

Access to contraceptives amidst COVID-19 pandemic in South Africa

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Abstract

Access to contraceptives in South Africa has been hindered by a number of multifaceted challenges, encompassing disruptions in supply chains, healthcare system strain, and shifts in policy priorities. Therefore, this paper seeks to explore the impact of the COVID-19 pandemic on access to contraceptives in South Africa. Data were elicited from the National Income Dynamics Study– Coronavirus Rapid Mobile Survey (NIDS-CRAM). Descriptive statistics were used to analyze data and to highlight the characteristics of the population and access to contraceptives. Bivariate analysis was conducted using the chi-square test, while binomial logistic regression models were employed to assess the predictors of contraceptive access. The result showed that 74% of the respondents had access to contraceptives during COVID-19 while 24% of the respondents did not have access to contraceptives. The bivariate results of access to contraceptives showed significant differences in all the explanatory variables with the exception of the employment status variable. After adjusting for confounders, non-Blacks (AOR = 1.70; 95% CI = 1.29–2.22) had significantly higher odds of contraceptive access. Urban residence (AOR = 1.12; 95% CI = 0.94–1.34) and tertiary education (AOR = 1.13; 95%

CI = 0.97–1.25) showed no significant associations. To improve access to contraceptives during emergencies like the COVID-19 pandemic, systemic barriers such as healthcare infrastructure gaps, unequal distribution of resources, and socio-cultural norms that hinder equitable access to reproductive healthcare services must be addressed.

Keywords: Access, contraceptives, COVID-19, pandemic, South Africa.

Introduction

The accessibility of contraceptives during pandemics or epidemics represents a critical aspect of public health response, as it ensures that individuals retain control over their reproductive choices amidst crises (Polis et al., 2022). While the COVID-19 pandemic has typified these challenges, historical precedents and other epidemics also offer valuable insights into the complexities of maintaining access to contraceptives during public health emergencies. The intersection of pandemics or epidemics and reproductive health underscores the need for comprehensive strategies to mitigate disruptions, uphold reproductive rights, and safeguard individual well-being in crisis situations.

Historical accounts and studies from past pandemics and epidemics, such as the Ebola outbreak in West Africa and the Zika virus epidemic in Latin America, elucidate similar challenges faced in

maintaining access to contraceptives during health emergencies. For instance studies examining the impact of the Zika virus epidemic reveal significant barriers to contraceptive access and utilization in affected regions. Ali et al. (2017) also highlighted how limited access to contraceptives and reproductive healthcare services heightened the cases of unintended pregnancies and birth defects among women in Zika-affected areas such as Brazil, Honduras, and Colombia.

Furthermore, analyses of public health responses during the HIV/AIDS pandemic provide additional insights into the challenges of maintaining contraceptive access in crisis settings. Sweeney et al. (2019) underscore how stigma, resource constraints, and healthcare system disruptions impeded access to contraception for individuals living with or at risk of HIV/AIDS, exacerbating the burden of reproductive health disparities.

Other related studies have equally shown that stigma surrounding HIV/AIDS often extends to contraceptive use, particularly among populations at high risk of HIV transmission (Ugwu et al., 2024; Babel et al., 2024). This stigma can deter individuals from seeking contraceptive services since that may disclose their HIV status, leading to discrimination from healthcare providers (Ugwu et al., 2024).

It is well acknowledged that using modern contraceptives is one of the best strategies to support reproductive health and foster socioeconomic development on a worldwide scale (Adedini et al., 2015). In order to advance gender equality and reproductive rights, there has been a significant push in recent decades to increase the usage of contemporary contraceptive methods (Fagbamigbe & Ojebuyi, 2017). Studies on the availability of contraceptives around the world prior to the COVID-19 pandemic have shown a range of findings, accounting for racial, gender, and age demographics among others (Kitila, 2020; Tsui et al., 2017).

International organizations like the World Health Organization lead the fight for equal access to contraceptives for all people (2022). The premise of this is that women, in comparison to men, have fewer opportunities and limited access to

modern contraception. According to WHO (2022) predictions from 2020, around 23 million girls in poor nations between the ages of 15 and 19 lack access to contemporary forms of contraception such as IUDs, condoms, and birth control pills. It makes the case that, among girls in underdeveloped nations between the ages of 15 and 19, half of pregnancies are thought to be unwanted. According to Asogwa et al. (2023) Mejia-Guevara (2021) and Kriel et al. (2019), men have greater access to contraception than women. For instance, Kriel et al. (2019) speculate that gender dynamics driven by culture may be the cause of this discrepancy. Related to this also, are regional disparities in access to contraceptives. Studies such as those of Anyatonwu and San Sebastián (2022) show that place of residence significantly influence access to contraceptives. Research shows that people in affluent countries have greater access to contemporary contraceptives and are more willing to accept them than people in developing or low-income nations (Singh et al., 2010). They further claimed that the unacceptability or limited access to contemporary contraceptives is the reason behind the disproportionately high percentage of unwanted pregnancies in developing nations, which predates COVID-19. This is notably true in sub-

Saharan Africa. Due to the COVID-19 pandemic and restricted access to contraception in developing countries, risky health behaviour has the potential to increase exponentially in these regions compared to developed ones (Aly et al., 2020).

Racial differences have also been observed in access to and use of contraceptives. Some studies have linked racial and ethnic differences with contraceptive use (Akintunde et al., 2023; Ngendahimana et al., 2021; Jackson et al., 2017). This disparity is often viewed from the lens of the differences in the rate of unintended pregnancy across races. Grady et al. (2015) argued that the observed disparities in unintended pregnancy are a result of racial/ethnic differences in contraceptive use patterns. Studies have highlighted that contraceptive non-users are likely to be found more among black women than white women. These studies further reveal that black women are more likely than white women to be involved in inconsistent use of contraception, to experience more contraceptive failures, and to less frequently use some prescription methods (Obionu et al., 2025; Gomez et al., 2024). Furthermore, Akintunde et al. (2023) and Grady et al. (2015) noted that contraceptive non-

users had greater odds of being black than white. These studies document that racial and ethnic disparities in contraceptive use persist across the full range of women at risk for unwanted pregnancy. Further, it showed that Hispanic women were significantly less likely than white women to use contraception devices. Aly et al. (2020) contend that the limitation of contraception access, as a result of the COVID-19 pandemic will exacerbate racial and ethnic disparities.

Significant variations in access and use of contraception have also been observed between urban and rural areas. Using data from Nigeria Demographic and Health Survey (2013), Grady et al. (2015) report a disparity in access to contraception between urban and rural settings in Nigeria. The odds of non-use were higher in the rural areas than in the urban areas. The cause of these disparities was assumed to be a reflection of the socioeconomic inequalities across different parts of the country. Results of the study further indicate that residing in the less developed regions (compared to the most developed ones) was associated with higher odds of reporting limited access to contraceptives. Other studies such as those of Wondie et al. (2020) Anyatonwu & San Sebastián, (2022) and

Milkowski et al. (2021) have also found disparity in access to contraceptives among rural and urban residents, with urban dwellers having more access to contraceptives than their rural counterpart. Furthermore, Hossain et al. (2018) report that in Bangladesh, the prevalence of contraception access and use was highest for those aged 30–34 years (73.7%), followed by those aged 35–39 (72.9%). The 15–19 years had the second lowest percentage (51.2%), while the oldest group (45–49 years) had the lowest use (38.0%). This is consistent with the findings of Kitila et al. (2020) who reported that the need for contraception decreased with increasing age.

Drawing from these historical and epidemiological contexts, it is evident that pandemics or epidemics pose multifaceted challenges to contraceptive access, encompassing disruptions in supply chains, healthcare system strain, and shifts in policy priorities. Addressing these challenges necessitates a nuanced understanding of the intersecting dynamics of public health emergencies and reproductive health needs, coupled with proactive measures to ensure the continuity of contraceptive services and uphold reproductive rights. Therefore, this paper seeks to explore the impact of the

COVID-19 pandemic on access to contraceptives in South Africa. By examining the multifaceted challenges and lessons learned from past crises, we aim to identify effective strategies to enhance contraceptive access and mitigate reproductive health disparities during future public health emergencies. In the same vein, it found that employed women used more contraception (68.1%) compared to unemployed (59.8%). Kriel et al. (2023) also noted that persons in government service access contraception more than those in informal sectors.

Study's context

The African continent is the least to be affected by the COVID-19 pandemic (Fox, 2020). As of April 31st, 2021, Africa reported 3,061,540 confirmed cases with 77, 864 deaths (WHO, 2021). The virus was first detected in Egypt on February 14, 2020, and by April 2021, it had spread to all African countries. On March 5, 2020, the first COVID-19 patient was confirmed in South Africa (Schröder et al., 2021). Going forward, South Africa became the most-affected country in Africa so far, with 1,548, 157 confirmed cases and 52, 846 deaths as of 31st March 2021 (WHO, 2021). This shows that half (50.6%) of the confirmed cases in all of Africa were in South Africa while more than half (67.9%) of deaths were in

South Africa as well. With the first few infections recorded in the country, the South African government started with smaller measures to contain the spread of the virus. However, as cases of infections spiked, the government enacted a national lockdown on March 27, 2020.

According to Schröder et al. (2021), estimates from CNBC Africa and GoMetro South Africa, South Africa's lockdown measures included "closure of childcare, institutions of primary and higher education as well as all public leisure activities, extreme physical distancing rules, an estimated 70% reduction of shopping, 85% of the on-site workforce and a 90% reduction in other activities"(pg. 4956). The report further showed an initial formal reduction of about 75% publicly available mobility services which greatly affected transportation services. One of the anticipated direct impacts of this is a shortage of contraceptive medications and devices (Aly et al., 2020). Closure of borders and travel restrictions could also affect the distribution of contraceptive medications and devices. Malaysia's KarexBhd, which is the world's largest condom manufacturer, was forced to close in March 2020, thereby limiting the export of condoms (Ming, 2020). India equally placed a limit on the export of 26

pharmaceutical ingredients and medications which includes drugs such as the hormone progesterone, which is used in the contraceptive pill and IUDs (Aly et al., 2020). This measure meant that the global distribution of contraceptive pills and IUDs is at risk of disruption as India is one of the world's largest producers and exporters of drugs (Ganguly et al., 2020). Within South Africa, the government, just like Uganda, adopted the strictest home confinement measures. A countrywide curfew began at the end of March 2020 which even included prohibition of any exercise outside the home (Haider et al., 2020). The restriction on people's movement is likely to impact access to contraceptives in South Africa amidst the pandemic.

This study, therefore, examined access to contraceptives amidst the COVID-19 pandemic in South Africa. While some studies have examined the impact of access to contraception during this pandemic (Aly et al., 2020; Ganguly et al., 2020), there is a paucity of localized studies, for instance, in South Africa, that focus on access to contraceptives during COVID-19.

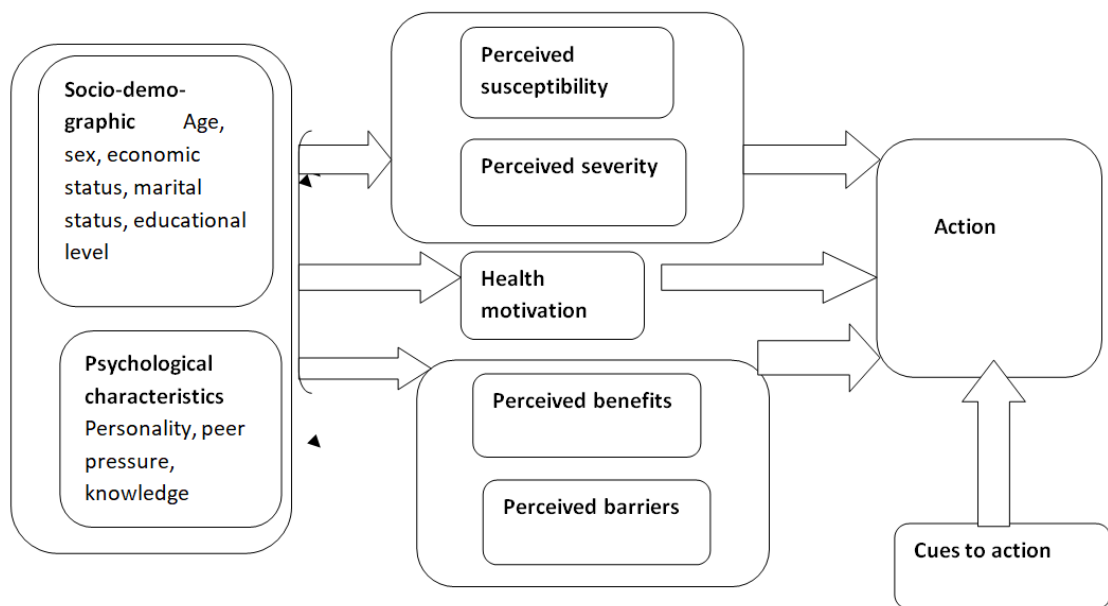
Conceptual framework

The Health Belief Model (HBM) was developed to foresee health behaviours

and to better comprehend the reasons individuals either agree or neglect to receive illness or disease prevention and management strategies (LaMorte, 2019; Boskey, 2020). The HBM proposes four constructs, which are perceived susceptibility to disease, perceived severity of illness, perceived benefits and perceived barriers to healthcare-seeking

behaviours. Thus, in this study, the HBM was used to understand the healthcare-seeking behaviours of people with chronic health conditions during the COVID-19 period. In addition, the HBM was used to examine the influence of socioeconomic factors on the healthcare-seeking behaviours of people with chronic health conditions.

Figure 1: The health belief model



Methods

Data used in this study was from the National Income Dynamics Study–Coronavirus Rapid Mobile Survey (NIDS–

CRAM) which is a nationally representative panel survey of 7,000 South African individuals across all the nine provinces conducted from April 2020

to July 2021. The study made use of a binary dependent variable of "Access to contraception". The independent variable used was derived from the question that sought to know who was able to access contraceptives in the last 4 weeks preceding the survey. Those who responded that they had access to contraceptives were categorized as "Yes" while those who responded that they did not have access to contraceptives were coded as "No". The independent socioeconomic variables used in this study were gender (male/female), age (15-24 years/ 25-44 years/ 45-64 years/ 65+ years), employment status (Yes/No), place of residence (urban/rural), race (Blacks/non-Blacks), health insurance (Yes/No), education (non-tertiary/ tertiary), migrant (yes/no) and province (Eastern Cape/ Northern Cape/ Western Cape/ KwaZulu Natal/ Free State/ Mpumalanga/Gauteng/Limpopo/North West).

Before the commencement of data analysis, the dataset was weighted to account for differences due to under-sampling and over-sampling as per the survey design using the STATA svyset command. Descriptive statistics were used to highlight the characteristics of the population. In addition, bivariate

analysis using chi-square test was used to examine for significant differences in access to contraceptives by various population groups. Finally, binary logistic regression models were used to estimate how the independent factors influenced access to contraceptives. There were two categories of models. Model A represented the unadjusted model of the independent variables to estimate their individual influences in access to contraceptives while model B was the adjusted model of the independent variables in order to ascertain their relative contribution towards respondents' access to contraceptives.

Result

Descriptive statistics of the study population

The study population is predominantly composed of 60.48% unemployed, 51.87% aged 25-44 years, with a majority of 84.99% Blacks and 60.41% of females see Table 1. Only 15.95% of the entire population has medical aid and 66.33% of the study population has non-tertiary education. For place of residence, 77.44% of individuals reside in urban areas meanwhile; across provinces, KwaZulu-Natal has the highest representation (27.98%) and Western Cape (7.55%) the lowest

Table 1: Descriptive statistics of the study population

Variables	Frequency	%
Age		
15-24	974	16.90
25-44	2,989	51.87
45+	1,799	31.22
Employment status		
Not employed	3,485	60.48
Employed	2,277	39.52
Race		
Blacks	4,897	84.99
Non-Blacks	865	15.01
Gender		
Male	2,281	39.59
Female	3,481	60.41
Level of education		
Non-tertiary	3,030	66.33
Tertiary	1,538	33.67
Has Medical aid		
Yes	918	15.95
None	4,837	84.05
Place of Residence		
Rural	1,300	22.56
Urban	4,462	77.44
Province of Residence		
Western Cape	435	7.55
Eastern Cape	544	9.44
Northern Cape	371	6.44
Free State	388	6.73
Kwanzulu-Natal	1,612	27.98
North West	385	6.68

Gauteng	892	15.48
Mpumalanga	522	9.06
Limpopo	613	10.64
Total	5,762	100

Chi-square statistic showing the relationship between variables and access to contraceptive

The proportion of respondents with access to contraceptives during COVID-19 is 74% while chi-square statistic in Table 2 indicates a significant relationship between access to contraceptives and age ($\chi^2 = 6.02$, $p < 0.05$), gender ($\chi^2 = 22.13$, $p < 0.001$), place of residence ($\chi^2 = 9.69$, $p < 0.001$), race ($\chi^2 = 55.38$, $p < 0.001$), level of education ($\chi^2 = 3.47$, $p < 0.05$), province of residents ($\chi^2 = 296.3$, $p < 0.001$) and those with medical aid ($\chi^2 = 12.25$, $p < 0.001$). There was no significant relationship recorded between employment status and access to contraceptives ($\chi^2 = 0.44$, $p > 0.05$).

Figure 2: The proportion of respondents with access to contraceptives during COVID-19

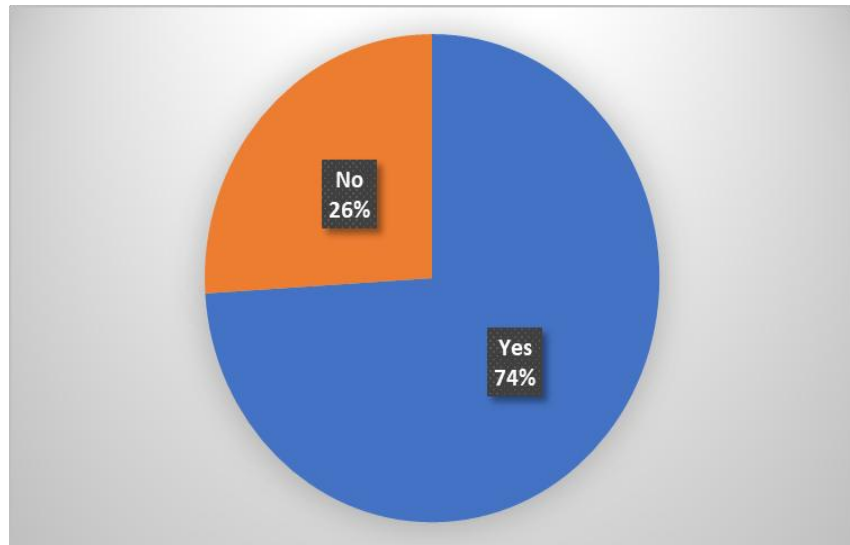


Table 2: Chi-square statistic showing the relationship between variables and access to contraceptives

Variables	Number	Percentage	Chi-square
Age			6.02*
15-24	748	17.62	
25-44	2, 179	51.34	
45+	1,317	31.75	
Employment status			0.44
Not employed	2, 556	61.20	
Employed	1, 688	38.80	
Medical aid			12.25***
Yes	719	16.96	
No	3, 520	83.04	
Gender			22.13***
Male	1, 757	41.40	
Female	2,487	58.60	
Place of Residence			9.69***
Rural	914	21.54	
Urban	3, 330	78.46	
Race			55.38***
Blacks	3, 518	82.89	
Non-Black	726	17.11	
Level of Education			3.47*
Non-Tertiary	2, 238	65.57	
Tertiary	1, 175	34.43	
Province of Residence			296.3***
Western Cape	359	8.46	
Eastern Cape	461	10.86	
Northern Cape	309	7.28	
Free State	274	6.46	
KwaZulu-Natal	961	22.64	
North West	312	7.35	
Gauteng	689	16.23	
Mpumalanga	360	8.48	
Limpopo	519	12.23	

Table 3: Binomial logistic regression of predictors of contraceptive access

Variables	Unadjusted	Adjusted
Age group		
15-24 years	1.00	1.00
25-44	0.81[0.68-0.96]	0.80 [0.67-0.96]*
45+	0.83[0.69-0.99]*	0.80[0.64-1.00]
Employment status		
Not employed	1.00	1.00
Employed	1.04[0.92-1.17]	0.90[0.77-1.05]
Medical aid		
Yes	1.00	1.00
No	0.74[0.62-0.88]***	1.02[0.82-1.25]
Gender		
Male	1.00	1.00
Female	0.75[0.66-0.84]***	0.74[0.64-0.86]***
Place of Residence		
Rural	1.00	1.00
Urban	1.24[1.08-1.42]**	1.12[0.94-1.34]
Race		
Blacks	1.00	1.00
Non-Blacks	2.05[1.69-2.48] ***	1.70[1.29-2.22]***
Level of education		
Non-tertiary	1.00	1.00
Tertiary	1.15[0.99-1.32]*	1.13[0.97-1.25]
Province of Residence		
Western Cape	1.00	1.00
Eastern Cape	1.18 [0.84-1.65]	1.38 [0.90-2.12]
Northern Cape	1.06[0.73-1.52]	0.99 [0.64-1.53]
Free State	0.51[0.37-0.71]***	0.69 [0.45-1.05]
KwaZulu-Natal	0.31[0.24-0.41]***	0.39 [0.28-0.56]***

North West	0.90[0.63-1.29]	1.17 [0.74-1.82]
Gauteng	0.72[0.54-0.96]*	0.83[0.57-1.20]
Mpumalanga	0.47[0.35-0.64]***	0.65[0.43-0.97]*
Limpopo	1.17[0.84-1.63]	1.56 [1.02-2.39]*

The unadjusted and adjusted analyses of the predictor variables to access contraceptives during the COVID-19 pandemic in South Africa (table 3), showed that individuals aged 25 to 44 years and 45 years and above had significant lowered odds of accessing contraceptives compared to those aged 15-24 years in unadjusted analysis. However, for adjusted analysis, the association was not significant for ages 45+. In both unadjusted and adjusted analyses, being employed did not significantly increase the odds of accessing contraceptives. Individuals without medical aid had significantly lower odds of accessing contraceptives compared to those with medical aid in the unadjusted analysis. In terms of gender, females had significantly higher odds of accessing contraceptives compared to males, even after adjusting for other variables.

For place of residence in the unadjusted analysis, urban residents had significantly higher odds (OR=1.24, 95% CI= [1.08-1.42]) of accessing contraceptives

compared to rural residents. Although the odds were still higher among urban residents (AOR=1.12, 95% CI=[0.94-1.34]) in the adjusted table, the association was non-significant. In both unadjusted (OR=2.05 95%CI=[1.69-2.48]) and adjusted (AOR=1.70, 95%CI=[1.29-2.22]) tables, Non-Black individuals had significantly higher odds of accessing contraceptives compared to Black individuals. Compared to those without tertiary education, those with tertiary education in both unadjusted (OR=1.15, 95%CI=[0.99-1.32]) and adjusted table (AOR=1.13, 95%CI=[0.97-1.25]) showed an increased odds of accessing contraceptives. However, this association was non-significant in the adjusted analysis.

Access to contraception varied significantly by province. In unadjusted analysis, those in Free State (OR=0.51, 95%CI=[0.37-0.71]), KwaZulu-Natal (OR=0.31, 95%CI=[0.24-0.41]), Gauteng (OR=0.72, 95%CI=[0.54-0.96]) and Mpumalanga (OR=0.47, 95%CI=[0.35-0.64]) had significantly lower odds of

accessing contraceptive compared to those in the Western Cape. While in the adjusted table, Limpopo (AOR=1.56, 95%CI= [1.02-2.39]) had significantly higher odds with Mpumalanga (AOR=0.65, 95%CI=[0.43-0.97]) and KwaZulu-Natal (AOR=0.39, 95%CI=[0.28-0.56]) having significantly lower odds of accessing contraceptive all in comparison to Western Cape.

Discussion of findings

The primary objective of this study was to examine access to contraceptives during the COVID-19 pandemic in South Africa. Our findings reveal that 74% of respondents retained access to contraceptives, which highlights partial resilience in reproductive healthcare systems despite pandemic-related disruptions. However, the remaining 24% of respondents faced barriers, underscoring systemic inequities worsened by the pandemic. The predictors identified—such as age, gender, race, and place of residence—reflect pre-existing disparities in contraceptive access (Polis et al., 2022) that were further strained during the crisis. These findings align with historical precedents from epidemics like Ebola and Zika, where disruptions to healthcare services disproportionately impacted marginalized populations (Ali et al., 2017).

The study shows that there is a correlation between age and the likelihood of individuals being able to obtain contraception. Those aged 25 to 44 years and 45+ were 0.69 times less likely to have access to contraceptives than others. Findings like this indicate that different age groups may face distinct barriers or facilitators when it comes to accessing contraceptives. Equally, societal attitudes and cultural norms surrounding sexuality and reproductive health often vary across age groups. These norms could influence individuals' perceptions of contraception and their willingness to seek it out. For instance, younger individuals might face stigma or judgment when accessing contraception due to prevailing attitudes about premarital sex, while older individuals might encounter societal pressure related to family planning and fertility. Our findings aligned with those of Asiimwe et al. (2014) who found a disparity in access to modern contraceptives among young and older married women aged 15–24 and 25–34 years. Kitila et al. (2020) have equally found similar results in a study among couples in Ethiopia. These age-related disparities in contraceptive access may reflect pandemic-specific challenges, such as reduced mobility for older adults

during lockdowns or shifts in healthcare priorities that disproportionately affected younger populations (Aly et al., 2020). Younger individuals (15–24 years) may have faced unique barriers, including school closures and limited access to youth-friendly services, which are critical for contraceptive provision (Asiimwe et al., 2014).

Employment status did not significantly predict access to contraceptives. Data analyzed shows that whether individuals are employed or not does not significantly affect their ability to obtain contraception. A number of factors could influence this outcome. For instance, there may be government-funded or subsidized programmes that provide access to contraceptives regardless of employment status. In addition, individuals may have access to contraceptive services through their healthcare coverage, such as private insurance or public healthcare programmes. Employment status may not play a significant role in determining access if individuals have comprehensive healthcare coverage that includes contraceptive services. While there are studies that have documented a relationship between employment status and access to contraceptives (McDaugal et al., 2021; Akinyemi et al., 2022), the

latest finding by Lachiewicz et al. (2023) is consistent with ours as it indicates that being employed was no longer associated with contraceptive use among non-Hispanic white women. Overall, while our findings and those of Lachiewicz et al. (2023) suggest that employment status may not be a determining factor in access to contraceptives, in the context of this study, it is crucial to consider the broader socioeconomic and cultural factors that can influence access to reproductive healthcare services, especially during pandemics.

Furthermore, the study found that although medical aid predicts access to contraceptives, individuals without medical aid are 1.02 times more likely to access contraceptives than those with medical aid. This finding highlights healthcare system complexities and how various factors, including insurance status, interact to influence access to contraceptives. While medical aid may facilitate access to contraceptives for many individuals by covering the cost of contraceptive services, it is possible that other factors associated with not having medical aid may also contribute to increased access to contraceptives. For instance, while medical aid coverage typically includes contraceptive services at low or no cost to the individual,

greater populations of the study 83.04% do not have medical aid but may still have access to contraceptives through other means, such as private insurance or out-of-pocket payment. In some cases, individuals without medical aid may be able to afford contraceptives despite not having insurance coverage. While our findings align with extant literature such as Currie and Jones (2019), Moorhouse et al. (2020), and Njuguna (2020) in showing the disparity in access to contraceptives among those with and without medical aid, it differs in some degrees with them as these earlier studies report that those with medical aid had more access to contraceptives. As the finding that medical aid predicts access to contraceptives is consistent with expectations given the role of medical aid in providing healthcare coverage to low-income individuals, the higher odds of accessing contraceptives among individuals without medical aid highlight the complexity of factors influencing contraceptive access, especially in pandemic situations. Further research is needed to better understand the relationship between insurance status and access to contraceptives and to identify strategies for improving contraceptive access for all individuals, regardless of insurance coverage.

The study also found that gender predicted access to contraceptives, with females 0.74 more likely to access contraceptives during COVID-19. This gender disparity highlights systemic inequities in reproductive healthcare access, as women often bear the burden of family planning decisions (Kriel et al., 2019). During the pandemic, gender barriers such as increased caregiving responsibilities and reduced mobility may have further limited women's access to contraceptives (Mejía-Guevara et al., 2021). This discovery advances the important considerations about gender disparities in reproductive healthcare access. Previous literature shows that men are believed to have higher odds of accessing contraceptives (e.g., Mejía-Guevara et al., 2021; Asogwa et al., 2023) which could be as a result of societal norms and expectations around gender roles and responsibilities. These may influence individuals' access to contraceptives. However, the results of this current study could be that healthcare systems and providers may have prioritized reproductive healthcare services for females during the COVID-19 pandemic, recognizing the importance of uninterrupted access to contraceptives for reproductive health and family planning. Initiatives such as telehealth

services, mail-order prescriptions, and community outreach programmes may have been implemented to ensure continued access to contraceptives for females. However, it is important to also consider how gender intersects with other factors such as race, ethnicity, socioeconomic status, and geographic location to influence access to contraceptives during this crisis period.

Analysis of the data also showed that place of residence predicted access to contraceptives, with individuals in urban areas 1.24 times more likely to access contraceptives during COVID-19 compared to those in rural areas. The urban-rural divide in contraceptive access reflects disparities in healthcare infrastructure, which were worsened during the pandemic. Rural areas, with fewer healthcare facilities and limited telehealth adoption, faced greater disruptions in contraceptive supply chains (Wondie et al., 2020; Anyatonwu & San Sebastián, 2022). Our findings further support those of Milkowski et al. (2021) and Obiyan and Lasisi (2019). For instance, Obiyan and Lasisi (2019) report that men in urban areas accessed contraceptives more than the residents in rural areas across different groups. In our case, urban areas may have been more equipped to transition to telehealth and

digital healthcare services during the pandemic. Telemedicine platforms and online prescription services may have enabled individuals in urban areas to access contraceptive services remotely, reducing the impact of physical distancing measures and healthcare facility closures on contraceptive access.

Also, among the various provinces, there were also differences in access to contraceptives with those in Free State, KwaZulu Natal and Mpumalanga having higher odds of accessing contraceptives during COVID-19 than those in Gauteng, Limpopo, North West, Eastern and Northern Capes. This further underscores the place of geographical location in access to contraceptives (Anyatonwu & San Sebastián, 2022). This could be a result of shortages of healthcare providers, including obstetricians/gynaecologists, family planning specialists and other socioeconomic factors such as income, leading to limited availability of reproductive healthcare services. This provider shortage may contribute to disparities in contraceptive access between these states, with Free State, KwaZulu Natal and Mpumalanga having a greater concentration of healthcare professionals who can provide contraceptive counseling and services.

It was also found that race predicted access to contraceptives. This finding suggests that there are disparities in access to contraception based on race, particularly during the COVID-19 pandemic. This implies that individuals from different racial backgrounds may face varying levels of barriers or challenges in obtaining contraception, which can have implications for their reproductive health and family planning decisions. The racial disparities in contraceptive access mirror broader systemic inequities in South Africa's healthcare system, where Black communities often face under-resourced facilities and geographic barriers (Akintunde et al., 2023; Ngendahimana et al., 2021; Jackson et al., 2017). These inequities were exacerbated during the pandemic, as lockdowns and supply chain disruptions disproportionately affected marginalized groups (Aly et al., 2020). These disparities can be rooted in structural inequities such as systemic racism, economic inequality, limited healthcare access, and unequal distribution of resources. Impact of COVID-19: The COVID-19 pandemic exacerbated existing healthcare disparities, disproportionately affecting marginalized communities, including Black and other minority populations

Finally, it was found that level of education predicted access to contraceptives, with individuals with tertiary education 1.15 times more likely to access contraceptives during COVID-19 compared to those with non-tertiary education. In other words, it suggests that there is a correlation between education and access to contraceptives. It underscores the influence of educational attainment on reproductive healthcare access. Woldeamanuel et al. (2023) demonstrate that years of education are significantly correlated with access to contraceptives. For instance, individuals with tertiary education may have higher health literacy and greater awareness of reproductive health issues, including contraceptive options and the importance of family planning. This knowledge and awareness can empower individuals to seek out contraceptive services and navigate the healthcare system more effectively, even during times of crisis such as the COVID-19 pandemic. Also, tertiary education is often associated with access to resources such as internet connectivity, educational materials, and social networks, which can provide individuals with information about contraceptive options and where to access reproductive healthcare services.

This study, therefore, emphasizes the need for targeted interventions as it will improve accessibility to contraceptives during any pandemic. For example, expanding telehealth services for rural populations, addressing racial inequities in resource allocation, and prioritizing youth-friendly contraceptive programmes could mitigate disparities. Such measures align with global recommendations to integrate reproductive healthcare into pandemic response plans (Polis et al., 2022).

Conclusion and recommendations

In conclusion, the study identified a number of significant predictors of access to contraceptives during the COVID-19 pandemic in South Africa. The study revealed that some significant variables affecting people's ability to get contraceptives during this difficult time included age, gender, medical assistance status, race, place of residence, and educational attainment. In light of the current global health crisis, these findings highlight the intricate interactions between systemic and sociodemographic factors that influence access to reproductive healthcare services. To address inequities in access to contraception and promote reproductive health equity, it is imperative to comprehend these variables in order to

establish targeted interventions and policies. While some predictors such as age and gender have been recognized as influential factors in reproductive healthcare access, our study highlights the importance of considering a broader range of variables, such as medical aid status, race, and place of residence. These findings prioritize the needs of marginalized populations and also emphasize the need for multifaceted approaches that account for intersecting dimensions of inequality.

Moving forward, efforts to improve access to contraceptives during emergencies like the COVID-19 pandemic must address systemic barriers such as healthcare infrastructure gaps, unequal distribution of resources, and socio-cultural norms that hinder equitable access to reproductive healthcare services. Policy initiatives aimed at expanding healthcare coverage, increasing the availability of contraceptive options, and enhancing healthcare delivery in underserved communities are essential steps towards ensuring universal access to contraceptives for all individuals in South Africa. By addressing the predictors identified in this study and implementing evidence-based interventions, we can work towards a future where every

individual has the ability to make informed choices about their reproductive health, regardless of their socio-demographic background or the challenges posed by external crises.

Limitations

This study has some limitations that should be considered when interpreting the findings. First, the analysis relies on cross-sectional data from the NIDS-CRAM survey, which limits causal inferences about the relationship between predictors (e.g., age, race, education) and contraceptive access. Second, the study focuses on self-reported access to contraceptives during the pandemic, which may be subject to recall bias or social desirability bias. Third, the dataset does not include qualitative insights into the lived

experiences of individuals facing barriers to contraceptive access, which could provide a deeper context for the quantitative results. Despite these limitations, this study's use of a nationally representative dataset, rigorous analytical methods, and focus on South Africa's unique pandemic context provides critical insights into systemic barriers to contraceptive access, and offers actionable evidence to address reproductive health inequities during public health emergencies. These findings underscore the importance of prioritizing contraceptive accessibility in crisis-response planning to mitigate disparities among marginalized populations. Future research should address the gaps identified through longitudinal designs and mixed-methods approaches.

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References

- Adedini, S. A., Odimegwu, C., Imasiku, E. N., & Ononokpono, D. N. (2015). Unmet need for family planning: Implication for under-five mortality in Nigeria. *Journal of Health Population and Nutrition*, 33 (1), 187–206.
- Akintunde, T., Howard, J., Wilson, D., Gore, A., Morton, C., Hebbar, L., Goodier, C., & Alfred, M. C. (2023). Racial and ethnic disparities in long-term contraception use among the birthing population at an academic hospital in the Southeastern United States. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 67(1), 609–613.
- Akinyemi, A. I., Ikuteyijo, O. O., Mobolaji, J. W., Erinfolami, T., & Adebayo, S. O. (2022). Socioeconomic inequalities and family planning utilization among female adolescents in urban slums in Nigeria. *Frontiers in Global Women's Health*, 3:838977, pp1–18
- Ali, S., Gugliemini, O., Harber, S., Harrison, A., Houle, L., Ivory, J., Kersten, S., Khan, R., Kim, J., LeBoa, C., et al. (2017). Environmental and social change drive the explosive emergence of Zika virus in the Americas. *PLoS Neglected Tropical Diseases*, 11(2):1–16
- Aly, J., Haeger, K.O., Christy, A.Y., & Johnson A.M (2020). Contraception access during the COVID-19 pandemic. *Contraception and Reproductive Medicine*, 5(17), 1–9.
- Anyatonwu, O. P., & San Sebastián, M. (2022). Rural–urban disparities in postpartum contraceptive use among women in Nigeria: A Blinder–Oaxaca decomposition analysis. *International Journal for Equity in Health*, 21(1), 71.:1–8
- Asiimwe, J. B., Ndugga, P., Mushomi, J., & ManyenyeNtozi, J. P. (2014). Factors associated with modern contraceptive use among young and older women in Uganda; a comparative analysis. *BMC Public Health*, 14 (926): 1–11.
- Asogwa, U. S., Okafor, N. I. & Ajaero, C. K. (2023). 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.

- Babel, R. A., Wang, P., Alessi, E. J., Raymond, H. F., & Wei, C. (2021). Stigma, HIV risk, and access to HIV prevention and treatment services among men who have sex with men (MSM) in the United States: A scoping review. *AIDS and Behaviour*, 25(11), 3574–3604.
- Currie, E. A., & Jones, K. M. (2019). Health insurance and utilization of contraceptive services among women of reproductive age in the Philippines. *Maternal and Child Health Journal*, 23(2), 249–256.
- Fagbamigbe, A.F., & Ojebuyi, B.R. (2017). Influence of spousal communication about family planning and HIV/AIDS-related issues on modern contraceptive use in Nigeria, *Journal of Health Management*, 19(2), 320–333.
- Fox, B. (2020). The last continent to face up COVID-19, Africa 'needs to wake up. EURACTIV.com. March, 20, 2020.
<https://www.euractiv.com/section/coronavirus/news/the-last-continent-to-face-up-covid-19-africa-needs-to-wake-up/> Accessed January 6, 2024
- Ganguly, D., Misra, S., & Goli, S. (2020). *India's COVID-19 episode: Resilience, response, impact and lessons: Jawaharlal Nehru University*. World Health Organization.
- Gomez, A. M., Bennett, A. H., Arcara, J., Stern, L., Bardwell, J., Cadena, D., ...& Marshall, C. (2024). Estimates of use of preferred contraceptive method in the United States: a population-based study. *The Lancet Regional Health–Americas*, 30, Article 100236
- Grady, C. D., Dehlendorf, C., Cohen, E. D., Schwarz, E. B., & Borrero, S. (2015). Racial and ethnic differences in contraceptive use among women who desire no future children, 2006–2010 national survey of family growth. *Contraception*, 92(1), 62–70.
- Haider, N., Osman, A. Y., Gadzekpo, A., Akpede, G. O., Asogun, D., Ansumana, R., Lessells, R. J., Khan, P., Hamid, M. M. A., Yeboah-Manu, D., Mboera, L., Shayo, E. H., Mmbaga, B. T., Urassa, M., Musoke, D., Kapata, N., Ferrand, R. A., Chanda-Kapata, P., Stigler, F., Czipionka, T., Zumla, A., Kock, R., & McCoy, D. (2020). Lockdown measures in response to COVID-19 in nine sub-Saharan African countries. *BMJ Global Health*, 5(10), 1–10.

- Hossain, M., Khan, M., Ababneh, F., & Shaw, J. (2018). Identifying factors influencing contraceptive use in Bangladesh: evidence from BDHS 2014 data. *BMC Public Health*, 18(1), 1–14.
- Jackson, A. V., Wang, L.-F., & Morse, J. (2017). Racial and ethnic differences in contraception use and obstetric outcomes: A review. *Seminars in Perinatology*, 41(5), 273–277.
- Kitila, S. B., Terfa, Y. B., Akuma, A. O., Olika, A. K., & Olika, A. K. (2020). Spousal age difference and its effect on contraceptive use among sexually active couples in Ethiopia: evidence from the 2016 Ethiopia demographic and health survey. *Contraception and Reproductive Medicine*, 5(1), 1–9.
- Kriel, Y., Milford, C., Cordero, J. P., Suleman, F., Steyn, P. S., & Smit, J. A. (2023). Access to public sector family planning services and modern contraceptive methods in South Africa: A qualitative evaluation from community and health care provider perspectives. *PloS one*, 18(3), 1–20,
- Kriel, Y., Milford, C., Cordero, J., Suleman, F., Beksinska, M., Steyn, P., & Smit, J. A. (2019). Male partner influence on family planning and contraceptive use: perspectives from community members and healthcare providers in KwaZulu-Natal, South Africa. *Reproductive Health*, 16(1), 1–15.
- Lachiewicz, M., Hailstorks, T., & Kancherla, V. (2023). Employment Status in the United States and use of long-Acting reversible contraception or moderately effective contraception before and after the affordable care Act: National survey of family growth 2006–2010 and 2015–2017. *Preventive Medicine Reports*, 33(102177), 1–7.
- McDougal, L., Singh, A., Kumar, K., Dehingia, N., Barros, A.J.D., Ewerling, F., et al. (2021). Planning for work: Exploring the relationship between contraceptive use and women's sector-specific employment in India. *PLoS ONE* 16(3), 1–16.
- Mejía-Guevara, I., Cislighi, B. & Darmstadt, G. L. (2021). Men's attitude towards contraception and sexuality, women's empowerment, and demand satisfied for family planning in India. *Frontiers in Sociology*, 6(689980), 1–14.

- Milkowski, C. M., Ziller, E. C., & Ahrens, K. A. (2021). Rural-urban residence and emergency contraception use, access, and counseling in the United States, 2006-2017. *Contraception: X*, (3), 1-6.
- Ming, L. S. (2020). Condom supply to global fund: an analysis of participation by Malaysian companies. *Interdisciplinary Research Review*, 15(1), 16-21.
- Moorhouse, M., Maartens, G., Venter, F., & Venkatesh, K. K. (2020). Contraceptive choice and use of dual protection among women living with HIV in South Africa. *Journal of Acquired Immune Deficiency Syndromes (1999)*, 83(2), 132-139.
- Ngendahimana, D., Amalraj, J., Wilkinson, B., Verbus, E., Montague, M., Morris, M., & Arora, K. S. (2021). Association of race and ethnicity with postpartum contraceptive method choice, receipt, and subsequent pregnancy. *BMC Women's Health*, 21(17), 1-7.
- Njuguna, A., Zulu, E. M., & Mutua, J. K. (2020). Health insurance and modern contraceptive use among women in Uganda: Do household socioeconomic status and national poverty levels matter? *BMC Women's Health*, 20(1), 1-11.
- Obionu, I. M., Shato, T., Nwaozuru, U., & SebertKuhlmann, A. (2025). Predictors of contraceptive use associated with foreign-born women in the US during the preconception period of their first pregnancy. *Journal of Immigrant and Minority Health*, 27(2), 294-302.
- Obiyan, M.O., & Lasisi, K. (2019). Rural-urban differentials in contraceptive use among men in south-west, Nigeria. *Ife Social Sciences Review*, 27(1), 28-36.
- Polis, C. B., Biddlecom, A., Singh, S., Ushie, B. A., Rosman, L., & Saad, A. (2022). Impacts of COVID-19 on contraceptive and abortion services in low- and middle-income countries: a scoping review. *Sexual and Reproductive Health Matters*, 30(1):1-24.
- Schröder, M., Bossert, A., Kersting, M., Aeffner, S., Coetzee, J., Timme, M., & Schlüter, J. (2021). COVID-19 in South Africa: outbreak despite interventions. *Scientific Reports – Nature*, 11 (4956): 1-9.

- Singh. S., Sedgh, G., & Hussain, R. (2010). Unintended pregnancy: worldwide levels, trends, and outcomes. *Studies in Family Planning*, 41(4), 241–50.
- Sweeney, S., Obure, C., Maier, C., Greener, R., Dehne, K., Vassall, A., & Warren, C. (2019). Costs and efficiency of integrating HIV/AIDS services with other health services: A systematic review of evidence and experience. *Sexually Transmitted Infections*, 95(5), 340–348.
- Tsui, A. O., Brown, W., & Li, Q. (2017). Contraceptive practice in sub-Saharan Africa. *Population and Development Review*, 43(Suppl Suppl 1), 166–191.
- Uddin, M. M., Kabir, M., Choundhury, S. R., Ahmed, T., & Bhuyan., M. R. (1985). Differentials in contraceptive use status in Bangladesh. *Rural Demography*, 12(1), 1–20.
- Ugwu, N. F., Ochiaka, R. E., Asogwa, U. S., Ekwulu, E. O., Ibenyenwa, N. C., Onayinka, T. S., Anibueze, A. U., Olubodun, O. A., Adams, A. B., Awoniyi, O. M., Falebita, T. F., & Okoli, S. N. (2024). The efficacy of traditional storytelling as a Health Education Intervention strategy in HIV stigma reduction in Nigerian rural communities: A randomized controlled trial. *IKENGA: International Journal of Institute of African Studies*, 25(3): 1–24.
- WHO (2020, October 8). Adolescent pregnancy. pregnancy <https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy>, Accessed January 6, 2024
- WHO (2021, March 30). Media briefing on COVID-19. <https://www.afro.who.int/health-topics/coronavirus-covid-19>, Accessed January 6, 2024
- Woldeamanuel, B. T., Gessese, G. T., Demie, T. G., Handebo, S., & Biratu, T. D. (2023, February 15). Women's education, contraception use, and high-risk fertility behaviour: A cross-sectional analysis of the demographic and health survey in Ethiopia. *Frontiers in Global Women's Health*, 4.
- Wondie, K. Y., Badi, M. B., & Tamiru, A. T. (2020, June 1). Rural-urban differentials of long-acting contraceptive method utilization among reproductive-age women in Amhara Region, Ethiopia: Further analysis of the 2016 EDHS. *Open Access Journal of Contraception*, 11, 77–89.

World Health Organization (2022).World family planning

2022.https://www.un.org/development/desa/pd/sites/www.un.org.development.de/pd/files/documents/2023/Feb/undesa_pd_2022_world-family-planning.pdf, Accessed January 6, 2024