majority emanating from Nigeria (13 articles) (Adefalu *et al.*, 2019; Aliyu *et al.*, 2015; Anate *et al.*, 2021; Aniwada *et al.*, 2017; Bolarinwa *et al.*, 2021; Chingle *et al.*, 2013; Esike *et al.*, 2017; Idowu *et al.*, 2020; Ogboghodo *et al.*, 2017; Olarewaju *et al.*, 2019; Umoh & Abah, 2011; Umukoro *et al.*, 2020; Utoo & Araoye, 2012), followed by Ethiopia (10 articles) (Alemayehu *et al.*, 2021; Dingeta *et al.*, 2021; Ejeta *et al.*, 2021; Endriyas *et al.*, 2017; Gebremedhin *et al.*, 2018; Gujo & Kare, 2021; Melka *et al.*, 2015; Melkie *et al.*, 2021; Mokwena Kebogile & Bogale Yenealem Reta, 2017; Tilahun *et al.*, 2022). Kenya contributed four articles (Mukthar *et al.*, 2014; Mumbo *et al.*, 2021; Ontiri *et al.*, 2019; Owuor *et al.*, 2018), while Ghana had three studies (Afriyie & Tarkang, 2019; Apanga & Adam, 2015; Krakowiak-Redd *et al.*, 2011). Uganda had two articles selected for review (Muyama *et al.*, 2020; Ouma *et al.*, 2015). One article each was reviewed from Rwanda (Uwimbabazi *et al.*, 2020), the Gambia (Anyanwu & Alida, 2017), Tanzania (Damian *et al.*, 2018), and Lesotho (Akintade *et al.*, 2011). Consequently, the coverage of this review spans across the Western, Southern, and Eastern countries in SSA. In addition, two studies followed a qualitative design (5.5%) (Adefalu *et al.*, 2019; Uwimbabazi *et al.*, 2020) and two articles adopted a mixed-method design (5.5%) (Endriyas *et al.*, 2017; Ontiri *et al.*, 2019), while a quantitative design was adopted for the remainder (88.9%). Furthermore, 64% of the reviewed studies represented the pre-COVID-19 period.

3. Results

As previously mentioned, all studies included in this review are primary research endeavors that encompass the population (adolescent girls and women), concepts (access to family planning services), and context (SSA) of interest. It is pertinent to point out that the concept of access to family planning services is inferred from the ability of adolescent girls and women to uptake family planning services during the two periods of interest. Articles reviewed during the COVID-19 period employed terms such as "uptake," "utilization," and "use" to characterize access to family planning services. In contrast, studies reviewed during the pre-COVID-19 period, in addition to using "uptake," "utilization," and "use," also incorporated terms such as "practice" and "acceptance" to describe family planning uptake. For the purpose of this study, adolescent girls and women of reproductive age whose use of any family planning method were described by any of these terms are considered to have a form of access to family planning.

Through our overall comprehensive search, we identified no cross-sectional primary study that met our inclusion criteria and specifically addressed the direct

Table 1. Characteristics of studies selected for review

S/N	Author	Pub year	Country	Purpose	Study population	Methods	Family planning method	Outcomes	Key findings related to objective
1	Tilahun, T. Bekuma, T. T., Getachew, M., Oljira, R., & Seme, A.	2022	Ethiopia	to assess barriers and determinants of postpartum family-planning uptake among women visiting MNCH services in public health facilities of western Ethiopia	postpartum mothers 15-49 years who have given birth in the last 12 months of the study period and visiting the selected hospitals and health centers	Quantitative facility-based cross-sectional study design	Post-Partum Family Planning (PPFP)	51% uptake	Moderate access
2	Alemayehu, A., Demissee, A., Feleke, D., & Abdella, M.	2021	Ethiopia	to assess level and determinants of long-acting family planning method among reproductive age women in Harar, Eastern Ethiopia	845 women of reproductive age	Community-based cross-sectional study design	LARC	74.7% LARC use	High access
3	Dingeta, T., Oljira, L., Worku, A., & Berhane, Y.	2021	Ethiopia	to assess the association between contraceptive utilization and socio-cultural factors among young married women in Eastern Ethiopia	3039 married women aged 14–24	Community-based survey	Any contraceptive method	14.1% current CPR	Low access
4	Anate, B. C., Balogun, M. R., Olubodun, T., & Adejimi, A. A.	2021	Nigeria	to assess the knowledge and utilization of family planning and determine predictors of utilization of family planning among postpartum women attending primary health care centers (PHCs) in a selected rural area of Lagos State	325 postpartum women attending PHCs aged 15-49 years	Descriptive cross-sectional study	Post-Partum Family Planning	38.5% using modern method	Moderate access
5	Melkie, A., Addisu, D., Mekie, M., & Dagnew, E.	2021	Ethiopia	to determine the utilization and factors associated with an immediate postpartum intrauterine contraceptive device	423 women who gave birth at selected hospitals of west Gojjam zone	Multi-level facility-based cross-sectional study	immediate postpartum intrauterine contraceptive device	4.02% used immediate postpartum intrauterine contraceptive device	Low access
6	Mumbo, E. M., Mutisya, R., & Ondigi, A.	2021	Kenya	to determine the contraception among HIVpositive women in Kwale County	347 HIV-positive female clients ages 15-49 attending Comprehensive Care Clinics	Cross-sectional design	Modern contraceptive use	79% CPR	High access
7	Gujo, A. B., & Kare, A. P.	2021	Ethiopia	to assess the utilization of LARCs and associated factors among reproductive-age women in Wondo Genet District, Southern Ethiopia	376 women of reproductive age	Institution based cross-sectional study	IUCD and Implant	37.8% use of long-acting reversible contraceptives	Moderate access

(*Cont'd...*)

Table 1. (Continued)

S/N	Author	Pub year	Country	Purpose	Study population	Methods	Family planning method	Outcomes	Key findings related to objective
8	Ejeta, L. T., Demeke, H. Z., Desta, B. F., Kibret, M. A., Gebre, G. K., Beshir, I. A., Gari, L. T., Tsegaye, Z. T., & Tefera, B. B.	2021	Ethiopia	to assess the determinants of facility-based FP and delivery service utilization in the six regions of Ethiopia	3778(FP-related) women of reproductive age	Cross-sectional design	Any family planning method	62.7% current users	Moderate access
9	Bolarinwa, O. A., Olaniyan, A. T., Saeed, B. Q., & Olagunju, O. S.	2021	Nigeria	to examine the influence of spousal communication and attitude toward family planning (FP) use among young mothers in the peri-urban area of Osun State	420 young mothers who had at least a child in the year preceding the survey age 15-30 years	Household-based cross-sectional design	Any contraceptive method	82% FP use	High access
10	Idowu, A., Ukandu, G. C., Mattu, J., Olawuyi, D., Abiodun, A., Adegboye, P., Chibu-Jonah, C., Siakpere, A. E., Ishola, A. E., Adeyeye, T., & Alabi, S.	2020	Nigeria	to assess the contraceptive use and its determinants among reproductive age women in Ejigbo, Osun State,	405 women of reproductive age	Cross-sectional design	Current users of contraception	33%	Moderate access
11	Muyama, D. L., Musaba, M. W., Opito, R., Soita, D. J., Wandabwa, J. N., & Amongin, D.	2020	Uganda	to determine the prevalence and factors associated with postpartum contraceptive use among teenage mothers in Mbale City	511 teenage mothers	Cross-sectional design	PPFP	61.50%	Moderate access
12	Umukoro, E., Edje, K., Agbonifo-Chijiokwu, E., Moke, E., Egbenede, E., & Emma-Ugulu, I.	2020	Nigeria	to assess the use and effects of contraceptives among female secondary school students in Abraka	250 female students aged 8-23 years	Descriptive cross-sectional study	Modern contraceptive use	58.8% current CP users	Moderate access
13	Uwimbabazi, C., Ukizinkuru, M., Nkubito, P., Runyange, N., Nyamwasa, D., Verhoeven, D., Randy, W., Hitimana, N., & Musabyimana, J. P.	2020	Rwanda	to analyze the use of immediate PPFP and identify motivators and barriers and their relationship in influencing the use of immediate Post Partum FP(PPFP) among Rwandan women at Kacyiru Hospital (KH), Kigali	28 women aged 21-49 years	Qualitative design	PPFP	67.9% accepted immediate PPFP	Moderate access

(Cont'd...)

Table 1. (Continued)

S/N	Author	Pub year	Country	Purpose	Study population	Methods	Family planning method	Outcomes	Key findings related to objective
14	Ontiri, S., Ndirangu, G., Kabue, M., Biesma, R., Stekelenburg, J., & Ouma, C.	2019	Kenya	to assess the factors associated with uptake of long-acting reversible contraception by women seeking family planning services in public health facilities in Kakamega County	423 women aged 15-49 years residing in Kakamega County in the last six months prior to the survey, and visiting the FP clinic for uptake of contraception services.	Public facility- based mixed-method cross-sectional design	LARC uptake	20.60%	Low access
15	Afriyie, P., & Tarkang, E. E.	2019	Ghana	to assess the factors influencing the use of modern contraception among married women in Ho West District	225 married women aged 18 and 49 years residing in the Ho West district	Descriptive cross-sectional design	Current modern contraceptive use	64.40%	Moderate access
16	Olarewaju, S. O., Olaniyan, Y., & Odusolu, Y. O.	2019	Nigeria	to assess the knowledge, attitude and practice of contraception among HIV positive women of reproductive age group attending ART/PMTCT clinics in Ogbomoso	270 HIV-positive women age 18-49 years attending PMTCT/ART clinics	Descriptive cross-sectional design	Any contraceptive method	44.1% current CP users	Moderate access
17	Adefalu, A. A., Ladipo, O. A., Akinyemi, O. O., Popoola, O. A., Latunji, O. O., & Iyanda, O.	2019	Nigeria	to explore specific factors that influence contraceptive uptake and demand in North-West Nigeria	250 community resident women aged 15-45 years	Qualitative design (Women-only FGD)	FP services and contraceptives	Increasing demand	Improved access
18	Owuor, H. O., Chege, P. M., & Laktabai, J.	2018	Kenya	to determine the predictors of uptake of post-partum family planning (PPFP)	259 post-partum women, accompanying their children for first measles vaccination	Descriptive cross-sectional design	PPFP	78.40%	High access
19	Gebremedhin, A. Y., Kebede, Y., Gelagay, A. A., & Habitu, Y. A.	2018	Ethiopia	to assess postpartum family planning use and its associated factors among women in extended postpartum period in Kolfe Keranyo sub city of Addis Ababa	803 women who have had live births during the preceding data collection year	Community-based cross-sectional study design	PPFP	80.30%	High access
20	Damian, D. J., George, J. M., Martin, E., Temba, B., & Msuya, S. E.	2018	Tanzania	to determine the prevalence and factors influencing modern contraceptive use among HIV-positive women in northern Tanzania	672 HIV-positive women	Cross-sectional design	Current modern contraceptive use	54%	Moderate access

(*Cont'd...*)

Table 1. (Continued)

S/N	Author	Pub year	Country	Purpose	Study population	Methods	Family planning method	Outcomes	Key findings related to objective
21	Endriyas, M., Eshete, A., Mekonnen, E., Misganaw, T., Shiferaw, M., & Ayele, S.	2017	Ethiopia	to assess the status and factors affecting contraceptive utilization among women of reproductive age	3205 non-pregnant women aged 15–49 years	Community based cross-sectional mixed-method design	Current modern contraceptive use	53.30%	Moderate access
22	Mokwena Kebogile & Bogale Yenealem Reta.	2017	Ethiopia	to examine the fertility intentions of a sample of women living with HIV/AIDS, and to describe the utilisation of contraception methods used	362 of women aged 18-49 years who attended the HIV clinic in Adama Hospital Medical College age	Cross-sectional quantitative study	Modern contraceptive use	65.7% use of CP	Moderate access
23	Ogboghodo, E., Adam, V., & Wagbatsoma, V.	2017	Nigeria	to assess the prevalence and determinants of contraception among women of child-bearing age in a rural community in Edo State	295 sexually active community permanent resident women of child bearing age (15-49)	Descriptive cross-sectional study	Any contraceptive method	26.4% CPR	Low access
24	Esike, C., Anozie, O., Ani, M., Ekwedigwe, K., Onyebuchi, A., Ezeonu, P., & Umeora, O.	2017	Nigeria	to find out the reasons for low FP uptake	330 women of reproductive age group	Cross-sectional study	Any contraceptive method	58.2% current CP users	Moderate access
25	Anyanwu, M., & Alida, B. W. N	2017	The Gambia	to nvestigated the uptake of LARC among women of reproductive age seeking for family planning services at a health facility in the Western region of The Gambia	160 women of reproductive age	Facility based cross-sectional study	Long-acting reversible contraceptives	89% current LARC users	High access
26	Aniwada, E. C., Okpoko, C. C., Uleanya, N., Umeobieri, A. K., & Okechi, U. C.	2017	Nigeria	to ascertain prevalence, pattern and predictors of family planning use among women living in an urban slum	281 area resident women aged 15-49 years	Community based descriptive cross-sectional study	Any contraceptives including modern methods	35.6% current CP users	Moderate access
27	Ouma, S., Turyasima, M., Acca, H., Nabbale, F., Obita, K. O., Rama, M., Adong, C. C., Openy, A., Beatrice, M. O., Odongo-Aginya, E. I., & Awor, S.	2015	Uganda	To determine obstacles to family planning use among rural women in Northern Uganda	424 women of reproductive years	Descriptive mixed-method cross-sectional analytical study.	Current contraceptives use	54.20%	Moderate access

(*Cont'd...*)

Table 1. (Continued)

S/N	Author	Pub year	Country	Purpose	Study population	Methods	Family planning method	Outcomes	Key findings related to objective
28	Melka, A. S., Tekelab, T., & Wirtu, D.	2015	Ethiopia	to understand the determinant factors of long acting and permanent contraceptive methods use among married women of reproductive age in Western Ethiopia	1012 married women of reproductive age	Community-based cross sectional study	Long-acting reversible contraceptives	20% LARC users	Low access
29	Apanga, P. A., & Adam, M. A.	2015	Ghana	to investigate the factors that influence the decision of women in fertility age to go for family planning services	280 women aged 15-49 years	Cross-sectional quantitative survey	Any contraceptives including modern methods	18% FP ever use	Low access
30	Aliyu, A. A., Dahiru, T., Oyefabi, A. M., & Ladan, A. M.	2015	Nigeria	to determine contraceptive knowledge, determinants, contraceptive prevalence and use of modern family planning	309 women of reproductive age attending outpatient clinic of the Comprehensive Health Centre, Sabon Gari	Cross-sectional descriptive study	Any contraceptives including modern methods	12.3% CPR	Low access
31	Mukthar, V. K., Maranga, A., Kulei, S., & Chemoiwa, R. K.	2014	Kenya	to determine the uptake and factors associated with the uptake of modern contraceptives among women of reproductive age (15-49 years) attending Maternal Child Health and Family Planning Clinics/Units in Rift Valley Provincial Hospital	261 women of reproductive age (15-49 years) who attended MCH/ FP Clinic at the Rift Valley Provincial Hospital	Descriptive cross-sectional study	any modern contraceptive	90.4% ever used CP	High access
32	Chingle, M., Banwat, M., Lar, L., & Zoakah, A.	2013	Nigeria	to assess the contraceptive uptake among women of reproductive age in a rural community in Jos SouthLGA	400 women of reproductive age residing in Giring	Cross-sectional descriptive study	Modern contraceptives	55.2% ever used CP	Moderate access
33	Utoo, P., & Araoye, M.	2012	Nigeria	to determine the awareness and pattern of utilization of family planning methods among women attending the under-five clinic for immunization	165 mothers attending the under-five clinic for immunization	Cross-sectional study	Modern contraceptives	44.8% ever used FP	Moderate access

(Cont'd...)

Table 1. (Continued)

S/N	Author	Pub year	Country	Purpose	Study population	Methods	Family planning method	Outcomes	Key findings related to objective
34	Umoh, A. V., & Abah, M. G.	2011	Nigeria	to document the awareness of contraception and its use in Uyo, South-south	522 women attending antenatal care	Cross-sectional study	Any contraceptives including modern methods	52.6% ever used FP	Moderate access
35	Krakowiak-Redd, D., Ansong, D., Otupiri, E., Tran, S., Klanderud, D., Boakye, I., Dickerson, T., & Crookston, B.	2011	Ghana	identify which family planning methods women recognized, had ever used and currently use	85 women aged 15-49 years	Cross-sectional study	Any contraceptives including modern methods	54.9% current CP use	Moderate access
36	Akintade, O. L., Pengpid, S., & Peltzer, K.	2011	Lesotho	to assess the level of awareness of contraceptives and utilisation of family planning services among young women in Lesotho	363 female undergraduate students aged 18-40 yearss	Quantitative descriptive survey	Any contraceptives including modern methods	55.3% current CP users	Moderate access

restrictive impact of COVID-19 on access to family planning services among adolescent girls and women in SSA. Therefore, the studies assessed in this review focus on examining the use of family planning before and during the COVID-19 period. Across the selected studies, family planning services were categorized into six thematic approaches: Contraceptive prevalence rate (CPR), post-partum family planning (PPFP), long-acting reversible contraception (LARC), any method of contraception including modern methods, modern contraception (mCP), and current contraceptives use.

All studies, except those employing qualitative design, reported the proportion of adolescent girls and women of reproductive age who accessed family planning. These proportions were subsequently used to categorize the level of access into high, moderate, and low. A proportion of 70% and above for adolescent girls and women of reproductive age accessing family planning was categorized as a high access level, while a range of 30 – 60% access was designated moderate access level. Any reported proportion < 30% was categorized as low access to family planning services.

In view of this categorization, during the COVID-19 period, eight of the reviewed articles (61.5%) indicated that adolescent girls and women of reproductive age had moderate access to family planning services, compared to 13 of the articles (56.5%) reviewed for pre-COVID-19 period. Additionally, concerning high family planning access levels, three articles (23.1%) showed high access during the COVID-19 period, while four articles (17.4%) demonstrated high access among adolescent girls and women of reproductive age in the pre-COVID-19 period. Furthermore, 15.4% of study subjects during the COVID-19 period had low access to family planning services, and 21.7% of adolescent girls and women of reproductive age had low access to these services pre-COVID-19 period.

We also conducted a sensitivity analysis to compare the 3 years preceding the COVID-19 period (2017 – 2019) with the COVID-19 period (2020 to March 2022). The result revealed 13 articles for each of these two periods. The findings indicated that during the 3 years preceding the COVID-19 outbreak in SSA, 8 articles (61.5%) depicted moderate access to family planning services, mirroring the observation for the COVID-19 period (eight articles [61.5%]). Similarly, two articles (15.4%) showed low access to these services, consistent with the findings during the COVID-19 period. Additionally, three studies (23.1%) demonstrated high access to family planning services among adolescent girls and women of reproductive age in the period before the emergence of COVID-19, aligning with the observation during the COVID-19 period.

4. Discussion

This review systematically maps the evidence concerning the impact of COVID-19 on access to family planning services among adolescent girls and women of reproductive age in SSA. As the transmission of COVID-19 rapidly spread across countries, various stringent measures, including the

lockdown of socioeconomic activities and restrictions on local and international travel, were implemented (Devi, 2020; Hugelius *et al*., 2021; Zajenkowski *et al*., 2020). While these control measures significantly contributed to stemming the spread of the disease, they also gave rise to numerous negative unintended consequences, such as heightened violence against women, substance abuse, increased risky sexual activities, and reduced access to critical health-care services, such as sexual and reproductive health-care services (Avena *et al*., 2021; Roesch *et al*., 2020; Spagnolo *et al*., 2020). This scoping review aims to furnish key evidence on the impact of COVID-19 on access to family planning services among adolescent girls and women of reproductive age in SSA.

Guided by JBI's scoping review guidelines, we included 36 articles in our review that met our inclusion criteria. These articles focused on nine SSA countries, spanning the Western, Eastern, and Southern regions. There were 17 studies from West Africa, 18 from East Africa, and 1 from Southern Africa. The majority of the studies employed quantitative methodology, with slightly over one-third of the reviewed papers concentrating on the COVID-19 era.

The restrictions imposed during the COVID-19 period appeared to exert a critical influence beyond health-care services access, potentially impacting the execution of primary studies. Notably, our search procedure yielded no studies directly examining the impact of COVID-19 on access to family planning services among adolescent girls and women in the African sub-region. However, to align with the focus of this review, we assessed the level of contraceptive access through various family planning methods across studies selected for this review. These methods included CPR, mCP use, PPFP, current contraceptive use, LARC, and any method of contraception, including modern methods. For each of these method categories, the proportion of respondents who utilized the methods was employed to determine the level of access to family planning during the periods of interest.

In comparing the 10-year pre-COVID-19 period with the 2.3 years of the COVID-19 period, the results revealed findings somewhat contrary to the hypothesis. Notably, when assessing different levels of categorizations, a higher proportion of adolescent girls and women of reproductive age had moderate access to family planning services during the COVID-19 period compared to the period preceding the pandemic outbreak. Similarly, in the comparison of these periods concerning high family planning services access, the results indicated that study subjects had approximately six more percentage points during the COVID-19 period than in the pre-COVID-19 period. Regarding low levels of access to family planning services, the findings suggested a higher proportion of adolescent girls and women of reproductive age (less than a seven percentage point difference) had low access to family planning services before the COVID-19 outbreak compared to during the pandemic. These results suggest that adolescent girls and women of reproductive age had improved access to family planning services during the COVID-19 period than before the pandemic. However, it is essential to consider the potential bias introduced by the length of the comparison periods. To confirm and better understand these results, a sensitivity bias test was conducted.

In this analysis, we compared the last 3 years preceding the pandemic outbreak to the 2.3 years of the ongoing pandemic. Coincidentally, each period comprised 13 articles. However, the COVID-19 period encompassed one qualitative and 12 quantitative designs, while the pre-COVID-19 period included one mixed-method, one qualitative, and 11 quantitative designs. The results revealed a stagnation in access to family planning services among adolescent girls and women of reproductive age. Despite recent efforts to enhance family planning services for these groups through a series of reproductive health interventions (Adedini *et al*., 2018; Babalola *et al*., 2019; Benson *et al*., 2018; Henry *et al*., 2021; Tweya *et al*., 2018), within the sub-region, nothing has changed in the period just before the COVID-19 period and approximately 2½ years into the pandemic. While it is possible that other factors may jointly contribute to this poor access to family planning services among this group of interest, the COVID-19 pandemic likely played some role in restricting access to these reproductive health and other services in the region. The restriction was, in part, due to the movement restrictions imposed to curb the spread of the virus during that time.

Furthermore, a comprehensive understanding of how movement restrictions during the lockdown could impact access to family planning services emerges when considering the underlying reasons for the low utilization of these services in the sub-region. In Ethiopia, for instance, during the pre-COVID-19 period, factors such as limited access to counseling and educational levels were identified as common barriers to family planning service access (Aliyu *et al*., 2015; Apanga & Adam, 2015; Esike *et al*., 2017; Melkie *et al*., 2021; Ogboghodo *et al*., 2017). However, throughout the period of movement restrictions, adolescent girls and women of reproductive age might not have had seamless opportunities to reach their service providers for both health and other types of education. Additionally, school-age girls might have been deprived of access to their schools. If school served as the primary

avenue for regularly accessing family planning services prior to the pandemic, the lockdown likely disrupted this access. One argument is that they may not have perceived the immediate need for contraception, as they may not have had access to their sexual partners during the lockdown.

In addition, economic activities were disrupted during the lockdown, with evidence suggesting that people's means of meeting economic needs were adversely affected. Considering that the cost of services (Ogboghodo *et al.*, 2017) and low income (Esike *et al.*, 2017; Gujo & Kare, 2021) have been identified as factors influencing access to family planning services, a plausible connection can be drawn between low access to family planning services and the disruption in economic activities due to the lockdown. Several specific reasons were commonly adduced for the low access to family planning during the COVID-19 period, including poor access to family planning information, limited availability of family planning counseling services, and reduced exposure to family planning messages in the media (Dingeta *et al.*, 2021; Melkie *et al.*, 2021).

This study exhibits both strengths and limitations. Our thorough search of relevant electronic databases employed well-defined search terms, ensuring a comprehensive approach; however, it is acknowledged that the search may not have captured all relevant articles. Additionally, the exclusion of articles not published in English and those unavailable online may have inadvertently overlooked potential contributions to this study. Despite these limitations, the scoping review has furnished valuable evidence regarding the impact of COVID-19 on access to family planning services among women in SSA.

5. Conclusion

This study reveals that COVID-19 has affected women's access to family planning services. Contrary to exacerbating such access, however, the findings demonstrate a stagnant level of access to family planning services. Therefore, efforts aimed at improving access to reproductive health services, including family planning, have proven ineffective during the COVID-19 era, particularly when movement restrictions were imposed across countries. The results of this review highlight a number of potential target areas for policy, programming, and research aimed at improving women's access to family planning services during the pandemic in SSA. There is a critical need for appropriate measures to counter the disruption of family planning services during the outbreak of any form of disease or epidemic. Furthermore, conducting additional studies that specifically examine the impact of COVID-19 on access to family planning services, along with the exploration of the broader aspects of sexual and reproductive health among women, is imperative in SSA. This imperative arises from the scarcity of evidence regarding the impact of COVID-19 on access to family planning services in the region.

Acknowledgments

The paper was presented at the Conference on Population and Reproductive Health Dynamics Under COVID-19 in Sub-Saharan Africa that was hosted by the University of the Witwatersrand, South Africa through its Demography and Population Studies Programme. The Conference was supported under the auspices of the Science Granting Councils Initiative in Sub-Saharan Africa (SGCI) and administered by South Africa's National Research Foundation in collaboration with Canada's International Development Research Center (IDRC), the Swedish International Development Cooperation Agency (Sida), South Africa's Department of Science and Innovation (DSI), the Fons de Recherche due Quebec (FRQ), the United Kingdom's Department of International Development (DFID), the United Kingdom Research and Innovation (UKRI) through the Newton Fund.

Funding

None.

Conflict of interest

No potential conflict of interest was reported by the authors.

Author contributions

Conceptualization: Sunday A. Adedini
Writing – original draft: Sunday A. Adedini, Hassan Ogunwemimo, Clifford Odimegwu
Writing – review & drafting: Sunday A. Adedini, Hassan Ogunwemimo, Clifford Odimegwu

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Not applicable.

Further disclose

The earlier version of this manuscript was reviewed by the organizers of the Conference on Population and Reproductive Health Dynamics under COVID-19, which

was held on March 14–16, 2022, in Johannesburg, South Africa. Comments from the assigned reviewers are gratefully acknowledged.

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ACCSCIENCE PUBLISHING

International Journal of Population Studies

REVIEW ARTICLE

Demand and supply of adolescent and young adult's sexual and reproductive health services during COVID-19 in sub-Saharan Africa: A scoping review

Olutoyin O. Ikuteyijo[1]*, Taofeek K. Aliyu[2,3], Akanni I. Akinyemi[2], Lanre O. Ikuteyijo[2], Oladimeji R. Ogunoye[2], Oluwaseun I. Obasola[4], John O. Abe[2], Jacob W. Mobolaji[2], Opeyemi O. Ekundayo[2], Ojo M. Agunbiade[2], and Sonja Merten[1]

[1]Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland

[2]Department of Sociology and Anthropology, Faculty of Social Sciences, Obafemi Awolowo University, Ile Ife, Osun, Nigeria

[3]Department of Sociology, and Center for Demography and Aging Research (CEDAR), Umea University, Umea, Sweden

[4]Kenneth-Dike Library, University of Ibadan, Ibadan, Nigeria

(This article belongs to *Special Issue: Population and Reproductive Health Dynamics under Covid-19 in Sub-Saharan Africa*)

Abstract

The COVID-19 pandemic and its associated containment strategies have significantly impacted the logistics of supplying sexual and reproductive health (SRH) services to adolescents and young adults (AYA) in sub-Saharan Africa (SSA). Studies conducted in the region indicate an increase in sexual activity, particularly among young people, during the pandemic. However, the impact of these changes on their utilization of SRH services remains unclear. This scoping review aims to synthesize the available evidence on the impact of COVID-19 on the SRH behavior and service utilization of AYA. This review focuses on examining the demand and supply of SRH for AYA during the COVID-19 lockdown period (January 2020 – December 2021). Following the Arksey & O'Malley (2005) procedure and the Joanna Briggs Institute (JBI) Reviewer's Manual (2020), the review encompasses comprehensive search strategies, analysis, and reporting of results. The search for relevant articles was conducted across various databases, including Medline Complete, Africa-Wide, SocINDEX, Academic Search Complete (all through EBSCOhost), Public Health, Social Science & Sociology databases, the Middle East & Africa Database (all through ProQuest), and Web of Science. Articles published between January 2020 and December 2021 were included in this review. The studies discussed in this review shed light on the discrepancies in the demand for and supply of SRH services during the COVID-19 pandemic, exposing a substantial gap in addressing the specific SRH needs of AYA. This review also examines the strategies adopted by countries in SSA to mitigate these effects. Several countries in SSA demonstrated resilience as health providers fulfilled their role, while AYA sought alternatives to mitigate the shortage in the supply chain for SRH services and commodities, often resorting to alternative medicine. The findings underscore the urgency of further research to address the risks imposed by COVID-19 on the utilization of SRH services by AYA in SSA. The evidence presented in this review can inform strategic efforts to ensure the availability and accessibility of SRH services for AYA during any unforeseen emergency or future pandemic.

Keywords: COVID-19; Adolescents and young adults; Sexual and reproductive health service; Demand and supply; sub-Saharan Africa

***Corresponding author:**
Olutoyin O. Ikuteyijo
(toyin.ikuteyijo@swisstph.ch)

Citation: Ikuteyijo, O.O., Aliyu, T.K., Akinyemi, A.I., Ikuteyijo, L.O., Ogunoye, O.R., Obasola, O.I., et al. (2024). Demand and supply of adolescent and young adult's sexual and reproductive health services during COVID-19 in sub-Saharan Africa: A scoping review. *International Journal of Population Studies,* 10(1):21-33.
https://doi.org/10.36922/ijps.366

Received: September 19, 2022

Accepted: December 1, 2023

Published Online: December 29, 2023

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

The World Health Organization declared COVID-19 as a pandemic on March 11, 2020 (World Health Organization, 2020). Between the onset of the outbreak in March and a reference period in September 2020, the African region recorded numerous deaths, with South Africa reporting 15,641 deaths (65% of the total deaths in the region), Algeria 1,632 (6.7%), Nigeria 1,088 (4.5%), Ethiopia 1,035 (4.3%), and 634 in Kenya (2.6%) (World Health Organization, 2020). These five countries accounted for 83% of the total recorded COVID-related deaths in the African region during this period. Health workers bore a significant burden of infections, with South Africa reporting about 27,360 infections among their health workers, followed by Algeria with 2,300, Nigeria with 2,065, Ethiopia with 1,291, and Kenya with 970 (World Health Organization, 2020). These numbers compounded the challenges faced by the health-care system, impacting its optimal functionality during the pandemic.

Many countries in Africa resorted to enforcing measures to curtail the spread of the pandemic. Some of the containment strategies employed included lockdowns, border closures, and export restrictions, which led to a drastic reduction in the supply of sexual and reproductive health (SRH) services. Studies across the world have shown increased sexual activity during the lockdown (UNFPA, 2021; World Health Organization, 2020). On the other hand, the lockdown disrupted service delivery in all sectors, including SRH service delivery worldwide (Adelekan *et al.*, 2021; Togun *et al.*, 2020; Wood *et al.*, 2021). For example, studies have documented some challenges in maintaining the supply of family planning services during the pandemic, such as the shutting down of contraceptive manufacturing factories and the closure of some health-care facilities (AHB, 2020; Ahmed & Sonfield, 2020). These service delivery disruptions negatively impact access to SRH care, including family planning (Isiugo-Abanihe, 2005), in many developing countries. Similar evidence in some African countries also attested to the fact that the lockdowns and restriction of movement also affected the demand for personalized SRH services, such as access to contraceptives, maternal care, pregnancy care, and safe abortion (UNFPA, 2021; Adelekan *et al.*, 2021).

In the wake of the pandemic, the provision of health services became more challenging for most countries, with a heightened focus on the COVID-19 response at the expense of other health-care services (Togun *et al.*, 2020; Wood *et al.*, 2021). Essential services like SRH consequently took a secondary position, exerting a significant toll on the mental and sexual well-being of individuals in many sub-Saharan African (SSA) countries where 70 – 90% of medical commodities are imported (AHB, 2020). The disruptions in the supply chain of essential SRH commodities and services led to substantial gaps between the growing demand and the decreasing supply of SRH services (Ahmed & Sonfield, 2020).

Adolescents and young adults (AYA) have specific SRH needs due to their development stage and engagement in adventurous sexual activities (Isiugo-Abanihe, 2005). Even before the pandemic, there was a high unmet need for adolescent SRH services in SSA (Okawa *et al.*, 2018), a situation further exacerbated by the COVID-19 lockdown. AYA's access to SRH services in SSA is generally limited due to various barriers, including individual perceptions, misconceptions about SRH, lack of confidentiality, and health providers' attitudes (Mutea *et al.*, 2020; Ninsiima *et al.*, 2021; Watara *et al.*, 2020), which continue to influence the level of utilization of SRH services. This situation is bound to amplify the unintended consequences COVID- 19 had on the utilization of SRH services for AYA (Mmeje *et al.*, 2020).

There are numerous negative health effects that could result from diverting medical attention from SRH of AYA to the COVID-19 response. This diversion may lead to an increase in unplanned pregnancies, a reduction in antenatal coverage, and a decrease in the percentage of births attended to by skilled health workers (Mmeje *et al.*, 2020), ultimately contributing to elevated maternal mortality and morbidity. Additional consequences include diminished access to SRH information, potentially resulting in increased exposure to sexually transmitted infections (STIs), adolescent pregnancies, and their associated health risks (Adelekan *et al.*, 2021). Moreover, this situation has exposed AYA to illegal and unsafe practices for the termination of unwanted pregnancy (abortion) (Wusu, 2020), which occurred during this period due to the lack of access to SRH services.

Several studies in SSA have explored the health impacts of COVID-19, including investigations into the use of SRH services. To the best of our knowledge, no review has synthesized the impact of the pandemic on the demand and supply of SRH services for AYA in SSA. This scoping review aims to identify factors responsible for the discrepancies in demand for and supply of SRH, the strategies adopted, and the resilience built over time. This knowledge can inform strategic planning for future crises. The study findings provide evidence for the imperative need to focus on the sustained supply of SRH services and commodities during periods of emergency. More specifically, the review has the following objectives:

(i) To examine the converging evidence on explanatory factors for the discrepancies in the demand and supply gap in SRH services for AYA during the outbreak of COVID-19 in SSA

(ii) To identify strategies adopted by countries in SSA to mitigate the effects of the demand-supply gap for SRH among AYA during the 2020 COVID-19 pandemic and afterward.
(iii) To identify lessons learned across SSA countries to strengthen resilience in meeting AYA's needs for SRH services during health emergencies.

2. Data and methods

This study represents a scoping review aimed at examining evidence related to the demand and supply of SRH services for AYA during the COVID-19 pandemic in SSA. This study adopted the updated methodological guidance provided by Joana Briggs Institute (JBI) (2020) (Peters *et al.*, 2020) and followed the Arksey & O'Malley (2005) procedure for conducting a scoping review. In addition, we adhered to the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Review (PRISMA-ScR) (Tricco *et al.*, 2018), and all literature searches were imported to Covidence ((Producer)) (https://www.covidence.org/) for extensive screening and data extraction.

The reviewers systematically searched for articles reporting on SRH and corresponding service utilization for AYA during the COVID-19 pandemic in SSA published between January 2020 and December 2021. To ensure an exhaustive and comprehensive search, the following databases were searched: Medline Complete, Africa-Wide, SocINDEX, Academic Search Complete (all through EBSCOhost), Public Health, Social Science & Sociology databases, the Middle East & Africa Database (all through ProQuest), and Web of Science. In addition, a hand search of all identified articles was carried out to locate other studies reporting on SRH services for AYA during the COVID-19 pandemic in SSA. Original studies in the English language were screened and considered for inclusion following the JBI recommendations. Two independent reviewers meticulously screened all citations, full-text articles, and abstract data. A narrative summary of findings was conducted, synthesized, and presented. In the electronic database search, medical subject headings (MeSH) were used, and Boolean terms (NOT/OR/AND) were used to separate keywords. The search strings included a range of relevant combinations of search terms and keywords, encompassing "COVID-19," "SRH services," "adolescents," "young people," "young adults," and "sub-Saharan Africa."

In accordance with JBI guidelines, the inclusion criteria for the studies were outlined in the following sub-sections, namely population, concept, and context.
(i) Population: The population under consideration included female AYA aged 15 – 24 years in all SSA countries.
(ii) Concept: The concept focused on SRH services, including maternal health care, contraceptive use, HIV/AIDS treatment, and abortion services.
(iii) Context: The review considered the demand and supply of SRH services for AYA, specifically examining the availability of sexual and reproductive commodities (drugs, pills, contraceptives, pre-exposure prophylaxis [PrEP], HIV drug therapy, abortion drugs, or treatment).

2.1. Study selection

The study selection process occurred in three stages. First, title screening was performed on resources retrieved from the previously mentioned databases. Second, I.O.O and A.T.K performed a two-level screening, eliminating studies that did not align with the study objectives. Finally, O.I.O was engaged to verify all studies deemed eligible for abstract and full-text consideration and to resolve any discrepancies that emerged during the initial two reviewers' assessments.

2.2. Eligibility criteria

2.2.1. Inclusion criteria

The study exclusively considered published research, encompassing both peer-reviewed and gray literature, which presented primary and secondary data. Additionally, only literature published in the English language was included. The scope of literature reviewed extended to materials reporting on SRH services for AYA during the COVID-19 pandemic in SSA, with a publication timeframe from January 2020 to December 2021. The justification for including articles within this specific timeframe is rooted in our intention to capture research conducted during the COVID-19 period, regardless of whether COVID-19 was the main focus of the study. For the purpose of this review, adolescents were defined as individuals within the age range of 10 to 19, while young adults were considered to be those aged 20 to under 24 years. Both quantitative and qualitative study designs were deemed eligible for inclusion in this review.

2.2.2. Exclusion criteria

Studies published between 2020 and 2021 that collected data before 2019 were excluded from consideration. Additionally, case reports, correspondence, commentaries, opinion pieces, case series, and editorials were excluded due to their tendency to offer relatively limited evidence for review. Comprehensive reviews, including systematic reviews and scoping reviews, were also excluded from the study selection process. Furthermore, guidelines issued by the governmental and other agencies were excluded.

2.3. Study domain

This review focuses on assessing the impact of COVID-19 on the demand and supply of SRH services among AYA in SSA countries. The study was restricted to articles that sourced their data within the timeframe of January 2020 to December 2021.

2.4. Data charting

Two reviewers used a data sheet specifically developed by the authors to systematically extract data from the included articles following a thorough screening. The extracted data encompassed the following information from each included study: author and year of publication, study setting (country), study aim, study design, study population, key findings, and implications or conclusions drawn. The results were categorized into three main domains: factors contributing to the discrepancies in demand and supply of SRH services, strategies adopted to mitigate the impact of the demand-supply gap, and approaches to build resilience in the supply chain of SRH services in SSA. For a comprehensive understanding of the data collection process, please refer to Appendices 1 and 2. Appendix 1 provides the search string employed for data collection, while Appendix 2 outlines the search terms used and the results obtained from the ProQuest databases.

3. Results

The exploration of databases yielded a total of 1,062 publications. The utilization of the Covidence platform (Covidence) significantly facilitated the identification of duplicates and the systematic screening of abstracts and full-text articles. To ensure a robust evaluation, a third reviewer was engaged to resolve any discrepancies that arose between the initial two reviewers before the conclusive inclusion of studies. The screening process of the articles is visually depicted in Figure 1.

3.1. Characteristics of the included studies

Table 1 provides an overview of the characteristics of the 10 studies included in this scoping review, all of which gathered data within the timeframe of 2020 – 2021 [Figure 2]. Among these studies, one conducted a survey across 9 Francophone countries in West Africa (Mongbo *et al.*, 2021), while the rest were domiciled in Nigeria, South Africa, Kenya, Uganda, and Ethiopia (Binezero Mambo *et al.*, 2021; Decker *et al.*, 2021). The central theme in all the included studies was the investigation into the repercussions of the COVID-19 pandemic on the SRH of AYA (Adelekan *et al.*, 2021), encompassing an examination of service delivery as well as various challenges (Hailemariam *et al.*, 2021; Mutea *et al.*, 2020) encountered by both adolescents and health providers. Additionally, the studies delved into the dynamics of access to and utilization of these services (Binezero Mambo *et al.*, 2021).

In the included studies, three employed a qualitative study design, three used mixed methods, and four used a quantitative design. The study settings varied, with one publication centered on Francophone countries (Mongbo *et al.*, 2021), three in Nigeria (Adelekan *et al.*, 2021; Odo *et al.*, 2021; Wusu, 2020), one in South Africa (Bolarinwa, 2020), two in Kenya (Decker *et al.*, 2021; Mutea *et al.*, 2020), one in Uganda (Binezero Mambo *et al.*, 2021), and two in Ethiopia (Hailemariam *et al.*, 2021; Tilahun *et al.*, 2021).

Eight of the studies focused on the access of AYA to SRH services while the remaining two focused on challenges faced by health facilities and proposed solutions to enhance SRH access during potential future health emergencies. The majority of the articles mentioned SRH, with the rest specifically concentrating on family planning or contraception. The Francophone study enumerated one of the challenges faced by health workers during the pandemic: limited knowledge on how to manage coronavirus while incorporating SRH service (Mongbo *et al.*, 2021). This finding was corroborated by a study from Nigeria, highlighting issues such as stock-outs of essential commodities such as drugs and contraceptives (Adelekan *et al.*, 2021). In terms of SRH, all included studies explored both demand and supply aspects of essential services and commodities, including contraception, menstrual hygiene, and management of STIs. Additionally, two studies investigated social-interactional barriers related to SRH services, including socio-cultural influences, lack of privacy, and health provider attitudes (Hailemariam *et al.*, 2021; Mutea *et al.*, 2020).

3.2. Factors responsible for the discrepancies in the demand for and supply of SRH services

In the studies included in this review, several factors were identified as responsible for the discrepancy in demand for SRH services and the corresponding supply. Sociodemographic and psychocultural factors, including gender, age, education status, income level, and living status, were identified as predictors of AYA demand for SRH services (Odo *et al.*, 2021). Client utilization of services, especially among young people, witnessed a notable reduction. The uncertainty about the availability of SRH services in health facilities, exacerbated by the pandemic, contributed to this decline. Studies from Ethiopia highlighted various factors influencing the utilization of SRH services, including the adolescents' age, a history of sexual intercourse, the availability of health services, and awareness of SRH services

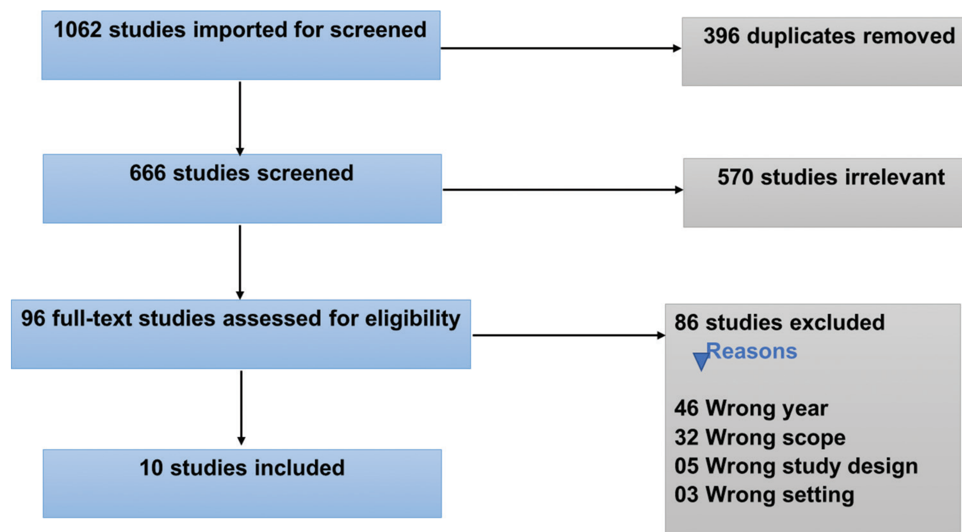

Figure 1. PRISMA flow diagram for the present scoping review

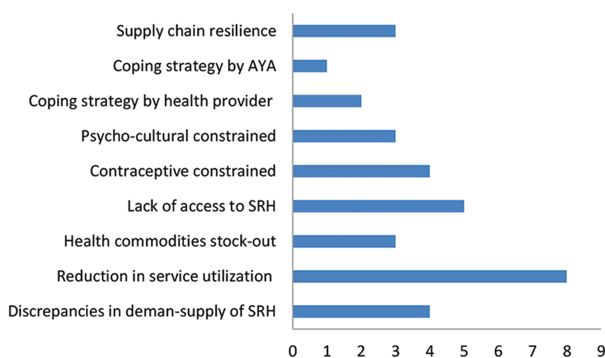

Figure 2. Different areas addressed by the included studies
Abbreviations: AYA: Adolescents and young adults; SRH: Sexual and reproductive health.

for young people (Hailemariam *et al.*, 2021; Tilahun *et al.*, 2021). A similar trend was observed in Nigeria, where the utilization of SRH services decreased during the pandemic (Adelekan *et al.*, 2021). The widespread stock-outs of health commodities, particularly contraceptives, were a major challenge during the lockdown. The majority of the countries in our review reported issues of limited access and stock-outs of contraceptives essential for the needs of AYA (Adelekan *et al.*, 2021; Bolarinwa, 2020; Mongbo *et al.*, 2021). The availability and accessibility of essential SRH commodities during the pandemic should be prioritized to avoid complications, as some countries experienced an increased demand for contraception, which, if unaddressed, may lead to a high rate of unplanned pregnancies among young people (Wood *et al.*, 2021). The lack of equitable access to SRH services among young women also contributed to the discrepancy in demand and supply. A study from Kenya reported barriers to accessing SRH services specific to AYA, including negative attitudes of health workers, distance to health facilities, and unaffordable costs of services, among others, contributing to inequitable access by AYA (Mutea *et al.*, 2020). The constrained access to contraceptives, especially among users who rely on both government and private health facilities, remains a concern during any health emergency. This constraint was documented in a study in South Africa, where a significant number of people solely relied on government facilities for contraceptive commodities, and the impact during lockdown was enormous (Bolarinwa, 2020). Neglecting SRH services and a lack of strategies to address health emergencies could lead to an increase in unintended pregnancies among young people and potentially among older individuals, with inevitable consequences for the economy of any country (Oyediran *et al.*, 2020). This emphasizes the importance of preserving the gains achieved in the field of SRH.

3.3. Strategies adopted to mitigate the effects of the demand-and-supply gap

A study conducted in Francophone West Africa surveyed nine countries to assess the continuity of essential SRH services during the COVID-19 pandemic. The findings revealed that health providers were aware of challenges affecting the demand and supply for SRH services. These challenges included limited knowledge among health workers regarding the novel coronavirus disease, anxieties among both health workers and the public, shortages of health commodities, and ineffective organization of services. Despite these challenges, the study proposed various strategies, including the need for adapted guidance and care procedures, the effective use of social media by providers to debunk misconceptions during the pandemic,

Table 1. Summary of research findings from the ten included publications

Authors/years	Settings and countries	Aim of study	Study design	Study population	Findings	Conclusions/Implications
Decker *et al.*, 2021	Nairobi Kenya	To examine the economic, health, social, and safety impact of COVID-19 on AYA in Nairobi	Mixed methods	1,217 male and female (aged 16 – 26)	During COVID-19, gender symmetry was observed in constrained access to contraception among contraceptive users (40.4% men; 34.6% women) and depressive symptoms (21.8% men; 24.3% women). Gender disparities rendered young women disproportionately unable to meet basic economic needs (adjusted odds ratio [aOR] = 1.21; $p<0.05$) and in need of health care during the pandemic (aOR=1.59; $p<0.001$). Gender-specific concerns for women included menstrual hygiene access challenges (52.0%), increased reliance on transactional partnerships and gender-based violence, with 17.3% reporting past-year partner violence and 3.0% non-partner sexual violence.	AYA face gendered impacts of COVID-19, reflecting both underlying disparities and the pandemic's economic and social shock. Gender-responsive recovery efforts are necessary and must address the unique needs of youth.
Bolarinwa, 2020	South Africa	To examine the factors contributing to inadequate access to contraception and sources of contraception during the COVID-19 pandemic in South Africa	Cross-sectional	6,829 participants aged above 17	Over one-quarter of South Africans could not access contraception, and more than seven in 10 South Africans preferred a public or government hospital as a source of contraception.	Findings from the study suggest strategies and interventions that will be tailored toward non-obstruction of contraception access during the ongoing COVID-19 or any future pandemic. Special consideration should be given to those in 3rd quintile of wealth income.
Wusu, 2020	Nigeria	To explore the contexts, persistence and implications of high age of consent for accessing family planning in Lagos State	Qualitative	75	The contexts formed the basis for the exclusion of adolescents from family planning services. Therefore, sexually active adolescents adopted local herbs, a combination of different medicines, concoctions and local alcoholic drinks (*ogogoro*) to prevent or abort pregnancies.	Community-based NGO engagement to promote community perception change about adolescents accessing family planning. Involvement of community representatives in government to influence policy on age for accessing family planning.
Mongbo *et al.*, 2021	Francophone in West Africa	To analyze the challenges and solutions for maintaining the continuity of essential health services during the COVID-19 pandemic in Francophone West Africa	Cross-sectional	18 participants	The challenges include a lack of standardized guides and procedures for appropriate care, limited knowledge of health workers on the new coronavirus disease, lack of diagnostic materials and kits, ineffective organization of services, anxieties of health workers and populations, and postponement of immunization mass campaigns.	This study showed that the managers of RMNCAH programs were aware of the challenges that could limit the supply and use of essential services during the COVID-19 pandemic.
Adelekan *et al.*, 2021	Nigeria	To investigate the extent to which the COVID-19 pandemic and related lockdowns had affected the provision of essential reproductive, maternal, child, and adolescent health (RMCAH) services in primary health-care facilities across the Nigerian States	Cross-sectional	307	Between 76 and 97% of the PHCS offered RMCAH services before the lockdown. During the lockdown, full-service delivery was reported by 75.2%, whereas 24.8% delivered partial services. Difficulties experienced during the lockdown included stock-out of drugs (25.7%), stock-out of contraceptives (25.1%), harassment by law enforcement agents (76.9%), and transportation difficulties (55.8%).	Considering the several difficulties reported, efforts by the government and NGOs are required to strengthen the delivery of SRH in primary health centers in Nigeria during the pandemic.

(Cont'd...)

Table 1. ***(Continued)***

Authors/years	Settings and countries	Aim of study	Study design	Study population	Findings	Conclusions/Implications
Tilahun *et al*., 2021	Ethiopia	To assess factors associated with the utilization of adolescent and youth SRH services in this area	Mixed methods	771 participants age (15 – 24)	28% of participants reported that they had never heard about adolescents' and youths' SRH services. Only 8.6% have visited health facilities for SRH services. Age was found to be one of the factors responsible for low utilization, including never heard of SRH services and having sexual intercourse.	Need to improve awareness of adolescents and youth towards SRH services and integrate these services into other routine services.
Hailemariam *et al*., 2021	Ethiopia	To explore the challenges faced by female out-of-school adolescents in accessing SRH services in the Bench-Sheko zone	Qualitative	8 focus group discussions and 8 in-depth interviews	The study revealed that out-of-school adolescents encounter several challenges in accessing SRHS in the zone, which include socio-cultural barriers, health-care system barriers, perceived legal barriers, inadequate information regarding SRH services, and low parent-adolescent communication.	The need to engage community influencers (religious leaders, community leaders, and elders) in overcoming the challenges. Also, the need for programs and policymakers to create adolescent-friendly environments in SRH service areas.
Mutea *et al*., 2020	Kenya	To describe barriers to and facilitators of access to adolescent SRH services in Kisumu and Kakamega counties, Kenya	Qualitative	113 participants	Findings show that the barriers to access to SRH services and information were health workers' negative attitudes, distance to the health facility, unaffordable cost of services, negative socio-cultural influences, and lack of privacy and confidentiality.	The need for counties to sensitize all stakeholders on adolescent SRH problems and support the development of multi-sectoral, sustainable solutions to adolescent health needs.
Odo *et al*., 2021	Nigeria	To determine factors that predict the utilization of SRH services among young people in Enugu State, Nigeria	Mixed methods	1447	The results show that sociodemographic factors of gender, age, education, income, and living status ($p<0.05$), as well as psycho-cultural and health-care systems, were significant predictors of utilization of SRH services.	The study suggested that the predictors found could be addressed through home sex education, regular training of health-care providers on youth-friendly service delivery, and policy reforms.
Binezero Mambo *et al*., 2021	Uganda	To explore factors that influenced access and utilization of SRH services among Ugandan youths during the COVID-19 pandemic lockdown	Cross-sectional	724 participants	Sexually transmitted infections were the most common SRH problems during the lockdown (40.4%), followed by unwanted pregnancy (32.4%) and sexual abuse (32.4%). Access to HIV services and menstrual supplies was also impaired. Lack of transportation was the factor cited as limiting access to SRH services during the lockdown (68.7%), alongside with high cost of services (42.2%), and inaccessibility to contraceptive supplies (27.2%).	Access to SRH information and services for Ugandan youths was restricted during the COVID-19 lockdown and may have increased the incidence of poor SRH outcomes. The government and other stakeholders should incorporate SRH among the priority services to be preserved during future outbreaks.

Abbreviations: SRH: Sexual and reproductive health; AYA: Adolescents and young adults.

and the continuous supply of essential family planning services (Adelekan *et al.*, 2021; Mongbo *et al.*, 2021). The study also highlighted the importance of regular training for providers on youth-friendly service delivery. Additionally, despite a few facilities being opened, some faced challenges such as stock-outs of essential commodities, especially affecting AYA. Furthermore, as a coping strategy during the pandemic, some sexually active AYA resorted to herbal remedies and local alcoholic drinks (Wusu, 2020), though such behaviors posed potential risks.

3.4. Building resilience in the supply chain of SRH service in SSA

Two of the included studies (Adelekan *et al.*, 2021; Mongbo *et al.*, 2021) focused on supply, gathering data from health providers to guide strategies for overcoming disruptions in essential services and the supply of health commodities during the pandemic. A crucial initial step in building resilience involves creating awareness of adolescent and youth-friendly SRH services (AYF-SRHS) and ensuring their availability in all primary health facilities, integrating them into routine services. This was particularly evident in Nigeria, where providers demonstrated resilience during the pandemic (Adelekan *et al.*, 2021). In addition, resilience can be strengthened through the continuous training and re-training of health providers in AYF-SRHS, coupled with an awareness of policy reforms.

4. Discussion

This study aims to identify factors contributing to the discrepancies in demand and supply of SRH services and commodities in SSA, with the goal of identifying the research gaps. It also seeks to analyze the strategies adopted and resilience built over time, offering valuable insights for future emergency planning. The search was restricted to studies published from January 2020 to December 2021, encompassing articles addressing the SRH needs (family planning, maternal health, and abortion services) and commodities (contraceptives) for female AYA aged 15 – 24.

The included studies underscored the challenges faced by AYA in SSA during the COVID-19 lockdown. Sexually active AYA requires continuous access to specific SRH services, which are deemed essential at all times, even amid a pandemic. The included studies highlighted several issues related to the lack of access to SRH services in most SSA countries during the lockdown, including reduced service utilization, constraints on contraceptive availability, and psycho-cultural challenges (culture, attitudes, discrimination, stress, and social capital), as observed during the pandemic.

The majority of the included studies highlighted a concerning prevalence of the gap between demand for SRH services and the limited supply during the lockdown. Among the contributing factors to the discrepancies in demand for and supply of SRH services was the reduction in client's utilization of services (Adelekan *et al.*, 2021; Hailemariam *et al.*, 2021). During the pandemic, both health-care providers and the public faced confusion and anxiety regarding protection against the coronavirus. This may be a major reason why people, especially women, reduced their visits to health-care facilities. AYA utilize health-care facilities less frequently due to widespread stock-outs (Adelekan *et al.*, 2021; Mongbo *et al.*, 2021) of health commodities during the pandemic. The stock-out of contraceptives further diminished utilization, as there was no guarantee of provisions amid the prevailing focus on COVID-19. Several studies have mentioned the diversion of attention from SRH services and its consequences. Even before the COVID-19 pandemic, there were existing challenges related to equitable access to SRH services among adolescents and women. The current situation exacerbates and exposes these issues. For instance, a study reported a 5% increase in the need for contraception among women in Lagos (Wood *et al.*, 2021), indicating that equal access to SRH services still did not reach certain areas in SSA. Constrained access and increased need among users were predominantly observed during the lockdown (Bolarinwa, 2020; Mutea *et al.*, 2020; Wood *et al.*, 2021). The lack of utilization was mainly attributed to various factors such as age, income status, psycho-cultural issues, parental orientation, health-care system barriers (Binezero Mambo *et al.*, 2021; Decker *et al.*, 2021; Hailemariam *et al.*, 2021; Odo *et al.*, 2021), and low decision power. These findings underscore the urgent need for reorientation of SRH services for young people at the grassroots level, increased parental involvement, and health-care systems with a dedicated focus on SRH services, ensuring pandemic resilience by incorporating AYF-SRHS into primary health-care facilities across SSA.

Two studies (Adelekan *et al.*, 2021; Mongbo *et al.*, 2021), which focus on health providers, discuss the challenges faced and strategies adopted to mitigate the effects of the demand-supply gap. A study conducted in West Africa surveyed key health professionals across nine Francophone countries, inquiring about challenges during the pandemic. Recorded challenges included the lack of basic materials and limited knowledge among health workers about COVID-19. The issue of stock-outs of health commodities requires relevant authorities to ensure an adequate supply of basic materials. Even with a few facilities open during this period, the problem of stock-outs (Mongbo *et al.*, 2021) discouraged young people from utilizing the facilities for their health needs. A systematic review also supports concerns about stock-outs in contraceptives,

limiting individuals' ability to use their preferred methods, influencing where they are obtained and their associated costs (Zuniga *et al.*, 2022). This problem has led young people to adopt alternatives such as using herbs to prevent pregnancy or resorting to abortion. Nigeria, among the countries under review, has a low uptake of contraception among adolescents in SSA, and the pandemic exacerbates the issue as young people resort to herbal concoctions and alcoholic drinks (*Ogogoro*) for abortion and protection during the pandemic (Wusu, 2020). Although risky, the use of alternative prevention methods was only mentioned in Nigeria among the countries reviewed. It is crucial to sustain the gains achieved in SRH to guarantee the achievement of the Sustainable Development Goals in SSA.

There is a crucial need to build resilience in the supply chain of SRH services, a major gap evident in this review. It is evident that the supply of SRH services was limited in SSA countries, with profound consequences during the pandemic. One of the studies, conducted in a Francophone country among health professionals, proposed several strategies, including better organization of services to ensure that pandemic disruptions do not impede the flow, the adaptation of guides and care procedures, training of health workers, and the effective use of information and communication technology (Mongbo *et al.*, 2021). To build resilience in this area, SSA countries should prioritize the availability, awareness, and removal of barriers to AYF-SRHS in all primary health centers, integrating them into routine services (Adelekan *et al.*, 2021; Eremutha & Gabriel, 2019; Habtu *et al.*, 2021; Haile *et al.*, 2020). Additionally, the training of health providers on AYA-friendly SRH services is crucial. While concerns about the re-training of health providers on AYA-friendly SRH services have been raised in the past as drivers for service utilization (Gausman *et al.*, 2021; Habtu *et al.*, 2021; Weiss *et al.*, 2018), this issue was emphasized in the included studies (Mongbo *et al.*, 2021; Mutea *et al.*, 2020).

4.1. Policy and program implications

This scoping review underscores the imperative for improved and increased preparedness of health-care systems to address the specific needs of young people during health emergency situations. Health services, especially those tailored for young people, should adopt innovative and technology-driven service delivery approaches, particularly in resource-constraint societies in SSA.

4.2. Strengths and limitations of the present scoping review

One of the major strengths of this study lies in its rigorous search and screening process, facilitated by the use of the Covidence (Kellermeyer *et al.*, 2018) for thorough article screening. The results of this scoping review adhere to the PRISMA guidelines and follow a systematic approach to identify relevant studies, conduct screening and charting, and analyze the outcomes thematically. However, it is important to acknowledge certain limitations; only articles published in English were included, potentially introducing bias at the selection level and influencing results due to the exclusion of articles in other languages. Additionally, despite searching several databases and websites, our search remains constrained by the time frame, and some studies related to SRH during the COVID-19 pandemic may not have been published online or in peer-reviewed journals.

5. Conclusion

The study findings highlight the pressing need to address logistical challenges in providing SRH commodities to AYA during future health emergencies. Key strategies to consider include the integration of AYF-SRHS, the incorporation of telemedicine, and the deployment of mobile clinics to reach underserved areas (such as rural areas and slums). These services should be prioritized within primary health-care facilities to mitigate the difficulties associated with supplying essential health commodities. Recommendations for closing the SRH demand-supply gap during public health emergencies, like the COVID-19 pandemic, include ensuring a consistent supply of health commodities, particularly for AYA, and the widespread availability of mobile clinics across all low and middle-income countries areas and regions. It is crucial to sustain the successes achieved in health care, preventing any decline and continuously striving to bridge the gap between health-care supply and demand.

Acknowledgments

The paper was presented at the Conference on Population and Reproductive Health Dynamics Under COVID-19 in SSA that was hosted by the University of the Witwatersrand, South Africa through its Demography and Population Studies Programme. The Conference was supported under the auspices of the Science Granting Councils Initiative in SSA (SGCI) and administered by South Africa's National Research Foundation in collaboration with Canada's International Development Research Center (IDRC), the Swedish International Development Cooperation Agency (Sida), South Africa's Department of Science and Innovation (DSI), the Fons de Recherche due Quebec (FRQ), the United Kingdom's Department of International Development (DFID), and the United Kingdom Research and Innovation (UKRI) through the Newton Fund.

Funding

None.

Conflict of interest

The authors report no conflict of interest.

Author contributions

Conceptualization: Akanni I. Akinyemi
Writing – original draft: Olutoyin O. Ikuteyijo, Taofeek K. Aliyu, Lanre O. Ikuteyijo, Oladimeji R. Ogunoye, Oluwaseun I. Obasola, John O. Abe, Jacob W. Mobolaji, Ojo M. Agunbiade, Opeyemi O. Ekundayo
Writing – review & editing: Akanni I. Akinyemi, Sonja Merten
All the authors reviewed and agreed to the manuscript.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Data used in this work is available from the corresponding author upon reasonable request.

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Appendix

Appendix 1

Search terms

1. Demand[tiab] OR Supply[tiab] OR Demand-Supply OR Accessibility[mh] OR Acceptability[mh] or Availability[mh] OR Acceptance[mh] OR Accessibility[mh] OR Affordable[mh] or Affordability[mh] OR Use [tiab] OR Usability[mh]

2. Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls

3. "SRH Service*"[tiab OR "Sexual Health Service*"[tiab] OR "Reproductive Health Service*"[tiab] OR "Sexual Reproductive Health Service*"[tiab] OR Health Services, Adolescent Use[mh] OR Service, Reproductive Health Use[mh] OR "Adolescent Health Service"[mh] OR

4. "Sub-Saharan Africa"[tiab] OR Africa[tiab] OR "West* Africa"[tiab] OR "South* Africa"[tiab] OR "Central Africa" [tiab] or "Northwest*"[tiab] or "Southwest*"[tiab] OR "East* Africa"[tiab] or "Northeast* Africa" [tiab] OR Angola[tiab] OR Benin[tiab] OR Botswana[tiab] OR "Burkina Faso"[tiab] OR Burundi[tiab] OR Cameroon" [tiab] OR "Cape Verde" [tiab] OR "Central African Republic"[tiab] OR "Chad" [tiab] OR "Comoros" [tiab] OR "Congo Brazzaville" [tiab] OR Congo[tiab] OR " Democratic Republic of Congo"[tiab] OR "Côte d'Ivoire" [tiab] OR Djibouti [tiab] OR "Equatorial Guinea"[tiab] OR Eritrea [tiab] OR Ethiopia[tiab] Gabon[tiab] OR Gambia [tiab] OR "The Gambia"[tiab] OR Ghana[tiab] or Guinea[tiab] or Guinea-Bissau[tiab] OR "Guinea-Bissau"[tiab] OR Kenya[tiab] OR Lesotho[tiab] OR Liberia[tiab] OR Madagascar[tiab] OR Malawi[tiab] OR Mali[tiab] OR Mauritania[tiab] OR Mauritius[tiab] OR Mozambique[tiab] OR Namibia[tiab] OR Niger[tiab] OR Nigeria[tiab] OR Rwanda[tiab] OR "Sao Tome and Principe"[tiab] abstract] OR Senegal[tiab] OR Seychelles[tiab] OR "Sierra Leone"[tiab] OR Somalia[tiab] OR "South Africa"[tiab] OR Sudan[tiab] OR Swaziland[tiab] OR Tanzania[tiab] OR Togo[tiab] OR Uganda[tiab] OR "Western Sahara"[tiab] OR Zambia[tiab] OR Zimbabwe[tiab].

Appendix 2

ProQuest

Search strategy

Filters: Africa, 20190101-20210801

Set#	Searched for	Databases	Results
S1	ab(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND ti(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND su(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND pd(20190101-20210801)	Middle East and Africa Database, Public Health Database, Social Science Database, Sociology Database	6,718
S2	ab(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND ti(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND su(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND pd(20190101-20210801)	Middle East and Africa Database, Public Health Database, Social Science Database, Sociology Database	14,448
S3	AB("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") OR SU("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") OR TI("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") AND pd(20190101-20210801)	Middle East and Africa Database, Public Health Database, Social Science Database, Sociology Database	5,874
S4	(ab(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND ti(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND su(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND pd(20190101-20210801)) AND(ab(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND ti(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND su(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND pd(20190101-20210801)) AND(AB("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") OR SU("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") OR TI("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") AND pd(20190101-20210801))	Middle East and Africa Database, Public Health Database, Social Science Database, and Sociology Database; these databases are searched for part of your query.	60

ACCSCIENCE PUBLISHING

International Journal of Population Studies

REVIEW ARTICLE

Gender symmetry: A systematic review of men's experiences of intimate partner violence during COVID-19 pandemic lockdown

Dorothy N. Ononokpono[1] and Endurance Uzobo[2]*

[1]Department of Sociology and Anthropology, University of Uyo, Uyo, Akwa Ibom State, Nigeria

[2]Department of Sociology, Niger Delta University, Wilberforce Island, Bayelsa State, Nigeria

(This article belongs to *Special Issue: Population and Reproductive Health Dynamics under Covid-19 in Sub-Saharan Africa*)

***Corresponding author:**
Endurance Uzobo
(enduzobo@gmail.com)

Citation: Ononokpono, D.N. & Uzobo, E. (2024). Gender symmetry: A systematic review of men's experiences of intimate partner violence during COVID-19 pandemic lockdown. *International Journal of Population Studies*, 10(1):34-44. https://doi.org/10.36922/ijps.376

Received: September 30, 2022

Accepted: December 1, 2023

Published Online: December 28, 2023

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Abstract

Intimate partner violence (IPV) is a public health concern. However, men's experiences of IPV have been largely neglected in previous studies. This systematic review aimed to examine men's experiences of IPV during the COVID-19 pandemic lockdown. Six online bibliographic databases were used to identify relevant published peer-reviewed journal articles and gray literature. A total of 19 journal articles and gray literature that examined the prevalence, types, and consequences of violence experienced by men during the COVID-19 pandemic lockdown were extracted for review. This systematic review is anchored on the gender symmetry theory developed by Straus and Gelles. Expectedly, females were the major victims of IPV cases, but a significant number of men around the world also experienced IPV during the COVID-19 pandemic lockdown. This finding suggests that evidence-based approaches that also recognize men as victims of IPV should be taken into account for minimizing such cases.

Keywords: Gender symmetry; Intimate partner violence; COVID-19; Pandemic; Lockdown

1. Introduction

The outbreak of the coronavirus disease 2019 (COVID-19) has no doubt altered the sociodemographic landscape across the globe. To contain the spread and manage the virus, stringent measures were put in place by various authorities in different countries. One of these measures was national and international lockdown to confine families in their respective residences. Such measure, however, led to escalating tensions among spouses, thereby pushing intimate partner violence (IPV) cases to a higher level. Compared to other forms of violence, IPV places its victims much greater danger as they have relatively fewer routes of escape from their abusers.

IPV can be defined as a form of domestic violence perpetrated against a spouse or partner who is or was in an intimate relationship (Larsen, 2016). A widely cited definition of IPV by the World Health Organization is "*any behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship, including acts of physical aggression, sexual coercion, psychological abuse and controlling behaviors*" (Krug *et al.*, 2002). While this definition highlights various aspects of IPV, it should be

noted that extreme forms of IPV include coercive control, battering, and intimate terrorism. Hence, these extreme forms usually require medical attention and the provision of psychological services (Anglin & Homeier, 2014). Nevertheless, Brooks (2020) has added a few variables to the definition of IPV, such as food deprivation, monitoring of expenditure spending, and withholding of personal gadgets.

Although IPV was supposedly more prevalent among women during the COVID-19 pandemic lockdown (Peitzmeier *et al.*, 2021), a significant number of men also fell victim to IPV perpetrated by their partners. This assertion is based on earlier findings that for every three IPV cases, one of the victims might be a man (Office for National Statistics, 2019). Some authors have also argued that these statistics may be a gross underestimation as only about half of the men who experience abuse have the courage to share their experiences with someone they know. Thus, men are less likely to report IPV cases and seek professional help for fear of social prejudice, shame, embarrassment, and discrimination (Tsui *et al.*, 2010).

In African societies, the issue of domestic violence against men is rarely discussed. The social stigma attached to men being abused by their spouses has downplayed the issue of domestic violence against men in African countries. Thus, the prevalence of violence against men is more common than what is documented. A commentary by Folorunsho-Francis (2020) also added that in Nigeria as a result of poor documentation, incidents of IPV cases against men across the country are often underreported. Narrating his experience with the level of the report of IPV cases against men, the Founder and Executive Director of a non-governmental organization in Nigeria stated that:

> *"Over time, we have discovered that when you refer these men, there is a preconceived judgement in some of these referral centres including the Office of the Public Defender. From the moment the victims start narrating that they were beaten up by their spouse, they tend to get discouraged by the attitude of some officials. Some men are further subjected to mockery and probing questions on why they didn't submit willingly to avoid being battered."* (cited in Folorunsho-Francis, 2020, para. 15-16).

The United Nations Nigeria (2020) reported that sexual violence against men and boys occurs, especially in the conflict-affected region of the North-Eastern part of Nigeria. However, most male survivors of sexual abuse failed to report this incidence due to sociocultural and personal factors. This phenomenon has also been noted by UNFPA and IPPF (2017). According to the reports, men are less likely than women to report an incident of domestic violence perpetrated against them. According to a report by United Nations Nigeria (2020), disability has further compounded the IPV cases among males as men and boys with disabilities are as more likely to be the victims of domestic violence.

Although reports on domestic violence against men are scarce in developing countries such as Nigeria, there have been pockets of reports, especially from the newspapers in these countries during the COVID-19 pandemic. Recently in Nigeria, there has been a proliferation of cases of women being prosecuted and jailed for a series of IPV perpetrated against their male spouses. Two prominent cases in Nigeria were a woman who was jailed for 7 years for stabbing her husband in the neck which eventually led to his death and another woman who reportedly stabbed her husband to death while he was sleeping (Folorunsho-Francis, 2020).

On the severity of abuse, Warburton & Raniolo (2020) noted that IPV is less frequent among men, but it is of equal severity when compared to the abuse experienced by women. In addition, most of the abuses experienced by men have led to severe injuries and death in some cases. For instance, the UK Office of National Statistics (2018) estimated that about 16 men died between April 2018 and March 2019 at the hands of their partner or ex-partner and the probability of men (4.3%) sustaining physical injuries during IPV is higher than those of the women (0.4%).

Although the number for women might be higher, it is important to note that the number of men who suffer severe injuries from their female partners is significant enough for IPV discussions to steer away from a gender divide, opening up conversations on promoting zero tolerance to IPV for both men and women. This becomes expedient as it has been argued that men who suffer silently from intimate partner abuse are at a higher risk of developing serious mental health-related problems.

Notably, most studies on IPV during the COVID-19 pandemic lockdown have exclusively focused on the prevalence and severity of IPV among women, while conversations on the severity of IPV among male victims have received little attention and remained poorly understood. Furthermore, little is known about the types of IPV suffered by men and their consequences against this backdrop, and this study examines the prevalence, types, and consequences of men's experiences of IPV during the COVID-19 pandemic lockdown through a systematic review of past studies.

1.1. Theoretical perspective: Gender symmetry theory

In recent times, the debate about the nature of IPV, especially concerning the gender of perpetrators, has been

a burning issue among scholars, activists, and development organizations. This debate erupted mainly as a result of the claim that women and men are both equally victims of domestic violence (Schwartz & DeKeseredy, 1993). Thus, it was these premises that led to the formulation of the gender symmetry theory.

The gender symmetry theory was developed by Straus and Gelles in 1975 and was used in a survey study that examined violence in the American families. The theory stresses that IPV occurs among married couples with roughly comparable frequency and magnitude. This is reflected in their study, which revealed that 11.6% of men and 12% of women had experienced one form of IPV or the other in the 12 months before the survey, with men experiencing a more severe form of IPV compared to women (4.6% and 3.8%, respectively) (Gelles & Straus, 1988). Thus, there was no statistically significant difference in IPV between men and women. Straus *et al.* further stated that while women face far more frequent and severe physical and economic violence than men, a considerable number of men also face physical and economic abuse from women. However, men are more likely than women to be victims of psychological assault (Stets & Straus, 1990; Straus, 2008). The gender symmetry theory also indicates that IPV has repercussions ranging from mild to fatal. Considerably, more men than women commit murder of their spouses, and the rates of homicides of ex-spouses present even more gender asymmetrical distribution (Straus, 2009). In addition, the injury rate for men is almost seven times higher than that for women (Stets & Straus, 1990).

These findings sparked a lot of discussion on the issue of gender symmetry leading to Steinmetz's coinage of the controversial term "*battered husband syndrome*" (Steinmetz, 1977). However, other researchers have pondered the existence of gender symmetry in IPV (Saunders, 1988; Dobash *et al.*, 1992).

Some empirical findings have pointed to the existence of gender symmetry (Straus, 2011). These findings indicate that the rates of gender perpetration of IPV are symmetrical among males and females for both minor and severe violence (Cercone *et al.*, 2005). Buttressing the gender symmetry position in two recent studies, Straus concluded that about 70% of IPV involve mutual acts of abuse (Straus, 2008; Straus, 2011). However, according to Tjaden (2000), the gender symmetry in IPV is caused by the frequent use of violence by women as a tool of resistance or self-defense against their male partners. Nevertheless, Bair-Merritt *et al.* (2010) indicated that distinguishing between self-defense and retaliation in IPV was difficult. Besides, when the scope of IPV is expanded to include emotional abuse and any form of hitting, there seems to be a gender symmetry in IPV, but when IPV is loosely defined to include physical harm, expression of fear, and other psychological harm, then IPV primarily affects women (Esquivel-Santovena *et al.*, 2013).

A more recent study has indicated that the gender symmetry theory is not applicable to all contexts (Esquivel-Santovena *et al.*, 2013). By implication, factors such as religion and other cultural elements might affect the symmetrical position of IPV. For example, in some religious and cultural settings, it is forbidden for a woman to either retaliate or raise her voice or abuse her partner. In sum, the proponents of this theory, however, acknowledged some asymmetrical aspects of IPV. Hence, they accepted that men often use more violent and use more deadly means of IPV in relationships (Swan *et al.*, 2008; Chan, 2011).

The gender symmetry theory is subjected to serious criticism. Michael Flood expressly denied the existence of gender symmetry when he wrote that "*there is no gender symmetry in domestic violence; there are important differences between men's and women's typical patterns of victimization; and domestic violence represents only a small proportion of the violence to which men are subject*" (Flood, 2004).

Other scholars have criticized this theory for excluding two important aspects of IPV: conflict-motivated aggression and control-motivated aggression (Kimmel, 2002). Hence, critics have noted that women in America mainly engage in IPV as a form of self-defense or retaliation (motivated aggression), which does not involve a high level of fear or injury (Swan *et al.*, 2008). Meanwhile, in cultural contexts such as Sub-Saharan Africa, where men tend to have higher decision-making power, the men generally engage in IPV as a form of control and cause some form of serious injuries and fear to their partners (Darteh *et al.*, 2019; Allen, 2013). Thus, critics of gender symmetry have argued that specific cases as indicated above must be taken into account when assessing IPV between women and men (Jewkes *et al.*, 2017). Notwithstanding these criticisms, this theory provides an important framework for more understanding of male and female experiences of IPV. Under the purview of this theory, the high frequency and magnitude of IPV among men and women during the COVID-19 lockdown period is proposed, with both genders experiencing the abuse in either equal or different intensity. Besides, considering the restriction of movements and social isolation, many men were confined together with their female abusers indoors. Because of limited route of escape when conflicts occur, male victims could suffer from both physical and psychological abuse and consequently severe injuries as women often use violence or harmful tools for self-defense against their male partners (Tjaden, 2000).

1.2. Study objectives

This study was designed to achieve the following objectives:

(i). To find the prevalence of IPV against men during COVID-19 pandemic lockdown

(ii). To identify the types and forms of IPV experienced by male victims during the COVID-19 pandemic lockdown

(iii). To investigate the consequences of IPV on male victims during the COVID-19 pandemic lockdown.

2. Data and methods

Six online bibliographic databases were searched to identify gray literature from published studies on the prevalence, types, and consequences of IPV against men during the COVID-19 lockdown. The populations of interest were men who had been abused specifically by their female partners. The search was limited to the 2020 – 2021 period. This is because COVID-19 lockdowns globally were mainly instituted in 2020 and early 2021. The six bibliographic databases from which literature was searched in this study include PubMed, PsycINFO, Sociological Abstract, Social Sciences Citation Index, SpringerLink, and ProQuest. The search terms adopted include "men abuse," "violence against men," "IPV against men," "domestic violence against men," and "gender-based violence against men." Reference listings from identified articles were further independently hand searched for articles with more specific themes. The number of articles gleaned from the various bibliographic databases is shown in Table 1.

In identifying relevant articles for this study, a four-stage screening process was adopted. At first, the authors independently conducted online searches using the terms mentioned earlier. In the second stage, the titles and abstracts of papers were selected using certain inclusion and exclusion criteria to identify relevant papers. In determining the inclusion criteria for articles, studies that reported gender-based violence, domestic violence, IPV, and abuses against men published between 2020 and 2021 were included in this study irrespective of the nature of the study (*i.e.*, research, commentaries, and reviews). Nevertheless, studies published within the search period (2020 – 2021) that used data from previous years to analyze IPV against men were excluded from the interpretation of our hypothesis of this study but were discussed in the introduction and discussion sections. In the third stage, the selected papers with available full texts were reviewed to ensure that they met pre-determined inclusion criteria. Finally, the two authors independently and succinctly screened both the titles and contents of selected articles to evaluate their suitability for the review.

Table 1. Number of articles gleaned and selected from online bibliographic databases

Name of database	No. of articles retrieved	No. of articles selected
PubMed	35	6
PsychINFO	9	2
Sociological Abstracts	7	1
Social Sciences Citation Index	14	1
SpringerLink	14	3
ProQuest (for Newspapers and Magazines)	8	6

As shown in Figure 1, the process of database searching in stage 1 yielded a total of 87 citations/abstracts. After a review of the titles and abstracts of the 87 articles, a total of 35 articles were rejected either because they had unrelated themes, did not provide enough information on the issue under discussion, or are duplicates.

Further screening in stage 2 involved screening and review of the titles and abstracts of the remaining 52 articles. Subsequently, 29 articles were rejected because the studies they described were conducted in a period outside the scope of this study, thereby leaving a total of 23 articles in stage 3.

Furthermore, in stage 3, after the full texts of the 23 articles were reviewed, 4 studies were subsequently discarded on the grounds of methodological flaws. Finally, in stage 4, 19 studies that met the criteria were subjected to a final in-depth review.

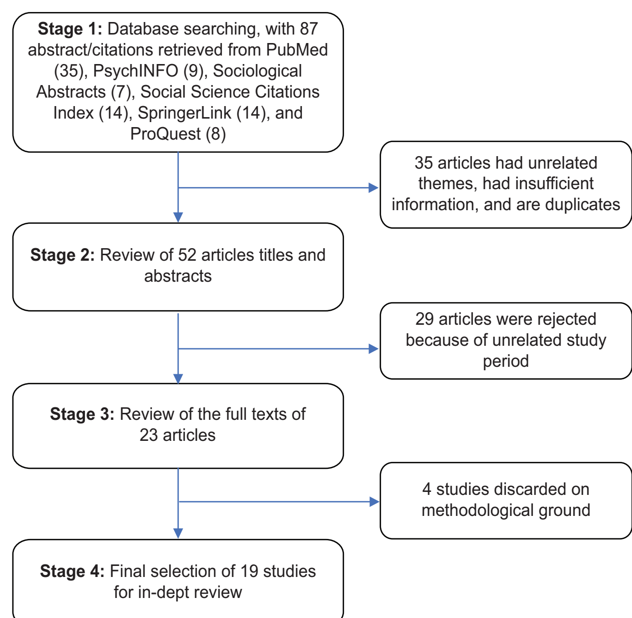

Figure 1. Flowchart of multistage selection and screening of articles retrieved from databases.

3. Results

Of the 19 studies reviewed, the majority of the papers originated in developed countries. Twelve (12) were from the United Kingdom, two were from Nigeria, and one each from England, Australia, Portugal, and India.

3.1. Prevalence of IPV

A study conducted in the United Kingdom indicated that in every three domestic abuse cases, two victims are females and one is male (Warburton & Raniolo, 2020). If the severity of IPV is measured by volume, the study found a prevalence of 28.4% in women and 13.6% in men. Almost all the 10 papers from ManKind Initiative on media and policy briefing reported that, just like their female counterparts, men were at higher risk of IPV because of the confinement with their abusers caused by the COVID-19 pandemic lockdown.

Notably, pleas for help from men who suffered domestic abuse increased to 60% during the lockdown in England (BBC News, 2020). As shown in the report, contact with male victims of IPV came through emails, and charity organizations dealing with these men saw the volume increase of emails by 96% from 372 emails in June 2019 to 728 in June 2020. In March 2020, calls to the ManKind Initiative helpline were 20% higher when compared to the level during the pre-lockdown period and 35% higher between March and June 2020 than normal. The ManKind Initiative website saw a 175% increase in visitors more compared to before the lockdown period. The study in India indicated that a higher proportion of men (7.7%) reported experience of abuse compared to women (7.3%). A Nigerian study reported 89 cases of men abuse between early 2020 and the first quarter of 2021. Similarly, the NOI Polls revealed that 47% of Nigerians reported one form of domestic violence or the other against men in their locality during the peak of the COVID-19 pandemic. In Portugal, IPV ranged from 12.3% for men to 14.2% for women (Table 2).

3.2. Types and forms of IPV experienced by male victims

The majority of the papers from the United Kingdom reported that male victims who were trapped indoors suffered emotional abuse and isolation, a situation that made help seeking more difficult. Male victims are subjected to emotional abuses, such as spending monitoring, food deprivation, and concealment of personal property such as a phone or computer (Brooks, 2020). Seven (7) of the ManKind Initiative briefings indicated a breach of Custody and Child Arrangement Orders by several ex-partners (mothers). A breach of child custody agreement was identified as a form of IPV because it is a form of behavior control. Some male partners had to resort back to family courts in ensuring that child arrangement orders were upheld. Some of the studies noted that male victims of IPV suffered financial/economic and psychological/emotional abuse from their female partners. Other forms of abuse experienced by male victims include sexual and physical abuse, which in most cases led to severe injuries (Table 2).

3.3. Consequences

A paper from the United Kingdom indicated that over one-third of men (41%) and more than half of women (52%) were more likely to suffer from emotional and mental problems emanating from IPV during the COVID-19 lockdown period (Warburton & Raniolo, 2020). Similarly, 4.3% of men and 0.4% of women suffered internal injuries such as fractures and broken teeth. Another study in Australia confirmed that there is little or no support for male victims (Gleeson, 2020). Counseling services for men are less widely available because they are less likely to report their experience of IPV. A male victim in Australia also reported homelessness. Some of the papers revealed that men were at higher risk of sustaining physical injuries and emotional trauma caused by their female partners (Warburton & Raniolo, 2020; ManKind Initiative Briefing 1, March 2020; ManKind Initiative Briefing 4, May 4 – 10, 2020).

The ManKind Initiative reported at least three homicidal cases involving male victims of IPV in the United Kingdom between May and June 2020. As indicated in some of the ManKind Initiative policy briefings, male victims of IPV suffered minimization, a topic brought up during the public hearing of the domestic bill in the United Kingdom (Table 2).

4. Discussion

Globally, the severity of men's IPV experience during the pandemic lockdown, although less frequent, is tantamount to spousal abuse suffered by women. In line with a previous study by Jewkes *et al.* (2017), women's IPV experiences were not significantly different from those of men. As indicated by one of the studies, if the severity of IPV is measured by volume, the severity of IPV in women and men is 28.4% and 13.6%, respectively. This shows that an appreciable proportion of men experienced severe abuse during the COVID-19 pandemic lockdown.

It is important to note that men's experience of IPV was on the rise. Findings indicate that two women and one man were victims of every three domestic violence incidents reported during the COVID-19 lockdown period, and calls from male victims remained 35% higher than the number recorded during the pre-lockdown period. The prevalence of male's experience of IPV in India was 7.7%, and in Nigeria, about 89 cases of men abuse were reported between early 2020 and

Table 2. Prevalence, types, and consequences of IPV

References	Region/ Country	Prevalence rate	Type	Consequences/Findings
Warburton & Raniolo, 2020	United Kingdom	Two women and one man were victims of every three domestic violence incidents reported during the period of the COVID-19 lockdown. When measured by volume, the prevalence is 28.4% for women and 13.6% for men.	Physical and emotional abuse	Compared to men (41%), women (52%) were more likely to suffer from emotional and mental problems emanating from IPV during the COVID-19 lockdown period. Data showed that 4.3% of men and 0.4% of women suffered internal injuries such as fractures and teeth.
ManKind Initiative Briefing 1 (March 2020)	/	/	Psychological/emotional abuse	Similar to female victims, men were found to be at greater risk as many were trapped with their abusers indoors. As a result, the male victims can be more easily controlled through physical, psychological, and social isolation. Besides, it is more difficult for male victim of abuse to find a safe space to seek help. There was generally a violation of custody and children arrangement orders and counseling facilities for male victims were lacking.
ManKind Initiative Briefing 2 (April 2020)	/	Calls to the ManKind Initiative helpline by male victims increased by 20% within the 3 weeks leading up to the lockdown (since March 30, 2020). Furthermore, the number of visitors to the ManKind Initiative webpage surged by 20% within the same period. Calls to the ManKind Initiative helpline were 20% higher than in the normal periods.	/	The ManKind Initiative reported a generally decline in the cases of men coming forward to report an IPV case. Referrals also decreased during this period. This was attributed to the inability of men to get out for help. Counseling for male victims was also lacking.
ManKind Initiative Briefing 3 (April – May 2020)	/	Calls to the ManKind Initiative helpline were 35% higher than normal (pre-lockdown); visitors to the webpage of the initiative were also three times higher than the usual average reported cases (about 189% increase).	/	There was a general lack of counseling for male victims.
ManKind Initiative Briefing 4 (May 4 – 10, 2020)	/	Calls to the ManKind Initiative helpline from male victims remained 35% higher than the level during the pre-lockdown period; visit frequency to the webpage of the initiative was 175% higher.	Psychological/emotional and economic/financial violence was the major type of abuse witnessed by men	Men, just like women, were at a higher risk due to the violations of Custody and Child Arrangement Orders and a lack of counseling for male victims.
ManKind Initiative Briefing 5 (May 11 – 17, 2020)	/	Reported cases since March 30, 2020 remained 35% higher than the level during the pre-lockdown periods; visit frequency to the webpage of the initiative was 160% higher (*i.e.*, over 2.5 times higher) than in the pre-COVID-19 periods.	Psychological/emotional abuse	There was a lack of counseling for male victims and a breach of Custody and Child Arrangement Orders .
ManKind Initiative Briefing 6 (May 18 – 31, 2020)	/	There were two homicide cases involving male victims of domestic abuse; visit frequency to the webpage of the initiative was 150% higher.	Physical/psychological/ emotional abuse	The counseling services for male victims were in short supply, and there was a breach of Custody and Child Arrangement Orders.
ManKind Initiative Briefing 7 (June 1 – 7, 2020	/	Visit frequency to the webpage of the initiative in the 1st week of June was 110% higher than the level in the period before the COVID-19 pandemic.	Psychological/emotional abuse	Three cases of homicide associated with additional domestic violence were recorded. There was a breach of Custody and Child Arrangement Orders and a

(Cont'd...)

Table 2. ***(Continued)***

References	Region/ Country	Prevalence rate	Type	Consequences/Findings
				lack of counseling for male victims. Groups representing female victims were convened, but no group spoke for the voices of male victims; debates and bill on domestic abuse were also discussed.
ManKind Initiative Briefing 8 (June 8 – 21, 2020)	/	Visit frequency to the webpage of the initiative in the 1st week of June was 115% higher than the level during the pre-coronavirus period.	/	Various bills at the committee stage mentioned 741 female victims, while males were only mentioned 52 times (minimization).
BBC News (September 24, 2020; https://www.bbc.com/news/uk-england-54237409)	England (UK)	Charity organizations dealing with men suffering from domestic violence who sought help during the lockdown period reported an increase of up to 60%. Approximately 22 emails and 92 phone calls were received by male victims per day as the lockdown continued from April to June. Contact with victims of abuse through email increased and other services increased by 96% from 372 emails in June 2019 to 728 in June 2020.	/	/
Gleeson, 2020	Australia	One reported case	Physical/emotional abuse	Victims' narrative: "*I think most people think domestic violence doesn't happen to men, that men are the stronger sex and so it won't happen to them. But having experienced it first hand, I feel there's not a lot of support for men, there's not much help out there at all.*"
Mazza *et al*., 2020	Worldwide	Lower-severity case reported	Physical abuse	This study indicated that IPV experienced by men was of "lower severity."
Brooks, 2020	UK	/	Male victims experienced emotional abuse such as monitoring of their spending by their spouse, food deprivation, and withholding of important personal gadgets such as computers and telephones.	There was a serious lack of awareness by the male victims on the severity of the IPV perpetrated by their partners.
Office of National Statistics (2020)	UK	About 16 male victims were killed between 2018 and 2019, while 80 female victims were killed in the same period.	Physical abuse	Mortality of male victims of abuse was under-reported.
Gama *et al*., 2021	Portugal	Domestic violence was reported by both men (12.3%) and women (14.2%).	All forms of IPV Physical, sexual, emotional	Although women were more predisposed to any form of domestic violence against a partner than men, the observed differences were not statistically significant.
Sharma & Khokhar, 2021	India	More men reported having been abused (7.7%) than women (7.3%) during the lockdown period.	/	No significant difference was found between the domestic violence (DV) level of males and females.
Nwosu, 2021	Nigeria	In Lagos, Nigeria, the government reported 89 physical domestic violence	Physical violence	

(Cont'd...)

Table 2. *(Continued)*

References	Region/ Country	Prevalence rate	Type	Consequences/Findings
		cases against men by their wives between 2020 and the first quarter of 2021. In 2020, a total of 46 men reported being battered by their wives, while in the first quarter of 2021, about 43 men reported being abused by their wives.		
NOI Polls (2020)	Nigeria	This study revealed that 47% of Nigerians reported one form of domestic violence or the other against men in their locality during the peak of the COVID-19	All forms of domestic violence	

the first quarter of 2021. A study in Norway lends credence to the increasing prevalence of IPV in men during the COVID-19 pandemic lockdown period (Nesset *et al.*, 2021). Crime statistics from the German Federal Criminal Police Office in 2018 recorded that about 26,362 men experienced IPV (Kolbe & Büttner, 2020). Other studies elsewhere before the pandemic also corroborate this finding (Mitra *et al.*, 2016; Dienye & Gbeneol, 2009; Dass *et al.*, 2011).

Arguably, most cases of male experience of IPV during the lockdown period were under-reported (Gleeson, 2020). Notably, IPV cases targeted at men were more commonly reported in developed countries than in developing countries, such as Nigeria and other Sub-Saharan African countries. This may be attributed to the dominant patriarchal culture, the need to maintain a masculine image, and the culture of stigmatization and shame associated with men claiming themselves as victims of IPV cases. Another study elsewhere confirmed that men are less likely to report IPV cases and seek professional help due to shame, embarrassment, and discrimination (Tsui *et al.*, 2010). On this note, it is plausible to say that men's experience of IPV may have been under-reported in this study and this may be attributed to social and cultural contexts in which they occurred and exacerbated by the stringent lockdown restrictions during the COVID-19 pandemic.

During the lockdown period, male victims were equally subjected to emotional and psychological abuses, such as spending monitoring, food deprivation, and the withholding of personal property (phone or computer). This situation could have resulted in serious emotional trauma and difficulty in accessing help. Consequently, the inability to access medical support and help may have adverse implications for their mental health and the economic well-being of families and the global economy.

Furthermore, some of the papers reviewed also showed that men experienced physical abuse and all other forms of abuse, including economic or financial abuse, from their female partners. This result is in tandem with studies elsewhere (Evans *et al.*, 2020; Kolbe and Büttner, 2020; Kigaya, 2021) and other studies in Sub-Saharan Africa, Europe, and the United States before the pandemic (Stults *et al.*, 2016; Khalifeh *et al.*, 2015; Costa *et al.*, 2015; Umubyeyi *et al.*, 2014). The physical abuse could reflect the vulnerability of men in violent situations as the female partners may likely resort to using dangerous weapons for self-defense. The plausible explanation for financial or economic abuse could be job loss during the peak of the lockdown period, which apparently may have left some male victims completely dependent on their partners.

The papers reviewed in this study showed that there are severe consequences of abuse perpetrated against men by female partners. While some studies reported that women are more likely to suffer from emotional and mental disorders, some of the male victims suffered similar outcomes (Warburton & Raniolo, 2020; ManKind Initiative Briefing 1, March 2020; ManKind Initiative Briefing 4, May 4 – 10, 2020; Gleeson, 2020; Gama *et al.*, 2021). Furthermore, 4.3% of men and 0.4% of women suffered internal injuries such as fractures and teeth injuries. This finding highlights the severe effects of IPV on male victims and the need to give equal attention to men who suffer spousal abuse. Generally, violations of custody and children arrangement orders, particularly in the United Kingdom, and the inability to get counseling services are prominent issues facing the male victims of IPV. These consequences have been confirmed by other studies (Ahmed *et al.*, 2021; Evans *et al.*, 2020). The lack of counseling support could be attributed to the inability of men to get out for help. During the COVID-19 pandemic lockdown, male victims were trapped with their female abusers and due to social isolation, it becomes more difficult to find a safe space where these abused men can seek counseling. In the words of one of the male victims

in an Australian study "…... *But having experienced it first hand, I feel there's not a lot of support for men, there's not much help out there at all*" (Gleeson, 2020). There were also reported cases of homicide and homelessness. In a situation where the woman (partner) owns the house and feels threatened by the man's presence, the result could be a possible eviction. However, further research is needed to explore some of these findings in other contexts.

This study notably has some limitations. The IPV cases in this study were reported mainly by male victims from developed countries such as the United Kingdom, Australia, Norway, and Portugal; therefore, the findings may not be adequate for understanding men's experience of IPV during the lockdown period in other contexts. Besides, IPV cases among men may have been underreported due to stigmatization and the feeling of shame. These limitations notwithstanding that the findings are still relevant in the public health domain.

5. Conclusion

This systematic review establishes that domestic abuse toward men is less frequent, but in terms of severity, types, and consequences, the abuse they are facing is similar to the domestic abuse suffered by women. Therefore, the discussion on domestic violence should be steered away from a gender bias. To address the issue of domestic violence holistically, there is a need to open up a discussion to promote zero tolerance of domestic abuse toward both men and women. The global health community must also address men's risks related to the pandemic and positively engage men in surmounting the challenges women face by recognizing gender as a key determinant. It is also important to identify men at risk, provide information about available domestic violence support services, and support at-risk men to access those services.

Acknowledgments

The paper was presented at the Conference on Population and Reproductive Health Dynamics Under COVID-19 in Sub-Saharan Africa that was hosted by the University of the Witwatersrand, South Africa through its Demography and Population Studies Programme. The Conference was supported under the auspices of the Science Granting Councils Initiative in Sub-Saharan Africa (SGCI) and administered by South Africa's National Research Foundation in collaboration with Canada's International Development Research Center (IDRC), the Swedish International Development Cooperation Agency (Sida), South Africa's Department of Science and Innovation (DSI), the Fons de Recherche due Quebec (FRQ), the United Kingdom's Department of International Development (DFID), the United Kingdom Research and Innovation (UKRI) through the Newton Fund.

Funding

None.

Conflict of interest

The authors declare no conflicts of interest.

Author contributions

Conceptualization: All authors
Data curation: All authors
Formal analysis: All authors
Methodology: All authors
Writing–original draft: All authors
Writing–review & editing: All authors

Both authors have read and agreed to the published version of the manuscript.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Data used in this paper were derived from secondary sources which are available to the public.

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ACCSCIENCE PUBLISHING

International Journal of Population Studies

REVIEW ARTICLE

Social context of intimate partner violence and system response during COVID-19 in Africa: A scoping review

Ojo M. Agunbiade[1]*, Akanni I. Akinyemi[2], Oluwaseun I. Obasola[3], Jacob W. Mobolaji[2], John O. Abe[2], Opeyemi O. Ekundayo[4], Taofeek K. Aliyu[2], Olutoyin O. Ikuteyijo[5], Oladimeji R. Ogunoye[6], and Lanre O. Ikuteyijo[1]

[1]Department of Sociology and Anthropology, Obafemi Awolowo University, Ile-Ife, Osun, Nigeria

[2]Department of Demography and Social Statistics, Obafemi Awolowo University, Ile-Ife, Osun, Nigeria

[3]Kenneth Dike Library, University of Ibadan, Oyo, Nigeria

[4]Department of Psychology, Obafemi Awolowo University, Ile-Ife, Osun, Nigeria

[5]Department of Epidemiology and Public Health, Swiss TPH, Basel University, Nigeria

[6]Department of English Language, Obafemi Awolowo University, Ile-Ife, Osun, Nigeria

(This article belongs to *Special Issue: Population and Reproductive Health Dynamics under Covid-19 in Sub-Saharan Africa*)

***Corresponding author:**
Ojo M. Agunbiade
(oagunbiade@oauife.edu.ng)

Citation: Agunbiade, O.M., Akinyemi, A.I., Obasola, O.I., Mobolaji, J.W., Abe, J.O., Ekundayo, O.O., *et al.* (2024). Social context of intimate partner violence and system response during COVID-19 in Africa: A scoping review. *International Journal of Population Studies*, 10(1):45-57. https://doi.org/10.36922/ijps.367

Received: September 19, 2022

Accepted: December 1, 2023

Published Online: December 29, 2023

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Abstract

Intimate partner violence (IPV) stands as a global social and public health crisis deeply rooted in extensive social and cultural contexts. The onset of the COVID-19 pandemic has disproportionately affected social interactions. This scoping review aims to synthesize evidence on the social contexts of IPV and system responses to COVID-19 in Africa. Adhering to the Arksey and O'Malley (2005) approach, refined by the Joanna Briggs Institute (2020), this review encompassed relevant literature from bibliographic databases, institutional websites, and electronic libraries from January 2020 to December 2021. The search was executed in three phases across databases, including Social Science Database and Sociological Abstract (through EBSCO), Africa Journal Archive, ProQuest (Coronavirus Research Library; Middle East and Africa Collection; Psychology, Sociology, and Social Science Database), and Google Scholar, also extended to the World Bank e-Library, the BBC portal, and pertinent websites. Briggs's (2020) recommendations guided the screening, focusing exclusively on English language articles. Convergent synthesis of extracted information utilized thematic analysis and, when applicable, descriptive statistics. Of the 14 articles meeting inclusion criteria, results revealed varied incidences of IPV during the COVID-19 pandemic, encompassing emotional, economic, and violence among minors. Women's experiences of daily IPV realities during the outbreak and lockdown hinged on contextual factors and relationship dynamics. Emotional and economic violence was predominant, with limited IPV cases among minors. State and non-state responses were inadequate, reactionary, and insufficiently transformative for the complex emergency posed by COVID-19 on livelihoods and intimate relationships. Pre-existing IPV instances lacked sensitivity in the preparedness and measures for gender inequalities within intimate relationships. While IPV was reported, both state and non-state actors exhibited notably deficient responsiveness.

Keywords: Africa; COVID-19; Intimate partner violence; Lockdown measures; Social contexts; System responses

1. Introduction

The emergence of COVID-19 and the abrupt introduction of lockdown measures in both developed and developing countries have given rise to unintended consequences on various social institutions, networks, and interpersonal relationships. Documented evidence underscores the diverse impacts on all social institutions, spanning the economy, international relations, religious organizations, and marriages (Peitzmeier *et al*., 2022), which continue to grapple with the lingering effects of the pandemic and the associated restrictions on movement and interactions. At the interpersonal level, particularly within intimate relationships, the impacts exhibit gendered nuances, rendering both men and women vulnerable, although to varying degrees and contingent upon the availability of a support system to mitigate the impact. Disruptions in incomes occurred as economic activities were impeded within and across national boundaries. Notably, certain sectors, such as the information and communication technology industry, gained increased prominence and timeliness in the face of these disruptions. These disruptions further exacerbated inherent tensions within interpersonal relations, especially in aspects related to well-being, insecurity, and relationships (Furbush *et al*., 2021). The restrictions on movements and interpersonal interactions compelled individuals with pre-existing tensions and strained relationships to engage more frequently, increasing the likelihood of experiencing various forms of violence, abuse, or maltreatment. The gender insensitivity inherent in the lockdown measures, coupled with the absence of a quality and responsive support network, may have exacerbated the situation for some women, especially in social settings where patriarchal values dominate and are exemplified within intimate relationships (Ceroni *et al*., 2021).

1.1. Literature review

Before the COVID-19 pandemic, intimate partner violence (IPV) remained dominant among various forms of violence, abuse, and maltreatment. This dominance can be partially attributed to its entrenchment and embeddedness in broader social and cultural contexts (Moreira & Pinto da Costa, 2020). Intimate relationships, being inherently gendered, yield multiplier consequences for the well-being of survivors and others in their networks. The emergence of the pandemic led to multiple postulations, with one notable expectation being that IPV could become more prevalent and exacerbated in both incidence and prevalence. The premises for such a potential surge was rooted in the absence, inadequacy, and insensitivity of containment measures to address existing gendered tensions and differentials within intimate partner relationships. Intimate partner relationships are universally acknowledged as a social and public health concern. Examining the social contexts that influence these relationships can provide valuable understanding of the gender-based differences in vulnerability that exist within networks and structures of relationships. This scoping review aims to identify existing evidence on social contexts of IPV, with a particular focus on sub-Saharan African contexts. The goal is to gain insights into system response across diverse settings during the pandemic period.

Contexts play critical roles in the derivative impacts of COVID-19. Despite the variants, the virus remains consistent across cultures, especially in terms of symptoms and potential consequences for hosts worldwide. Social networks and relationships have undergone differentiated and gendered experiences in individual countries during the outbreak, as well as the accompanying measures to curb its spread (Amzat *et al*., 2020). From around March 2020, when African countries started recording index cases of COVID-19, governments adhered to established protocols for managing the COVID-19 pandemic, implementing isolation, social distancing, and movement restrictions (Amzat *et al*., 2020). In locations where such measures were enacted, cases of IPV escalated, involving multiple sexual partners (Agüero, 2021; Donato, 2020; Moreira & Pinto da Costa, 2020). Couples and families were compelled to share spaces and spend more time together (McNeil *et al*., 2023). The reported growth in IPV cases appears to be a cross-cultural phenomenon. McNeil *et al*. (2023), in a rapid review, reported a preliminary spread and increase in IPV cases. Similarly, Leslie and Wilson (2020) had earlier reported a 7.5% increase in IPV within the first 3 months of lockdown in some metropolitan areas of the United States. In China, cases of IPV tripled in the first quarter of 2020 compared to the previous year (Roesch *et al*., 2020; Zhang, 2020). In 2020, a similar increase was recorded in a small-scale survey conducted in Ethiopia (Tadesse, *et al*., 2022). The survey, featuring 589 married women, revealed that an appreciable proportion (22.4%) reported experiencing some forms of IPV, with a considerable number reporting multiple forms, including physical, psychological, and sexual violence during the pandemic (Tadesse *et al*., 2022).

The novelty of COVID-19, akin to other complex emergencies, contributes in part to the much-needed evidence that can inform appropriate policies, measures, and interventions to mitigate the disruptions in socioeconomic structures and networks of relationships. Before the onset of the COVID-19 pandemic, Africa was already one of the regions with the highest prevalence of IPV. A systematic review and meta-analysis of cross-sectional studies on gender-based violence (GBV) against women in sub-Saharan Africa conducted in 2020 by Muluneh *et al*. reveal a prevalent rate of domestic violence in

Africa at 44% (Muluneh *et al*., 2020). Moreover, variations exist across countries in sub-Saharan Africa regarding the prevalence of IPV, ranging from approximately 30% to nearly 60% (Bamiwuye & Odimegwu, 2014). The conducive environment for IPV in Africa suggests that the region may be disproportionately affected due to inherent deficiencies in social institutions and the excruciating effects of the political economy on households and relationship networks. In many African communities, patriarchal beliefs, values, and expectations may exacerbate the gendered nature of IPV, with women often emerging as the primary victims. Gender inequalities, low women's status (Oyediran & Feyisetan, 2017), poverty, a low level of education, and issues such as drunkenness are commonly associated with men who perpetrate various forms of gender violence across African communities (McCloskey *et al*., 2016).

Comparatively, Africa lags in sufficient and synthesized evidence on the impacts of COVID-19 on social relationships, the inherent institutional and structural weaknesses, and the attendant effects on well-being and inequalities on the continent. Organized evidence is needed to expand the frontiers of knowledge, policy, and practice. The immediate relevance of this form of evidence is critical, considering the unappreciated isolation and the "stay at home" orders issued by most African countries during the COVID-19 pandemic. It is unclear how these measures influenced the contexts, incidence, and prevalence of IPV in Africa. What could be used as evidence during these times was also limited by the lack of nationwide surveys, places where evidence could be collected, and the need for social distance and isolation. Despite these limitations, a scoping review that adopts mixed methods with a convergence orientation will help bridge existing knowledge gaps. We hope that this review will show how systems, including those of state and non-state actors, have responded to the rise in IPV cases, as well as the nature of the measures, interventions, and policies that were introduced in response to vulnerabilities during the period.

1.2. Research questions

The review was guided by questions that can facilitate evidence mapping and synthesis on IPV's occurrence within the period under consideration and the responses from state and non-state actors. The specific questions are as follows: first, did COVID-19 increase cases of IPV in Africa? Second, what was the response system to IPV in the settings from which the articles and reports emanated? Finally, are there concrete systemic intentions to modify or design an emergency response framework that can be deployed and accessed by those in need?

2. Data and methods

The review was conducted following suggested refinements to earlier approaches, as outlined in the Methodological Guidance for Scoping Review by the Joana Briggs Institute (Peters *et al*., 2020). The refined suggestions allowed the use of a mixed-method approach in the extraction and synthesis of the evidence, as well as in presenting the results from the review. The research questions for this review were designed to understand the social contexts representing the settings of IPV occurrence, considering factors such as the gender dynamics of the partners involved, their marital status, and the geographical space of occurrence (Africa). In addition, the questions sought to understand the meanings attached to such forms of violence among the social actors involved and the subsequent reactions or actions. In terms of actions, the focus leaned toward formal, institutional, or system responses, as opposed to the expected or unexpected reactions that IPV occurrences attract. Specifically, attention was given to the types and forms of support available in the settings where cases of IPV were reported, the frequency of access, and the perceived relevance of available support within existing systems. The evidence syntheses from the selected articles and documents also used a broad sense of categorization of system response.

2.1. Search strategy

An information scientist with relevant expertise structured the search strategy with input from the lead author and three other authors of the present article. The inclusion and exclusion criteria were discussed iteratively among all authors to ensure clarity in the screening and extraction of relevant information. The search strategy was executed in phases to encompass both published and unpublished literature from a wide range of sources (bibliographic databases, institutional websites, and electronic libraries). The employed search techniques included conventional subject searching, reference list checking, citation searching, and direct contact with subject matter experts.

Our initial searches traversed the Coronavirus Research Library; Middle East and Africa Collection; Psychology, Sociology, and Social Science Database (through ProQuest), Academic Search Complete, Africa-Wide, Medline Complete (all through EBSCO), and Google Scholar. Text words present in the titles and abstracts of the search results were analyzed to identify keywords within both natural language and controlled vocabulary. This process facilitated the development of a list of general and sub-categories of terms pertaining to IPV and COVID-19.

The terms generated through the process were carefully applied in searching selected bibliographic databases

and websites using Boolean operators (refer to Appendix for the complete list of search terms). For each database and website, search strings were modified and adapted to ensure the retrieval of relevant published and unpublished studies in English from March 2020 to December 2021. The search results were filtered based on the geographical region (sub-Saharan Africa). Detailed information about the databases, institutional websites, and other sources searched is presented in Appendix.

2.2. Inclusion and exclusion criteria

Studies reporting IPV cases in Africa were eligible for inclusion in this review. In addition, studies addressing reactions, strategies, interventions, and policies related to IPV published between January 2020 and December 2021 were considered. This review exclusively targeted studies published in the English language.

Reports, cases, experiences, stories, and studies discussing IPV in locations outside Africa or presented in languages other than English were not included in this review.

2.3. Participants

The target population for this review includes males, females, youths, young adults, older adults, adolescents or young people, as well as teens or teenagers involved in the reports, cases, and studies regarding experiences of IPV.

2.4. Context

The emphasis of this review rests on the availability of evidence or reports depicting cases, experiences, and stories of IPV within African contexts. Our focus extends to system responses, encompassing targeting measures, interventions, reactions, and efforts taken or under consideration by government agencies and their representatives, high commissions, and other governmental agencies in Africa. For non-state actors, the focus extended to religious bodies, community-based organizations, and other non-governmental organizations. We assessed the responses of both state and non-state actors in terms of the steps taken to advocate for measures, initiatives, or interventions addressing IPV, with the aim of mitigating vulnerability. In addition, we considered responses in the form of support provided to victims, aiming to reduce potential effects on their well-being and improve their resilience. Responses initiated to either punish or rehabilitate perpetrators were also considered at the systemic level.

2.5. Analytical framework for organizing the extractions

The analysis of the extracts commenced with a detailed examination of the research questions and the aim of the review. Both inductive and deductive coding approaches were adopted to make sense of the evidence, contexts, and interpretations related to reported cases of IPV. The coding process was conducted collaboratively by the first four authors across three levels: first, second, and third order. The process provided an opportunity to refine the codes for a deeper sense of the extractions from the selected articles and reports. At the first level, the analysis sought to understand the contexts of the occurrence of each reported IPV case and the basic narratives provided. In addition, this level facilitated the identification of statistical information on the occurrence of IPV across the settings of interest. At the second-order level, the focus shifted to the responses from both state and non-state actors, assessing whether emergency efforts or interventions were introduced as a response to address inherent vulnerabilities during the COVID-19 pandemic. The third-level analysis delved into the forms, processes, actors involved, and the quality of response from these actors. Analysis at the fourth level involved the integration of identified issues into themes and sub-themes, providing a more comprehensive understanding of both the IPV cases and system response.

3. Results

The 14 articles that met the inclusion criteria spanned regions across Eastern, Western, Northern, and Southern Africa. Among these, three articles originated from Nigeria, two from South Africa, and two from Uganda. Of these seven papers, three adopted qualitative approaches, two took the form of surveys with a focus on the influence of COVID-19 on mental health, and three were reviews (Figure 1). The remaining articles included a review of the legal framework for the recognition, evidence gathering, and prosecution of perpetrators in three African countries (Sudan, Malawi, and Kenya). Two additional articles adopted a comparative approach, focusing on the impact of the COVID-19 pandemic on evidence gathering, documentation, and challenges in evidence collection for the protection of survivors of sexual and gender-based violence (SGBV), with implications drawn from both the COVID-19 pandemic moments in France and Cameroon. Hailing from the northern part of Africa, one article emerged from Tunisia, presenting an online survey on the effect of the COVID-19-related lockdown on mental health and GBV among Tunisian women. The second article, originating from Morocco and framed as a newspaper report, provides narratives depicting women's experiences of violence during the COVID-19 lockdown in Morocco. A common theme among these articles centers on the pre-existing vulnerability of women to IPV before the pandemic. The predominant skewness in social arrangements, favoring men in terms of opportunities and privileges, was widely accepted as a potent explanation,

distinctly separated from considerations of women's biological composition.

3.1. Prevalent IPV across different social categories in Africa during the COVID-19 lockdown

The COVID-19 lockdown has compelled individuals to cohabit regardless of compatibility, resulting in vulnerable groups, especially women and children, being trapped with dangerous abusers and violent partners. For instance, one of the reviewed articles revealed a general surge of approximately 30% in IPV cases in certain contexts (Tochie *et al.*, 2020). In other contexts, IPV cases exceeded twice the usual frequency, predominantly reported by women who endured physical, psychosocial, sexual, and economic abuse from intimate partners (Muluneh *et al.*, 2020).

However, as described in another study, IPV was less prevalent in specific contexts during COVID-19 (7.2%) compared to the pre-COVID period (13.5%) (Ojeahere *et al.*, 2022). Given that the study relied on retrospective data collected through social media, the pre-COVID IPV experiences might have been over-reported or the post-COVID-19 experiences under-reported, depending on the timing of data collection. The study's observation of decreased IPV during the early phase of the pandemic further suggests the need for further interrogation of the findings.

3.2. Emotional abuse

Emotional abuse holds significant consequences for individuals' mental health. Psychological symptoms such as feelings of hopelessness, failure, depression, and irritability were associated with IPV during the lockdown (Ojeahere *et al.*, 2022). An article assessing the impact of the COVID-19 lockdown on women's mental health and GBV revealed that over half (57.3%) of the women reported extreme forms of severe distress. Those with a history of mental illness also suffered from severe symptoms of anxiety, stress, and depression, often linked to experiences of emotional abuse during the COVID-19 lockdown (Sediri *et al.*, 2020). The study further stated that some of the respondents faced challenges accessing social media due to abuse from their partners. The lockdown intensifies the strain on the already negative relationships among couples and partners compelled to cohabit despite strained relationships. One study highlighted that emotional violence was the most frequently reported form during the COVID-19 lockdown (Tochie *et al.*, 2020). Another study, comparing the prevalence of IPV before and during the pandemic, substantiates this observation by stating that the experience of emotional violence was the most reported among IPV victims during the lockdown (Ojeahere *et al.*, 2021).

3.3. Economic abuse

The COVID-19 lockdown has also impacted the economy and livelihood of families, with potential implications for economic aggression resulting in GBV within the families. One of the articles argued that the lockdown was associated with IPV in relation to the disruption of women's income generation and economic stressors (Fawole *et al.*, 2021). The patriarchal nature of African family settings, which subverts women's economic independence or decision-making under the authority of the male partner, perpetuates and institutionalizes economic violence against women during the lockdown. Another study described that IPV during the pandemic was more prevalent for women earning below $83 USD per month or whose intimate partner earns below this threshold, as well as for women experiencing unintended pregnancies during the lockdown (Tochie *et al.*, 2020).

COVID-19 could have a negative impact on SGBV in South Africa due to economic disruption. In the Western Cape, for instance, Parry & Gordon, 2021, argued that black working women are particularly at risk of experiencing IPV during the COVID-19 lockdown due to their poor living conditions and already compromised access to health, safety, policing, and socioeconomic needs (Parry & Gordon, 2021). The study further emphasized that women in these contexts are more vulnerable to IPV due to the structural dimensions of their contexts (Parry & Gordon, 2021).

3.4. An increase in IPV among minors

The COVID-19 lockdown also potentially amplifies the incidence of IPV, particularly affecting minors. For instance, an article reported that during the COVID-19 pandemic, the majority of individuals seeking help as IPV survivors were minors aged below 16 years. This is potentially linked to children being left alone and consequently being more vulnerable to SGBV during the lockdown when schools were closed (Rockowitz, *et al.*, 2021).

3.5. A hike in the eviction of women from homes and a fight over the custody of children

Findings revealed pre-existing instances of IPV before the lockdown, with a notable increase in both the frequency and severity of episodes during the lockdown period. Physical, economic, psychological, and sexual violence emerged as the most frequently reported forms of abuse in these cases. Commonly reported were threats of eviction from homes, coupled with disruptions in income during the period. The sources of support for victims were adversely affected, with restrictions on movement and escalated threats from perpetrators exacerbating their

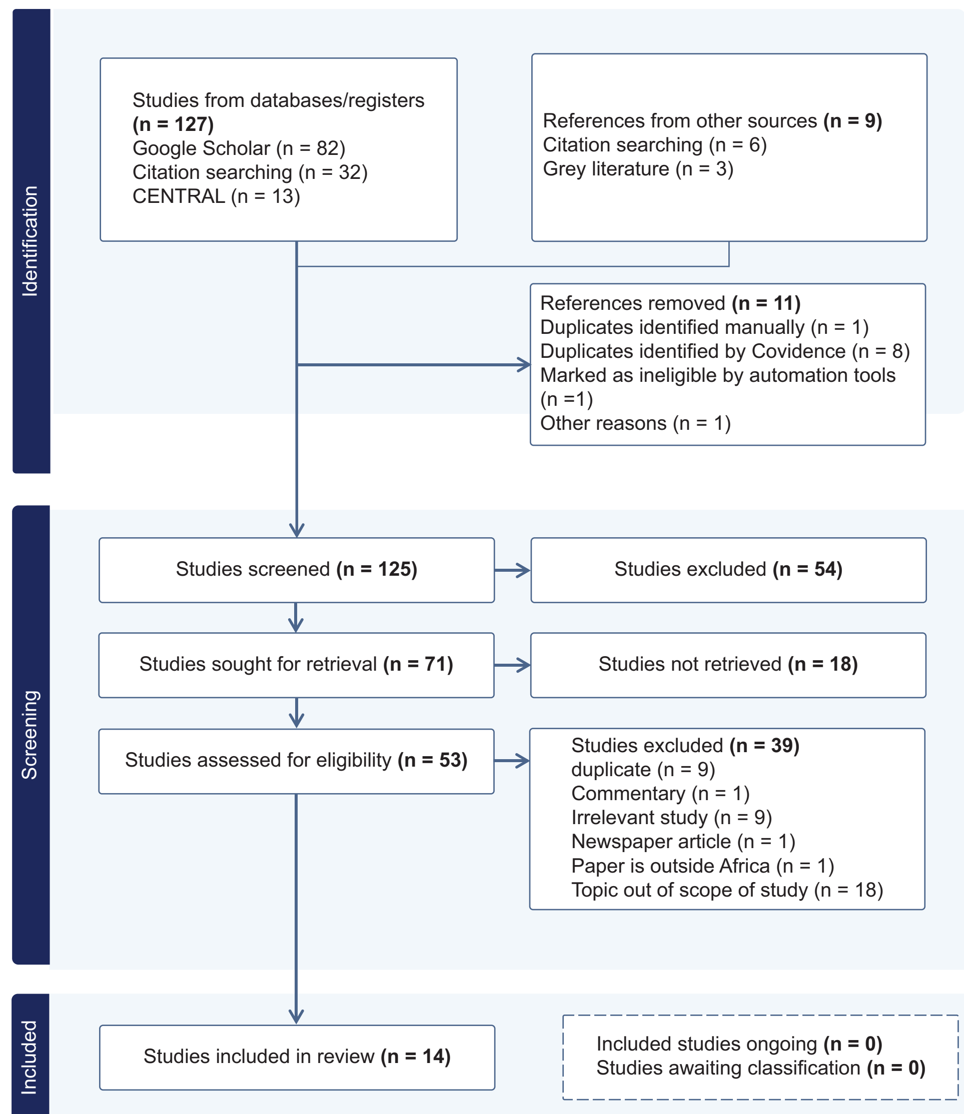

Figure 1. PRISMA table for this review.

situation. In addition, instances of IPV were observed in relation to threats of evicting women from their homes, couples' separation, and fights over custody of children – all associated with the challenges posed by the lockdown (Fawole *et al*., 2021).

3.6. Sense of precariousness in responses of state and non-state actors to IPV

The conclusions tend toward a consensus that IPV persists in most communities and countries covered in this review. A significant rationale for anticipating challenging circumstances for those involved in intimate relationships lies in the pre-existing fragility of social structures and the response framework. These traits are evident across the 10 African countries featured in the selected articles and documents. The COVID-19 pandemic disrupted all spheres of interaction as the world system grappled with the need for a new normal to cope with the challenges. Partners and spouses engaged in intimate relationships were further predicted to likely experience violence in various forms due to factors such as patriarchy, inadequate policies, and shortcomings in existing response systems. Proposing such a prediction in South Africa, Parry & Gordon (2021) reflected on the existing fragile situation of black women and postulated a potential increase in IPV among black working women in the Western Cape. They argued that black working women were particularly at risk due to their challenging living conditions and already constrained access to health, safety, policing, and socioeconomic needs. Extracts from the policy review

on Cameroon by Tochie *et al*. (2020) also postulated the intersections between structures and networks of relations in predisposing women to gender violence, and with COVID-19, more cases were reported to have occurred.

Precarious relationships and pre-existing health conditions further predisposed certain women to experience IPV during the pandemic. Extracts from a cross-sectional survey conducted among women with a history of mental illness in Tunisia revealed that more than half of these women reported experiencing more abusive incidents during the COVID-19 lockdown compared to the period preceding it (Sediri *et al*., 2020). In addition, these women endured heightened episodes of depression, anxiety, and challenges in social interaction, including sharing or presenting their experiences in social media spaces. Importantly, the peculiarity of their health status proved inconsequential in defining what qualifies as effective and socially inclusive care during complex emergencies.

The extracts from the study by Mbulayi *et al*. (2021) on the psychosocial consequences of the COVID-19 pandemic highlight a worsening mental health problems among the study participants. Those reporting such experiences cited phobias, anxiety, unhappiness, and insomnia as prevalent symptoms attributable to the pandemic. The heightened concerns about contracting COVID-19 had a negative impact on their sense of safety, with increased anxiety about potential mortality. In addition, some of the respondents manifested false symptoms of COVID-19. The psychosocial consequences of COVID-19 intensified as many of the respondents abandoned their sources of livelihood in compliance with the government-recommended protocol for curbing the spread of COVID. Notably, women were disproportionately affected, with cases of domestic violence on the rise.

3.7. Response systems and measures traceable to the reported IPV during COVID-19

This review indicates a propensity for approaching all identified cases from a reactionary stance within the landscape of IPV cases in Africa. This pattern appears consistent across the limited articles and documents included in this review from the 10 African countries (Cameroon, Kenya, Malawi, Morocco, Nigeria, Sudan, South Africa, Tunisia, Uganda, and Zimbabwe). The expectation was for both state and non-state actors to collaborate and engage in addressing the potential impact or consequences of the pandemic. However, the system also captures certain forms of tension and dissociation within the response system and the measures implemented during the early stages of the COVID-19 outbreak.

Drawing from the existing legal framework and responses to the impact of COVID-19 on IPV in Kenya, Malawi, and Sudan, Ahmed *et al*. (2021) described the presence or absence of laws and protocols aimed at addressing vulnerability to IPV in these three African countries. The Kenyan constitution provides guidelines and ensures the protection of citizens' lives against IPV. The Sexual Offences Act of 2006 safeguards everyone from harm arising from sexual acts. Similarly, Malawi boasts seven gender-related laws designed to eliminate GBV within domestic relationships. Conversely, the situation in Sudan diverges significantly, as there are no laws against IPV within the country's legal framework. This absence is attributed to the prolonged years of violence and family law, rendering it practically impossible to prosecute perpetrators of domestic violence.

In Malawi, Police Victim Support Units were established in all districts to respond to and prevent all forms of GBV. However, survivors of IPV faced challenges in accessing IPV prevention and response services due to the limited capacity of relevant service providers, who shifted their focus to COVID-19. The police response to IPV cases was hampered by a shortage of personal protective equipment (PPE), leading to concerns about COVID-19 infection. Travel restrictions, transportation costs, and the fear of COVID-19 infection further prevented some women from accessing IPV prevention and response services. A sense of modification from the pre-pandemic situation was observed. In August 2020, the Kenyan police introduced PoliCare, a one-stop model police station where survivors can access critical multisectoral services. However, these services are exclusively available to residents of Nairobi City (Ahmed *et al*., 2021).

Lobbying by civil society, driven by the surge in GBV cases, resulted in increased funding from foreign donors. This funding is aimed at hiring counselors, promoting services provided by the GBV hotline, reinforcing referrals to survivors, and establishing toll-free hotlines, phone calls, and virtual platforms for counseling services. Unfortunately, these services were exclusive, catering primarily to middle-class women. In recognition of this limitation, certain organizations addressed the issue by training and deploying community health volunteers to support women and girls within their communities, providing psychological first aid. Kenya, in particular, exemplified how trained community health workers could deliver IPV prevention and control services to survivors from marginalized groups lacking access to the internet or phone services during the period of COVID-19 infection control and prevention measures. It is noteworthy that the three countries had helplines designed to support IPV

survivors. However, these services were only accessible to a marginal section of the population.

Ahmed *et al*. (2021) argued that Sudan and Kenya lack adequate guidelines for prevention and response services. In Kenya, the inclusion of GBV in the COVID-19 response plans only occurred following pressure from civil society, underscoring the influential role of civil society in IPV prevention. Conversely, Sudan lacks both a prevention and response plan, attributed to a deficiency in political will and a legal framework supporting the establishment of services, despite a notable increase in cases of marital rape during lockdown. Gender inequalities prevalent in these countries contribute to the weak enforcement of GBV laws, with the absence of a well-resourced functional system to address the needs and concerns of IPV survivors and prevent IPV across all three countries (Ahmed *et al*., 2021).

Non-state actors appeared handicapped in addressing the challenges posed by the pandemic; the need for more concrete and focused efforts from churches, which are critical actors, was absent in the Magezi & Manzanga (2020) accounts. The extracts from the study called for public pastoral care roles as more members suffered one form of loss or another during the lockdown periods. More transformative interventions and measures were proposed and predicted to have more meaningful impacts on members, particularly in upholding the dignity of women when integrated within measures from other sectors. Despite these assertions and the potential effectiveness of adopting multisectoral strategies and measures, none of the responses reflected an understanding of the situation. Affirming this neglect, Parry & Gordon (2021) argued that even among black women in the Western Cape, South Africa, the one-size-fits-all strategy adopted was oblivious to the precarious spaces promoting vulnerability to IPV among women. Similar situations were portrayed in the policy review in Cameroon, where the implementation of COVID-19 confinement laws proved insufficient to curb cases of sexual and GBV (Tochie *et al*., 2020). The responses and measures introduced exhibited blindness and gender insensitivity in curbing the further spread of COVID-19 in South Africa and other settings in Africa, necessitating a reconsideration.

4. Discussion

IPV is a psychosocial phenomenon that occurs within contexts and relationships marked by low tolerance and inherent oppression. This review systematically maps the literature concerning the exacerbation and contexts of IPV during the COVID-19 outbreak and the subsequent implementation of lockdown measures across various social settings in Africa. Challenges within intimate relationships, socioeconomic pressures, and patriarchal skewness surrounding resource access and sharing render women in many African communities vulnerable. The COVID-19 outbreak in Africa prompted governments and key decision-makers to implement measures aimed at curbing the spread of the virus and mitigating its consequences for those already affected and the general population. Unfortunately, the widespread adoption of lockdown measures, without due consideration for gender differences and structural deficiencies, has exacerbated various forms of IPV within different contexts and relationships. The anticipation of a surge in IPV stems from prevailing structural challenges and a policy environment that has demonstrated insensitivity to gender inequity (Amzat *et al*., 2020). During the pandemic, the prevalence rate of IPV was notably high, with variations across different contexts. The implementation of COVID-19 outbreak and lockdown measures has exacerbated the situation across all contexts considered in this review (Ahmed *et al*., 2021; Amzat *et al*., 2020; Fawole *et al*., 2021; Magezi & Manzanga, 2020; Mbulayi *et al*., 2021; Sediri *et al*., 2020; Tochie *et al*., 2020). To comprehensively assess the prevailing response system to IPV in the settings from which the articles and reports originated, it is crucial to initially determine whether there was a concrete systemic intention to modify or design an emergency response framework that could be deployed and accessed by those in need.

Despite variations in prevalence across contexts, this review revealed heightened occurrences of emotional abuse, economic abuse, and increased minor IPV. The effects of IPV on women in Tunisia, Morocco, Zimbabwe, and South Africa exhibited variability. The review underscores how societal structures contribute to women's vulnerability to IPV, and the COVID-19 pandemic exacerbates this issue. The psychosocial consequences of contracting COVID-19, coupled with limited protective measures against its spread, further affected the emotional and psychological stability of some women. These findings from the review highlight the limited available and utilized options during the early stages of the COVID-19 outbreak in Africa.

The article by Fawole *et al.* (2021) further revealed that women who experienced emotional and physical violence, along with their children, faced threats of homelessness from their partners or spouses. The responses from both state and non-state actors to reported cases of IPV failed to capture the peculiarities of each situation and the introduced measures.

This review affirms concerns raised by various stakeholders regarding the gender insensitivity of lockdown measures and how this approach could have

exacerbated the reported prevalence of IPV. Nonetheless, the situations and relationships contributing to women's vulnerability to IPV remained inadequately addressed. The included articles highlighted gaps in addressing these issues, intensifying the vulnerability of women who were already at risk (Fawole *et al*., 2021; Magezi & Manzanga, 2020; Mbulayi *et al*., 2021; Parry & Gordon, 2021; Tochie *et al*., 2020). Moreover, these articles shed light on policy gaps and the fragility of social structures and support systems, hindering retribution and rehabilitation efforts for victims and perpetrators of IPV (Sediri *et al*., 2020; Tochie *et al*., 2020).

The unpreparedness of existing systems to manage complex emergencies, such as the COVID-19 pandemic, is evident in the pervasive sense of hopelessness accompanying it. The consequences of COVID-19 intersect across various sectors, posing challenges for a meaningful and swift response within current frameworks. Parry & Gordon (2021) argued that addressing vulnerability to IPV among women requires improved living conditions, enhanced economic opportunities, and access to essential health-care services. This includes effective policing in vulnerable neighborhoods and enhanced responsiveness to IPV complaints and cases. They express skepticism about the readiness and likelihood of resolving existing structural deficits and economic challenges in South Africa, which consequently heighten vulnerability for women and other social categories. Understanding the concomitant impact of COVID-19 on IPV and the system's response is crucial when addressing the issue.

Factors contributing to relationship instability and underlying health conditions are sometimes beyond individual control and lifestyle choices. One of the included articles demonstrated how women with previous mental health challenges had more negative experiences during the lockdown than before. The evidence highlights a significant gap in mental health promotion, as women with such conditions were inadequately considered, leading to more complications being reported among women in Tunisia (Sediri *et al*., 2020). It is important to note that women in these contexts face increased vulnerability to IPV due to the structural dimensions of their contexts.

The response systems and measures outlined in the included literature reflect a lack of responsiveness to contextual predisposing factors, necessary support contexts of occurrence, alternative support networks, and the impact of the COVID-19 pandemic. The identified limitations and gaps in response measures, as described in the articles, underscore a failure to adequately protect the situations and experiences of the women most affected. The vulnerability of women to IPV during the lockdown periods received limited attention across contexts. The neglect of these women during critical moments can be attributed to multiple factors. Some of these factors include inherent limitations and inequities in existing structures, including policies that fall short of mitigating vulnerability in precarious spaces and complex emergencies. From all the articles included in this review, the measures implemented were not specifically targeted at addressing IPV, except in cases where reporting is encouraged but prosecution becomes challenging.

Response and support from non-state actors appeared to be lacking in the literature included. This observation is particularly notable in the context of Zimbabwe, where Magezi & Manzanga advocate for a more responsive approach to addressing IPV and its impact during the COVID-19 pandemic. Exploring such efforts, especially considering that churches, prominent non-state actors, possess a grassroots presence and a broad membership base that is vulnerable and in need of protection and rehabilitation from IPV (Magezi & Manzanga, 2020).

This review has some limitations that merit consideration. The literature primarily focuses on explaining and assessing the impact of COVID-19, the implemented measures, and their respective contexts. Some of the included articles utilized cross-sectional designs with data collected retrospectively through social media, capturing the pre-COVID IPV experience. Depending on the timing of data collection, this approach may have resulted in either an overreporting or underreporting of post-COVID-19 experiences. The review's identification of decreased IPV in the early phase of the pandemic underscores the necessity for a more in-depth interrogation of the findings. It is important to note that research design quality was not specifically addressed in this review. In addition, there was a deliberate focus on restricting the inclusion of articles to those written exclusively in English. This criterion implies the inclusion of only articles and documents composed in the English language. Despite this limitation, the thorough search conducted yielded a total of 14 relevant articles and documents. The review also addressed certain ambiguities, including a discussion of the questions that guided this review.

5. Conclusion

Before the COVID-19 pandemic, cases of IPV were prevalent, yet the preparations and preventive measures were insensitive to gender inequalities within intimate relationships. Although there were reports of IPV, the responses from both state and non-state actors were notably limited. The level of responsiveness exhibited by these actors toward the gendered consequences of the COVID-19 pandemic underscores the potential need for

multisectoral, gender-transformative interventions across various social institutions and networks of relationships within the social settings outlined in the reviewed literature. Achieving meaningful effects through such interventions will necessitate baseline evidence and the active participation of key players.

Acknowledgments

The paper was presented at the Conference on Population and Reproductive Health Dynamics Under COVID-19 in Sub-Saharan Africa that was hosted by the University of the Witwatersrand, South Africa through its Demography and Population Studies Program. The Conference was supported under the auspices of the Science Granting Councils Initiative in Sub-Saharan Africa (SGCI) and administered by South Africa's National Research Foundation in collaboration with Canada's International Development Research Center (IDRC), the Swedish International Development Cooperation Agency (Sida), South Africa's Department of Science and Innovation (DSI), the Fons de Recherche due Quebec (FRQ), the United Kingdom's Department of International Development (DFID), the United Kingdom Research and Innovation (UKRI) through the Newton Fund.

Funding

None.

Conflict of Interest

The authors declare no conflict of interest.

Author contributions

Conceptualization: Ojo M. Agunbiade, Akanni I. Akinyemi, Jacob W. Mobolaji, John O. Abe, Taofeek K. Aliyu, Olutoyin O. Ikuteyijo, Oladimeji R. Ogunoye, Lanre O. Ikuteyijo
Writing – original draft: All authors
Writing – review & editing: All authors

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

In the interest of transparency and to facilitate further research, the data underpinning the findings of our scoping review are openly available. This dataset includes our search strategies, selection criteria, and a comprehensive list of the studies reviewed. In addition, we provide detailed data extraction tables and any supplementary analyses conducted. Interested readers and researchers can access and utilize the data through the research team members.

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Appendix

Search Terms and Databases			
Set	Search	Databases	Results
S4	(ti(Corona*) OR ab(Corona*) OR mainsubject(Covid*)) AND (ti(("Intimate Partner Violence" OR "Intimate Partner Violence and Abuse" OR "Intimate Partner Homicide" OR "Domestic Violence" OR "Domestic Abuse" OR "Courtship Violence" OR "Abusive Relationship" OR IPV* OR Partner Violence, Intimate OR Violence, Intimate Partner OR "Intimate Partner Abuse" OR Abuse, Intimate Partner OR "Dating Violence" OR Violence, Dating OR "Spouse Abuse" OR "Spousal Violence" OR "Partner Abuse" OR "Lesbian Partner Abuse" OR "Bisexual Partner Abuse" OR "Abused Gay Men")) OR ab(("Intimate Partner Violence" OR "Intimate Partner Violence and Abuse" OR "Intimate Partner Homicide" OR "Domestic Violence" OR "Domestic Abuse" OR "Courtship Violence" OR "Abusive Relationship" OR IPV* OR Partner Violence, Intimate OR Violence, Intimate Partner OR "Intimate Partner Abuse" OR Abuse, Intimate Partner OR "Dating Violence" OR Violence, Dating OR "Spouse Abuse" OR "Spousal Violence" OR "Partner Abuse" OR "Lesbian Partner Abuse" OR "Bisexual Partner Abuse" OR "Abused Gay Men")) OR mainsubject(("Intimate Partner Violence" OR "Intimate Partner Violence and Abuse" OR "Intimate Partner Homicide" OR "Domestic Violence" OR "Domestic Abuse" OR "Courtship Violence" OR "Abusive Relationship" OR IPV* OR Partner Violence, Intimate OR Violence, Intimate Partner OR "Intimate Partner Abuse" OR Abuse, Intimate Partner OR "Dating Violence" OR Violence, Dating OR "Spouse Abuse" OR "Spousal Violence" OR "Partner Abuse" OR "Lesbian Partner Abuse" OR "Bisexual Partner Abuse" OR "Abused Gay Men")))Limits applied. S2 AND S3	5 databases	52
S3	(ti(Covid*) OR ab(Covid*) OR mainsubject(Covid*)) AND (ti((“Intimate Partner Violence” OR “Intimate Partner Violence and Abuse” OR “Intimate Partner Homicide” OR “Domestic Violence” OR “Domestic Abuse” OR “Courtship Violence” OR “Abusive Relationship” OR IPV* OR Partner Violence, Intimate OR Violence, Intimate Partner OR “Intimate Partner Abuse” OR Abuse, Intimate Partner OR “Dating Violence” OR Violence, Dating OR “Spouse Abuse” OR “Spousal Violence” OR “Partner Abuse” OR “Lesbian Partner Abuse” OR “Bisexual Partner Abuse” OR “Abused Gay Men”)) OR ab((“Intimate Partner Violence” OR “Intimate Partner Violence and Abuse” OR “Intimate Partner Homicide” OR “Domestic Violence” OR “Domestic Abuse” OR “Courtship Violence” OR “Abusive Relationship” OR IPV* OR Partner Violence, Intimate OR Violence, Intimate Partner OR “Intimate Partner Abuse” OR Abuse, Intimate Partner OR “Dating Violence” OR Violence, Dating OR “Spouse Abuse” OR “Spousal Violence” OR “Partner Abuse” OR “Lesbian Partner Abuse” OR “Bisexual Partner Abuse” OR “Abused Gay Men”)) OR mainsubject((“Intimate Partner Violence” OR “Intimate Partner Violence and Abuse” OR “Intimate Partner Homicide” OR “Domestic Violence” OR “Domestic Abuse” OR “Courtship Violence” OR “Abusive Relationship” OR IPV* OR Partner Violence, Intimate OR Violence, Intimate Partner OR “Intimate Partner Abuse” OR Abuse, Intimate Partner OR “Dating Violence” OR Violence, Dating OR “Spouse Abuse” OR “Spousal	5 databases	14

(Cont'd...)

(Continued)

Search Terms and Databases			
Set	**Search**	**Databases**	**Results**
	Violence" OR "Partner Abuse" OR "Lesbian Partner Abuse" OR "Bisexual Partner Abuse" OR "Abused Gay Men")))Limits applied. S1 AND S3		
S2	ti(("Intimate Partner Violence" OR "Intimate Partner Violence and Abuse" OR "Intimate Partner Homicide" OR "Domestic Violence" OR "Domestic Abuse" OR "Courtship Violence" OR "Abusive Relationship" OR IPV* OR Partner Violence, Intimate OR Violence, Intimate Partner OR "Intimate Partner Abuse" OR Abuse, Intimate Partner OR "Dating Violence" OR Violence, Dating OR "Spouse Abuse" OR "Spousal Violence" OR "Partner Abuse" OR "Lesbian Partner Abuse" OR "Bisexual Partner Abuse" OR "Abused Gay Men")) OR ab(("Intimate Partner Violence" OR "Intimate Partner Violence and Abuse" OR "Intimate Partner Homicide" OR "Domestic Violence" OR "Domestic Abuse" OR "Courtship Violence" OR "Abusive Relationship" OR IPV* OR Partner Violence, Intimate OR Violence, Intimate Partner OR "Intimate Partner Abuse" OR Abuse, Intimate Partner OR "Dating Violence" OR Violence, Dating OR "Spouse Abuse" OR "Spousal Violence" OR "Partner Abuse" OR "Lesbian Partner Abuse" OR "Bisexual Partner Abuse" OR "Abused Gay Men")) OR mainsubject(("Intimate Partner Violence" OR "Intimate Partner Violence and Abuse" OR "Intimate Partner Homicide" OR "Domestic Violence" OR "Domestic Abuse" OR "Courtship Violence" OR "Abusive Relationship" OR IPV* OR Partner Violence, Intimate OR Violence, Intimate Partner OR "Intimate Partner Abuse" OR Abuse, Intimate Partner OR "Dating Violence" OR Violence, Dating OR "Spouse Abuse" OR "Spousal Violence" OR "Partner Abuse" OR "Lesbian Partner Abuse" OR "Bisexual Partner Abuse" OR "Abused Gay Men"))Limits. Applied	5 databases	24,602
S1	ti(Covid*) OR ab (Covid*) OR main subject(Covid*)Limits applied	5 databases	54,367

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International Journal of Population Studies

RESEARCH ARTICLE

COVID-19 and access to sexual and reproductive health services: Perspectives from adolescents and women in rural areas of Enugu State, Nigeria

Ugochukwu Simeon Asogwa[1]*, Nneka Ifeoma Okafor[2], and Chukwuedozie K. Ajaero[3,4]

[1]Department of Sociology and Anthropology, University of Nigeria, Nsukka, Enugu, Nigeria

[2]UNESCO Multisectoral Regional Office, Abuja, Nigeria

[3]Department of Geography, University of Nigeria, Nsukka, Enugu, Nigeria

[4]Demography and Population Studies Programme, University of the Witwatersrand, Johannesburg, South Africa

(This article belongs to *Special Issue: Population and Reproductive Health Dynamics under Covid-19 in Sub-Saharan Africa*)

***Corresponding author:**
Ugochukwu Simeon Asogwa
(Ugochukwu.asogwa@unn.edu.ng)

Citation: Asogwa, U.S., Okafor, N.I. & Ajaero, C.K. (2024). COVID-19 and access to sexual and reproductive health services: Perspectives from adolescents and women in rural areas of Enugu State, Nigeria. *International Journal of Population Studies*, 10(1):58-67. https://doi.org/10.36922/ijps.2354

Received: December 19, 2022

Accepted: December 1, 2023

Published Online: December 26, 2023

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Abstract

The coronavirus disease 2019 (COVID-19) pandemic has a far-reaching effect on human activities and relationships, especially on sexual and reproductive health (SRH). The pandemic exposed the unpreparedness of the governments of many nations to respond to the longstanding health needs of the people. Adopting a qualitative research design, this study examined access to quality and affordable SRH in Enugu stat, Nigeria, during COVID-19 pandemic. Our findings revealed that SRH products were not easily accessible due to the prolonged lockdowns attributed to the pandemic. Adolescents and women were discouraged from procuring and accessing SRH services due to artificially induced high prices of the products and the added feeling of nosocomephobia which kept people away from medical centers. More effort is needed by government and non-governmental organizations to strengthen access to SRH products in Nigeria, especially during pandemic.

Keywords: COVID-19; Reproductive health; Access; Availability; Adolescent

1. Introduction

The coronavirus disease 2019 (COVID-19) pandemic has transformed human activities and relationships with significant effects on sexual and reproductive health (SRH). Following the declaration of pandemic in March 2020, the delivery of frontline service capacity was almost on the verge of disruption (Church *et al.*, 2020). As the viral infection cases increased at an alarming rate across the globe, the fallout has exposed the unpreparedness of governments, health systems, and social safety networks to adequately respond to the longstanding and emerging needs of people worldwide, especially relating to the health and rights of women and adolescents (International Women's Health coalition [IWHC], 2020). The tight restrictions on movement imposed to halt the spread of the virus in many countries had tremendous implications for global

health and economy. In Nigeria, the government imposed a number of measures such as ban on inter-state travel to curtail the spread of the virus. Evidence has shown, however, that the global response to the pandemic has mainly focused on containing the virus as well as treating the infected individuals (International Monetary Fund, 2021). This demonstrates lapses in the continued provision of SRHs care in many countries.

SRH is a state of physical, emotional, mental, and social well-being in relation to the reproductive system and processes and not merely the absence of disease or infirmity (World Health Organization & the Pan American Health Organization, 2000). Being in an SRH state ensures that people are able to have a fulfilling and safe sex life, and access to safe, affordable, and acceptable method of family planning and appropriate health services for safe and smooth pregnancy and childbirth. As a critical aspect of human well-being, SRH has attracted significant attention of many governments and non-governmental organizations over the years. However, research shows that SRH problems are most prominent in developing countries, especially among adolescents in sub-Saharan Africa where child marriage, adolescent childbearing, human immunodeficiency virus (HIV) transmission, and poor exposure to modern contraceptives are prevailing (Melesse *et al.*, 2020).

Before COVID-19 outbreak, access to quality reproductive health services had already been a big challenge especially in less developed countries (Ninsiima *et al.*, 2021). Notwithstanding the global promotion of availability of SRH services, these services are still in short supply in most rural areas (Denno *et al.*, 2015). This challenge is disturbing, especially for women and adolescent. In sub-Saharan Africa, the rate of increase in the SRH problems, especially among young people in the region, is alarming (Asante, 2013). The study shows that adolescents face numerous substantial SRH challenges such as "limited access to youth-friendly services including information on growth, unsafe abortion, gender-based violence, sexuality, and family planning" in sub-Saharan Africa (Ninsiima *et al.*, 2021, p2). This has resulted in risky sexual behavior with subsequent increase in cases of sexually transmitted infections (STI) and HIV prevalence among young people, early pregnancy, and delivery complications, leading to high mortality (Sogarwal *et al.*, 2013). This underscores the need for increased attention toward SRH as there is the likelihood that the outbreak of COVID-19 will exacerbate the already poor condition of the SRH in the region.

Modern-day contraceptive use has been significantly recognized to be one of the most effective ways of promoting reproductive health and stimulating socioeconomic development globally (Adedini *et al.*, 2015). This has led to massive advocate for the need to improve uptake of modern contraceptive methods in the last few decades as a way of promoting reproductive rights and gender equality (Fagbamigbe, & Ojebuyi, 2017). However, with the outbreak of COVID-19, access to contraceptives could be limited by the restrictive measures put in place to curb the spread of the virus. Containment to prevent the spread of disease is usually the first approach utilized by the government in response to the escalating cases. In the case where the disease has spread through the community, as with COVID-19, mitigation strategies are deployed to reduce transmission (Walensky & Del Rio, 2020). Such mitigation strategies include but are not limited to social distancing measures, closure of workplaces and community facilities, and travel restrictions. With these mitigation efforts in place, access to contraception and other SRH services such as maternal and newborn care services, prevention and treatment of HIV or other STIs, abortion-related cases, etc. could be affected as state-level lockdown measures are put in place to curb the transmission process.

The problems of SRH are yet to receive sufficient attention particularly in the developing countries like Nigeria. SRH issues in Nigeria are complicated and this is worse among the young people (Silva, 2015). UNFPA (2015) reports that one in 20 adolescents contracts a STI each year in Nigeria, and that people under the age of 25 years account for half of all cases of HIV infection. This might be a result of early sexual engagement and early marriage, which increase adolescents' HIV vulnerability (Odo *et al.*, 2018). This sort of sexual behavior may have implications in a pandemic of this nature. Teenage and unwanted pregnancies are a common factor in Nigeria. Abortion is clandestinely carried out in Nigeria too. Even though, the abortion law and policy in Nigeria proscribes access to legal abortion services, approximately 1.25 million commit induced abortion yearly by unskilled health-care providers (Ipas, 2017). This portends significant enough danger for women reproductive health and well-being as lockdown measures may further limit access to post-abortion care services needed in cases of complications. On the basis of these perceived problems related to SRH in Nigeria, this study assessed the availability and accessibility of SRH services amidst COVID-19 lockdown in rural area of Enugu State, Nigeria. As Marrone *et al.* (2015) had reported, a number of sociodemographic factors influence both geographical and financial accessibility to SRH services by the adolescents in low- and medium-income countries. The need for availability and accessibility of quality and affordable SRHS is paramount as it ensures SRH well-being (Enwereji, & Enwereji, 2013).

2. Data and methods

2.1. Study design and area

This study adopted qualitative research design. Esterberg (2002) noted that qualitative methods of study are well suited to identifying attitudes of subjects and the explanations for their behaviors. The study was conducted in Nsukka area of Nigeria. The area is situated in Enugu state, which consists of an Igbo society. Nsukka was chosen for the study partly because of the rural nature of most of the villages that make up this area where a substantial number of the population are still illiterate and on the other hand, because this city boasts a youthful population. The 2006 census revealed that Nsukka has a population of 309,633 persons, with an annual growth rate of 2.3%. Adopting the style of Jemisenia *et al.* (2021), verbal accord was obtained from each respondent after having been informed of the study objectives, risks, benefits, and steps taken to ensure confidentiality.

2.2. Sample

The population of the study comprised of 40 participants of both genders; ten of which are patent medicine dealers, who are the "persons without formal pharmacy training selling orthodox pharmaceutical products on a retail basis for profit" (Brieger *et al.*, 2004). The inclusion of patent medicine dealers in the study was informed by the fact that most people in the rural areas patronize them a lot and in the outbreak of COVID-19, they could be the most visited medical service. In addition, in most rural areas, SRH products are commonly accessed through these patent medical stores. Their experiences could as well be insightful.

Respondents were selected using a purposive sampling procedure, through which prospective participants were identified and approached for inclusion. Participants who showed interest were screened for eligibility and were selected as part of the study sample. The study population constituted 29 females and 11 males. When the significant number of respondents was not met, we resorted to snowball sampling technique, through which the already selected respondents (especially patent medicine dealers) were asked to refer us to other members they felt might show interest in this study. Consequently, new respondents were identified and selected. The study population was limited to 40 participants owing to the unwillingness of some people, despite meeting the inclusion criteria, to partake in the study as they were not willing disclose their sexual and reproductive life.

2.3. Data collection

Individual in-depth interviews (IDI) were conducted using structured interview guide. IDI was used instead of other qualitative approaches such focused group discussion due to social distancing measures and restriction on public gathering. Verbal consent was obtained from the interviewees before the commencement of the IDI sessions. The study was conducted between October and November 2020. An interview guide was prepared with emphasis on specific themes. The interview guide allowed for sequential probes to pursue leads provided by the respondents. The IDI guide covered issues on respondents' experiences with access to SRH products and care amid COVID-19 pandemic, such as the accessibility and affordability of these SRH products and the rate of general uptake and utilization of these products and services.

The interview was flexible and interactive in nature. Respondents were encouraged to respond to questions through narration. This approach has been described by Pierce (2003) as capable of providing insights into the connection between life experiences with one's social environment. Each interview session took place at venue agreed by each respondent. Interviews lasted between 45 and 60 min. After each interview, interview record of each participant was labeled accordingly, (e.g., PP1, gender, and age) to ensure easy identification during data management and analysis processes. The interviews were digitally audio-recorded and later transcribed verbatim. A note-taker attended the interviews to take notes.

2.4. Analytic strategy

The data were analyzed using Braun & Clarke's (2006) model of thematic analysis. Themes were identified from reading and rereading the transcripts, and noting any similarities and differences between and within participants' accounts. Qualitative computer package (Nvivo 11, QSR) was used to organize and assist in the task of first-level analysis. Responses were further categorized within relevant themes.

3. Results

The basic demographic characteristics of the respondents are listed in **Table 1**. Analysis of the responses of the participants resulted in three broad themes: access and availability of SRH services, decline in patronage of patent medical stores, and rise in cases of unintended pregnancy.

3.1. Access to and availability of SRH products and services

Analysis of the results showed that SRH products were not easily accessible due to closure of markets and most street vendors in compliance with the lockdown measures. Market closure affected many people in the rural areas; many people preferred accessing SRH products from the markets where

Table 1. Respondents' demographic characteristics

Characteristics	Frequency	%
Gender		
Male	11	27.5
Female	29	72.5
Age		
18–25	12	30.0
26–33	19	47.5
34–40	9	22.5
Occupation		
Civil servant	2	5.0
Trader	17	42.5
Artisan	21	52.5
Level of education		
Primary education	11	27.5
Secondary education	21	52.5
Tertiary education	8	20.0
Marital status		
Married	13	32.5
Single	27	67.5
Religion		
Christianity	24	60.0
African traditional religion	12	30.0
Others	4	10.0
Area of residence		
Nsukka	40	100

their identity is lesser known than doing so within their neighborhood where they are recognizable. In few of the places where some of these products were available, youths and women were equally put off by the exorbitantly high prices of these products. A respondent stated that:

> "The lockdown affected my sexual life seriously. It was difficult for me to get condoms because I never liked buying condom or any contraceptive device from my area for fear of stigmatization on my part and that of my partner. I like going to the market where I have no business with anybody. I have lived here all my life and I know what I am talking about. Closure of the markets was a serious blow to my sexual life." (PP5, male, 27 years old)

The above narrative corroborates that of another participant who disclosed that experience has taught her a lesson about buying reproductive care products from within her neighborhood and this experience influenced her decisions and behaviors during the lockdown. According to her:

> "I once went into a nearby chemist shop to purchase sanitary pad during one of my monthly menstrual cycles. After about 5 days that I went back there to get a balm, the young man started to ask me if the menses has stopped. I felt so ashamed and embarrassed that I swore not to get any reproductive care product from within my neighborhood no matter the circumstances. That is why the lockdown which resulted in the closure of market made me so devastated that I had to sometimes resort to the use of tissue paper during my menses instead of patronizing them." (PP13, female, 30 years old)

The implication of the above comments by the participants is that familiar environment influences the uptake of SRH. As noted by the participants, shame and fear of stigmatization constituted a barrier to their access to SRH care within their immediate environment. This perceived behavior could increase risky health practices among these people as lockdown meant that human and vehicular movement was restricted. The closure of market was a serious challenge to access to SRH products because the setup of markets in this locality is that once it is closed for human entrance, no section of the markets, including medical stores, can be accessed. This signifies that COVID-19 had impact on the access and utilization of SRH services in the area. In addition, many of the participants intimated that SRH products were highly expensive during the lockdown. Their expression was that many patent medicine dealers within their neighborhood capitalized on the lockdown to charge unnecessarily high prices for SRH product and services. For instance, a participant stated:

> "As the lockdown persisted, my boyfriend stopped using condom on me. He complained that the price has become rather too high and he cannot be buying it every now and then as he has other things to take care of. He asked that we should start practicing withdrawal method. I was not comfortable with the idea because I was scared of pregnancy and sexually transmitted diseases (STDs). I had to accept his proposal anyway because I had no option and I also didn't know when the lockdown will be over." (PP7, female, 25 years old)

In the same way, a male participant expressed his shock at finding out the price of contraceptives (condoms) at the chemist shops. He expressed that price made him resort to condomless sex. He explained that:

> "I used to buy one particular condom (name withheld) at the cost of 150 naira (0.36 USD). But during the lockdown, it was sold between 300 naira and 350 naira (0.73 USD) and (0.85 USD) at chemist shops around here. I could not afford to use condom all the time considering how often I make use of it. I was mainly doing the "withdrawal thing" even though I am scared at the moment as I am yet to go for a test since then." (PP20, male, 33 years old)

Implicit in the above narratives is that high cost of contraceptives heightened the risk for STDs among the

participants, let alone the rural dwellers as they may find themselves in similar conditions. They had to resort to unprotected sexual intercourse — common among youths who are not married — which carries an imminent health risk, as deprivation of sex protection catalyzes the transmission of STDs and other related infections in a community. The exorbitant prices of contraceptives had driven many to adopt the withdrawal method (i.e., pulling out before ejaculation during sexual intercourse), which, if proficiently mastered, is wrongfully thought to deliver the same contraceptive and protective effect as condom. However, condom discontinuation could lead to increased number of teenage pregnancy and STDs in the rural areas. Furthermore, some of the participants were of the view that in some occasions, SRH products were not readily available at the street vendors that were opened because of supply shortage caused by the disrupted supply chain of the products during pandemic lockdown. A participant noted that she had to use soft clothing material in place of sanitary pad during menses because "pads were not always available here and it's costly at times" (PP2, female, 21 years old). This is an unhygienic practice that could attract diseases and infections. A worrying reality is that many people were practicing as such because this particular respondent also confirmed that some of her friends engaged in such practice too.

Result also indicates that there was a reduction in the number of women seeking antenatal and postnatal care. Two of the participants who were pregnant opined that many women in their neighborhood, including themselves, were scared of seeking care from hospitals or other health facilities because they were afraid of contracting COVID-19 while seeking medical consultation there. One of the women stated that: "I was meant to go for antenatal checks with my friend the other day but we did not go again because of fear of COVID" (PP38, female, 29 years old). Corroborating this, another woman stated that "the way people talk about this COVID-19 made me to avoid hospital. I had this feeling that once I step into any hospital, I will be infected" (PP11, female, 35 years old). The implication is that the fear of contracting COVID-19 significantly reduced women's intention to seek SRH care. This could lead to unassisted deliveries, which are dangerous, and could increase the likelihood of maternal or infant mortality as well as birth-related health complications.

3.2. COVID-19 phobia and the decline in patronage of patent medical stores

Most of the patent medicine dealers intimated that they witnessed low patronages due to the COVID-19 restriction protocols and the perception that medical stores were viewed as conduits for COVID-19 transmission. There is no doubt that the disease created a lot of fear and anxiety among Nigerians, considering that the confirmed cases in Nigeria and the fatality rates reported in America and some European countries were always maintained at high levels. The narratives of the patent medicine dealers suggest that the fear induced abstinence from medical facilities among the rural people as they thought they would contract the virus there. The implication, therefore, is that many people never used SRH products or they resorted to unhygienic means for care. This will invariably increase the number of people who resort to self-care (the practice of an individual or family encouraging and sustaining health without the support of a qualified healthcare provider) as it is known that dearth of recognized healthcare prompts many women to self-administer SRH care. A patent medicine dealer explained that:

> "Ordinarily, many women and men come here to buy sanitary pads, condoms, and even to treat STDs. Some woman even come here for advice and directions on antenatal issues. But with the outbreak of COVID-19 and the subsequent lockdown, everything changed. We noticed a drastic reduction in the number of persons that come for these aforementioned products and services." (PP35, male, 35 years old, patent medicine dealer)

Similarly, a female patent medicine dealer was also of the opinion that the fear of contracting COVID-19 had kept many who used to patronize her store away because few that visited her shop cited such fear as the prime reason.

> "Many people were scared of the virus and I know this was the reason for the reduction in the number of people who come to request for condoms, pads, and for other treatment. Although some people complained that the prices of things were high. The lockdown also affected those who usually come from far places to access SRH services and products here instead of where they stay." (PP14, female, 38 years old, patent medicine dealer)

The above narratives show that some people who needed SRH care could not access it due to lockdown restriction and fear. The danger of this kind of scenario is that it will exacerbate the problem of SRH in the area as many people will adopt unhealthy practices, thereby multiplying the number of persons adopting self-care and self-medication, which increase health risks for the practicing individuals and the population as a whole. As observed earlier, many respondents reported that they have already adopted withdrawal method instead of using condom. Engaging in condomless sex is an easy way of contracting and spreading HIV and other STDs. Due to lockdown and limited access to SHR care, many people had resorted to self-medication especially those who need to treat STDs and other related case. Self-medication may negatively impact the health of individuals due to the toxicity arising from the inappropriate use of medicine. This

is particularly disturbing as Nigerians are notorious in the act of self-medication (Oshikoya *et al.*, 2009).

Lack of information and misinformation can be particularly terrible and dangerous, especially during pandemics like COVID-19. Many of the respondents surveyed in this study had the impression that visiting health facilities amidst COVID-19 outbreak is an automatic means of contracting the virus. This misconception is caused by the lack of information and misinformation regarding the isolation and treatment centers where the symptomatic individuals are treated. In addition, observing the COVID-19 mitigation protocols helps minimize the risk of contracting the disease. This has, however, testified to the power of information and how dangerous it could become when inappropriately consumed. Some of the respondents disclosed the circumstances that informed their decisions to avoid medical establishments. A respondent stated that:

> "The contagious nature of this virus created fear in our family to the extent that we hardly come out of the house. One of my siblings told us that he saw a news report online where it was stated that people are contracting the virus through contact with medical staff. From that point onwards, I decided that nothing will take me to hospital. Even the nearby chemist shops here where I used to buy some drugs and other stuff were not visited by member of our family." (PP1, female, 24 years old)

In this same way, a respondent narrated her encounter with a close neighbor that impacted her decision to avoid visiting health facilities. According to her:

> "One of my close neighbors came asking for paracetamol from us. I told her that the one we had had finished but she could easily get it from Emeka's shop (a patent medical store) down the road. She quickly told me that one could contract COVID by visiting any of those places. From that day, I became so scared that I decided not visit any of those places around. Even when I got ill, I will prepare local herbs to take care of myself." (PP31, female, 27 years old)

Implicit in the above narrative is that the COVID-19 pandemic worsened access to SRH services because women who fear contracting the coronavirus are reluctant to seek care. The disruption in SRH care will certainly lead to a torrent of additional health problems, including increases in the number of unintended pregnancies, maternal deaths, and STDs as many people will undoubtedly resort to risky health practices.

3.3. Sexuality and the rise in cases of unintended pregnancy

Analysis of the responses of the respondents points to a likely increase in teenage and unintended pregnancy, which in part is a consequence of the lockdown. Before the COVID-19 outbreak, studies (*e.g.*, Lamina, 2015) reported a prevalence rate of unintended pregnancy of 26.6% and abortion prevalence of 21.7% in Nigeria. The occurrence of unintended pregnancy points to the unmet need for contraception in Nigeria. COVID-19, which is circuitously associated with increased time dedicated to sexual intercourse among couples and partners, could precipitate a sharp rise in the number of cases of unintended pregnancy, exceeding the level before the pandemic. Closely connected to this also is that access and utilization of contraceptive services and supplies are being affected by restrictions and lockdowns. The lack of access to contraceptive during the lockdown was further compounded by the government decision to shift attention to the prevention and control of COVID-19. These prevention and control strategies for COVID-19 will probably lead to increase in the number of unintended pregnancies, unsafe abortions, and death of the women and girls as most teenagers would want to terminate their pregnancies out of shame. For instance, a participant revealed that her own sister became pregnant as a result of the lockdown. According to her:

> "My younger sister is currently pregnant for the boyfriend as a result of the lockdown. They were making out every now and then. The disturbing thing is that the guy in question has absconded, leaving her alone to take care of the pregnancy. I am worried because she hardly talks to anyone or come out these days. She might do something funny." (PP29, male, 24 years old)

Inherent in the expression is that the young girl may be ashamed to reveal her pregnancy due to fear of stigmatization and public scrutiny. This condition could lead her into contemplating abortion. The above scenario may well be common amidst the lockdown as it provided opportunity for couples and partners (heterosexual friends in close relationship) who live together or close to each other to have more time for sexual intercourse. This may result in a number of SRH crises, such as increase in STDs, pregnancy, unsafe abortion, and adoption of other forms of risky health practices. A participant intimated that "there is currently a case of incest that have resulted [in] pregnancy in this compound. The young girl told me that she wishes to die" (PP33, female, 37 years old). Incest is a taboo in most societies and the fact that this incidence occurred amidst the lockdown is particularly worrisome as there could be several more of such cases. Furthermore, a woman stated that she was pregnant even though she never wanted it. According to her, "I am now pregnant for my fifth child which I never wanted. I was having sex with my husband almost all the time because we weren't going to

our shop as the market was closed" (PP6, female, 35 years old). Even among couples, cases of unintended pregnancy still occurred. This is another indication that more time were dedicated by the couples to sexual intercourse.

Furthermore, there were also reported cases of abortion by the participants. Abortion which is outlawed in Nigeria (except in cases of rape or where a pregnancy threatens the mother's life) is still clandestinely carried out in Nigeria. A significant number of abortions in the country are performed outside the formal health system. This usually involves the use of unsafe methods which include ingesting dangerous chemicals or high doses of pharmaceuticals, or having an unqualified worker perform the abortion. These methods are high-risk and tremendously dangerous. Amidst the lockdown, the possibility of increase in unsafe abortion becomes extremely high. A patent medicine dealer observed that "despite low patronage during this lockdown, I see up to 3 – 4 four girls in <2 weeks who come to ask for abortion pills" (PP30, male, 34 years old, patent medicine dealer). This indicates that unsafe abortion showed signs of increasing and treatment of complications resulting from the abortion process is not properly administered and regulated during the pandemic, signaling the deterioration in this regard which is superimposed on the already limited access to abortion services in Nigeria prior to the pandemic. Taken together, COVID-19 pandemic has impacted the access to SRH care.

4. Discussion

Availability and accessibility of SRH products and services is essential to its persistent utilization. This study aimed at examining access to SRH services and products amidst COVID-19 lockdown in rural areas of Enugu State, Nigeria. Qualitative method was used to elicit adequate SRH information from the respondents. Our findings showed that SRH products were hardly available because markets and street vendors were closed in compliance with the lockdown measures, which limited access to these products and services. This finding is consistent with that of IWHC (2020), which found that access to SRH has been reduced in the United States due to COVID-19 as many young women who obtain contraceptive products and services on college campuses failed to receive such products due to the closure of schools. The immediate implication of this is that SRH crisis will be worsened. Therefore, there will likely be an increase in the number of people who adopt high-risk health practices, such as self-medication, condomless sex among unmarried partners, and unassisted delivery. This becomes even more worrisome as an increasing number of adolescents and women in most rural villages exhibit non-chalant attitude toward the uptake of SRH services and products. Denno *et al.* (2015) have observed that despite the global promotion of availability of SRH services, people from most rural areas are still reluctant to take up SRH services and products.

Furthermore, it was found that access to SRH products and services was inadequate due to high prices driven by the limited availability of the products and services. This poor availability and subsequent high prices, as reported by the respondents, spurred on the adoption of unhygienic and risky health practices which created more problems against the backdrop of the already poor SRH utilization in the area. Aly *et al.* (2020) had reported that one of the primary barriers to access is the supply shortage caused by supply chain disruption. Shortage in supply was a global challenge which was influenced by a number of factors. For instance, India put a limit on the export of some pharmaceutical ingredients and medications, including progesterone, which is used in the contraceptive pill and intrauterine devices (Aly *et al.*, 2020). This put the global supply and distribution of SRH products at risk. Even Malaysia's Karex Bhd, the world's largest condom manufacturer, was forced to close in March 2020, thus limiting the export of condoms (Ming, 2020). In Nigeria, Kanabe (2021) documented that DKT, one of the leading suppliers of contraceptives in Nigeria reported that they did not have much challenges in supplying contraceptives as government had given them waiver, but their products could not be widely sold as most shops were closed. In addition, the company reported that there were disruptions at the port that prevented them from clearing their container for up to 3 months. This observed shortage in supply of these products will most likely exacerbate the SRH crisis in the community. This will further derail the effort at ensuring global access to SRH.

In Nigeria, the private sector plays a key role in health-care delivery. They provide health-care services to a substantial proportion of the population (Oyeyemi *et al.*, 2020). This is where the patent medicine dealers play their part as they belong to under the umbrella of patent and proprietary medicine vendors (PPMVs). They are the mainstay of the rural health sector. The 2018 Nigeria Demographic and Health Survey (NDHS) showed that this sector provided modern contraceptives for 41% of users and was the place of institutional delivery for 33% of women (NDHS, 2018). Our study found that there was a decline in the patronage of these patent medical stores during the COVID-19 lockdown in the area because people avoided medical establishment for fear of contracting the virus. These establishments and other major medical establishment were seen as conduit for the virus. Our findings contradict that of IntegatE Project (a 4-year initiative [2017 – 2021] funded by the Bill & Melinda Gates Foundation and MSD for Mothers that seeks to increase access to contraceptive methods by

involving the private sector like PPMVs in family planning service delivery in Lagos and Kaduna states), which found that family planning clients in Lagos and Kaduna states were minimally affected by COVID-19 pandemic as PPMVs continued to serve as a source of family planning. However, their study was not based in rural areas and was conducted online with quantitative data as the major source of their analysis. It therefore lacked on-the-ground assessment of the realities in the rural areas. However, our finding corroborates that of Cone & Lamarche (2021), who found that in Mali, many people in the rural areas did not feel comfortable seeking care from hospitals or other health facilities due to fear that they could be infected there. This fear significantly reduced peoples' intention to seek SRH care. It could therefore further aggravate SRH crisis in the rural areas as not many rural dwellers are proficient at telemedicine/or online drug ordering. Even those who may attempt to do so (ordering drugs online) will be frowned upon by the ban on interstate movement and restriction on human and vehicular movement, which affected the online service providers and their delivery agents.

Furthermore, findings showed that COVID-19 indirectly impacted the number of unintended pregnancies as couples and partners have more time for sexual intercourse due to the lockdown. Restrictions and staying at home reduced the access and availability of SRH services, adversely affecting family planning and resulting in an increase in unintended pregnancy. This finding concords with those of Xue *et al.* (2020) and Boserup *et al.* (2020), who found that the prevention and control strategies for COVID-19 indirectly increase the risk of sexual violence, which in turn increase, the magnitude of unintended pregnancy. These could indirectly lead to increased unsafe abortions and mortality of women. Kassahun *et al.* (2019) noted that unintended pregnancy is a global public health issue and one of the most serious reproductive and sexual health issues, putting women in reproductive age groups at a higher risk of mortality and morbidity. Out of shame, many teenagers would choose to terminate their pregnancies without professional assistance. This becomes worrisome as the rate of assisted abortion had been low due to the ban on abortion in the country. Unassisted pregnancy would therefore increase the likelihood of maternal or infant mortality and birth-related health complications. This calls for urgent attention as evidence suggests that unintended pregnancy increases the chances of unsafe abortion.

The above exposition is a demonstration that the pandemic has significantly impacted SRH in a negative manner. This is particularly not good as it scuttled the effort at ensuring availability and accessibility of SRH services and products. Many people will be forced to resort to dangerous health practices, such as self-medication and care, unprotected sexual intercourse, use of cloths and tissue paper as substitute for sanitary pads, and unsafe abortion. This will likely increase the cases of HIV/AIDS and other STDs, pre/post-natal complications, and maternal mortality in the population.

4.1. Policy implications

Based on the findings of this research, we advocate that in pandemic of this nature, government and non-governmental organizations should double their efforts in ensuring that SRH services are available and accessible, especially in the rural areas. This is crucial as limited access to SHR could lead to unhealthy practices such as unsafe abortion without postpartum care and increased rate of STDs, among others. In addition, massive reorientation and sensitization should be carried out especially at the rural areas to help the population there understand that medical establishments are not conduits for viruses (*e.g.*, SARS-CoV-2 that causes COVID-19) so long as established COVID-19 protocols are observed. This is highly recommended necessary as we found that COVID-19 pandemic aggravates the feelings of nosocomephobia (*i.e.*, fear of hospitals) among the people. To achieve the sustainable development goals related to better health and well-being of the population, the uptake of SRH services should be increased continuously.

5. Conclusion

COVID-19 pandemic has a multi-faceted impact on the deterioration of SRH crisis. The prominent implications of the pandemic are the limited access and availability of SRH products and the exorbitant prices of these products. In addition, people were scared of visiting medical establishment for fear of contracting COVID-19. The lockdown restrictions gave the couples and partners more time for sexual intercourse, thereby increasing the cases of unintended pregnancies which had attendant impact on the rate of unsafe abortion and STDs. More effort by government and non-governmental organization is needed to strengthen SRH delivery in Nigeria, especially during pandemics.

Acknowledgments

The paper was presented at the Conference on Population and Reproductive Health Dynamics Under COVID-19 in Sub-Saharan Africa that was hosted by the University of the Witwatersrand, South Africa through its Demography and Population Studies Programme. The Conference was supported under the auspices of the Science Granting Councils Initiative in Sub-Saharan Africa (SGCI) and administered by South Africa's National Research Foundation in collaboration with Canada's International

Development Research Center (IDRC), the Swedish International Development Cooperation Agency (Sida), South Africa's Department of Science and Innovation (DSI), the Fons de Recherche due Quebec (FRQ), the United Kingdom's Department of International Development (DFID), the United Kingdom Research and Innovation (UKRI) through the Newton Fund.

Funding

None.

Conflict of interest

The authors declare no conflicts of interest.

Author contributions

Conceptualization: Ugochukwu Simeon Asogwa, Chukwuedozie K. Ajaero
Formal analysis: All authors
Investigation: Ugochukwu Simeon Asogwa, Nneka Ifeoma Okafor
Methodology: Chukwuedozie K. Ajaero
Writing–original draft: Ugochukwu Simeon Asogwa
Writing–review & editing: All authors

Ethics approval and consent to participate

In accordance with the National Health Research Ethics committee (NHREC, 2020), ethical approval was not obtained as the study did not involve human participants in ways that will endanger them. Informed consent was obtained from all members included in this study before their participation.

Consent for publication

Informed consent was duly obtained from all the participants before their participation.

Availability of data

Data used in this work are available from the corresponding author on reasonable request.

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ACCSCIENCE PUBLISHING

International Journal of Population Studies

RESEARCH ARTICLE

What drives the willingness to get vaccinated against COVID-19 in South Africa?

Yemi Adewoyin[1,2]* and Clifford O. Odimegwu[1]

[1]Demography and Population Studies Programme, Schools of Public Health and Social Sciences, University of the Witwatersrand, Johannesburg, South Africa

[2]Department of Geography, University of Nigeria, Nsukka, Nigeria

(This article belongs to *Special Issue: Population and Reproductive Health Dynamics under Covid-19 in Sub-Saharan Africa*)

Abstract

The willingness to get vaccinated in South Africa is among the highest in the world, measuring at 76%. This study investigated the impact of individual risk beliefs, self-reported health status, and familiarity with someone with coronavirus disease 2019 (COVID-19) on the willingness to get vaccinated in South Africa. Data were obtained from the Wave 5 of the South African National Income Dynamics Study – Coronavirus Rapid Mobile Survey. Data were analyzed using descriptive statistics and binary logistic regression. More than 53% of the population believed that they were not at risk of COVID-19; 71.8% believed that they were in good health; and 31.6% knew someone with COVID-19. Beliefs (odds ratio [OR]: 1.287), health status (OR: 1.064), and COVID-19 case familiarity (OR: 1.034) were associated with willingness to get vaccinated. Other associations remained positive in the adjusted model. The relationship between case familiarity and willingness to get vaccinated shows that knowing someone who died of COVID-19 or suffered from the discomfort induced by the disease may drive other individuals to get vaccinated.

Keywords: COVID-19; Risk beliefs; Health status; Case familiarity; Vaccine willingness; South Africa

***Corresponding author:**
Yemi Adewoyin
(yemiadewoyin@yahoo.com)

Citation: Adewoyin, Y. & Odimegwu, C.O. (2024). What drives the willingness to get vaccinated against COVID-19 in South Africa? *International Journal of Population Studies,* 10(1):68-76. https://doi.org/10.36922/ijps.479

Received: March 15, 2023

Accepted: December 1, 2023

Published Online: December 26, 2023

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

More than 2 years after its emergence as a public health issue, the coronavirus disease 2019 (COVID-19) pandemic still gripped the world. As of February 4, 2022, more than 386.5 million cases and 5.7 million deaths have been recorded in over 200 countries (World Health Organization [WHO], 2022a). Initial efforts to contain its spread were targeted mainly at the restriction of movement and social interactions as well as the use of facemasks. To complement these efforts and in the absence of WHO-approved antiviral drugs for the treatment of the disease, research laboratories and pharmaceutical companies developed vaccines against COVID-19. Vaccines stimulate the body's natural defenses to fight against infections (WHO, 2022b; Center for Disease Control, 2022). With the WHO approval for some of these vaccines, over 10 billion vaccine doses had been administered globally as of February 1, 2022 (WHO, 2022c). These ranged from not <100 doses per 100 population in North America and Europe to between 0.52

and 50.26 doses in most of sub-Saharan African region according to the WHO. While China, the United States, the United Kingdom, and France have administered 3 billion, 523 million, 138 million, and 140 million vaccine doses, respectively (WHO, 2022c), South Africa recorded the highest number of doses administered in sub-Saharan African region, standing at 29.8 million doses (Department of Health, South Africa, 2022). The doses were administered to 19.9 million people in South Africa, which has an estimated population of 59 million people. The geographical variation in vaccination coverage could be attributed to the geography of vaccine manufacturing technology, production capacity and availability, vaccine nationalism prevailing in wealthy nations (Ghebreyesus, 2021), and vaccine hesitancy. While the first three apparently put sub-Saharan African countries at a disadvantage, vaccine hesitancy is a global phenomenon as studies have shown that COVID-19 vaccine hesitancy rate was around 40 – 45% in Sweden, Germany, Italy, the US, Russia, Poland, and France (Lindholt *et al.*, 2021; Sallam, 2021) and as high as 63% in Jordan (El-Elimat *et al.*, 2021) and 76% in Kuwait (Sallam. 2021). Factors underlying the hesitancy include perceived risks and benefits, cultural and religious beliefs, sociodemographic characteristics, and trust (Lindholt *et al.*, 2021; Sallam, 2021; El-Elimat *et al.*, 2021).

In South Africa, however, the willingness to get vaccinated stood at around 76% in July 2021, despite vaccine insufficiency (National Income Dynamics Study – Coronavirus Rapid Mobile Survey [NIDS-CRAM], 2021). With its index case reported on March 5, 2020, 3.6 million positive cases out of 22.4 million tests, and nearly 96,000 deaths in four COVID-19 waves as of February 4, 2022 (Department of Health, South Africa, 2022), South Africa has the highest prevalence of COVID-19 in Africa and accounts for half of the total number of cases on the continent (WHO, 2022c). The country also ranked 17th of 220 countries in the number of cases, a position higher than the Netherlands, Canada, and Sweden. While a number of studies have focused on exploring the drivers of COVID-19 vaccine hesitancy across the world, this study investigated the factors driving the willingness to get vaccinated. Specifically, this study assessed the impacts of individual's beliefs about their risks of getting infected, their self-reported health status, and their familiarity with someone infected with COVID-19 on their willingness to get vaccinated.

Beliefs about perceived risks of infection and health status have been shown to influence the uptake of health-care services (Rosenstock, 1966; Becker, 1974). Case familiarity as a determinant of health-care seeking is, however, not prominent. With respect to COVID-19, the knowledge of the severity of symptoms and presentations in individuals who tested positive, and/or the loss of a family member or an acquaintance to the disease may affect an individual's disposition to the virus, and influence their willingness to get vaccinated. Reading or watching the news about the prevalence of COVID-19, encompassing the case and death statistics, on the media may not shed light on the extent of its severity. The overarching hypothesis of this study, therefore, is that individuals who perceived themselves as being at risk of infection, whose current health status was sub-optimal, and who knew someone with COVID-19 would be more willing to get vaccinated.

2. Data and methods

2.1. Data source

Data for this study were sourced from Wave 5 of the National Income Dynamics Study – Coronavirus Rapid Mobile Survey (NIDS-CRAM) in South Africa. The NIDS-CRAM is a nationally representative panel survey of South Africans over the age of 18. In the survey, the same cohort of individuals were contacted periodically and asked a range of questions about their income, employment status, household welfare, receipt of grants, and their knowledge concerning and attitude to COVID-19 (NIDS-CRAM, 2021). The NIDS-CRAM is a special follow-up with a subsample of adults from households in the National Income Dynamics Study (NIDS) survey. NIDS is a broadly nationally representative panel study following the lives of the same 28,000 South Africans, and those they live with, every 2 – 3 years since 2008 (NIDS-CRAM, 2021). NIDS-CRAM is funded by the FEM Education Foundation and Michael and Susan Dell Foundation, implemented by the Southern Africa Labour and Development Research Unit, and the data from this survey are made accessible by DataFirst.

2.2. Sampling

The sample for the survey was drawn using a stratified sampling technique to select households in all nine provinces of South Africa. Respondents who were 15 years and older in the 2017 NIDS survey were included in the NIDS-CRAM Wave 5 survey in 2020, as they had turned 18 in 2020. Data for the survey were collected between April 6 and May 11, 2021, through Computer-assisted Telephone Interviewing (CATI) (NIDS-CRAM, 2021). As the sample in the panel consists of individuals who have been followed up since Wave 1, this study excluded respondents whose data were included in Wave 5 but without participating in the current round of data collection. This category of individuals comprised of those who were not contacted, moved out of South Africa,

refused to answer COVID-related questions, were not available, or could not be tracked from the previous waves, and/or did not provide any responses to COVID-related questions. Of the 8,051 respondents in the Wave 5 dataset, we worked with the weighted sub-sample of 5,862 who satisfied the inclusion criteria.

2.3. Variable definitions

The primary outcome variable of this study is the willingness to get vaccinated against COVID-19. In the NIDS-CRAM questionnaire, this variable is captured in question G11 as "To what extent do you agree or disagree with the statement: If a vaccine for COVID-19 were available, would I get it?" The response options include "strongly agree," "somewhat agree," "somewhat disagree," "strongly disagree," "refused," and "do not know." In line with our prime objective to study the willingness of respondents to get vaccinated, responses that indicated any degree of willingness, such as "strongly agree" and "somewhat agree," were coded as willing to get vaccinated (Yes, 1), while other options were coded as unwilling (No, 0).

The primary independent variables include beliefs about the risk of being infected (question G1), case familiarity (question G3), and respondent's current health status (question G16). In the NIDS-CRAM questionnaire, these variables are captured in the following questions: "Do you think you are likely to get the Coronavirus?", "Do you know anyone who has been diagnosed with the Coronavirus?", and "How would you describe your health at present? Would you say it is excellent, very good, good, fair, or poor?", respectively. The three response options for questions G1 and G3 are "do not know," "no," and "yes." The response options for question G16 are "excellent," "very good," "good," "fair," and "poor." These were coded as "fair" (0), "poor," (1) and "good to excellent" (2).

Other explanatory variables employed from the dataset include age (A8), sex (Ba1), race (Ba2), educational status (Ba4), marital status (Ba5), province of residence (Bb1), place of residence (rural or urban) (Bb2), number of persons in residence (Bc1), number of people aged 60 and above in a residence (Bc5), and mental health status of the respondents (G20). Question G20 is phrased as "Over the last 2 weeks, have you been feeling down, depressed or hopeless?". The responses for this question were "not at all," "several days," "more than half the days," "nearly every day," and "do not know." Individuals who responded "not at all" were categorized as "not depressed/hopeless/down."

2.4. Data analysis

The sociodemographic characteristics of the respondents were expressed in simple frequency, while the sociodemographic dimensions of willingness to get vaccinated of the study population were analyzed using Chi-squared test. Binary logistic regression analysis was employed to examine the relationship between the sociodemographic variables and the respondents' willingness to get vaccinated. Four regression models were run. In the first three models, the three main independent variables were tested individually, while in the fourth model, we controlled for the sociodemographic variables. The fourth model was run as a full model to incorporate all three main independent variables, rather than one at a time, to enable a complete picture of the relationship between these independent variables and the outcome variable after other confounders, including the other main predictors, was controlled for. Running the model while isolating the other main predictors would have presented results under the presumption that the other main predictors were of no influence on the relationship. Results were considered statistically significant at $p < 0.05$.

2.5. Ethical consideration

The implementer of the NIDS-CRAM survey has obtained ethics approval from the University of Cape Town Commerce Ethics Committee to conduct the survey (REC 2020/04/017).

3. Results

One-third of the respondents were aged 35 – 49 (Table 1). The sample was also made up of more females (61.7%), Blacks (86.5%), respondents without tertiary education (62.1%), single individuals (56.3%), respondents from the KwaZulu Natal province (28.7%), and rural dwellers (54.9%). A high proportion of female respondents in the sample suggests that there were more females in the initial sample of the 2017 NIDS survey, and more females constituted the majority among those available and willing to participate in the follow-up NIDS-CRAM survey in 2020. Households with between 1 and 4 residents (47.5%) and without any occupant over the age of 60 (66.3%) were also in the majority. More than 53% of the population believed that they were not at risk of contracting COVID-19, 35% had experienced depression, 71.8% believed that their health was in good to excellent state, and 31.6% knew someone suffering from COVID-19. Only 2.1% of the population had been vaccinated but 76.3% were willing to be vaccinated if the vaccines were available.

The willingness to get vaccinated was high among all the sociodemographic categories (63.5 – 83.4%), as shown in the third column of Table 1. The lowest end of the range, however, was among the Whites (63.5%), those aged 18 – 24 (66.5%), those who had received no formal education (69.2%), and residents of the Northern Cape province

Table 1. Sociodemographic characteristics of study population, and dimensions and predictors of willingness to get vaccinated

Variable	Percentage (%) N = 5,862	Willingness to get vaccinated (%)	Unadjusted odds ratio (95% CI)	Adjusted odds ratio (95% CI)
Age				
18 – 24	12.6	66.5*	-	RC
25 – 34	25.7	74.7*	-	1.459 (1.182 – 1.802)*
35 – 49	33.2	79.9*	-	2.081 (1.160 – 2.609)*
50+	28.3	78.2*	-	2.372 (1.758 – 3.200)*
Sex				
Male	38.3	76.8	-	RC
Female	61.7	76.1	-	0.926 (0.879 – 1.254)
Race				
White	4.3	63.5*	-	RC
African/Black	86.5	78.0*	-	2.301 (1.881 – 2.796)*
Asian/Indian	0.8	74.4*	-	2.110 (1.705 – 2.318)
Colored	8.4	66.2*	-	1.199 (0.952 – 1.321)
Education				
Tertiary	33.6	75.9	-	RC
Below tertiary	62.1	75.6	-	0.962 (0.816 – 1.124)
None	4.3	69.2	-	0.465 (0.392 – 0.616)*
Marital status				
Married/Has a Partner	43.7	77.9*	-	RC
Single	56.3	75.1*	-	0.996 (0.738 – 1.212)
Province				
Northern Cape	5.9	69.9*	-	RC
Eastern Cape	10.0	77.1*	-	1.143 (0.855 – 1.342)
Free State	6.0	72.5*	-	0.846 (0.662 – 0.906)
Gauteng	15.1	71.0*	-	1.004 (0.816 – 1.118)
Kwazulu-Natal	28.7	80.1*	-	1.468 (1.318 – 1.659)*
Limpopo	10.5	83.4*	-	1.692 (1.442 – 1.941)*
Mpumalanga	9.4	74.7*	-	1.048 (0.808 – 1.176)
North West	6.0	75.6*	-	0.928 (0.619 – 1.008)
Western Cape	7.4	71.2*	-	1.461 (1.218 – 1.665)*
Place of residence				
Rural	54.9	79.1*	-	RC
Urban	45.1	72.8*	-	0.880 (0.638 – 1.046)
Number of persons in residence				
1 – 4	47.5	76.3	-	RC
5 – 8	39.3	75.7	-	0.880 (0.608 – 1.038)
9+	13.2	78.4	-	0.922 (0.812 – 1.334)
Number of people aged 60+ in residence				
0	66.3	76.6	-	RC
1	24.7	76.7	-	0.998 (0.798 – 1.329)
2 – 5	9.0	73.6	-	0.839 (0.707 – 1.128)

(Cont'd...)

Table 1. *(Continued)*

Variable	Percentage (%) N = 5,862	Willingness to get vaccinated (%)	Unadjusted odds ratio (95% CI)	Adjusted odds ratio (95% CI)
Belief about risk of being infected				
Do not know	8.2	73.5*	RC	RC
No	53.4	75.5*	1.115 (0.814 – 1.299)	1.312 (0.952 – 1.458)
Yes	38.4	78.1*	1.287 (1.110 – 1.412)*	1.403 (1.300 – 1.617)*
Knowing someone diagnosed with COVID-19				
No	68.4	76.2	RC	RC
Yes	31.6	76.8	1.034 (0.881 – 1.203)	1.029 (0.780 – 1.119)
Current health status				
Fair	19.5	78.7*	RC	RC
Poor	8.7	79.7*	1.064 (0.779 – 1.202)	1.025 (0.830 – 1.091)
Good to excellent	71.8	75.4*	0.828 (0.609 – 0.987)*	0.903 (0.717 – 1.209)
Mental health status				
Not depressed/hopeless/down	65.0	76.9	-	RC
Depressed/hopeless/down	35.0	75.2	-	0.901 (0.708 – 1.118)
COVID-19 vaccination history				
No	97.9	-	-	-
Yes	2.1	-	-	-
Willingness to get vaccinated				
No	23.7	-	-	-
Yes	76.3	-	-	-

Note: *Significant at p <0.05; RC: Reference category.

(69.9%). Nearly 80% of respondents aged 35 – 49, more males (76.8%), Africans/Blacks (78%), those with tertiary education (75.9%), and respondents that were married or in union (77.9%) were more willing to get vaccinated. Respondents in Limpopo province (83.4%), those in rural areas (79.1%), and those who lived in residences with more than nine people (78.4%) also had more proportions of individuals willing to get vaccinated.

Among individuals who believed that they were at risk of being infected with COVID-19, 78.1% were willing to get vaccinated, while 76.8% of the respondents who knew someone with COVID-19 were also willing to get vaccinated. Individuals who considered their health status as poor accounted for the highest proportion (79.7%) of those willing to get vaccinated. The Chi-squared test results demonstrated that all the explanatory variables, except for sex, education, number in residence, older persons in residence, mental health status, and case familiarity, were significantly associated with the dependent variable – willingness to get vaccinated ($p < 0.05$; Table 1).

The unadjusted analysis showed that the respondents who believed that they were at risk of being infected with COVID-19 (odds ratio [OR]: 1.287) and those who were familiar with a COVID-19 case (OR: 1.034) were more willing to get vaccinated. Respondents who considered their current health status as good to excellent were found to be less willing to get vaccinated (OR: 0.828). However, the relationship with case familiarity was not statistically significant. When the sociodemographic variables were controlled for, the willingness to get vaccinated was still similar in direction but only the risk of getting infected remained statistically significant (OR: 1.403, $p < 0.05$). Age, race, and being a resident of any province, except Free State and North West, were associated with willingness to get vaccinated. Sex, education, marital status, place of residence, number in dwelling, and number of residents aged >60 years were associated with lower willingness to vaccination.

4. Discussion

More than 76% of the South African population were willing to get vaccinated, despite that the country was facing vaccine insufficiency, and the resultant low vaccine coverage typifies both the inverse care and underclass hypotheses at a global scale (Hart, 1971; Lineberry, 1976; Adewoyin *et al.*, 2018). The prevailing context aptly

describes a situation where vaccines are less available to those who need them and are more receptive to them. The need for vaccination, in this case, is reflected in the disease burden of the country – the burden of COVID-19 in South Africa was among the highest globally, measuring at 10% (WHO, 2022c). Nearly 80% of South Africans were willing to get vaccinated, a statistic higher than that in countries with higher vaccine production capacities such as the United States, Germany, France, and Russia, measuring between 55% and 60% (Lindholt *et al.*, 2021; Sallam, 2021).

Factors predicting the population's willingness to get vaccinated, as shown in this study, were age, racial composition, province of residence, beliefs about the risk of being infected, health status, and familiarity with a COVID-19 case. Sex, marital status, education, place of residence, number of people in households, number of people aged 60 and above in a residence, and mental health status were not found to drive the willingness. Age, race, and place of residence have also been shown to be positively associated with vaccine uptake in studies from other countries (Lindholt *et al.*, 2021; Sallam, 2021; El-Elimat *et al.*, 2021; Arce *et al.*, 2021; Al-Jayyousi *et al.*, 2021; Holzmann-Littig, 2021), which also found a positive association of vaccine uptake with sex, marital status, and education, contrary to findings from the present study. In the same note, conflicting findings from different studies showed that the number of persons per household, number of people aged 60 and above in a residence, and mental health status predispose individuals to COVID-19 and augment their willingness to get vaccinated (Makinde *et al.*, 2021; Najjuka *et al.*, 2021; Vukotic *et al.*, 2021), but such associations were negative in the present study.

Unlike most other sociodemographic attributes that recorded negative odds in their association with the willingness to get vaccinated, marital status of the respondents was not statistically significant in its negative association. This might be related to the country's peculiarity with regard to union formation. More than 56% of the respondents were single in a sample comprising of nearly 90% of individuals aged 25 and above. In tandem, civil marriages had declined in South Africa by 22.5% in 8 years (2011 – 2019) (Statistics South Africa, 2022). South Africa is one of the countries with the highest prevalence of single motherhood globally after countries in Latin America (Adewoyin & Odimegwu, 2022a). Contrary to findings that being in a union or living in households with more male-dominant decision-making powers is positively associated with higher level of utilization of health-care services (Adewoyin & Odimegwu, 2022b; Adewoyin *et al.*, 2022), being or not being in a union did not influence an individual's decision to get vaccinated in the current study.

With respect to the main explanatory variables, the proportion of South Africans willing to get vaccinated against COVID-19 was not lower than 73% of the population, irrespective of risk beliefs, current health status, or familiarity with a COVID-19 case. However, respondents who did not believe that they were at risk of infection, who considered that their health was in good condition, and who did not have someone with COVID-19 were relatively less willing to get vaccinated. When the relationships were analyzed by means of multivariate regression, only the risk of being infected had a statistically significant relationship with the willingness to get vaccinated. Under the unadjusted and adjusted modes, individuals who considered themselves at risk of being infected were more likely to get vaccinated. The odds even increased from 1.287 to 1.403 when the sociodemographic variables were controlled for in the regression model.

The findings of this study indicate that the major factor that drives an individual to seek health-care services is the perception that they might be susceptible to ill health. The role of beliefs in health-care seeking is well established in the literature and as such, the findings here align with what is known. Upon realizing the vulnerability to the risks of infection, many individuals resort to adopt protective behaviors (Rosenstock, 1966; Becker, 1974), such as consulting a doctor, visiting a health facility, or getting vaccinated. During the COVID-19 pandemic period, the same theory held true (Banda *et al.*, 2021; Kim & Kim, 2020), accounting for why South Africans who believed that they were at risk were more willing to get vaccinated.

The willingness to get vaccinated was also found to be higher among individuals who reported their health as being poor. This may be connected with the established scientific evidence about COVID-19 complications and deaths being higher among individuals who reported underlying comorbidities. Such comorbidities include diseases of heart, kidney, liver and lung, diabetes, obesity, and human immunodeficiency virus infection (Center for Disease Control, 2021). The prevalence rates of obesity and human immunodeficiency virus infection are particularly higher in South Africa (United Nations Programme on HIV/AIDS, 2020; Odimegwu *et al.*, 2020; Sartorius *et al.*, 2015). In this study, higher level of willingness to get vaccinated in this particular cohort may have stemmed from their desire to survive COVID-19 and not to fall ill with the related complications.

Individuals who knew someone with COVID-19 were more willing to get vaccinated than those who were not familiar with any. This finding is similar to those from a

few related studies that investigated this association (Wang *et al.*, 2021; Berihun *et al.*, 2021; Salali & Uysal, 2021). Expectedly, the awareness of the agony and discomfort suffered by a symptomatic COVID-19 patient would likely drive the individuals to get vaccinated for immunity. Such preventive actions related to case familiarity can be validated by the protection motivation theory of fear appeals (Rogers, 1975; Witte & Allen, 2000). Based on this theory, individuals are motivated by external triggers to adopt protective behaviors. In this study, however, the association was not statistically significant in both the unadjusted and adjusted models.

The datasets employed for this study contain self-reported data and captured intentions rather than actual behavior. While actual behavior may eventually differ from initial intentions and may have a different effect on the association considered in this study, but the fact that this study focused on willingness to get vaccinated, and not whether the respondents have been vaccinated or not, overrides this limitation. Furthermore, the use of CATI for data collection may have excluded a section of the population without telephone access. The standardization and other methodological adjustments made by the dataset implementers (NID-CRAM, 2021) are sufficient for this study.

5. Conclusion

While vaccine hesitancy is rife across the world, more than 76% of South Africans are willing to get vaccinated against COVID-19. Our findings showed that the risks of being infected and self-reported health status were significantly associated with higher willingness to get vaccinated. Case familiarity was also positively associated with the willingness to get vaccinated but the association was not statistically significant. For about 24% of the population that were not willing to get vaccinated, their reasons, according to the NIDS-CRAM survey, were largely about trust in the vaccine's efficacy and side effects (NIDS-CRAM, 2021). About 17% of the population considered the vaccines as harmful and unsafe and would only get vaccinated after their community leader is vaccinated first and remains healthy afterward. This implies that in addition to the individuals' perceived risks of being infected with COVID-19 and their reported health status, attitude of the community leaders also plays an important role in influencing the vaccine uptake; therefore, local leaders should engage themselves in the scaling-up of vaccine acceptance across South Africa. Further, media broadcasts showcasing the relatable personal experiences of individuals and community leaders who got vaccinated should be amplified to convince individuals who are unwilling to get vaccinated against COVID-19.

Acknowledgments

The paper was presented at the Conference on Population and Reproductive Health Dynamics Under COVID-19 in Sub-Saharan Africa that was hosted by the University of the Witwatersrand, South Africa through its Demography and Population Studies Programme. The Conference was supported under the auspices of the Science Granting Councils Initiative in Sub-Saharan Africa (SGCI) and administered by South Africa's National Research Foundation in collaboration with Canada's International Development Research Center (IDRC), the Swedish International Development Cooperation Agency (Sida), South Africa's Department of Science and Innovation (DSI), the Fons de Recherche due Quebec (FRQ), the United Kingdom's Department of International Development (DFID), the United Kingdom Research and Innovation (UKRI) through the Newton Fund.

Funding

None.

Conflict of interest

The authors declare no conflict of interest.

Author contributions

Conceptualization: All authors
Data curation: All authors
Formal analysis: All authors
Methodology: All authors
Writing – original draft: All authors
Writing – review & editing: All authors

Ethics approval and consent to participate

The implementer of the NIDS-CRAM Survey obtained an ethics approval from the University of Cape Town Commerce Ethics Committee to conduct the survey (REC 2020/04/017).

Consent for publication

Not applicable.

Availability of data

Data used in this work are available from the National Income Dynamics Study – Coronavirus Rapid Mobile Survey (NIDS-CRAM) 2021, Wave 5 [dataset]. Version 1.0.0. Johannesburg and Cape Town: FEM Education Foundation and Michael and Susan Dell Foundation [funding agencies]. Cape Town: Southern Africa Labour and Development Research Unit [implementer], 2021. Cape Town: DataFirst [distributor], 2021. https://doi.org/10.25828/awhe-t852

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International Journal of Population Studies

RESEARCH ARTICLE

Perception and acceptance readiness for COVID-19 vaccine in Nigeria

Oladipupo Olaleye[1,2]*, and Samson Akande[2]

[1]John Hopkins Centre for Communication Programs, Ibadan, Nigeria

[2]Department of Health Promotion and Education, College of Medicine, University of Ibadan, Ibadan, Nigeria

(This article belongs to *Special Issue: Population and Reproductive Health Dynamics under Covid-19 in Sub-Saharan Africa*)

Abstract

The development of coronavirus disease 2019 (COVID-19) vaccine is widely regarded as a tremendous scientific progress. However, the level of vaccine acceptance has been a concern in Nigeria. Thus, we conducted a study to analyze the perception and acceptance readiness for COVID-19 vaccine among Nigerians, yielding analysis data that could inform policy for raising the COVID-19 vaccine acceptance rate. A total of 302 respondents were surveyed in this cross-sectional study to explore their perception and acceptance readiness for COVID-19 vaccine. A total score of ≤14 was considered having negative perception of COVID-19 vaccine whereas a score >14 was regarded as having positive perception. Most respondents (71.2%) had a negative perception of the vaccine. The majority of these respondents (96.7%) had not been vaccinated, out of which 46.6% claimed to be willing to take the vaccines if they were provided free of charge, while 15.1% expressed their willingness to be vaccinated even if payment was required. There was no variable associated with readiness or non-readiness to take the COVID-19 vaccine. Major reasons for non-readiness include doubt about the vaccine authenticity/safety/effectiveness (59.2%), low level of trust in the government (12.6%), and fear of side effects (10.7%). In conclusion, to boost the COVID-19 vaccine uptake in Nigeria, both governmental and non-governmental bodies should participate in continuous public engagement to assure the public that the vaccine is safe and effective.

Keywords: COVID-19 vaccine; Acceptance readiness; Hesitancy

***Corresponding author:**
Oladipupo Olaleye
(oladipsam@gmail.com)

Citation: Olaleye, O., Akande, S. (2024). Perception and acceptance readiness for COVID-19 vaccine in Nigeria. *International Journal of Population Studies*, 10(1):77-85.
https://doi.org/10.36922/ijps.364

Received: September 19, 2022

Accepted: December 1, 2023

Published Online: December 26, 2023

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

Vaccination is one of the most successful approaches to public health intervention and a cornerstone for the prevention of communicable infectious diseases (Puri *et al.*, 2020). Before the coronavirus disease 2019 (COVID-19) pandemic, more time, usually in years, is required to develop a vaccine for an infectious disease (Adigwe, 2021). The swift conception and development of COVID-19 vaccines represent a huge scientific breakthrough in modern human history (Loembé & Nkengasong, 2021), marking a giant leap in our effort to combat the virus which had infected over 181 million persons globally and caused over 4 million deaths between December 2019 and

September 2021 (Machingaidze & Wiysonge, 2021). Soon after the invention, more than a billion doses of COVID-19 vaccines were shipped worldwide (Loembé & Nkengasong, 2021). Vaccine production and distribution have become a top priority in many countries. To limit the spread of the disease, every nation, including Nigeria, struggled to acquire the sufficient amount of vaccines.

Vaccination is a viable solution to stall the dissemination of vaccine-preventable infections, but vaccine hesitancy still remains a major threat to global health, although vaccine was an invention of the past century (WHO, 2019; Puri *et al.*, 2020). The level of COVID-19 vaccine acceptance has been a global concern, even in Europe (Reno *et al.*, 2021). As of January 2021, low COVID-19 vaccine acceptance rates were recorded in Kuwait (23.6%), Jordan (28.4%), Italy (53.7%), Russia (54.9%), Poland (56.3%), the US (56.9%), and France (58.9%) (Sallam, 2021). Many African countries had barely administered 18 million COVID-19 vaccine doses; out of the 37 million, they received in April 2021(Loembé & Nkengasong, 2021), indicating that only <2% of the vaccines had been inoculated at that time, corresponding to a coverage of only 1.4% or a very smaller fraction of the continent's population (Loembé & Nkengasong, 2021).

The level of COVID-19 vaccine acceptance in Nigeria has hitherto a public health concern since the arrival of the first batch (four million doses of vaccine) in March 2021. As of September 2021, only 2.2% Nigerians had taken at least a dose of the vaccine, which was markedly lower than the global rate of 45% at the same period (Our World in Data, 2022). The total COVID-19 vaccination rate as of March 2022 was 9.4%, with 4.3% having completed the initial protocol and 5.1% being partially vaccinated (Our World in Data, 2022).

Extensive COVID-19 vaccination is critical to safeguarding personal health, protecting vulnerable populations, reopening socioeconomic life, and achieving population health and safety through immunity (NASEM, 2021); however, vaccine hesitancy has emerged as a global challenge and there is increasing worldwide concern toward a general non-acceptance of vaccines (Sallam, 2021; Reno *et al.*, 2021; Cooper *et al.*, 2021; Adigwe, 2021). With 232,813,000 infections and 4,970,000 deaths reported in 40 countries as of September 2021 (Reuters COVID-19 Global Tracker, 2021), the low level of vaccine acceptance is still a major concern for the public health sector (Sallam, 2021). In Nigeria, the slow progress of vaccination might account for the spike in confirmed cases, for instance, the dramatic rise of cases from 164,000 in April to 201,798 in September 2021 (NCDC, 2021). To prevent future increase in the cases of COVID-19, we need to determine the factors responsible for vaccine hesitancy. Therefore, perception and acceptance readiness for COVID-19 vaccine in Nigeria, including the reason for hesitancy, is worth investigating. As such, the research questions for this study include:

(i) What is the level of perception of respondents toward COVID-19 vaccine?
(ii) What is the level of acceptance readiness for COVID-19 vaccine?
(iii) What are the major reasons for non-readiness?

This study aimed to determine the perception and acceptance readiness of COVID-19 vaccine among Nigerians.

2. Data and methods

2.1. Study design and area

This cross-sectional study was conducted in Nigeria. In this study, the respondents were surveyed using Google Forms, an online survey tool.

2.2. Measures

Data were collected using a 27-item questionnaire, which was developed and designed using Google Forms. The questionnaire was divided into three sections, covering sociodemographic details, perception on COVID-19 vaccine, and acceptance readiness for the vaccine. Participants were also asked if they have taken the COVID-19 vaccine (only one dose of the vaccine was available at the time when the study was conducted in April 2021). Furthermore, for those who were yet to be vaccinated and were not ready to be vaccinated, they were requested to provide reasons for their non-readiness.

2.3. Questionnaire administration

A link to the survey was posted on various social media platforms, including Facebook and WhatsApp, in April 2021, and responses were received for a period of 20 days before the link was deactivated. A total of 302 responses were received from respondents residing in all six geopolitical zones in Nigeria.

2.4. Data management and analysis

The questionnaire on the Google Form was designed to prevent multiple submissions by the same user, using internet protocol (IP) privacy protection system. Regardless of the browser used, no single user filled the form twice. Data validation measures were also used to ensure all questions which were completed to avoid missing data. Responses were exported as Google Excel sheet file after the survey link was deactivated.

The sociodemographic variables such as age, geopolitical zone, and marital status were expressed as mean, percentages,

and frequencies. The perception of COVID-19 vaccine was rated using 18-point perception scale. A total score of ≤14 and >14 (the 70th percentile) was categorized as negative and positive perception, respectively. The acceptance readiness for COVID-19 vaccine was analyzed using descriptive and inferential statistics (Chi-square). Reasons for non-willingness were presented as a theme. Differences with $p < 0.05$ were considered statistically significant.

3. Results

3.1. Sociodemographic characteristics

The mean age of the respondents was 26.6 ± 9.2 years, and 73.2% of them were single. The majority of the respondents were males (52.5%), and more than half (58.1%) had tertiary education degree while 41.9% had attained secondary education. Most of the responses (80.5%) were from the South-West geopolitical region, while the South-South region contributed the least number of responses to this survey. Furthermore, most of the respondents were urban dwellers. Slightly more than one-fifth of the respondents were health workers (21.9%) as shown in Table 1.

3.2. Perception of COVID-19 vaccine

Through this survey, we found that the majority of the respondents (71.2%) had negative perception toward the COVID-19 vaccine. Some of the respondents (23.8%) agreed that the COVID-19 vaccine at that time was not effective and few opined that COVID-19 is not real, so a vaccine for it is not needed (Table 2).

3.3. COVID-19 vaccination

Figure 1 presents the percentage of the respondents who have taken COVID-19 vaccine. Only 3.3% (10) of the respondents have been vaccinated among which 50.0% were males, while 96.7% (292) remained unvaccinated.

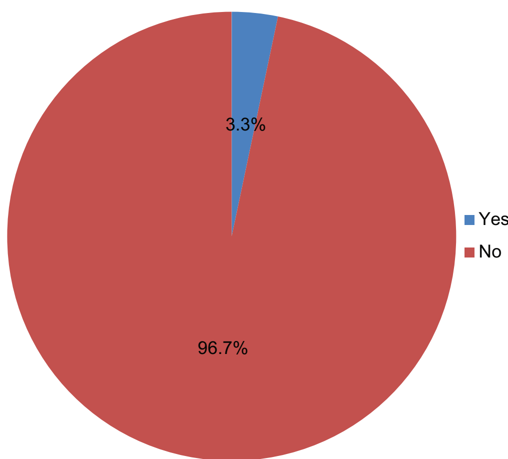

Figure 1. Percentage of vaccinated respondents

Unsurprisingly, significantly more health workers (7.9%) have been vaccinated compared with non-health workers (2.1%). On the other hand, more rural dwellers (16.7%) have received the vaccine compared with semi-urban (0.0%) and urban (3.0%) dwellers. We found that marital status, educational level, and religion of the respondents were not associated with their status of vaccination (Table 3).

3.4. Acceptance readiness for COVID-19 vaccine

Among those who were yet to take COVID-19 vaccine (96.7%), 46.6% were willing to be vaccinated if the vaccines were accessible and given free of charge, and only 15.1% of the respondents expressed willingness to take the vaccine even if they need to pay for the vaccine (Table 4). Age, sex, marital status, being a health worker, type of residence, and level of education had no association with acceptance readiness for COVID-19 vaccine (Table 5). Major reasons for non-readiness were doubt about vaccine

Table 1. Sociodemographic characteristics of respondents

Variable	Frequency	Percentage
Sex		
Male	157	52.5
Female	142	47.5
Age group		
16–30	207	69.5
31–45	79	26.5
>45	12	4.0
Mean age	26.6±9.2	
Marital status		
Single	221	73.2
Married	81	26.8
Highest level of education		
Secondary school	126	41.9
Bachelor/Diploma	98	32.5
Master/Doctoral	77	25.6
Religion		
Christianity	233	92.1
Islam	17	6.7
Others	3	1.2
Health worker		
Yes	63	79.1
No	239	20.9
Type of residence		
Rural	18	5.9
Semi-urban	50	16.6
Urban	234	77.5
Geopolitical zone		
North Central	16	5.3
North-East	10	3.3
North-East	14	4.6
South-East	14	4.6
South-South	5	1.7
South-West	243	80.5

Table 2. Perception of COVID-19 vaccine

Variable	Agree	Undecided	Disagree
The currently available COVID-19 vaccine in the world is not effective	72 (23.8)	114 (37.7)	116 (38.4)
COVID-19 vaccine is just a means for some people/government to make money	101 (33.4)	42 (13.9)	159 (52.7)
There is no need for any vaccine because COVID-19 is not real	25 (8.3)	13 (4.3)	264 (87.4)
COVID-19 vaccine is "anti-Christ/anti-Islam"	20 (6.6)	30 (9.9)	252 (83.4)
COVID-19 vaccine is just a way for some people to control the world	60 (19.8)	50 (16.6)	192 (63.6)
The available vaccine is totally not safe for human beings	67 (22.3)	98 (32.5)	136 (45.2)
The COVID-19 vaccine is not necessary because with the uptake, one can still contract the virus	146 (48.5)	77 (25.6)	78 (25.9)
COVID-19 vaccine invention is an avenue for some drug companies to engulf global money	100 (33.2)	42 (14.0)	159 (52.8)
Nigerian government should use the money allocated to purchase COVID-19 vaccines to tend to other health issues in Nigeria	127 (42.2)	27 (9.0)	147 (48.8)

Table 3. COVID-19 vaccination by sociodemographic characteristics

Variable	Not vaccinated n (%)	Vaccinated n (%)	Test statistics	*p*-value
Sex				
Male	152 (96.8)	5 (3.2)	0.03	0.6
Female	137 (96.5)	5 (3.5)		
Marital status				
Single	215 (97.3)	6 (2.7)	0.9	0.3
Married	77 (95.1)	4 (4.9)		
Religion			7.5	0.1
Christianity	224 (96.1)	9 (3.9)		
Islam	17 (100.0)	0 (0.0)		
Others	2 (66.7)	1 (33.3)		
Health worker				
No	234 (97.9)	5 (2.1)	5.3	0.03*
Yes	58 (92.1)	5 (7.9)		
Residence				
Rural	15 (83.3)	3 (16.7)	11.8	0.003*
Semi-urban	50 (100.0)	0 (0.0)		
Urban	227 (97.0)	7 (3.0)		
Highest level of education			3.7	0.2
Secondary school	124 (98.4)	2 (1.6)		
Bachelor/Diploma	92 (93.9)	6 (6.1)		
Master/Doctoral	75 (97.4)	25 (2.6)		

Note: *$p<0.05$.

Table 4. Acceptance readiness for COVID-19 vaccine.

Variable	No n (%)	Not sure n (%)	Yes n (%)
If COVID-19 vaccine is available but Nigerians would have to pay for it, would you be ready to pay to be vaccinated?	192 (65.7)	56 (19.2)	44 (15.1)
Will you be willing to take COVID-19 vaccine if it is available and free-of-charge at your community/street/nearby health center/hospital?	95 (32.5)	61 (20.9)	136 (46.6)
Will you be willing to allow your family members to receive COVID-19 vaccine?	96 (32.9)	58 (19.9)	138 (47.2)
Will you be willing to support the campaign for the uptake of COVID-19 vaccine?	85 (29.2)	67 (22.9)	140 (47.9)
Will you support your friend's decisions to take the COVID-19 vaccine?	79 (27.0)	56 (19.2)	157 (53.8)
Will you be willing to welcome the COVID-19 vaccination team into your religious house	78 (26.7)	68 (23.3)	146 (50.0)

Note: n (%): Data are expressed as count (percentage).

Table 5. Acceptance readiness for free-of-charge COVID-19 vaccine by sociodemographic characteristics

Variable	Ready to be vaccinated if provided free			Test statistics	*p*-value
	No n (%)	Not sure n (%)	Yes n (%)		
Sex					
Male	41 (27.0)	33 (21.7)	78 (51.3)	4.7	0.09
Female	53 (38.7)	28 (20.4)	56 (40.9)		
Marital status					
Single	71 (33.0)	46 (21.4)	98 (45.6)	0.3	0.8
Married	24 (31.2)	15 (19.5)	38 (49.3)		
Religion					
Christianity	79 (35.3)	50 (22.3)	95 (42.4)	3.9	0.4
Islam	3 (17.6)	3 (17.6)	11 (64.8)		
Others	1 (50.0)	0 (0.0)	1 (50.0)		
Health worker					
No	80 (34.2)	47 (20.1)	107 (45.7)	1.5	0.5
Yes	15 (25.9)	14 (24.1)	29 (50.0)		
Residence					
Rural	8 (53.3)	1 (6.7)	6 (40.0)	5.4	0.3
Semi-urban	12 (24.0)	13 (26.0)	25 (50.0)		
Urban	75 (33.0)	47 (20.7)	105 (46.3)		
Highest level of education					
Secondary school	40 (32.3)	24 (19.3)	60 (48.4)	2.1	0.7
Bachelor/Diploma	31 (33.7)	17 (18.5)	44 (47.8)		
Master/Doctoral	23 (30.7)	20 (26.7)	32 (42.6)		

authenticity/safety/effectiveness (59.2%), low level of trust in the government (12.6%), and fear of side effects (10.7%) (Table 6).

4. Discussion

The majority of our respondents were single and aged between 16 and 36 years, affirming that this age group belongs to the more youthful category that prominently uses social media (Alonzo *et al.*, 2021; Asibong *et al.*, 2020; Tayo *et al.*, 2019; Shava & Chinyamurindi, 2018). Regarding the perception on COVID-19 vaccine, our findings showed that only few had positive perception toward COVID-19 vaccine. These findings are consistent with the study conducted in Jordan where public acceptance of the vaccines was low (37.4%) (El-Elimat *et al.*, 2021). However, our study contrasted with the study conducted in Bangladesh where 63% of students exhibited positive perceptions (Hossain *et al.*, 2021). Conflicting results were reported from the Arabian and Nepalese populations, in which high proportions of the surveyed respondents in Jazan Province, Saudi Arabia (Alamer *et al.*, 2021) and Nepal (Subedi *et al.*, 2021) had positive perceptions and attitude toward the vaccine. The difference observed in the level of perceptions may be due to population covered, regional diversity, study time, and differences in government responsiveness across different states in the country. Also, having low trust in Nigeria government is cited as one of the reasons for non-uptake of the vaccine.

Table 6. Reasons for non-readiness to take COVID-19 vaccine

Reason for non-readiness to take COVID-19 vaccine	Frequency	Percentage (%)
COVID-19 burden is low/does not exist in Nigeria	5	4.8
COVID is not serious as portrayed	4	3.9
Do not trust government	13	12.6
Doubt authenticity/safety/ effectiveness of COVID-19 vaccine	61	59.2
Fear of side effects	12	11.7
There is no need for COVID-19 vaccine	4	3.9
Personal belief	1	1.0
Poor knowledge of COVID-19 vaccine	1	1.0
No reason	2	1.9

The level of acceptance readiness for COVID-19 vaccine was found to be very low (46.6%) even if the vaccines are provided free-of-charge and readily accessible. This is in resonance with the study conducted in Pakistan where only 48.2% agreed to be vaccinated if the vaccines are available (Arshad *et al.*, 2021). Similarly, most of the parents (66.1%) in Ankara city, Turkey, were reluctant to be inoculated with foreign COVID-19 vaccines (Yigit *et al.*, 2021). In the same vein, a study reported that the COVID-19 hesitancy

rate among staff and students in a Nigerian university was 65.0 % (Uzochukwu *et al.*, 2021). In Delta state and North-East Nigeria, the levels of willingness to take COVID-19 vaccines were 48.6% and 40.0%, respectively (Josiah & Kantaris, 2021; Mustapha *et al.*, 2021), and 51.1% of the respondents in Kano, Nigeria, were willing to take the vaccine (Iliyasu *et al.*, 2021). Another paper reported that 58.2% of the respondents in several Nigeria states, which exceeds the average acceptance level, were willing to take COVID-19 vaccine (Olomofe *et al.*, 2021). Although the level of COVID-19 vaccination hesitancy reported in this study is equivalent to that reported elsewhere in Nigeria, we cannot deny that the vaccine acceptance rate or hesitancy level could be impacted by the timing of conducting cross-sectional surveys.

The current study identified three principal reasons fueling the COVID-19 vaccine hesitancy: Doubt about the authenticity/safety/effectiveness, low level of trust in the government, and fear of side effects. The same set of reasons was also cited in the studies by Papagiannis *et al.* (2021) and Almalki *et al.* (2021), in which many respondents claimed that the fear toward the vaccine, its potential long-term side effects, and the lack of trust in government or inefficient government efforts and initiatives were the three main factors contributing to vaccination hesitancy (Shakeel *et al.*, 2022). However, high level of acceptance readiness for COVID-19 vaccine was detected in the United Kingdom (73.5%) (Sherman *et al.*, 2022), Saudi Arabia (>90%) (Almalki *et al.*, 2021), Malaysia (Marzo *et al.*, 2021), Shanghai in China (Wu *et al*, 2021), Japan (Machida *et al.*, 2021), Bangladesh (72%) (Hossain *et al.*, 2021), and Somalia (Ahmed *et al.*, 2021). One major factor that may have accounted for this exceptionally high level of vaccine acceptance is that residents in these countries or regions have heightened level of trust in the government compared to that in the Nigerian context. The low trust in government might be related to the alleged politicization in the distribution process of COVID-19 palliatives in the country (Eranga, 2020).

Findings also showed that health workers were more willing to accept the vaccine compared with non-health workers. In concordance with our study, a study found that only slightly more than half of the surveyed health workers in Nigeria (55.5%) were willing to receive vaccination (Adejumo *et al.*, 2021), which is in stark contrast to the higher percentages among health professionals in Greece (74.0%) (Papagiannis *et al.*, 2021), Morocco (62.0%) (Khalis *et al.*, 2021), and Mozambique (86.6%) (Dula *et al.*, 2021). Furthermore, the vaccine acceptance rates in the aforementioned nations were higher than those reported in other developing countries. For example, 27.7% and 39.3% of the respondents in Democratic Republic of the Congo and Ghana, respectively, indicated that they would accept COVID-19 vaccine if it was made available (Nzaji *et al.*, 2020; Agyekum *et al.*, 2021).

Several limitations of this study should be acknowledged. First, the sample size was small and the findings yielded in this study cannot be generalized to the current population of Nigeria. Second, the COVID-19 vaccine acceptance, perception, and hesitancy are changing rapidly, and thus, the evaluation of these parameters measured during April 2021 can only provide a snapshot of perception and acceptance readiness at that particular time. Despite portraying "static situation" concerning the COVID-19 palliatives in 2021, the findings in this study shed light on the slow COVID-19 vaccine coverage in Nigeria as compared to other developed countries. Besides, these findings are also helpful for formulating strategies for boosting vaccine acceptance rate in future. Third, the current set of findings cannot be generalized to older adults as most of the respondents in this study were youths of 30 years of age and below. Finally, about 80% of the respondents were from the South-West Nigeria but only 20% from other five geopolitical zones. Therefore, these findings are also not representative of the situation of the other five zones. However, this study could serve as a guide for carrying out related research in these zones.

5. Conclusion

In general, among the Nigerian respondents surveyed, the percentage of individuals who have taken COVID-19 vaccine was very low. A more noteworthy finding of this study is that rural dwellers and health workers accounted for a bigger portion among those who have been vaccinated. We also found high levels of negative perception on COVID-19 vaccine and non-readiness to get vaccinated among the respondents. This study was unable to unravel any variables associated with non-readiness to accept COVID-19 vaccine, which could serve as targets for addressing this particular conundrum. However, public health authorities including governmental and non-governmental bodies are recommended to participate in continuous public engagement to assure the public that the vaccine is safe and effective, so as to assuage the fear toward the vaccine and improve vaccine acceptance.

Acknowledgments

The paper was presented at the Conference on Population and Reproductive Health Dynamics Under COVID-19 in Sub-Saharan Africa that was hosted by the University of the Witwatersrand, South Africa through its Demography and Population Studies Programme. The Conference was supported under the auspices of the Science Granting

Councils Initiative in Sub-Saharan Africa (SGCI) and administered by South Africa's National Research Foundation in collaboration with Canada's International Development Research Center (IDRC), the Swedish International Development Cooperation Agency (Sida), South Africa's Department of Science and Innovation (DSI), the Fons de Recherche due Quebec (FRQ), the United Kingdom's Department of International Development (DFID), the United Kingdom Research and Innovation (UKRI) through the Newton Fund.

Funding

None.

Conflict of interest

The authors declare no conflicts of interest.

Author contributions

Conceptualization: Oladipupo Olaleye
Formal analysis: Oladipupo Olaleye
Investigation: All authors
Methodology: All authors
Writing – original draft: All authors
Writing – review & editing: All authors

Ethics approval and consent to participate

The participants willingly consented to participate in this online study after reading about the details of the research.

Consent for publication

Informed consent of participants has been obtained for releasing their data and/or images in this paper.

Availability of data

Data can be obtained from the corresponding author upon reasonable request.

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ACCSCIENCE PUBLISHING

International Journal of Population Studies

RESEARCH ARTICLE

"Does a healthy man need vaccination?": Attitudes of older adults toward COVID-19 vaccine in South-East Nigeria

Samuel O. Ebimgbo[1]*, Yemi Adewoyin[2,3], Chukwuedozie K. Ajaero[2], and Uzoma O. Okoye[1]

[1]Department of Social Work, Faculty of the Social Sciences, University of Nigeria, Nsukka, Enugu State, Nigeria

[2]Department of Geography, Faculty of the Social Sciences, University of Nigeria, Nsukka, Enugu State, Nigeria

[3]Demography and Population Studies Programme, Schools of Public Health and Social Sciences, University of the Witwatersrand, Johannesburg, South Africa

(This article belongs to *Special Issue: Population and Reproductive Health Dynamics under Covid-19 in Sub-Saharan Africa*)

***Corresponding author:**
Samuel O. Ebimgbo
(samuel.ebimgbo@unn.edu.ng)

Citation: Ebimgbo, S.O., Adewoyin, Y., Ajaero, C.K. & Okoye, U.O. (2024). "Does a healthy man need vaccination?": Attitudes of older adults toward COVID-19 vaccine in South-East Nigeria. *International Journal of Population Studies*, 10(1):86-97. https://doi.org/10.36922/ijps.359

Received: September 19, 2022

Accepted: December 1, 2023

Published Online: January 9, 2024

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Abstract

The COVID-19 pandemic appears to be impeding the progress of the United Nations' Sustainable Development Goal and the African Union's Agenda 2063 in achieving optimal health and well-being for individuals, particularly older adults. Numerous older adults have succumbed to the virus, exacerbating existing global health challenges. In response, scientists worldwide have developed a vaccine to alleviate the substantial disease burden. The Nigerian government has mandated the prioritized vaccination of older adults. This study aims to investigate the attitudes of older adults toward the COVID-19 vaccine. Data were collected from 32 older adults through in-depth interviews and focus group discussions. Thematic analysis was employed to derive meaningful patterns from the collected data. The findings reveal a prevailing lack of awareness among older adults regarding the COVID-19 vaccine. They asserted that they perceived no need for vaccinations, asserting their current state of health. In addition, concerns were raised about potential adverse effects of the vaccine, including the onset of other illnesses. This study suggests that the Nigerian government, through its orientation agencies, undertakes comprehensive public education campaigns highlighting the importance of COVID-19 vaccine uptake.

Keywords: COVID-19; Hesitancy; Older adults; Pandemic; Vaccine

1. Introduction

Human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), diabetes, cancer, chronic respiratory disease, and cardiovascular conditions are among the health challenges that affect older adults in Nigeria. Previous studies indicate that older adults generally hold positive attitudes toward vaccines targeting some of these diseases (Figueiredo *et al*., 2021; Nakajima *et al*., 2021). However, there is a notable

gap in the literature concerning the attitudes of Nigerian older adults toward the intake of COVID-19 vaccines. The emergence of COVID-19 has had profound implications for the well-being, quality of life, and various aspects of individuals' lives across the globe. Vulnerable populations, such as older adults, have been disproportionately affected by the pandemic (Amadasun, 2021; Amadasun & Omorogiuwa, 2020). As of June 17, 2022, the World Health Organization (WHO) reported over 6 million deaths attributed to COVID-19 (WHO, 2022), with more than 95% of these fatalities occurring among older adults (WHO, 2020a). The pandemic has occasioned poor health conditions among older individuals and has contributed to a range of mental health problems (Mukhtar, 2020). These mental health problems include depression and cognitive dysfunction (Flett & Heisel, 2020); anxiety, anger, stress, agitation, and withdrawal (Armitage & Nellums, 2020; WHO, 2020b); insomnia (Liu *et al*., 2020); and suicidal ideations (Wand *et al*., 2020). The emotional distress and mental health problems experienced by older adults can be linked to measures such as social and physical distancing, self-isolation, and quarantine implemented by governments to curtail the spread of COVID-19 (Flett & Heisel, 2020).

Amidst all these measures implemented to curtail the spread of COVID-19, the development and utilization of vaccines have proven to be particularly effective (Yamey *et al*., 2020). Vaccination plays a crucial role in enhancing individuals' immune systems and fostering the production of robust antibodies to combat various diseases (Centers for Disease Control and Prevention, n.d.). Consequent to the comprehensive understanding of the genome sequence of SARS-CoV-2 in the first quarter of 2020 (Wu *et al*., 2020) and the WHO's declaration of the pandemic in March 2020 (Cucinotta & Vanelli, 2020), scientists and pharmaceutical organizations worldwide mobilized efforts to invent the COVID-19 vaccine, aiming to alleviate the substantial burden imposed by the disease (Coustasse *et al*., 2021; Zimmer *et al*., 2020).

Following the invention of COVID-19 vaccines, a major threat to their rollout and the complete mitigation of the pandemic is vaccine hesitancy (Coustasse *et al*., 2021). Despite instances of hesitancy documented in countries such as Jordan, Russia, France, Hungary, and Portugal (El-Elimat *et al*., 2021; Lindholt *et al*., 2021; Soares *et al*., 2021), other countries, including the United States (US), China, Saudi Arabia, Malta, Mozambique, Malaysia, Denmark, and Germany, among others, have displayed positive attitudes toward the vaccine (Al-Mohaithef & Padhi, 2020; Dula *et al*., 2021; Lazarus *et al*., 2020; Lindholt *et al*., 2021; Mohamed *et al*., 2021; Reiter *et al*., 2020; Graeber *et al*., 2021). Moreover, research indicates that a significant proportion of populations in China, Canada, Spain, and other countries has already received a full dose of the COVID-19 vaccine (Iguacel *et al*., 2021; Mohamadi *et al*., 2021; Ontario Agency for Health Protection and Promotion, 2021; Zheng *et al*., 2021). Gender, education level, age, employment status, residence, knowledge about the vaccine, course of study, influence of significant others, and concerns about vaccine safety all emerge as significant variables influencing attitudes toward the COVID-19 vaccine (Bai *et al*., 2021; Cordina *et al*., 2021; El-Elimat *et al*., 2021; Rzymski *et al*., 2021).

Nigeria received approximately 4 million doses of the COVID-19 vaccine through the COVAX Facility on March 2, 2021. Despite the availability of the COVID-19 vaccine, there is considerable hesitancy among the population to embrace it. Anorue *et al*. (2021) have revealed apprehensions among southeasterners regarding the COVID-19 vaccine. In Delta State, approximately 48.6% of the population expressed unwillingness to accept the vaccine (Josiah & Kantaris, 2021). Uzochukwu *et al*. (2021) discovered that over 65% of staff and students in Nigerian tertiary institutions demonstrated negative attitudes toward the COVID-19 vaccine. Within Enugu State, Southeast Nigeria, Onalu *et al*. (2022) observed that the majority of the populace has not embraced the COVID-19 vaccine; Ezema *et al*. (2023), in a study of the perceptions of lecturers and students in a tertiary institution, also found that many people exhibit COVID-19 vaccine apathy. Furthermore, a similar study by Nwangwu *et al*. (2021) revealed that students of Enugu State University demonstrated unwillingness to accept the COVID-19 vaccination. In the same vein, Enitan *et al*. (2020) found that approximately 80% of Nigerians were unwilling to partake in the COVID-19 vaccine trial. The qualitative study by Ogueji & Okoloba (2022) revealed that only a small number of participants had received the COVID-19 vaccine. In addition, Adigwe (2021) found that a significant number of Abuja residents were not willing to take the COVID-19 vaccine. However, among them, particularly older adults, especially those who were previously infected with COVID-19, indicated their interest in paying for the COVID-19 vaccination.

Several reasons for negative attitudes toward vaccine uptake among Nigerians have been documented in the literature. Adigwe (2021) reported that the Nigerians' concerns about the side effects of COVID-19 vaccines contribute to the hesitancy in the COVID-19 vaccine uptake. In rural areas of Nigeria, Abubakar *et al*. (2022) have identified factors such as a lack of interest in the vaccine, distrust in the government, misconceptions about the use of the vaccine against the population, denial of the

reality of COVID-19, and concerns about the safety of the vaccines as reasons for rejecting the COVID-19 vaccine. Similar findings have been reported by Ezema *et al.* (2023), who highlighted factors such as denial of COVID-19's existence, lack of trust in the Nigerian government's health-care system, misleading sermons by religious leaders, disinformation, and fear of adverse effects of COVID-19 vaccines contributing to COVID-19 vaccine hesitancy among the populace. A rapid review study by Olu-Abiodun *et al.* (2022) indicates that propaganda, concerns over adverse effects, and conspiracy theories influence people's negative attitudes toward the COVID-19 vaccine. Similarly, Eniade *et al.* (2021) found that perceived risk and lack of trust in the government system deter Nigerians from COVID-19 vaccine uptake. In a qualitative study by Onalu *et al.* (2022), the government's alleged ploy to harm citizens and religious beliefs was cited as the reason for poor uptake of the COVID-19 vaccine. Other reasons include perceived adverse effects, mistrust, and a moral obligation to receive the vaccine (Ogueji & Okoloba, 2022).

Religious beliefs are an integral part of the daily lives of many people, influencing their reactions to and uptake of medical interventions. Therefore, the exploration of COVID-19 vaccine apathy necessitates a discussion of the role of religious beliefs. Studies have demonstrated that religious beliefs play a significant role in shaping people's attitudes toward COVID-19 vaccine uptake (Kasstan, 2021; Qasim *et al.*, 2022). Diverse attitudes toward COVID-19 vaccine uptake are evident among various religious groups, with some expressing outright opposition (Garcia & Yap, 2021). Within certain religious doctrines, prayers are revered over medication, leading to a perception of vaccine ineffectiveness among the faithful (Lucia *et al.*, 2020). In addition, COVID-19 vaccine hesitancy is occasioned by a lack of trust in the efficacy of the scientific procedures employed in its development (Olagoke *et al.*, 2021; Plohl & Musil, 2021; Upenieks *et al.*, 2022). Notably, Christians have been reported to harbor negative attitudes toward the COVID-19 vaccine (Baker *et al.*, 2020; Whitehead & Perry, 2020) due to the belief that it was developed from aborted fetal tissue (Thinane, 2022). Similar sentiments have been observed among Muslims and Jewish communities (Islam *et al.*, 2021). As a result, the rollout of the COVID-19 vaccines in Indonesia was halted until approval was obtained in accordance with Islamic law (Jamal, 2020). Furthermore, Christians in the US perceive COVID-19 vaccines as unsafe and ineffective, contributing to their unwillingness to receive the vaccine (Corcoran *et al.*, 2021).

Several studies have addressed attitudes toward COVID-19 vaccine uptake in Nigeria (Adigwe, 2021; James *et al.*, 2022; Uzochukwu *et al.*, 2021). Despite these studies taking into consideration the views of older adults as well as other sub-populations toward COVID-19 vaccine uptake, the current study used a qualitative approach to contribute to the existing literature on the views and attitudes of older adults toward COVID-19 vaccines and the reasons for COVID-19 hesitancy. This focus is particularly crucial as some underlying health conditions associated with aging render older adults more susceptible to COVID-19. The study's significance is underscored by the Nigerian government's mandate to prioritize the vaccination of older adults.

2. Methods

2.1. Design, setting, and sampling

The study adopted a descriptive phenomenology design, a qualitative research method selected for its ability to describe the universal essence of the COVID-19 vaccine (Lopez & Willis, 2004; Willis *et al.*, 2016). The research was conducted within the southeast geopolitical zone of Nigeria, comprising five states, namely Abia, Anambra, Ebonyi, Enugu, and Imo. The study sample consisted of 32 participants, with 26 individuals selected for in-depth interviews (IDIs) and 6 participants selected for the focus group discussion (FGD).

In the process of selecting study areas and participants, a non-probability sampling technique was adopted, utilizing purposive, snowballing, and availability sampling procedures. Out of five states in southeast Nigeria, Anambra state was purposively selected for its substantial older adult population, totaling 237,272 older adults aged 60 years and above (145,847 males and 91425 females) (National Population Commission, 2010). In addition, Anambra state has experienced a high number of COVID-19 cases (Nigeria Center for Disease Control, [NCDC], 2020), further justifying its selection as a study area. Anambra state encompasses 21 Local Government Areas (LGAs) and three senatorial districts, namely Anambra North, Anambra Central, and Anambra South. For this study, one LGA was purposively selected from each of the two selected senatorial zones. The chosen LGAs are Idemili-South in the Anambra Central senatorial zone and Nnewi-North in the Anambra South senatorial zone. Within these selected LGAs, two communities were further selected, namely Otolo and Umudim from Nnewi-North LGA and Nnobi and Nnokwa from Idemili-South LGA.

The participants were selected utilizing a combination of snowball and availability sampling techniques. Some participants were recruited with the help of community leaders in the selected communities. With their assistance, we identified one or two older adults who subsequently referred us to other eligible participants. In total, 32

Table 1 . Sociodemographic characteristics of the male participants by pseudonyms, LGA, age, marital status, educational level, occupation, and monthly income

Serial number	Pseudonym	LGA	Age	Religion	Study	Marital status	Educational qualification	Occupation	Monthly income
1	Mr. Iku	NN	82	Christianity	FGD	Married	No education	Unemployed	Undisclosed
2	Mr. Eme	NN	80	Christianity	FGD	Widower	No education	Unemployed	Undisclosed
3	Mr. Emma	NN	62	Christianity	FGD	Married	Secondary	Trader	Undisclosed
4	Mr. Mba	NN	70	Christianity	FGD	Married	No education	Artisan	Undisclosed
5	Mr. Ben	NN	72	Christianity	FGD	Widower	No education	Trader	Undisclosed
6	Mr. Geo	NN	66	Christianity	FGD	Married	University	Retiree	Undisclosed
7	Mr. Gody	NN	60	Christianity	IDI	Married	Secondary	Farmer	Undisclosed
8	Mr. Isa	NN	69	Christianity	IDI	Married	No education	Trader	Undisclosed
9	Mr. Mik	NN	65	Christianity	IDI	Married	University	Pastor	Undisclosed
10	Mr. Sim	NN	79	Christianity	IDI	Widower	No education	Unemployed	Undisclosed
11	Mr. Lui	NN	74	Christianity	IDI	Married	Secondary	Working	₦47,000
12	Bar. Edo	NN	61	Christianity	IDI	Married	University	Lawyer	Undisclosed
13	Mr. Sol	NN	88	Christianity	IDI	Widower	Primary	Trader	₦25,000
14	Mr. Nel	IS	81	Christianity	IDI	Married	Primary	Retiree	Undisclosed
15	Mr. Pau	IS	61	Christianity	IDI	Widower	Primary	Trader	Undisclosed
16	Mr. Jul	IS	72	Christianity	IDI	Married	Primary	Unemployed	₦2,000
17	Mr. Ken	IS	68	Christianity	IDI	Married	No education	Farmer	Undisclosed
18	Mr. Mel	IS	60	Christianity	IDI	Married	Primary	Trader	₦8,000

Abbreviations: IS: Idemili-South; NN: Nnewi-North; LGA: Local Government Areas. Source: Researchers' fieldwork in 2021.

Table 2. Sociodemographic characteristics of the female participants by pseudonyms, LGA, age, marital status, educational level, occupation, and monthly income

Serial number	Pseudonym	LGA	Age	Religion	Study	Marital status	Educational qualification	Occupation	Monthly income
1	Mrs. Gra	NN	85	Christianity	IDI	Widow	No education	Unemployed	Undisclosed
2	Mrs. Luc	NN	85	Christianity	IDI	Widow	Primary	Farmer	₦30,000
3	Mrs. Mon	NN	61	Christianity	IDI	Married	Primary	Unemployed	₦50,000
4	Mrs. Ngo	NN	60	Christianity	IDI	Widow	Secondary	Trader	Undisclosed
5	Mrs. Brig	NN	62	Christianity	IDI	Widow	No education	Trader	₦20,000
6	Mrs. Joye	NN	60	Christianity	IDI	Widow	Primary	Unemployed	Undisclosed
7	Mrs. Anth	NN	64	Christianity	IDI	Widow	Secondary	Trader	Undisclosed
8	Mrs. Vic	IS	62	Christianity	IDI	Married	University	Teaching	₦45,000
9	Mrs. Com	IS	79	Christianity	IDI	Married	University	Teaching	Undisclosed
10	Mrs. Roso	IS	76	Christianity	IDI	Widow	University	Retiree	Undisclosed
11	Mrs. Graco	IS	70	Christianity	IDI	Married	Primary	Unemployed	Undisclosed
12	Mrs. Fel	IS	73	Christianity	IDI	Widow	Primary	Trader	Undisclosed
13	Mrs. Bene	IS	75	Christianity	IDI	Widow	Primary	Unemployed	Undisclosed
14	Mrs. Afor	IS	65	Christianity	IDI	Married	University	Retiree	Undisclosed

Abbreviations: IS: Idemili-South; NN: Nnewi-North; LGA: Local Government Areas. Source: Researchers' fieldwork in 2021.

participants (18 males and 14 females) were selected for the study. The gender imbalance among participants was occasioned by their availability, with men being more accessible for the study than women. Specifically, 20 participants (13 males and seven females) were selected from Nnewi-North LGA, while 12 participants (five males and seven females) were selected from Idemili-South LGA. For the FGD, six males were selected from Otolo in Nnewi-

North LGA. In the case of the IDI, 14 participants (seven males and seven females) were selected from Umudim in Nnewi-North LGA, while seven females were selected from Nnobi and five males from Nnokwa, both situated in Idemili-South LGA. The details are as shown in Table 1.

2.2. Data collection

The study utilized a semi-structured IDI guide and an FGD guide as the primary instruments for data collection. Recognizing that the study area was predominantly inhabited by Igbo-speaking individuals, the study instruments were prepared in the Igbo language to facilitate seamless communication and discussions. However, participants were given the option to be interviewed in English if they preferred. One FGD session, consisting of six participants, was conducted with male older adults, while 26 IDIs were conducted, involving 14 females and 12 males. To accommodate the language preferences of the participants, interviews and discussions were conducted in both Igbo and English. In addition, with the permission of the participants, an electronic recorder was used to capture verbal communication, while field notes were used to document non-verbal communication cues expressed by participants.

During the participant recruitment process, we engaged in discussions to determine their preferred date, time, and venue for the interview and discussion. Their participants expressed a preference for conducting these sessions in their homes and community halls. In addition, we provided comprehensive information about the study, including its aims, potential risks, and expected benefits. We assured participants of the confidentiality and anonymity of their responses and emphasized their right to withdraw from the study at any point. A total of 38 older adults were approached for participation in the study, but six declined due to unavailability. Each interview session, whether individual or group discussions, lasted between 25 and 40 min, while the group discussion sessions lasted 55 – 60 min. The sociodemographic characteristics of the IDI participants are shown in Table 2.

2.3. Data analysis

The analyses of the transcripts and field notes adhered to the inductive thematic analysis (Braun & Clarke, 2006). In an effort to maintain the authenticity of the original data collected from the field, a manual analysis method was employed without reliance on computer software. Audio files containing participant responses were transcribed verbatim in Igbo and subsequently translated into English to ensure consistency of meaning in both languages. Field notes, where both verbal and non-verbal cues were documented, were assigned identification codes to reflect the expression of the participants. This coding system facilitated the integration of observations related to non-verbal points by establishing links between the audio-recorded interview, the coded field notes, and our collective memory of the events. This comprehensive approach ensured that no information, whether originally recorded in English or Igbo, was lost during the transcription and translation.

The researchers performed initial coding, a process that generated numerous categories without any reservation of codes (Charmaz, 2006). During this phase, emerging thoughts were identified, and relationship diagrams were drawn in line with the study objectives. Frequently used keywords by respondents were pinpointed as indicators of important themes. In the second phase, we eliminated, combined, or subdivided the coding categories identified in the initial coding. This involved a thorough reading of the analysis over time to gain familiarity with and mastery of common and recurrent themes. Our attention was directed toward recurring thoughts and broader themes connected to the codes (Charmaz, 2006; Krueger, 1994; Ritchie & Spencer, 1994). The final findings of this study were then reported based on these themes (Table 3).

3. Results

3.1. Theme 1: Attitudes toward COVID-19 vaccine uptake

We sought to examine the attitudes of Nigerian older adults toward the COVID-19 vaccine. Transcript analysis revealed that older adults exhibited non-compliance with COVID-19 vaccine uptake, actively rejected the idea of receiving the COVID-19 vaccine, and expressed a reluctance to advocate for its acceptance, among others.

3.1.1. Non-compliance with COVID-19 vaccine uptake

The analysis of the transcript indicates a widespread lack of compliance with the COVID-19 vaccine uptake among almost all the participants. The study's findings underscore that only one male participant acknowledged receiving the COVID-19 vaccine. In both LGAs, all other participants reported not having been vaccinated. Mr. Jul from Idemili-South explicitly stated, "No, I did not take it. Why would they inject me? Am I sick or what?… After a hiss, I did not take it, '*Coro*' (COVID-19) has come and gone, and I did not." In addition, some participants conveyed a belief that they did not need the vaccine as they considered themselves immunized by God. Mr. Lui, a male participant in the IDI, asserted, "I did not take the vaccine. I did not take it because I do not need it; I am immunized by God." A female participant, Mrs. Brig from Nnewi-North, echoed this sentiment, stating, "I did not take the vaccine.

Table 3. Guide of questions for focus group discussion and in-depth interviews, emerged themes, and sub-themes

Serial number	Key questions	Emerged Themes	Sub-Themes
1.	What is your view regarding the COVID-19 vaccine that older adults are meant to take?	Attitudes toward COVID-19 vaccine uptake	a. Non-compliance of older adults to the vaccine uptake, their b. Rejection of COVID-19 vaccine uptake c. Unwilling to encourage others to vaccine uptake
2.	What factors encourage older adults to reject covid-19 vaccine?	Reasons for the rejection of COVID-19 vaccine	a. It causes other sicknesses b. Negative reactions on the body c. Fulfillment of God's word (A mark of the beast; 666)

They advised us to do so, but I did not because God was with me, and I wasn't suffering from COVID-19. People are going, but I have not, for 1 day, attempted to go because God has given me sound health, but if I am sick, I will go to the hospital for treatment."

3.1.2. Rejection of COVID-19 vaccine uptake

Given that almost all participants conveyed that they had not received the COVID-19 vaccine, our inquiry extended to discerning their willingness to accept the vaccine in the future. It appears that almost all participants in the study demonstrated indifferent attitudes toward COVID-19 vaccine uptake. With the exception of one male participant expressing a conditional willingness to accept the vaccine if available in the community, all other participants stated their unwillingness to take the vaccine. During the FGD involving male older adults, a unanimous indifferent attitude toward the vaccine was observed. Participants in the FGD thought that the local climate (Nigeria) was too hot for the virus to survive. In the same vein, the IDI participants overwhelmingly demonstrated negative attitudes toward COVID-19 vaccine uptake. They expressed their unwillingness to accept the vaccine. Mrs. Graco from Idemili-South stated, "I will not take it, even if they bring it to my house, I will not take it… *laughs*…" In addition, a participant, a lawyer by profession, went to the extent of canceling all his foreign trips rather than taking the vaccine. He reflected, "No, no, no, I don't have any vaccines. If people want it, it's their decision. For me, I don't have it. Even if I want to travel, I will suspend it. I won't take it."

Several participants emphasized their perception of good healthy as a reason for rejecting the vaccines, asserting that they saw no necessity for vaccination. They expressed a preference for seeking medical attention at a hospital in the event of any health challenges. One participant's perspective on this matter was reflected in the following quote:

> "I will not take the vaccine, ho ha. No, I refuse to take it. If I am sick or have a headache, I have my hospital card, and I will visit the hospital for proper diagnosis and treatment. I won't take the vaccine. Let them continue taking." (Mr. Ken; Idemili-South).

In addition, one participant highlighted a perspective suggesting that COVID-19 has existed for some time but has not been acknowledged in other countries. He revealed that COVID-19 is essentially common malaria, a longstanding affliction in Africans. This viewpoint is articulated in the following quote:

> "I will not take the vaccine… well, I am healthy. For me, COVID or whatever they call it, has been in existence for a long time, but it has not been experienced by the whites (Westerners) because our bodies and theirs are not the same. The sickness is just malaria that has been ravaging us before now. It is malaria, but because we are not the same as the whites, it is affecting them so much." (Mr. Sim; Nnewi-North)

3.1.3. Unwillingness to encourage others to vaccine uptake

We also sought to ascertain if older adults would encourage or support others to accept the COVID-19 vaccine, whether they are their fellow older adults or other sub-populations in society. However, the participants revealed that they are neither willing to support nor encourage anyone to accept the COVID-19 vaccine. During the FGD sessions, all participants expressed their unwillingness to offer support or encouragement for COVID-19 vaccine acceptance. In the same vein, with the exception of only two participants in the IDI study who are willing to support others, every other participant declined to provide support or encouragement for vaccine acceptance. Mrs. Fel, a female participant, said, "If others can take, let them go ahead, but as for me, I will not encourage anybody to take the vaccine. If you people (researchers) can take the vaccine, it's your business; I am not part of it." Another participant, Mrs. Anth, a widow, stated, "Eeh, I don't support ohh! Because my daughter called me and instructed me not to take the vaccine." Mr. Geo from Nnewi-North rhetorically asked, "Why should I support a healthy man to take an injection? Is it a vaccine food or what? My advice is, if they don't have food, they should get something and eat."

3.2. Theme 2: Reasons for COVID-19 vaccine hesitancy

We sought to uncover the reasons behind older adults' vaccine hesitancy, given their expressed unwillingness to accept the vaccine. According to the transcripts analysis, some participants cited concerns that the vaccine might cause other illnesses. Mr. Mik stated, "My brothers (researchers), I won't take the vaccine because there was a time it was announced that those people that took the injection abroad have been infected with another illness." Similarly, a female participant, Mrs. Joye from Nnewi-North, shared her thoughts, "I won't take it; I will not take the injection because some people discovered that anyone who takes the injection doesn't survive it, especially those who are not up to 60 years. They also said that it has an aftereffect on those who receive the vaccine. I will not take the vaccine." Another female participant, Mrs. Vic from Idemili-South, expressed her concern, "… but the question is that people that started it, what they are showing us is that someone's body can light up an electric bulb, that someone's body can work as a magnetic substance. So, you notice that the consequences are detrimental to one's health. The vaccine is a failure, it's a failure, it's a failure. I can't be part of it." Other participants viewed the vaccine as the fulfillment of God's word regarding the end time, believing that accepting the COVID-19 vaccine involves receiving the mark of the beast, symbolized by 666. A female participant reflected her thoughts in the following quote:

> "Waa! First, the Bible is real, and we are well warned about the inventions that will be made manifest in the end time. We are told about the mark of the beast, the time of that 666, and so on. The Bible told us that we would be injected on our hands and heads. It is happening now; reading makes a man and all that the Bible says is happening now. The world, through technology, is about to fulfill the word of God. So, these technologies are strategies to fulfill it. What is coming next cannot be easily comprehended now".

4. Discussion

Vaccine development and utilization have proven highly effective in curtailing the spread of the COVID-19 pandemic (Kumari *et al*., 2021), as they boost individuals' immune systems, generating antibodies to combat existing diseases. The COVID-19 vaccine, in particular, is essential for preventing the virus's spread and further outbreak. However, the issue of COVID-19 vaccine hesitancy poses a significant threat to global health safety (Ezema *et al*., 2023). Vaccines play an important role in reducing morbidity and mortality associated with various infectious diseases by conferring benefits upon vaccinated individuals and safeguarding communities through the reduction of disease transmission (Rodrigues & Plotkin, 2020). In light of these considerations, this study sought to ascertain the attitudes of Nigerian older adults toward the uptake of the COVID-19 vaccine. The study's findings revealed that almost all participants had not yet received the COVID-19 vaccine. With the exception of one male participant who acknowledged having received the COVID-19 vaccine, the remaining participants had not accepted the vaccine. Similar observations were reported in Jordan and Malaysia, where there was low uptake of the COVID-19 vaccine (El-Elimat *et al*., 2021; Mohamed *et al*., 2021). On the contrary, in countries such as China and Spain, findings revealed that a majority of the populace, including older adults, had completed the full course of the COVID-19 vaccine (Iguacel *et al*., 2021; Mohamadi *et al*., 2021; Ontario Agency for Health Protection and Promotion, 2021; Zheng *et al*., 2021).

The findings of this study underscore that participants demonstrated indifferent attitudes toward the uptake of the COVID-19 vaccine. Among the older adults who participated in the study, only one expressed willingness to accept the vaccine if it were made available. The narratives provided by the participants reveal a lack of knowledge among Nigerian older adults about COVID-19, its consequences, and the importance of the vaccine in reducing the spread of COVID-19. Comparable to the findings in Jordan and Malaysia, these nations also displayed indifferent attitudes toward accepting the COVID-19 vaccine (El-Elimat *et al*., 2021; Mohamed *et al*., 2021). In contrast, older adults in Saudi Arabia demonstrated a greater willingness to accept the COVID-19 vaccine (Al-Mohaithef & Padhi, 2020). Similar positive trends were observed in countries such as Malta, the United Kingdom, the US, France, and other nations (Cordina *et al*., 2021; Lazarus *et al*., 2020; Murphy *et al*., 2020; Szilagyi *et al*., 2020; Sherman *et al*., 2020).

The findings of this study revealed a range of reasons provided by participants for their aversion to the COVID-19 vaccine. Some of the reported reasons include unfounded rumors suggesting that the vaccine causes other illnesses, that individuals who receive it may succumb to its effects, and that the vaccine possesses the ability to light an electric bulb or attract iron substances. These findings underscore a noticeable lack of knowledge among Nigerian older adults regarding the COVID-19 vaccine. Similar concerns were observed in other countries, such as Poland, where Rzymski *et al*. (2021) discovered that older adults expressed fear of the COVID-19 vaccine due to concerns about severe adverse effects, serious allergic reactions, and

unknown long-term effects. In contrast, citizens of Saudi Arabia and Venezuela exhibited a more informed stance on COVID-19, demonstrating positive attitudes toward the COVID-19 vaccines as a crucial means of containing the disease (Al-Hanawi *et al*., 2020; Bates *et al*., 2021).

Religious belief was found to influence older adults' COVID-19 vaccine hesitancy. Some participants stated that they need not get the vaccine because God has already conferred them with immunization. Others believe that the vaccine is the fulfillment of God's word, a method of injecting "666," which is the mark of the beast, into someone's body. These findings demonstrated older adults' lack of knowledge about COVID-19 and the vaccine. Similarly, the study by Onalu *et al*. (2022) discovered that Nigerians believe that the COVID-19 vaccine is a ploy by the Antichrist to inscribe the mark of the beast on people. Several studies have found that Christians, Muslims, and Jews all have negative attitudes toward COVID-19 vaccine uptake due to their religious beliefs (Baker *et al*., 2020; Corcoran *et al*., 2021; Islam *et al*., 2021; Jamal, 2020; Thinane, 2022; Whitehead & Perry, 2020).

Like many other studies, this one has limitations. The study's location in a specific state and geopolitical zone may impact the broader generalizability of the findings, especially if the participants were all local residents. As a result, the views they hold may only represent a subset of the Nigerian population. Therefore, there is a need for a similar study to be conducted in the country's other geopolitical zones.

5. Conclusion

COVID-19 has been linked to millions of deaths worldwide, with older adults bearing a disproportionate share of the toll. The pandemic has also affected the physical and mental health of older adults. Pharmaceutical companies and scientists from around the world collaborated to develop a vaccine to combat the effects of COVID-19. Nigeria is among the countries that have received doses of the COVID-19 vaccine, with a directive to prioritize vaccination for the older population before other sub-populations. The purpose of this study was to investigate the attitudes of Nigerian older adults toward the COVID-19 vaccine, with the southeast geopolitical zone as the study area. However, the study's findings revealed that the majority of older adults exhibited indifferent attitudes toward COVID-19 vaccine uptake. This indifference is rooted in their tendency to associate the vaccine with other illnesses, influenced by religious beliefs and concerns about perceived vaccine side effects. Consequently, despite the susceptibility of Nigerian older adults to COVID-19, their vaccine uptake is very low. Therefore, the study suggests that the Nigerian government, through orientation agencies, should undertake public education initiatives highlighting the importance of COVID-19 vaccine uptake. In addition, there is a need for policies that regulate the activities of unvaccinated individuals in various public domains.

Acknowledgments

The paper was presented at the Conference on Population and Reproductive Health Dynamics under COVID-19 in Sub-Saharan Africa that was hosted by the University of the Witwatersrand, South Africa, through its Demography and Population Studies Programme. The conference was supported under the auspices of the Science Granting Councils Initiative in Sub-Saharan Africa (SGCI) and administered by South Africa's National Research Foundation in collaboration with Canada's International Development Research Center (IDRC), the Swedish International Development Cooperation Agency (Sida), South Africa's Department of Science and Innovation (DSI), the Fons de Recherche due Quebec (FRQ), the United Kingdom's Department of International Development (DFID), the United Kingdom Research and Innovation (UKRI) through the Newton Fund.

Funding

None.

Conflict of interest

The authors declare no conflict of interest.

Author contributions

Conceptualization: Samuel O. Ebimgbo, Yemi Adewoyin, Uzoma O. Okoye
Formal analysis: Samuel O. Ebimgbo, Chukwuedozie K. Ajaero
Investigation: Samuel O. Ebimgbo, Yemi Adewoyin, Uzoma O. Okoye
Methodology: Samuel O. Ebimgbo, Chukwuedozie K. Ajaero, Uzoma O. Okoye
Writing – original draft: Samuel O. Ebimgbo, Uzoma O. Okoye
Writing – review & editing: Yemi Adewoyin, Chukwuedozie K. Ajaero

Ethics approval and consent to participate

The study received ethical approval from the Health Research Ethics Committee at the University of Nigeria, Teaching Hospital, Enugu (ref: NHREC/05/01/2008B-FWA00002458-1RB00002323). All interviews were carried out with the voluntary consent of participants. All the

participants were required to give oral permission. Their right to withdraw from the study whenever they were no longer interested in the study was given to them.

Consent for publication

The participants gave their oral permission to publish all the information they provided. Their confidentiality and anonymity were assured to them, hence the use of pseudonyms.

Availability of data

The data used for this study are available on request from the authors.

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ACCSCIENCE PUBLISHING

International Journal of Population Studies

RESEARCH ARTICLE

Parent-adolescent communication about COVID-19 safety precautions in Nigeria: A qualitative research

Aloysius Odii*

Department of Sociology and Anthropology, University of Nigeria, Nsukka, Nigeria

(This article belongs to *Special Issue: Population and Reproductive Health Dynamics under Covid-19 in Sub-Saharan Africa*)

Abstract

Parents remain the primary source of health information for adolescents but their discussions regarding coronavirus disease 2019 (COVID-19) safety precautions have not been systematically explored. This study aimed to qualitatively explore the communication between parents and children regarding COVID-19 safety measures. In-depth interviews with 25 parents from different communities in Enugu State, Nigeria, were conducted. The study revealed that parents obtained information about the severity of the virus and the preventive measures from the media. Then, they persuaded their children, sometimes through threat or force and religious allegories, to comply with the preventive measures. The discussions about safety measures between parents and their children proved to be effective since the parents reported that their children obeyed the rules following their communications. Parent-adolescent communication about COVID-19 also instilled the concept of practicing basic hygiene routines into the adolescents. The implications of the parent-adolescent communication for policy and research are discussed.

Keywords: Parents; Adolescents; Risk communication; COVID-19

***Corresponding author:**
Aloysius Odii
(aloysius.odii@unn.edu.ng)

Citation: Odii, A. (2024). Parent-adolescent communication about COVID-19 safety precautions in Nigeria: A qualitative research. *International Journal of Population Studies*, 10(1):98-107.
https://doi.org/10.36922/ijps.363

Received: September 19, 2022

Accepted: December 1, 2023

Published Online: December 19, 2023

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

Upon the declaration of the coronavirus disease 2019 (COVID-19) pandemic, global response and risk communication have been centered around safety precautions to reduce the spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) – the virus responsible for COVID-19 (Olarewaju, 2020; Odii *et al.*, 2020a; Nigerian Centre for Disease Control [NCDC], 2020; Otuonye *et al.*, 2021). Some of the most notable precautions preached to the public include regular hand washing, physical distancing of at least one meter, avoiding crowds, face mask wearing, and hygiene maintenance (World Health Organisation [WHO], 2022).

Although older people are at higher risk of contracting and dying from the virus, young people are in no way invincible to it (United Nations [UN], 2020). Among the 4.4 million COVID-19 deaths reported in the MPIDR Coverage database, 17,200 occurred among children and adolescents under 20 years of age, and out of this, 53% occurred among adolescents ages 10 – 19 (UNICEF, 2022). The high COVID-19-related

mortality rate among adolescents can be explained by their high tendency to violate safety precautions, which is prompted by low connectedness with family, increased peer pressure, and impulses to engage in risk-taking attempts (Laursen & Collins, 2009). Given these statistics, it is of utmost importance to make communicating with adolescents about COVID-19 safety precautions a priority in the overall effort to curtail the spread of the virus.

Nigeria is the most populous country in the sub-Saharan Africa, with an estimated population of 206 million (Ebu, 2020). Adolescents constitute a huge part of the population, as more than 1 in 4 people in Nigeria are adolescents aged 10 – 19 years (PMA/2020 Nigeria, 2017). Yet, little attention has been paid to understanding how information about COVID-19 is passed down to them. While most adults are aware of the impact of the virus, most adolescents, especially those in low-and middle-income countries, are at risk of contracting the virus because they are not given adequate information regarding the transmission process and the safety precautions (Ugwu, 2020). A study conducted across 25 health facilities in Nigeria, Ghana, the Democratic Republic of Congo, Kenya, South Africa, and Uganda reported higher mortality rates among children compared to those in developed countries and regions, such as the United States of America (USA) and Europe (Nachega *et al.*, 2022). Therefore, the adolescents in low-and middle-income countries should be properly informed about the virus, especially from trusted sources such as their parents.

Parents are the primary agents of socialization for their children (Chandra-Mouli & Patel 2017), and they are responsible for guiding them on what constitutes the safety protocols for preventing the spread of COVID-19 (Tambling *et al.*, 2021; Ugwu, 2020). Most information regarding COVID-19 is disseminated through the media (NCDC, 2020); therefore, parents can access this information easily and have the responsibility of educating their children. Parents participate in many domains of child raising, including attitude formation, sharing of values and knowledge, and caretaking of health, all of which are achieved by communicating with their children (Bikila *et al.*, 2021; Olusanya *et al.*, 2013). Parent-adolescent communication is the most proper avenue for conveying the needed directions, advice, and guidelines about COVID-19 prevention.

Curtailing the risk and spread of the coronavirus is a critical endeavor (Peplak *et al.*, 2021). Evidence indicates that parent-adolescent communication plays a crucial role in safeguarding the health of adolescents. A study conducted in the USA revealed that adolescents who engaged in discussions about sex, dangers of sexually transmitted infections (STI), and contraceptives with their parents were more likely to use condoms during sexual intercourse (Weinman *et al.*, 2008). In a study in Tanzania, adolescent girls who communicated about HIV/AIDs with their parents tended to practice family planning, get tested for HIV, and consistently utilize sexual protection such as condoms (Muthengi *et al.*, 2015). In Nigeria, Odii *et al.* (2020b) found that adolescent undergraduate students who did not discuss sex with their parents had multiple sexual partners and engaged in sex without consistent condom use. In the context of COVID-19, parent-adolescent communication could provide the needed guidelines, persuade compliance, and offer explanation of why complying is important.

However, there is a paucity of knowledge regarding parent-adolescent communications on the topics surrounding COVID-19. The current literature focuses mainly on developed countries. One study conducted in the USA reported that parents play their part by communicating with their children about personal and social hygiene, as recommended by the Centre for Disease Control (CDC), in an effort to prevent the spread of the virus (Tambling *et al.*, 2021). Another study showed that an increased frequency of parent-adolescent communication about COVID-19 strengthened adherence to the relevant safety measures (Peplak *et al.*, 2021). Therefore, there is a need to explore the discussions between parents and their adolescent children about COVID-19 safety precautions in low-and middle-income countries. This study is aimed at filling the literature gap by exploring sources of information regarding COVID-19 safety precautions and how the information is cascaded from parents to their children in Nigeria. The study promises to add to the existing literature on COVID-19 prevention and health promotion among adolescents in Nigeria.

2. Data and methods

2.1. Research design and study area

This study utilized qualitative methods to unravel parents' experiences in communicating COVID-19 safety precautions with their children. The present study was undertaken in Enugu State in Southeastern Nigeria, which has a total land mass of 7,161 km. Enugu state was created in 1991 from part of the old Anambra State. The capital is Enugu, which also is the largest city of the state. Enugu State shares border with Imo, Anambra, Abia, Ebonyi, Benue, and Kogi States. The state has an estimated population of 3.3 million people (National Population Commission [NPC], 2010). Igbo forms the major ethnic group in Enugu State and Southeastern Nigeria. Enugu is among the states with reported cases of COVID-19 in Nigeria, had enhanced surveillance at different airports,

and was locked down at the peak of COVID-19 in Nigeria (Al-Shattarat & Amuda, 2021).

2.2. Study participants and selection

The study participants comprised parents of adolescents in secondary schools located in Nsukka Local Government Area, Enugu, Nigeria. Thus, two major schools (a public and a private school) were purposively selected in Nsukka LGA. The schools were selected with the consideration of population and diversity of students' backgrounds. Then, the school administrators were met and informed about the study, and they offered assistance by providing name lists of adolescents aged 10 – 19 years whose parents have always resided within the community. Secondary schools were determined as the source of study participants because they have a large concentration of adolescents whose parents are easy to trace. Moreover, it was necessary to establish that the study was dealing with parents who were with their children during the peak of the pandemic. Through the assistance of the administrators, balloting was conducted and 35 parents were identified. They were contacted and briefed on the nature of the study and 25 agreed to participate in the study. The other parents who did not participate cited having a busy schedule as the prime rejection reason.

2.3. Instrument and method of data collection

The interview guide was developed by the researcher. It was first pre-tested on two parents before the data collection began. After the pre-test, the tool was strengthened further, especially in line with the objectives. Specific questions on what parents think about COVID-19, their source of information about COVID-19, their discussions with children regarding COVID-19, and how the discussions affected the children's behavior were key in addressing the research objectives.

Data were collected between December 2020 and February 2021, toward the easing of the lockdown. The respondents attended the interview at the time and venue of their preference. The interviews were conducted in English, a language all the participants are fluent in. The research employed the service of a research assistant (a female student from the University of Nigeria, Nsukka) who helped with note-taking during the interviews. The interviews lasted for approximately 34 min. With the permission of each respondent, the interviews were recorded, and the clips were properly labeled and stored on a computer.

2.4. Data analyses

The data were transcribed verbatim by the researcher, with the assistance of the note-taker. All the transcripts were processed and edited appropriately to remove errors. Thematic analyses, guided by Braun & Clarke (2006), were used for data analyses. Four transcripts were read by the researcher multiple times to achieve immersion in the data. The transcripts were then used to develop codes for the study. The codes were assessed, and in the end, some were merged or removed. The codes were later developed into conceptual categories and later, themes. The remaining transcripts were coded in the same pattern. An example was the decision to code any reference to knowledge or awareness of COVID-19 to the theme of what parents think about COVID-19. The findings are presented thematically in the next section.

3. Results

3.1. Sociodemographic characteristics of the respondents

A total of 25 parents were interviewed (Table 1). Nine of the respondents are males while 16 are females. The respondents have an average age of 44 (31 – 74 years). Five of the respondents have Senior Secondary School Certificates (SSCE), three have diplomas, 12 have degrees while five have higher degrees. All the respondents were married and only two were unemployed.

3.2. What do parents think about COVID-19?

The interviews started with a question on what parents think about COVID-19. This was based on the premise that what parents think about the virus may influence how they discuss it with their children. From the participants' accounts, parents perceived that COVID-19 is a deadly disease that wreak havoc and as such, must be taken seriously. The following are illustrative quotes:

> "COVID is a killer disease, a communicable disease, which demands that we all must be careful. COVID-19 does not differentiate between social status nor does it discriminate… it kills people of different classes and different ages." (Male, 68 years old, unemployed)
>
> "When they started the awareness about COVID-19, I went to Kano. There, they kept saying that COVID is killing a lot of people. So, we decided to go to the general hospital to see for ourselves, right there we saw dead people that are being taken away. Also, we learned that a top official in this administration died as a result of COVID-19. The day he was buried, we saw it on the television, including those that disposed the clothes they wore to the burial because they all know that it is a killer disease." (Male, 55 years old, civil servant)

Participants claimed that they were aware of the high death rates linked to COVID-19. However, some of the

Table 1. Sociodemographic details of respondents

S. No.	Age (years)	Sex	Occupation	Educational level	Marital status
1	68	Male	Unemployed	OND	Married
2	55	Male	Civil servant	SSCE	Married
3	45	Male	Clergy	SSCE	Married
4	35	Male	Artisan	Degree	Married
5	44	Male	Driver	Degree	Married
6	74	Male	Retiree	Degree	Married
7	26	Male	Artisan	Degree	Married
8	56	Male	Businessman	Degree	Married
9	66	Male	Businessman	Higher degrees	Married
10	34	Female	Businesswoman	SSCE	Married
11	44	Female	Civil servant	Higher degrees	Married
12	34	Female	Businesswoman	Higher degrees	Married
13	44	Female	Businesswoman	SSCE	Married
14	54	Female	Petty trader	SSCE	Married
15	44	Female	Health worker	Degree	Married
16	39	Female	Businesswoman	Degree	Married
17	51	Female	Businesswoman	Degree	Married
18	44	Female	Clergy	Degree	Married
19	31	Female	Businesswoman	Higher degree	Married
20	64	Female	Teacher	OND	Married
21	33	Female	Teacher	Degree	Married
22	48	Female	Petty trader	Degree	Married
23	54	Female	Petty trader	Degree	Married
24	34	Female	Unemployed	OND	Married
25	48	Female	Teacher	Higher degrees	Married

Abbreviations: OND: Ordinary national diploma; SSCE: Senior secondary school certificates.

participants had a wishful thinking that although the mortality rate caused by COVID-19 was high in Europe, the similarly grave situation may not replicate in Nigeria, citing that the high temperature in the region could prevent the virus from thriving. Some of the respondents said:

> "My understanding is that it is for white people. It is not for us… the pandemic cannot be equated to the suffering of the Igbos. When you walk around during the day and the sun strikes you repeatedly, the COVID-19 will leave you by force." (Male, 55 years old, civil servant)
>
> "It is a disease from a foreign country, it has too much effect on them because their weather is too cold. We Nigerians are just being deceived by them because I strongly believe that our weather is too hot for it to survive." (Female, 48-years-old, teacher)

Other respondents perceived that the virus may not cause high mortality because "God loves us," believing that God will spare the people he loves from the virus. For example:

> "Forget about those things. What happens is that God loves us a lot because He knows we don't know anything. God loves us. Such diseases are not for us." (Female, 34 years old, businesswoman)

3.3. Parents' major source of information about COVID-19

The data show that the media, predominantly television, were the major source of information about COVID-19. Most of the participants learned about COVID-19 from the television news, broadcasted by international news media, such as Aljazeera and BBC, as well as local news media, such as Channels and Arise TV. The respondents reported that broadcasting media disseminated essential information about the virus, including safety precautions, through various means. For example:

> "They made sure that there were representatives for people who are dumb. They used sign language to pass the information to those who cannot talk. They also

translated these messages into different languages such as Hausa, Igbo and Yoruba to reach as many people as possible. So, as long as you watch television, you will see them disseminating the information to those who are impaired or speak only their native dialects like Igbo, Yoruba and Hausa. So, they did their best in ensuring that the information is properly disseminated. They taught us how to use hand sanitizers, open the tap, and do many other things." (Female, 44 years old, civil servant)

"Everything I know about the virus, I learned from the news media or on television. They showed those who contracted the virus, its signs and symptoms and how to manage it. On TV, they said we have to wash our hands regularly, whenever we touch anything or shake [hand with] someone, we ought to wash our hands. Also, they talked about the need for us to wear face masks." (Female, 44 years old, health worker)

However, the news was phrased in a way that made most respondents develop fatalistic attitude toward the pandemic, and because of the intimidating presence of COVID-19, they feared for the safety of themselves and their family members. One of the respondents, a clergy described his experience as follows:

"I first learnt of it on Aljazeera news media, which I usually listen to. When it (COVID-19) got into America, we saw how devastating it was, we also saw how it killed people in China. Before it even entered Nigeria, we were already afraid after seeing the people it killed in developed countries…, we wondered what becomes of nations like ours." (Male, 45 years old, clergy)

3.4. Initiation of discussion about COVID-19

The findings in this section showcase how parents converse with their children, after learning of the virus outbreak. It was found that discussions about COVID-19 mostly arose after the news coverage of the mortality and prevalence of the virus started to increase. The media images showing those killed by the virus have motivated parents to talk to their children about the virus and safety precautions. Parents initiated the discussions that inspired fear in their children. Some illustrative quotes are as follows:

"It is usually the media that initiated the discussion between me and my child. After watching the news, I called them to inform them to be careful about COVID-19 and that the disease is very deadly and very dangerous. So, the summary of the discussion is for them to be very careful so they don't contract the virus." (Female, 39 years old, businesswoman).

"I know that COVID-19 is bad but I can't say I have come in contact with the person who contracted the virus. I only see them on television. The day I saw someone who was infected by the virus on television, I was afraid especially since people couldn't go close to the body. When I called my children to talk to them about the virus, they were afraid after I explained to them how dangerous it is and how quickly it could take one's life." (Female, 44 years old, health worker)

Some parents who had been apathetic about COVID-19 – despite the sharing from other sources – started to take the potentially dire consequences seriously only after witnessing the gravity of the pandemic from the media. An illustrative quote is given below:

"I first heard about it at the church but then, I didn't take it seriously. Then I watched it on television coupled with images of death and people that are infected then the media also reported that the virus has entered Nigeria. After that, I became afraid and quickly called my children. That was when I started advising my children to be careful." (Male, 35 years old, artisan)

3.5. Content of the discussion between parents and their children about COVID-19 safety precautions

The data revealed that safety precautions were emphasized in the discussions between parents and their children. Parents told their children to comply with the safety precautions, such as wearing face masks, using hand sanitizers, washing hands regularly, and avoiding places with crowds, as presented by the media. Some quotes captured it this way:

"We talked about how to prevent them from contracting the virus, how to wash hands regularly and avoid shaking people and wear facemasks." (Female, 44 years old, health worker)

"We normally tell them to be very careful how they touch or shake people, including talking to people. If you have to talk to anyone you have to maintain some distance from them or social distance to avoid contracting the virus." (Female, 39 years old, businesswoman)

Parents reported that they needed to address the inquiries of their children mostly on how to identify an infected person and how to protect oneself during the discussions. The data showed that parents address these concerns based on what they learn from the media. Some of the parents' quotes are as follows:

"During the discussion, my child asked questions like, "how do you know who is infected with COVID-19?" Then I explained to him based on what I saw on the news that an infected person breathes hard, coughs repeatedly and shows signs of fever." (Male, 53 years old, businessman)

"They asked questions. They wanted to know the signs and symptoms of the virus as well as how to protect oneself from ever contracting it. Then I told them to stay away from people who have fever or sneezes. I told them to not touch or come close to such people because they can contract it in the process… that is what they said on television." (Female, 59 years old, businesswoman)

"Sometimes they ask questions, "mummy how do we prevent ourselves from contracting the virus? How do we secure ourselves from the virus?" When they do, then I advise them to give strangers space and to wash their hands regularly, use hand sanitizer and use face masks so that they will not contract it." (Female, 39 years old, businesswoman)

3.6. Use of force, emotions, and religious allegories to enforce compliance

Parents claimed to own a set of strategies at their disposal to make their children comply with the safety precautions. One of the most commonly reported strategies is the use of force. Most of the parents admitted hitting and shouting at their children to make sure they continue to follow the safety measures. This was motivated by the belief that children would hardly follow instructions, except when they are disciplined with corporal and/or verbal punishments. Some illustrative quotes are given below:

"They are not always complying and it's because it is not something they are used to. When I notice that, I correct them using the appropriate ways of handling a child which is harsh voice. It's not everything you tell them that they will put into practice, but as a father, you must keep reminding them." (Male, 44 years old, driver)

"Yes, I do raise my voice at him by saying wash your hands, do this or do that. If I tell him and he does not respond, then I shout at him or even beat him to obey the guidelines that they said [could] protect them." (Female, 51 years old, businesswoman)

"I had to apply force so that they can comply with the measures I talked about to them. I had to flog them, especially the younger ones since they barely listen to instructions until you apply force." (Female, 44 years old, businesswoman)

Some parents also integrate their teachings about the virus with religion to reinforce compliance. An illustrative quote is given:

"I told them that COVID-19 can be compared to the word of God which is an individual thing. If you want to go to heaven, obedience to the word of God is a personal or individual thing. Likewise, complying with COVID-19 safety protocols is a personal or individual thing. So, if you ask someone to wear face masks and they refuse, you leave them. Likewise, if you ask someone to wash their hands with hand sanitizer and they refuse, don't mind them; [just] wash your own hands." (Female, 44 years old, clergy)

Finally, some parents also appealed to the child's emotions by referring to death and its overall implications. A quote related to this strategy is as follows:

"They asked questions about the effect of it and I responded that I am now aged so I don't want them to contract it and die earlier so they should maintain the COVID-19 rules so that they could live up to…, longer and help me. Because if they die young, I would not be able to live long and I am not ready to bury any of my children." (Male, 74 years old, retiree)

3.7. Impact of the conversation on children's behavior

All the parents reported that the discussion about COVID-19 culminated in a positive outcome, where their children abided by the rules or precautions as directed, such as wearing face masks, staying away from crowds, and washing their hands intermittently. The discussions also helped foster the concept of practicing basic hygiene routines among the children.

"After the discussion about COVID-19 with my child, I noticed that he became cleaner. He started washing his hands regularly and stayed away from dirty surroundings because he was afraid of it. (Female, 31 years old, businesswoman)

"How they acted afterward showed me that indeed, they heard what I told them about the virus. They started washing their hands, and wearing face masks…, each time they can't find their facemasks, they refused to go to school until I bought another one for them." (Male, 45 years old, clergy)

The findings also revealed that discussions between parents and their children about COVID-19 made the children vanguards of compliance with safety measures. They reminded each other and their parents whenever they violated the safety measures. The following are some illustrative quotes:

"They behave well… sometimes when we have visitors, they say to us, "mummy, don't hug that person and make sure that whenever you are talking to that person that you are very far from him and make sure that the person washes their hands before entering our house." (Female, 39 years old, businesswoman)

"All my children know about the virus, sometimes, they even remind me that I am not wearing my face masks or that I have not washed my hands." (Male, 35 years old, artisan)

"My children did not know about the virus until I called them together and discussed it with them. It was after the discussion that many of them started reiterating what they have heard from me and even said that they heard it from other sources." (Female, 44 years old, health worker)

4. Discussion

This study explored parent-adolescent communication about COVID-19. The findings support the key role of parents in the effort of curbing the spread of coronavirus. After the parents learned about COVID-19 and the safety precautions, they talked to their children and requested them to comply with the safety measures, strengthening the adolescents' adherence to safety measures and instilling the importance of basic hygiene in their children. It has been shown that frequent parent-adolescent conversations about the pandemic may increase adherence to health-protective behaviors (Peplak *et al.*, 2021).

All the respondents believe that COVID-19 exists and is a deadly infectious disease capable of causing mayhem. The way media describe the COVID-19 informed parents' belief that the virus is dangerous. Although some parents were not aware of the severity of the disease, their commitment to safeguarding their children served as a motivation for them to enforce the safety guidelines. Ilesanmi & Afolabi (2020) also revealed that some people held the view that the virus is an exaggerated event. In this study, some parents reported that high temperature could reduce the severity of the virus. There was also a religious interpretation of the virus, with certain parents believing that the virus could not harm them as they are protected by God. A study by Pieterse & Landman (2019) also found that many people held the view that God is still in control despite the raging pandemic. Despite these diverging views, parents would still ensure that their children were informed about the safety measures, which are designed to protect them from the virus. This underscores parents' protective roles in the face of uncertainties, like the COVID-19 pandemic.

The study found that the media remain the major source of information about COVID-19 for parents. This is similar to the findings of Apuke & Omar (2021) who found that the media paid adequate attention to the issues of coronavirus. Parents regularly tune in to the television to get updated with the news about the coronavirus (Ugwu, 2020). According to these parents, stories about COVID-19 could also be derived from other sources (*e.g.*, religious organizations), but it was the media showing the severity of the disease that compelled them to take the whole situation seriously. This motivated them to initiate the conversation about the virus with their adolescent children. Mbachu *et al.* (2020) similarly found that parents are often triggered to talk about sex-related matters with their adolescent children by the unpleasant or tragic news revolving around pregnant adolescents or abortion-related death. However, parents' decision to initiate health-related discussions only when they are inundated with tragic news can have disastrous consequences and delay intervention.

Fear is centered on the discussion between parents and adolescents about the virus. The media coverage of the COVID-19 pandemic has intimidated many parents. The panicking parents in turn aroused fear in their child during the discussions about the virus. Apuke & Omar (2021) similarly reported that television stations in Nigeria tended to cover the news about coronavirus using negative and alarming tones; however, such tones are perhaps uncalled for if it is not necessary to draw the attention nationwide to the severity of the pandemic. However, the fear- or horror-infused news can incite irrational actions in some audiences. In this study, the fear and panic factor may explain why parents hit or shout at their children to enforce compliance with the safety measures publicized by the media. It may also explain why parents approached the discussion desperately using emotions and religious allegories to enforce compliance with the safety measures.

Furthermore, the discussion between parent and adolescent was mostly horizontal, top-down fashion where the parent assumes the role of the teacher while the child acts as the passive listener. Parents can assume the teaching role if they do not trust their children can efficiently comprehend information (Putnam *et al.*, 2002) or if the parents are not educated enough to answer their children's queries. Occasionally, as this study found, the parents were only able to respond to queries regarding safety measures even if their children's inquiries were concerned with other aspects of the pandemic. This once again emphasizes the need for media to exude professionalism in their coverage of the pandemic. Additionally, parents ought to consider the emotional needs of their children when communicating sensitive issues, such as those related to the pandemic (Peplak *et al.*, 2021).

Taken together, parent-adolescent discussions about COVID-19 influenced the children's compliance with safety measures as well as instilled in them the basic hygiene concept. Parents reported that after the discussions, the overall hygiene of their children improved, face mask wearing became more frequent, physical distancing was practiced, and hand washing became more regular. This is significant for the effort to control the spread of the virus because the children also, in turn, reminded their parents whenever they fail to adhere to the measures they proposed. Ugwu (2020) similarly reported that during the peak of the pandemic,

children often reminded their parents to keep their distance and change clothes after visiting a public space.

4.1. Implications for policy and research

Very little attention has been paid to the risk communication of COVID-19 for young people. In fact, at household level, parents contributed to alleviating the spread of COVID-19 by instilling safety precautions to their children and persuading them to comply, after learning about the safety measures from the media. While parents have made significant strides in promoting COVID-19 prevention measure, it is not advisable to rely on parents solely for the task of communicating safety measures. Instead, it is crucial to recognize that parental discussion with their children underscores the necessity of designing more effective strategies for communicating risk with younger individuals, all while minimizing potential psychological and emotional consequences.

As the major source of information regarding COVID-19, the media and other stakeholders can design risk communication strategies aimed at improving parent-adolescent discussions about the virus. The current strategies employed by parents may evoke emotional distress in adolescents whose emotional and psychological states have already been adversely impacted by the pandemic. Hence, parents need to practice sensitivity to the emotions and psychological state of their children during discussions about COVID-19 and other health issues.

4.2. Study limitations and future directions

One prominent limitation of the present study was the small sample size used, which was not sufficient for broader generalizations or interpretations. In light of this, there is a need for large-scale quantitative studies to provide further corroborating evidence on parent-adolescent discussions about COVID-19. Future studies should consider including adolescents as study participants, a population not included in the current study. These may pave way for the formulation of more effective risk communication strategies and healthier discussions between parents and their children.

5. Conclusion

This study demonstrates that parents a play pivotal role, as part of the collective effort, in curbing the spread of COVID-19. Their role extends beyond merely providing information, as they also enforce compliance to the safety measures. As long as there is up-to-date and accurate information disseminated by the media, parents can continue to significantly contribute to mitigating the impact of the pandemic and ensuring the safety of their families and communities. This underscores the need for public health campaigns and intervention strategies to not only target adolescents but also to engage with and support parents as important allies in the fight against COVID-19.

Acknowledgments

The paper was presented at the Conference on Population and Reproductive Health Dynamics Under COVID-19 in Sub-Saharan Africa that was hosted by the University of the Witwatersrand, South Africa through its Demography and Population Studies Programme. The Conference was supported under the auspices of the Science Granting Councils Initiative in Sub-Saharan Africa (SGCI) and administered by South Africa's National Research Foundation in collaboration with Canada's International Development Research Center (IDRC), the Swedish International Development Cooperation Agency (Sida), South Africa's Department of Science and Innovation (DSI), the Fons de Recherche due Quebec (FRQ), the United Kingdom's Department of International Development (DFID), the United Kingdom Research and Innovation (UKRI) through the Newton Fund.

Funding

None.

Conflict of interest

The author declares no competing interest.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

The study was approved by the research ethics committee of the University of Nigeria Teaching Hospital. The study's process and purpose were explained to the respondents before the interviews commenced. The terms set forth in the consent sheet were explained to the respondents, encompassing the risks and benefits of participating in the study. The respondents were also informed that if they chose to participate, their responses would be kept anonymous. Additionally, they were informed that they could discontinue the interview any time and disregard any questions. Those who agreed to participate had signed the informed consent form.

Consent for publication

Participants were informed that the findings were for research and would be published.

Availability of data

Supporting data can be obtained from corresponding author following formal request.

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ACCSCIENCE PUBLISHING

International Journal of Population Studies

RESEARCH ARTICLE

Use of migration and mobility data in COVID-19 response: Evidence from the East Africa Community region

Mary Kalerwa Muyonga*

Population Studies and Research Institute, University of Nairobi, Nairobi, Kenya

(This article belongs to *Special Issue: Population and Reproductive Health Dynamics under COVID-19 in Sub-Saharan Africa*)

Abstract

COVID-19 pandemic has given rise to unprecedented challenges to global health and mobility. A valuable lesson from this recent pandemic is that migration statistics can be relied on to illuminate the spread of an epidemic and model diffusion patterns once a highly contagious virus is detected in a country. This study reviews literature published between 2020 and 2021, giving insights into the generation and use of migration and mobility data in COVID-19 response in the East Africa Community (EAC). The reviewed studies regarding the EAC Regional COVID-19 Response Plan all point to the need for timely data, but do not specify requirements for mobility and migration statistics. Several studies featured in this review propounded innovative ways to obtain and use the data in COVID-19 modeling. The study concludes that there is potential for use of migration statistics in future pandemic response plans and recommends that the EAC mainstreams migration statistics within the pandemic response processes.

Keywords: COVID-19; Migration; Mobility; Data; East Africa Community; Africa

***Corresponding author:**
Mary Kalerwa Muyonga
(mary.kalerwa@gmail.com)

Citation: Muyonga, M.K. (2024). Use of migration and mobility data in COVID-19 response: Evidence from the East Africa Community region. *International Journal of Population Studies*, 10(1):108-119. https://doi.org/10.36922/ijps.357

Received: September 19, 2022

Accepted: December 1, 2023

Published Online: December 28, 2023

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

As the coronavirus disease 2019 (COVID-19) pandemic started to take hold of the world in December 2019, no one has anticipated the unprecedented effects that it brought on global health and mobility, which confirm the inextricable connection between migration, health, and human mobility. The first confirmed case of COVID-19 was recorded in the Chinese city of Wuhan, and the virus responsible for this infectious disease, called the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), had swiftly swept the globe. In Africa, the first case of COVID-19 was reported in Egypt in February 2020 and later that same month in Nigeria.

The first cases of the COVID-19 in the East African Community (EAC) region were reported in March 2020 in Burundi, Kenya, Rwanda, Tanzania, and Uganda (Musanabaganwam et, al., 2021; Habonimana *et al.*, 2020; Republic of Health Kenya, 2020a; Olum & Bongomin, 2020; Tarimo & Wu, 2020). The immediate response was a raft of containment measures to limit human mobility evidenced by the closure of international borders and restriction of movement within national borders. While Kenya,

Rwanda, and Uganda implemented these containment measures immediately, Tanzania and Burundi took a different approach, by playing down the significance of the pandemic, due to political reasons (Brima, 2021). By June 2020, Rwanda began implementing the protection measures such as health messaging, while Tanzania later set up a COVID-19 response taskforce almost a year later, in April 2021 (Manirambona *et al.*, 2021).

The spread of COVID-19 pandemic is closely tied to global mobility, as migration played a key role in the spread of the virus across the globe (Benton *et al.*, 2021; De Bruin *et al.*, 2020). As different countries unilaterally or within coalitions put in place mitigation measures to manage the pandemic, it is necessary to understand how mobility and migration data were accessed and utilized in the COVID-19 mitigation measures. The migration and mobility data serve to identify recent travelers and their close contacts as well the population at risk of infection, which are important determining factors for implementing mitigation measures. For example, in many countries, once a victim was positively identified to have contracted COVID-19, information such as travel history and possible contacts made during the travel will be collected. This way, COVID-19-positive individuals will be monitored during quarantine and their contacts traced to prevent the infection from dissemination to others (Nachega *et al.*, 2021; Braithwaite *et al.*, 2020; Jordana & Triviño-Salazar, 2020).

Pandemics pose serious public health challenges and usually require instant, accessible data to inform planning and formulate suitable response, and mitigation measures (Pergolizzi *et al.*, 2021; Desai *et al.*, 2019). Response efforts require granular data which, at times, are unavailable; therefore, model-derived proxies of mobility are commonly employed. Perez & Dragicevic (2009) developed such a model based on community mobility flows to predict the spread of communicable disease in Canada. Such agent-based models have been applied to model the spread of COVID-19 in the Global North countries (Hoertel *et al.*, 2020; Venkatramanan *et al.*, 2018). For example, Fortaleza *et al.* (2021) used health geography modeling technique to understand the early dispersion of COVID-19 in São Paulo, Brazil, using COVID-19 surveillance data to model the spread within the municipalities combined with tracking of air travel into and out of Brazil. Their results showed that SARS-CoV-2 virus spread within Brazil due to increased movement of people to regions with better transport infrastructure, with higher cases being initially reported in the bigger cities before spreading to smaller ones.

The Global Compact on Safe, Orderly, and Regular Migration (GCM) is a negotiated treaty adopted by 152 countries, focusing on the management of migration. The GCM reiterates the importance of data on migration, with the first objective tasking member states to collect and utilize accurate and disaggregated migration data as a basis for evidence-based policies (UN, 2018). Guided by the already-known connection between human mobility and global dissemination of virus, the COVID-19 pandemic provides a timely opportunity to explore whether migration and mobility data available in a timely, accurate, and disaggregated manner can inform suitable policy response to the pandemic.

This systematic review of literature focuses on the preliminary response to the COVID-19 pandemic between 2020 and 2021, examining how migration and mobility statistics were incorporated to strengthen the response plans. The centerpiece of this review reflects the necessity of intelligently applying timely and disaggregated data for evidence-based decision making, which is the aspiration of the Global Compact for Migration. The next section of this paper details the methods and analytical approach, and the last three sections deal with the results, discussion, and recommendations for future pandemic response efforts.

The main objective of this review is to showcase the application of migration and mobility data in the management and response to the COVID-19 pandemic in the EAC region.

2. Data and methods

This systematic review was conducted based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) reporting guidelines (Moher *et al.*, 2009). Studies were identified from the available electronic databases, including but not limited to, African Journals Online (AJOL), Google Scholar, Jstor, PubMed, and Medline. The review focused on studies conducted in Burundi, Kenya, Rwanda, Tanzania, and Uganda. Despite being a member state of the EAC, South Sudan was omitted in this review; additionally, studies conducted in the Democratic Republic of Congo, which had not yet been ratified as a member of the EAC regional economic bloc, were omitted from the review.

The review included published and gray literature that captures data on migration and mobility and its use in the management of COVID-19 within the countries of the EAC region from January 2020 to December 2021. This was complemented by literature found in health, mobility, migration, and health specialist platforms hosted by international or local organizations, including universities in the member states, as well as in data and research publications from the International Organization for Migration (IOM), through its Migration Research

Portal, the African Union (AU), the EAC, and the Intergovernmental Authority on Development (IGAD). This approach enabled the reconstruction of the COVID-19 response framework in the EAC region, which has important implications for data requirements for the response efforts. In this paper, COVID-19 management refers to a range of measures undertaken by the respective governments to track down COVID-19 victims, trace their contacts, and address other issues related to identification of persons with COVID-19. This review focuses on studies that tracked usage of migration and mobility data to not only manage COVID-19 but also forecast or model the internal diffusion of the virus.

The keywords used in literature search include "migration data," "migration statistics," "mobility data," "mobility statistics," "COVID-19", "East African Community," "EAC," and the respective name of each EAC member state. The keywords were used to search for literature on the Internet. The abstracts, keywords, and methodology described in the selected studies after online search were rigorously reviewed, with particular emphasis on the availability and use of data and the limitations surrounding these aspects. The study selection process is outlined in Figure 1.

The methodology sections of the selected papers were examined to evaluate the relevance of the manuscripts to the study objectives. Manuscripts that fulfilled the inclusion criteria were read, and the references cited in the selected manuscripts were screened through to identify other possible relevant manuscripts for inclusion in this systematic review. Adherence to the above-mentioned procedures helped preliminarily identify a total of 50 studies conducted in the EAC region, concerning the keywords "migration," "mobility," and "COVID-19." The first-level screening involves the identification of duplicate articles by reviewing the titles and abstracts, and 17 articles were excluded from the preliminary set of studies. Thereafter, the remaining 33 articles were reviewed through full-text reading, and 15 articles were found to be ineligible as some of them focused on Africa as a region, while others featured epidemiological aspects of the SARS-CoV-2 virus, without reference to migration or mobility issues. Studies on the impact of COVID-19 on health, economics, and related subjects were omitted in this analysis, unless they specifically focused on mobility or migration data or statistics. After a thorough and careful article selection and multi-stage screening, a total of 18 studies were found relevant to the objectives of the systematic review and were, therefore, included in the qualitative analysis (Table 1).

The final 18 studies that met the criteria for the review were, further, analyzed to draw insights from the available literature on how migration and mobility data were generated and utilized in the mitigation and management of COVID-19 in the EAC region, especially in every member state. The sampled studies show regional variations, with Kenya reporting more published studies on COVID-19 compared to the other countries in the EAC region. Of the five Kenyan studies cited in this paper, two were based on research conducted in urban informal settlements to monitor the effects of COVID-19 protocols, using telephone-based interviews conducted amongst residents of those areas; two studies focused on predictive modeling of COVID-19 in the country; while the remaining study used geospatial indicators to predict the social, environmental, and socioepidemiological vulnerabilities in the sub national units, which could inform the COVID-19 pandemic response. There is only one relevant study from Burundi that provides a summary of the COVID-19 measures adopted in the country. For Uganda, three studies were found relevant, with one focusing on ways to track COVID-19 spread in the country while the other two evaluating the trends of the pandemic in the country and the lessons learned. In Rwanda, only one study was relevant, depicting the management of COVID-19 in the country and the lessons learned. No relevant studies from Tanzania were found during the specified period. Several continental and regional studies, which included some of the EAC member states, were included in this systematic review. The main themes of these continental and regional studies revolve around COVID-19 preparedness and vulnerabilities of the different countries as well as the effectiveness of interventions.

3. Results

3.1. COVID-19 response architecture in the EAC region

The EAC regional response to the COVID-19 pandemic was based on the continental response plan, which was guided by the African Union Commission (AU) in partnership with the African Centers for Disease Control (Africa CDC) and the World Health Organization Regional Office for Africa (WHO/AFRO), who formed the Africa Taskforce for Coronavirus (AFTCOR) in February 2020 (Africa Union, 2020a). Comprising representatives of the AU and members of the national public health institutions of the member states, the Africa Taskforce launched the Joint Continental Strategy for COVID-19 Outbreak in 2020 following consultations of the Africa Taskforce (African Union, 2020b). The continental strategy had twin objectives: (i) To coordinate member states in their response; and (ii) to promote evidence-based public health practice for surveillance, prevention, diagnosis, treatment, and control of COVID-19 (African Union, 2020b:6). Collecting data for the purpose of managing

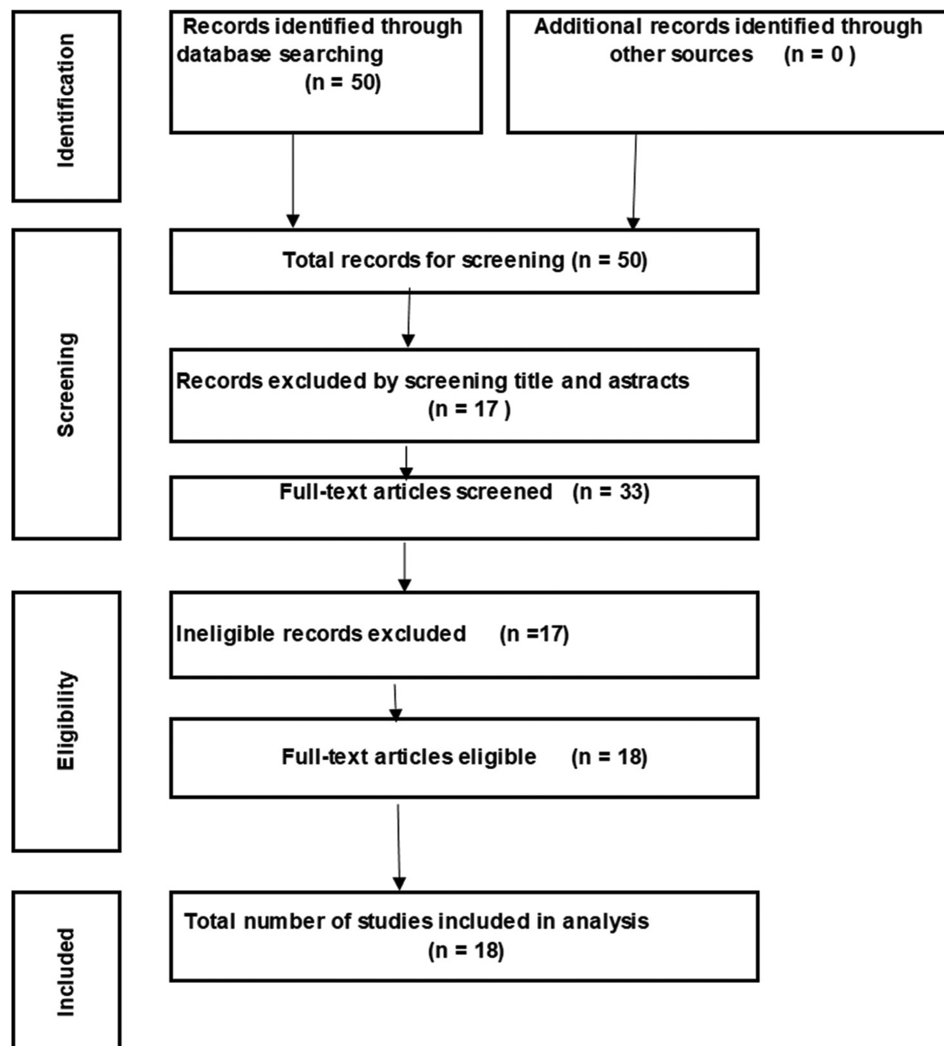

Figure 1. PRISMA flow diagram of selection of studies for systematic review

the COVID-19 pandemic was a top priority for AFTCOR, with "timely data" emphasized in the second objective (African Union, 2020b:4). Several critical initiatives, such as the Partnership to Accelerate COVID-19 Testing in Africa (PACT), Africa Medical Supplies Platform (AMSP), Consortium for COVID-19 Clinical Vaccine Trials (CONCVACT), and Africa Against COVID-19: Saving Lives, Economies and Livelihoods (African Union, 2020c; 2020d; 2020e; 2020f), were launched to ensure the seamless distribution of medical supplies and vaccines and the implementation of public health interventions.

Some of the key activities identified to manage COVID-19 include the increased surveillance through screening at entry points, and contact tracing, as well as adapting the health information systems for managing identified COVID-19 cases and contact data (African Union 2020b:2d). The AU pledged to work with member states to assess and manage issues related to "special populations" which encompass refugees and internally displaced persons, who form part of the migrant population (African Union 2020b: Section 2.7). To monitor the continental response efforts, AFTCOR contracted a global consortium, the Partnership for Evidence-Based COVID-19 Response (PERC), in March 2020, to conduct monitoring surveys on the accessibility, impact, and effectiveness of the COVID-19 public health, and social measures implemented at the country level, focusing on 20 member states of the AU (WHO/AFRO, 2021; Africa CDC, 2021a).

The COVID-19 pandemic came at a time when the EAC region had already experienced previous pandemics, where a collaborative network had already been established based on previous disease outbreaks to manage public health

Table 1. Summary of studies included in the systematic review

Region	Article title	Author(s), year
Burundi	Burundi's "Worst Enemy:" the Country's Fight Against COVID-19	Manirambona *et al*., 2021
Kenya	Practical geospatial and sociodemographic predictors of human mobility	Ruktanonchai *et al*., 2021
Kenya	Mobility Patterns During COVID-19 Travel Restrictions in Nairobi Urban Informal Settlements: Who Is Leaving Home and Why. Journal of urban health:	Pinchoff *et al*., 2021
Kenya	Forecasting the scale of the COVID-19 epidemic in Kenya	Brand *et al*., 2020
Kenya	The impact of COVID-19 control measures on social contacts and transmission in Kenyan informal settlements	Quaife *et al*., 2020
Kenya	A vulnerability index for COVID-19: spatial analysis at the subnational level in Kenya	Macharia *et al*., 2020
Rwanda	Lessons learned from Rwanda: innovative strategies for prevention and containment of COVID-19	Karim *et al*., 2021
Uganda	Feasibility of using a mobile App to monitor and report COVID-19 related symptoms and people's movements in Uganda	Mugenyi *et al*., 2021
Uganda	Uganda as a role model for pandemic containment in Africa	Sarki *et al*., 2020
Uganda	Uganda's first 100 COVID-19 cases: trends and lessons	Olum & Bongomin, 2020
Tanzania	The first confirmed case of COVID-19 in Tanzania: recommendations based on lesson learned from China	Tarimo & Wu, 2020
Africa	COVID-19 and the State of Global Mobility in 2020	Benton, 2021
Africa	Pan-African evolution of within-and between-country COVID-19 dynamics	Ssentongo *et al*., 2021
Continental	Prediction of the COVID-19 spread in African countries and implications for prevention and control: a case study in South Africa, Egypt, Algeria, Nigeria, Senegal, and Kenya	Zhao *et al*., 2020
Continental	Preparedness and vulnerability of African countries against importations of COVID-19: a modeling study	Gilbert *et al*., 2020
Kenya, Uganda	Unseen Eyes, Unheard Stories: Surveillance, data protection, and freedom of expression in Kenya and Uganda during COVID-19	ARTICLE 19 Eastern Africa, the Kenya ICT Action Network (KICTANet), 2021
Global	Community movement and COVID-19: a global study using Google's Community Mobility Reports	Sulyok & Walker, 2020
Africa	Coordinating action: lessons from early COVID-19 responses in five African countries	WHO/AFRO, 2021

emergencies (Affara *et al*., 2021). Frequent outbreaks of diseases in the EAC could partly be attributed to the increased integration and Free Movement Protocol that allowed visa-free travel within the region by citizens of respective member states (EAC, 2010). In response to the COVID-19 pandemic in the region in March 2020, the EAC Regional Health Sector Novel Corona Virus (COVID-19) Emergency Response Plan was launched in April 2020, largely mirroring the continental response plan (EAC, 2020a).

The EAC COVID-19 Response Plan had several key activities aimed at reducing community transmission due to cross-border movements of people, building regional surveillance, enhancing case detection and case management, monitoring and coordinating responses to the pandemic, supporting research and development of future responses, and swiftly tracking the implementation of the Digital COVID-19 Tracker Tool, which helps in contact tracking and patient self-monitoring (EAC, 2020b:12). The strategy adopted by the EAC summit was to limit cross-border movements by people, but to allow trade to continue. One of the notable initiatives was the establishment of a tracking system for truck drivers who play a critical role of transporting goods across the region, namely, the Regional Electronic Cargo and Driver Tracking System (RECDTS) (EAC, 2020b). RECDTS is a mobile phone app that allows cargo drivers to cross the border using COVID-19 digital certificates which display the COVID-19 test results and reduces the need for testing in multiple countries.

At the national level, each member state set up a national response plan mirroring the EAC Regional Response Plan. While Kenya, Rwanda, and Uganda had immediate response to the COVID-19 pandemic, Tanzania and Burundi recorded delayed responses largely blamed on political factors. The Burundi government set up the COVID-19 National Response Plan to be implemented by the Ministry of Public Health and the Fight against AIDS,

in June 2020 (Brima, 2021; Ogbolosingha & Singh, 2020). The Republic of Kenya set up the National Emergency Response Committee on Coronavirus (NERC), which was a multisectoral and multi-ministerial forum, in February 2020, following a Presidential Executive Order (Republic of Kenya, 2020a). The Ministry of Health of Kenya was the lead agency in the response plan and set out several guidelines on the management of COVID-19 in the country (Wangari *et al.*, 2021; Republic of Kenya, 2020b).

The Republic of Uganda constituted a National Task Force to combat COVID-19, in March 2020, that launched the Uganda National COVID-19 Preparedness and Response Plan, with the Ministry of Health of Uganda as a lead agency, while the Office of the Prime Minister provided the overall policy guidance. The Task Force was tasked to manage all aspects of COVID-19, including case management, health sector responses, community engagement strategies, funding and resource mobilization, and surveillance and laboratory responses. Uganda drew on the previous experience in handling the Ebola epidemic in the country and activated the subnational surveillance teams as part of the response plan to the COVID-19 pandemic (Republic of Uganda, 2020; Sarki *et al.*, 2020).

The Government of Rwanda set up a National Task Force bringing together several government agencies, that launched the Rwanda Coronavirus Disease National Preparedness and Response Plan from March to August 2020 (Republic of Rwanda, 2020). Part of the response included setting up a COVID-19 Incident Management System (IMS) as well as building national capacities for prevention, prompt detection and enhanced surveillance at community, and port of entry and health facilities (Republic of Rwanda, 2020:12). Although "migration and mobility data" are not referenced in the National Response Plan, the data could be collected as part of the "port of entry" surveillance system. Rwanda has been commended for the innovative approaches rolled out as part of the COVID-19 response, such as using robots for screening and inpatient care, using drones for distribution of medical supplies, implementing a robust public information strategy that leveraged on the experiences in managing Ebola in 2018–2019, and using the Integrated Disease Surveillance and Response (IDSR) framework (WHO/AFRO, 2021; Karim, 2021; Republic of Rwanda, 2020).

Comparatively, the Tanzanian government set up a COVID-19 Task Force in May 2021 to review the country's response to COVID. This delayed response is attributed to a presidential directive issued in May 2020 that resulted in Tanzania not giving daily updates of COVID-19 cases in the country as reported in various media sources[1].

[1] https://en.wikipedia.org/wiki/COVID-19_pandemic_in_Tanzania (accessed on February 8, 2022)

3.2. Availability and accessibility of mobility and migration data for COVID-19 response in EAC

Traditional data sources for migration and mobility, including administrative data, census, and surveys, are potentially useful in COVID-19 management. This study sought to establish if any of the EAC member states applied these data sources to inform the COVID-19 preparedness. Ideally, the countries would use such data to monitor the populations at risk, especially the migrant or mobile populations, or in the provision of services to the migrant and displaced populations in the region.

Administrative data collected at border points – land, sea, or air – is a potential source of information on who is getting into and out of the respective members state coupled with their COVID-19 status, including if tested positive for the coronavirus or not. The review of member state websites and relevant ministries did not return any confirmation of the use of administrative data in COVID-19 management. One potential source reviewed was the One Stop Border Post (OSPB) initiative, which captures daily updates of cross-border movements within the EAC region, but a study commented that the data sharing infrastructure used by OSPB was highly complex, prompting paper-based data collection (Nugent & Soi, 2020).

A second data source for migration data is the decennial population census, which collects migration data based on residence within national administrative units, as well as demographic information on migrants, such as age, sex, marital status, education level, and occupation. Two studies identified in the reviewed literature demonstrate how census data could be useful in modeling the spread of COVID-19 in Kenya. In the first study, Macharia *et al.* (2020) used census data to model the social vulnerability index for subnational regions in Kenya to determine how effectively they could handle the COVID-19 pandemic. The study showed that subnational units with higher poverty indices and with few social amenities would have weaker institutional capacity to tackle COVID-19. Based on their model, COVID-19 cases in Kenya were concentrated in the capital city, urbanized areas, and border towns, and the authors recommended that a vulnerability mapping would help mitigate the spread of COVID-19 in these regions. The study observation that COVID-19 spread faster in the urbanized areas and border towns shows the close nexus between the national migration patterns and the spread of the pandemic in Kenya, as observed in earlier studies, that migrants preferred to move to the capital city, urbanized areas and in towns located along the international borders (Muyonga *et al.*, 2021). The second study demonstrates how census data can be used to model the diffusion of COVID-19 in Kenya. In the study, Brand *et al.* (2020) used

internal migration data from the 2019 Kenya census dataset and the demographic profile of the confirmed COVID-19 cases in China to forecast the spread of COVID-19 to Kenya. One notable observation from Kenya is that the Centers for Disease Control (CDC) in Kenya advised the National Emergency Response Committee to decentralize to response efforts to the hotspot areas based on patterns of population movements and COVID cases reported in the country[2].

The third common source for obtaining migration data is the surveys, including specialist migration surveys that collect information regarding migrants and their livelihoods. The merits and demerits of using survey data have been well documented; of note, the application of survey data faces several limitations, such as the low generalizability of the results due to small sample size and the high cost of conducting surveys. However, due to the time lag of census data and the lack of updated population registers in contexts like Africa, the specialist migration surveys are the preferred option for more timely data (Fargues *et al.*, 2021; Muyonga *et al.*, 2020). For the EAC region, only Tanzania has used the World Bank's Living Standards Survey, which incorporates a module on migration (Muyonga *et al.*, 2020). In the review of literature, there is no evidence on the use of specialist surveys to capture information on migrants, or migration and mobility in the region, but evidence points to use of innovative methods to collect such data, as discussed in the next section.

3.3. Innovative sources of migration and mobility data for COVID-19 response in EAC

In the absence of administrative data, the use of mobility data based on cellphone user location data proved to be popular in studies conducted during the COVID-19 pandemic in the EAC region. Several countries resorted to using mobile phone surveys as a more efficient way to collect information from the public, especially in the wake of implementing containment measures, using the Google Mobility dataset[3] to map human mobility during the pandemic period (Pinchoff *et al.*, 2021; Quaife *et al.*, 2020). This is based on earlier studies that demonstrated the mobile phone penetration within the region (Wesolowski *et al.*, 2012: Tomitsch, 2010).

Sulyok & Walker (2020) documented the changes in patterns of human mobility globally, including EAC countries, by comparing changes in the mobility patterns. To monitor the trends of mobility during the lockdown period in Kenya, several behavioral patterns related to COVID-19 among residents in five slum areas in Nairobi were assessed in joint collaboration with the Ministry of Health and Population Council, with results showing that the residents of informal settlements were still moving in search of jobs despite the lockdown measures, with up to 19% of respondents reporting that they used public transport to go to work (Austrian *et al.*, 2020).

As part of the AU monitoring structures for the continental response to COVID-19, the PERC conducted online surveys to gather public opinion on the public health measures and their effects on livelihood. In September 2021, PERC monitored mobility trends in several African countries, including the EAC region, and found that several countries still had higher population mobility in spite of the rising cases of COVID-19 delta variant infection in the region (Africa CDC, 2021b). In Kenya, Ruktanonchai *et al.* (2021) used the Google Mobility dataset to map the human mobility patterns in the 2018–2019 period in Kenya, to illustrate the levels of domestic and international travel in the pre-pandemic period, and establish what factors influenced such movements. Results showed there were two peak seasons for human mobility in Kenya, that is, in August and December, mirroring the school calendar, with the pre-pandemic period characterized by short trips within the country and longer intercounty and international trips. In Kenya, a mobile survey revealed that a spike in COVID-19 infections was attributed to non-adherence by some of the citizens to movement restriction protocols imposed by the government (Quaife *et al.*, 2020). The Google Mobility data, however, have limitations as it only captures information from mobile phones and, therefore, omits population that does not own phones. Moreover, the georeferencing feature works only if "location" setting is turned on, meaning that there may be many cases of individuals moving without the mobile phone picking up such movements. Data collected through such digital sources have faced ethical and legal challenges, especially in the domain of data privacy rights, as noted in protests by human rights activists in Kenya and Uganda who demanded for data protection laws (Article 19 Report, 2021).

Digital traveler locator apps were used to track international air travelers to ensure that they adhere to the quarantine measures through self-reporting. These include the *Jitenge App* introduced in Kenya as a home-based care self-reporting app for international travelers in July 2020 by the Ministry of Health in Kenya (Republic of Kenya, 2020c), and the *CoronaCheck*[4] mobile app launched in 2020 for self-evaluation and home-based screening in the Republic of Tanzania. Elsewhere, movement of truck drivers in the EAC

[2] https://www.cdc.gov/globalhealth/stories/2021/cdc-supports-kenya-expanding-emergency-response.html (accessed on February 8, 2022)

[3] Google LLC. Google COVID-19 Community Mobility Reports. https://www.google.com/covid19/mobility/Accessed on 8 February 2022.

[4] https://www.aku.edu/news/Pages/News_Details.aspx?nid=NEWS-002200 (accessed on February 8, 2022)

region was tracked using the Regional Electronic Cargo and Driver Tracking System (RECDTS), which captured information on COVID-19 among truck drivers. Using the RECDTS database, the Uganda Ministry of Health reported that truck drivers accounted for over 80% of the COVID-19 positive cases, which, in turn, drove the accelerated rate of vaccination and more intensive tracking of truck drivers as a response measure (Sarki *et al.*, 2020:2).

Gilbert *et al.* (2020) modeled the air travel flows between China and Africa to compute the risk of importation of the coronavirus into the African countries, including Kenya and Tanzania, using *Epirisk,* a computational platform, for epidemiological modeling. The results showed that the EAC region was associated with low risk in this regard, but Kenya and Tanzania were identified as having "moderate risk" of importing the virus, while also being reported for harboring very low capacity to manage the pandemic in case; it becomes severe (Gilbert *et al.*, 2020).

4. Discussion

This systematic review sought to provide evidence on the use of migration and mobility statistics in the management of COVID-19 pandemic in the EAC bloc. The Global Compact on Migration calls for the use of accurate and disaggregated migration statistics for policy making in migration governance. In line with this, this systematic review seeks to investigate how migration data were utilized in COVID-19 response initiatives in the EAC region. The EAC COVID-19 Response Plan provides the overall framework for managing the pandemic in the region and was reviewed as part of the background information critical for the study. A glimpse into the strategies employed in the plan indicate that "timely data," encompassing that of vulnerable populations including migrants, is explicitly stated, but none of the documented studies demonstrate the use of the data in the COVID management strategies.

Several data sources have been traditionally employed by the EAC member states to collect data on migration and human mobility and include administrative records, such as border control data, decennial census, and periodic surveys. Evidence shows that such data sources may not provide real-time information required during emergencies such as pandemic outbreaks, but they can be employed to provide initial model on the spread of diseases. The One Stop Border Initiative launched in the EAC region provides a repository of critical information on population mobility, including travel duration, destination, and reason for movements, all which could inform the contact tracing processes in times of the pandemics, as demonstrated in the management of previous disease outbreaks (Kakaī *et al.*, 2020; Pindolia *et al.*, 2014). To ensure completeness and integrity of the data collected, better coordination of data collection across multiple agencies at the border posts is strongly required (Odero, 2020). The studies conducted in Kenya demonstrate how census data can model the diffusion of the disease in the country, as well as detect the regions with higher social vulnerabilities that would weaken their response systems. It is noteworthy that the CDC in Kenya, which was part of the agencies managing COVID-19 in the country, adjusted their interventions based on the observed patterns of subnational migration flows in the country, ensuring there was more vigilance in the urban areas and some of the subnational units where most of the population resided in.

A notable observation was the use of digital technology to conduct surveys of the population to test the efficacy of COVID-19 interventions in the country. Digital technology provided a quicker alternative for migration and mobility data and was widely adopted globally (Alamo *et al.*, 2020). In the EAC region, *Jitenge* and *CoronaCheck* apps in Kenya and Tanzania, respectively, demonstrate the usefulness of technology in generating real-time information on population flows. These apps enabled monitoring of health status of infected travellers and their adherence to quarantine measures when they were receiving treatments for COVID-19.

Availability and open access to global online databases to facilitate research and modeling of COVID-19 is an important pillar supporting the design of pandemic responses globally. The studies cited in this review confirmed the benefits of the Google Mobility dataset for forecasting and modeling the spread of COVID-19 in the EAC region. It is also necessary to explore other datasets, such as the Global Epidemic and Mobility (GLEaM), for modeling epidemics by combining sociodemographic and population mobility data to include different diseases and population structures (Balcan *et al.*, 2010). There were, however, ethical and proprietary considerations about the use of data generated from such sources as they are not representative of the entire population and are also prone to ethical issues. Potential misuse of such data to track perceived illegal migrants has been documented elsewhere (Gasser *et al.*, 2020), sparking the need to protect data of all people, including the migrants. In contexts where data protection laws are in place, there is reduced risk in misuse of such data (Munir *et al.*, 2015).

This review captured the interventions conducted in the 2-year period after the global outbreak of COVID-19. While efforts were made to acquire the evidence from the member states of the EAC region, there were few published studies from Burundi and Tanzania, resulting in under-

representation of the scenarios from these two countries. In addition, South Sudan – although being a member state of the EAC – was omitted from this analysis due to data paucity. Despite this, the current analysis is still able to provide a snapshot of the use of mobility and migration data in the EAC region for the first 2 years of the COVID-19 pandemic for the benefit of all EAC member states.

This review recommends that the EAC regional bloc as well as AFTCOR should critically review the application of migration and mobility data for COVID-19 response and the gaps thereof to inform future pandemic response plans. It is recommended that future pandemic response frameworks should mainstream migration statistics to better model the diffusion of the disease on one hand and to investigate the effectiveness and impact of the interventions on the mobile population, on the other. The study recommends the formation of research collaborations between the EAC secretariat and migration specialists to improve the use of, and demand for, migration and mobility statistics to improve the evidence base for managing the migration, mobility, and health interphases.

5. Conclusion

The COVID-19 pandemic, which has brought about wide-ranging catastrophic impacts worldwide, underscores the need for timely data to inform decision making during critical moments. This systematic review sought to identify if mobility and migration data were used in the COVID-19 response efforts in the EAC region. This review pinpoints that the continental COVID response strategy encapsulates the concept of utilizing timely data for monitoring response plans and the PERC was established to serve this important purpose. Migration and mobility data can be derived from several sources, including global mobility datasets, online epidemiological data, and mobile phone apps. There is, however, no clear evidence on the demand for such data by the governments in their specific COVID-19 response plans. This may partly be attributed to the complexities of managing pandemics and the varied data requirements by different stakeholders. Nevertheless, an integrated approach that ensures spatial capture of population on the move at times of pandemics stands out to be a potent tool for revolutionizing future response efforts.

Published scholarly work demonstrates the potential use of migration and mobility statistics to model and predict the diffusion of the pandemic within nation states or larger geographical regions. Since the traditional data sources are unable to provide real-time data relevant for pandemic response, the digital technology becomes a feasible alternative. On the same note, the huge potential of digital technology, especially in the EAC context, to obtain migration or mobility data for strategizing pandemic response in the future remains untapped, but the legal and ethical protections need to be instated to ensure safer use of such data for future pandemics. The scope of this systematic review was limited to the immediate response to the pandemic in the first 2 years, leaving a gap on how the EAC region applied migration statistics in the response processes, which deserves further exploration in the future.

Acknowledgments

The paper was presented at the Conference on Population and Reproductive Health Dynamics Under COVID-19 in Sub-Saharan Africa that was hosted by the University of the Witwatersrand, South Africa through its Demography and Population Studies Programme. The Conference was supported under the auspices of the Science Granting Councils Initiative in Sub-Saharan Africa (SGCI) and administered by South Africa's National Research Foundation in collaboration with Canada's International Development Research Center (IDRC), the Swedish International Development Cooperation Agency (Sida), South Africa's Department of Science and Innovation (DSI), the Fons de Recherche due Quebec (FRQ), the United Kingdom's Department of International Development (DFID), the United Kingdom Research and Innovation (UKRI) through the Newton Fund.

Funding

None.

Conflict of interest

The author declares that they have no competing interests.

Author contributions

This is single-authored article.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Data used in this case report are available from the corresponding author on reasonable request.

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