Ignoring the elephant in the room: factors contributing to inadequate access to contraception and sources of contraception during novel coronavirus diseases 2019 in South Africa.

Abstract

Background: Evidence have shown that the prescribed lockdown and social distancing due to the novel coronavirus disease 2019 (COVID-19) has made accessing essential health care much more difficult in low-and middle-income countries (LMICs). Access to contraception is essential and should not be denied, even in the time of a global crisis because it is associated with health benefits. It is paramount to maintain timely access to contraception without unnecessary barriers. Hence, this study examines the factors contributing to inadequate access to contraception and sources of contraception during the COVID-19 pandemic in South Africa (SA).

Method: The first secondary dataset on coronavirus from the National Income Dynamic Study (NIDS) conducted in SA during the coronavirus pandemic was employed in this study. This study involved 6,829 respondents. Data was analysed using chi-square and binary logistic regression analysis.

Results: Over one-quarter of South Africans could not access contraception and more than every 7 in 10 South Africans preferred public or government hospital as source of contraception. Female South Africans (OR=0.89 CI:0.7487-1.0719) and those aged 65 years above (OR=0.67 CI:0.4485-0.9988) were 33% and 11% respectively less likely to have access to contraception. The preferred sources of contraception were associated with the selected demographic and economic variables at \( P<0.05 \).

Conclusions: Findings from the study suggests strategies and interventions that will be tailored towards non-obstruction of contraception access during the on-going COVID-19 or any future pandemic. Moreover, special consideration should be given to certain provinces and those in 3rd quintile of wealth income.

Keywords: Access, Sources, Contraception, sexual and reproductive health, COVID-19, South Africa.
Introduction

The coronavirus disease 2019 (COVID-19) outbreak has revealed how strikingly unprepared the world is for a pandemic and how easily viruses spread in our interconnected world (1). It has also been shown to be highly contagious (2), and this has radically changed social relations in the world (3).

The strain that the outbreak imposes on health systems will undoubtedly impact the sexual and reproductive health of individuals living in low-and middle-income countries (LMICs) (4) (5) with such consequences as halt the supply of contraceptive products, including condoms, due to restriction imposed as a result of lockdown and social distancing (6) (7).

Developing countries like Sub-Saharan Africa and Southern Asia bears the maximum burden of unmet need for modern contraceptives, accounting for 57% of total global unmet needs, of which 39% of these women reside in developing countries (8). Despite the doubling in the number of women consuming modern contraceptive methods from 470 million in 1990 to around 840 million in the year 2019, an estimated 214 million women in developing countries still had unmet needs for contraceptives use (8).

This is equally apparent as Sub-Saharan Africa (SSA) region continues to have the lowest contraceptive prevalence at 24% and the highest level of unmet need at 25% (9). There are numerous barriers to receiving high-quality healthcare in SSA (10). However, multiple factors such as poverty, illiteracy, lack of knowledge and awareness about contraceptives, non-availability of contraceptives and other factors have been linked to low use of contraceptive in this region (8), but the most recent is the inadequate access to sexual and reproductive healthcare (SHR) services which makes accessibility of contraception limited (11).

Healthcare access is defined as the opportunity to identify healthcare needs, to seek healthcare services, to reach, to obtain or use healthcare services and to require services fulfilled (12). It’s pertinent to know that access to required medications or services is central to achieving universal health coverage (13). For instance, a recent study in Italy concluded that nine out of every fifteen adults indulged in risky sexual behaviour due to lack of access to contraception due to coronavirus outbreak in the country (14)

Evidence has also shown that the prescribed lockdown and social distancing due to COVID-19 has made accessing essential health care much more difficult in LMICs (15). Access to contraception is essential and should not be denied, even in the time of a global crisis (16). Effective contraception significantly reduces maternal mortality by preventing unintended pregnancy and the inherent risks associated with pregnancy; for these reasons and more, it is paramount to maintain timely access to contraception without unnecessary barriers (16).

Guttmacher Institute Authors and other studies estimated that if there were a 10% decline over a year in the use of contraception as a result of inadequate access because of the ongoing pandemic, an additional of over 48 million women would have an unmet need for contraception worldwide, resulting in more than 15 million additional unintended pregnancies (17) (18) (19),...
which may lead to unsafe abortions and higher extra spending in the future on sexual and reproductive health outcomes as a result of coronavirus disease 2019 pandemic (20) (21) (22).

The first cases of SARS-CoV-2 were declared in Africa in late February and early March 2020 (23). South Africa (SA) had its first case reported on March 06, 2020 (24); since then, cases have increased to over 638,000 and more than 15,000 deaths have been recorded as at 8th of September, 2020 (25).

President Cyril Ramaphosa declared a nationwide lockdown on 23 March 2020 to help curb the spread of the 2019 Coronavirus Disease outbreak (COVID-19) in SA (26), and to encourage health systems to plan for the influx of moderate to severe cases of COVID-19 (27). In addition to the national lockdown, other social distancing steps such as isolation of persons infected with the COVID-19 and quarantining of anyone who might have been exposed or in contact with an infected individual were also encouraged and implemented (28).

Despite World Health Organization (WHO) advises to Federal and state governments that preparedness efforts should focus on access to “essential medicines” and healthcare services to satisfy the priority health needs of the population (29). However, certain individuals within households and communities in South Africa were deprived access to essential medicine or health care services, including sexual and reproductive health services and contraception, because they feel obligated to uphold the lockdown and prevent transmission of COVID-19, as such these individuals choice of contraception are being influenced by location or source of contraception (30).

South Africa faces key reproductive health challenges that are entrenched in socio-political and cultural factors (31), and this is evident in the country’s overall unmet need for contraception of 18%, while the contraceptive prevalence rate (CPR) for married women is 54% and 64% for unmarried women(32). Although, the effects of contraceptive obstruction during pandemics are often not the direct result of the pandemic, instead they are indirect consequences of strained health care systems, disruptions in care and redirected resources to pandemic needs (33) (34).

It’s imperative to note that before the COVID-19 outbreak, access to optimal healthcare has also been facing major socio-demographic inequalities (35) and these Socio-demographic inequalities contribute to unequal access to quality health care (36). However, with the current evolution of the COVID-19 pandemic, there is a need for concerted actions towards ensuring individuals who need essential access to sexual and reproductive health, including the provision of contraception services, are not obstructed (4) (37). Thus, there is a need to examine the demographic and economic characteristics of South Africans’ access to contraception and sources of contraception during the ongoing COVID-19 pandemic.
Methods and Materials

Study design and settings

This study used data from the National Income Dynamics Study-Coronavirus Rapid Mobile Survey (NIDS-CRAM) (38). NIDS-CRAM is a nationally-representative survey of the NIDS, which involves a sample of South African adults from 2017 NIDS wave 5 (39). The primary investigator for this survey is the Southern Africa Labour and Development Research Unit (SALDRU), which is affiliated to the University of Cape Town (UCT). SALDRU is aided by the South Africa Department of Planning, Monitoring and Evaluation (40). The NIDS wave 5 survey employed a stratified, two-stage cluster sample design to interview respondents in all nine provinces of South Africa. Hence this study maintained the NIDS wave 5 study design and settings (41).

Data collection

NIDS-CRAM is a computer-assisted telephone interviewing (CATI) survey, with the first wave conducted during the coronavirus pandemic in South Africa between May and June 2020. Respondents were mainly asked retrospective questions about their circumstances in February and April 2020. The NIDS-CRAM constitutes a sample of 7,074 individuals drawn from the adult sub-sample of the fifth wave of NIDS conducted in 2017. Information such as demographic characteristics, economic characteristics, access to contraception and sources of contraception during the coronavirus pandemic in South Africa were the variables extracted from the NIDS-CRAM wave 1 dataset.

Sampling

All the age groups interviewed in the survey were included. After eliminating respondents who failed to answer questions related to access to contraception or sources of contraception during the coronavirus pandemic in South Africa, a total of 6,829 respondents were eligible for the study out of 7,074 individuals. The eligible respondents were between the ages of 17 years and above.

Statistical Analysis

NIDS_CRAM wave 1 dataset was recoded and analyzed using STATA version 14. Descriptive statistics were used to summarize data on demographic characteristics, economic characteristics, access to contraception, including condom use and sources of contraception during the 2019 novel coronavirus pandemic in South Africa. Outcome variables were access to contraception and sources of contraception while the explanatory variables were demographic and economic characteristics. Dataset were weighted by applying the recommended weight command of “svyset cluster [pw=w1_nc_wgt], strata(stratum)”and summarized as percentages (%) for both explanatory and outcome variables. Chi-square was done to check the significant association of the selected demographic and economic variables on access to contraception and sources of contraception. Binary logistic regression tests were performed to determine likelihood of the explanatory variables on only access to contraception in the outcome variables due to its dichotomy nature, those who had access where coded “1” as “yes” and those who did not have
access were coded “0” as “No”. P-value < 0.05 was considered statistically significant at 95% confidence interval (CI), and explanatory variables with an odds ratio (OR) greater than 1 were considered to have a higher likelihood on the outcome variables.

**Ethics approval and consent to participate**

This study is a secondary analysis of the NIDS-CRAM wave 1 dataset. Ethical approval for NIDS-CRAM was granted by the University of Cape Town (UCT) Commerce Faculty Ethics Committee. In 2017, the NIDS data collectors (Wave 5) conducted a written informed consent process for all participants, and only resumed interviews until this procedure had been completed. NIDS-CRAM 2020 drawn from the same population sample; hence the consent of the participants was re-validated via telephone interview before proceeding with relevant questions.

**Results**

**Percentage distribution of the explanatory and outcome variables.**

**Table 1**: Percentage distribution of demographic & economic characteristics of the respondents

| Variable          | n=6,829 | Variable          | n=6,829 |
|-------------------|---------|-------------------|---------|
| **Age**           |         | **Employment**    |         |
| 17-24             | 16.99   | Not Economically Active | 22.18  |
| 25-34             | 25.96   | Unemployed        | 33.21   |
| 35-44             | 22.69   | Employed          | 44.60   |
| 45-54             | 14.52   |                   |         |
| 55-64             | 10.79   | Lower quintile    | 56.47   |
| 65+               | 9.05    | 2nd quintile      | 10.73   |
| **Mean Age= 40.21** |        | 3rd quintile      | 4.14    |
| **SD Age =15.59** |         | 4th quintile      | 7.90    |
| **Population group** |       | Upper quintile    | 20.75   |
| African/Black     | 78.54   |                   |         |
| Coloured          | 9.64    |                   |         |
| Asian/Indian      | 2.49    | No schooling      | 1.95    |
| White             | 9.33    | Primary           | 13.07   |
| **Sex**           |         | Secondary         | 83.55   |
Table 1 above showed the percentage distribution of the explanatory variables, which are the demographic and economic characteristics of the respondents interviewed during the survey.

**Demographic Characteristics**

Majority of the respondents were between the age group 25-34 years (25.96). Almost 8 in 10 (78.54%) of the respondents were Africans or Black, while the lowest population group was among Asians/Indians with 2.49%.

A little above half of the respondents were female (52.82%), while males involved in the survey were below average with 57.12%. Gauteng had the highest respondents, with 26.64%, followed by KwaZulu-Natal 18.08% while the least was among Northern-Cape (2.86%). Almost 8 in 10 of the respondents dwell in a House or flat residence, while 1.15% of the respondents dwell in other forms of dwelling types other than those listed above (Table 1).

**Economic Characteristics**
More than two-fifths of the respondents interviewed were employed (44.60%), while 22.18% were not economically active at the time of data collection. Above-average of the respondents were in the lower quintile (56.47%), while those in the third quintile were the least with 4.14% of the wealth-income category of the respondents. Majority of the respondents had secondary school education (83.55%), whiles 1.43% of the respondents had tertiary education.

**Figure 1:** Percentage distribution of the outcome variables

![Percentage distribution of access & source of contraception](image)

NIDS-CRAM, 2020 (Weighted)

Percentage distribution of the outcome variables presented in figure1 above indicated that more than two-fifths (22.88%) of the respondents were unable to access required contraception during the coronavirus pandemic in South Africa while 7 in every 10 respondents preferred public sources; which include public hospital and clinic to get their contraception.

| Variable | Access to Contraception | Sources of Contraception |
|----------|-------------------------|---------------------------|
| Age      |                         |                           |
| 17-24    | Yes (76.41)             | No (23.59)                |
|          | Private (3.89)          | Public (80.56)            |
|          | Other (15.54)           |                           |
| 25-34    | Yes (77.57)             | No (22.43)                |
|          | Private (3.18)          | Public (68.9)             |
|          | Other (27.91)           |                           |
| 35-44    | Yes (77.27)             | No (22.73)                |
|          | Private (9.44)          | Public (67.17)            |
|          | Other (23.39)           |                           |
| 45-54    | Yes (78.99)             | No (21.01)                |
|          | Private (4.97)          | Public (76.8)             |
|          | Other (18.23)           |                           |
| 55-64    | Yes (77.20)             | No (22.80)                |
|          | Private (5.26)          | Public (77.71)            |
|          | Other (17.03)           |                           |
| 65+      | Yes (73.64)             | No (26.36)                |
|          | Private (8.88)          | Public (74.48)            |
|          | Other (16.65)           |                           |
| Total    | Yes (77.12)             | No (22.88)                |
|          | Private (5.77)          | Public (73.14)            |
|          | Other (21.09)           |                           |

$\chi^2=6.7637$  $P-value = 0.7381$  $\chi^2=47.9050$  $P-value=0.03^*$
| Population group | 74.74  | 25.26  | 4.16  | 77.76  | 18.08  |
|------------------|--------|--------|-------|--------|--------|
| Coloured         | 83.68  | 16.32  | 10.12 | 66.07  | 23.8   |
| Asian/Indian     | 90.1   | 9.90   | 17.16 | 2.31   | 80.53  |
| White            | 86.89  | 13.11  | 24.01 | 21.45  | 54.54  |
| Total            | 77.12  | 22.88  | 5.77  | 73.14  | 21.09  |

$\chi^2=84.0219$ \hspace{1cm} $P-Value=0.00^*$

| Gender | Male | 78.13 | 21.87 | 5.27 | 68.87 | 25.86 |
|--------|------|-------|-------|------|-------|-------|
|        | Female | 76.19 | 23.81 | 6.19 | 76.61 | 17.19 |
| Total  |      | 77.1  | 22.9  | 5.77 | 73.12 | 21.1  |

$\chi^2=3.6105$ \hspace{1cm} $P-value=0.21$  \hspace{1cm} $\chi^2=20.7586$ \hspace{1cm} $P-value=0.02^*$

| Province           | 84.17 | 15.83 | 10.18 | 68.67 | 21.16 |
|--------------------|-------|-------|-------|-------|-------|
| Western Cape       | 84.51 | 15.49 | 3.9   | 72.32 | 23.77 |
| Eastern Cape       | 78.69 | 21.31 | 8.42  | 49.06 | 42.52 |
| Northern Cape      | 69.93 | 30.07 | 5.49  | 80    | 14.51 |
| Free State         | 63.43 | 36.57 | 3.37  | 83.05 | 13.58 |
| KwaZulu-Natal      | 81.21 | 18.79 | 5.46  | 78.27 | 16.27 |
| North-West         | 80.45 | 19.55 | 6.53  | 59.93 | 33.53 |
| Gauteng            | 70.24 | 29.76 | 6.91  | 73.04 | 20.05 |
| Mpumalanga         | 83.79 | 16.21 | 8.03  | 79.89 | 12.08 |
| Limpopo            | 77.12 | 22.88 | 5.77  | 73.14 | 21.09 |

$\chi^2=237.0372$ \hspace{1cm} $P-value=0.00^*$  \hspace{1cm} $\chi^2=102.6875$ \hspace{1cm} $P-value=0.00^*$

| Dwelling Type      | 77.7  | 22.3  | 6.58  | 70.5  | 22.91 |
|--------------------|-------|-------|-------|-------|-------|
| A Flat House       | 71.62 | 28.38 | 1.26  | 89.07 | 9.67  |
## Table 2

| Informal House | 77.27 | 22.73 | 3.13 | 79.06 | 17.81 |
|----------------|-------|-------|------|-------|-------|
| Others         | 74.6  | 25.4  | 15.22| 54.65 | 30.13 |
| **Total**      | 77.12 | 22.88 | 5.77 | 73.14 | 21.09 |
| \(\chi^2=11.0368\) | \(P\text{-value}=0.23\) | \(\chi^2=40.4167\) | \(P\text{-value}=0.00^*\) |

### Employment

| Employment | 75.29 | 24.71 | 4.88 | 83.25 | 11.87 |
|------------|-------|-------|------|-------|-------|
| Not Active | 76.92 | 23.08 | 2.10 | 80.6  | 17.3  |
| Employed   | 78.17 | 21.83 | 9.16 | 61.57 | 29.27 |
| **Total**  | 77.12 | 22.88 | 5.77 | 73.14 | 21.09 |
| \(\chi^2=4.8330\) | \(P\text{-value}=0.36\) | \(\chi^2=103.1541\) | \(P\text{-value}=0.00^*\) |

### Wealth Income

| Wealth Income | 76.63 | 23.37 | 4.18 | 75.31 | 20.51 |
|---------------|-------|-------|------|-------|-------|
| Lower quintile| 73.45 | 26.55 | 1.51 | 89.32 | 9.18  |
| 2nd quintile  | 82.91 | 17.09 | 5.47 | 83.44 | 11.09 |
| 3rd quintile  | 72.22 | 27.78 | 6.92 | 77.66 | 15.42 |
| Upper quintile| 81.02 | 18.98 | 13.6 | 49.78 | 36.62 |
| **Total**     | 77.11 | 22.89 | 5.77 | 73.14 | 21.09 |
| \(\chi^2=31.0409\) | \(P\text{-value}=0.00^*\) | \(\chi^2=137.6581\) | \(P\text{-value}=0.00^*\) |

### Education

| Education | 73.65 | 26.35 | 3.08 | 93.15 | 3.77 |
|-----------|-------|-------|------|-------|------|
| No Education | 67.95 | 32.05 | 4.25 | 87.31 | 8.44 |
| Primary    | 78.49 | 21.51 | 6.24 | 69.13 | 24.63 |
| Secondary  | 85.21 | 14.79 | 2.96 | 83.88 | 13.16 |
| Tertiary   | 77.12 | 22.88 | 5.77 | 73.14 | 21.09 |
| **Total**  |       |       |      |       |      |
| \(\chi^2=53.1667\) | \(P\text{-value}=0.00^*\) | \(\chi^2=58.4574\) | \(P\text{-value}=0.00^*\) |

NIDS-CRAM, 2020 (Weighted)

\* Significant at 0.05

Table 2 showed the test of association between demographic & economic factors and access to contraception & source of contraception during the coronavirus pandemic in South Africa.
The results showed that the age group 65 years and above (26.36%) had no access to contraception while the age group 17-24 years (80.56%) preferred public sources of contraception than other sources. Test of association showed no significant association between the age of respondents and access to contraception as \( P > 0.05 \) while there was a significant association between the age of respondents and sources of contraception as \( P < 0.05 \).

Among the respondents' population group, African or Black population group had no access to contraception as every 2 in 10 African or Black population were unable to access contraception. Also, more than 7 in 10 African or Black population preferred public sources of contraception. Both access to contraception and sources of contraception is significantly associated with population group as \( P < 0.05 \).

Gender of respondents showed that females had no access to contraception as a little more than two-fifths (23.81%) were unable to access contraception while more than three-quarters of the female respondents preferred public sources of contraception. The test of association was not significant between gender and access to contraception as \( P > 0.05 \), while there is a significant association between gender and sources of contraception as \( P < 0.05 \).

Every 3 in 10 respondents from the Free State province (30.07%) had less access to contraception, while approximately 80% of respondents from Limpopo province preferred public sources of contraception. Both access to contraception and sources of contraception were the significant associated province of respondents as both \( P \)-value were less than 0.05.

28.38% of respondents who dwelled in the traditional house were unable to access contraception. In the same vein, 89% of those same respondents category preferred public sources of contraception. Test of association showed no significant association between dwelling type and access to contraception as \( P > 0.05 \) while there is a significant relationship between dwelling type and sources of contraception as \( P < 0.05 \).

Among the employment category, a little below quarter (24.17%) of respondents who were not economically active had no access to contraception; also, 8 in ten of the same group preferred public sources of contraception. Test of association between employment and access to contraception showed no significant association as \( P > 0.05 \) while there is an association between employment and sources of contraception as \( P < 0.05 \).

Every 3 in 10 respondents with primary education had no access to contraception, while 9 in ten respondents preferred public sources of contraception. Both access to contraception and sources of contraception was significantly associated education of respondents as both \( P \)-value were less than 0.05.

**Table 3:** Test of the relationship between independent variables & access to contraception using Binary Logistic Regression

| Variables    | Access to Contraception |
|--------------|--------------------------|
| Age group    | Odds Ratio \( P>|t| \) 95% CI | RC |
| 17-24        |                          |     |
| Age Group | Incidence Ratio | Standard Error | 95% CI |
|-----------|-----------------|----------------|-------|
| 25-34     | 1.05            | 0.70           | (0.8054-1.3781) |
| 35-44     | 0.97            | 0.82           | (0.7295-1.2841) |
| 45-54     | 1.02            | 0.91           | (0.7261-1.4334) |
| 55-64     | 0.86            | 0.46           | (0.5709-1.2893) |
| 65+       | 0.67            | 0.05*          | (0.4485-0.9988) |

**Population Group**

| Group       | Incidence Ratio | Standard Error | 95% CI |
|-------------|-----------------|----------------|-------|
| African     | 1.39            | 0.08           | (0.9513-2.0237) |
| Coloured    | 5.67            | 0.00*          | (1.8293-17.5846) |
| Asian/Indian| 2.24            | 0.00*          | (1.2949-3.8766) |

**Gender**

| Sex        | Incidence Ratio | Standard Error | 95% CI |
|------------|-----------------|----------------|-------|
| Male       | 0.89            | 0.22           | (0.7487-1.0719) |
| Female     | 2.24            | 0.00*          | (1.2949-3.8766) |

**Province**

| Province               | Incidence Ratio | Standard Error | 95% CI |
|------------------------|-----------------|----------------|-------|
| Western Cape           | 1.29            | 0.31           | (0.7918-2.1021) |
| Eastern Cape           | 0.79            | 0.43           | (0.4393-1.4201) |
| Northern Cape          | 0.57            | 0.02*          | (0.3453-0.9377) |
| Free State             | 0.36            | 0.00*          | (0.2350-0.5524) |
| KwaZulu-Natal          | 1.05            | 0.86           | (0.6051-1.8283) |
| North-West             | 0.89            | 0.59           | (0.5800-1.3632) |
| Gauteng                | 0.55            | 0.01*          | (0.3490-0.8675) |
| Mpumalanga             | 1.29            | 0.29           | (0.8044-2.0887) |

**Dwelling Type**

| Type            | Incidence Ratio | Standard Error | 95% CI |
|-----------------|-----------------|----------------|-------|
| A Flat House    | 1.11            | 0.48           | (0.8329-1.4777) |
| Traditional House| 1.03            | 0.84           | (0.7672-1.3865) |
Table 3 showed the results of binary logistic regression between independent variables and access to contraception during the coronavirus pandemic in South Africa.

Respondents between the age group 25-34 years were 5% more likely to have access to contraception with a confidence interval of (0.8054-1.3781) compared to respondents who were 65 years and above with a confidence interval of (0.4485-0.9988). Only respondents 65 years and above had a significant relationship with access to contraception in the age group category as $P<0.05$.

Population group respondents who were Coloured and White were 39% and 124%, respectively, more likely to have access to contraception. Both Asians/Indians and the White population are significantly associated with access to contraception as $P<0.05$.

Female respondents were 11% less likely to have access to contraception with a confidence interval of (0.7487-1.0719). The test of relationship showed there is no significant relationship between female respondents and access to contraception as $P>0.05$.

| Others     | 0.75 | 0.51 | (0.3189-1.7739) |
|------------|------|------|----------------|
| Employment |      |      |                |
| Not Active | RC   |      |                |
| Unemployed | 1.00 | 0.96 | (0.7985-1.2680) |
| Employed   | 1.01 | 0.90 | (0.7968-1.2938) |
| Wealth Income |          |      |                |
| Lower quintile | RC   |      |                |
| 2nd quintile   | 0.91 | 0.51 | (0.6998-1.1928) |
| 3rd quintile   | 1.55 | 0.03*| (1.0482-2.2997) |
| 4th quintile   | 0.81 | 0.14 | (0.6117-1.0698) |
| Upper quintile | 1.25 | 0.08 | (0.9698-1.6014) |
| Education     |      |      |                |
| No Education  | 0.74 | 0.32 | (0.4134-1.3319) |
| Primary       | 1.23 | 0.41 | (0.7460-2.0324) |
| Secondary     | 1.95 | 0.17 | (0.7421-5.1121) |
| Tertiary      | RC   |      |                |
Both respondents who reside in Eastern Cape and Limpopo Provinces were 29% more likely to have access to contraception, while those who respondents in KwaZulu-Natal were 64% less likely to have access to contraception. Respondents from Free-State, KwaZulu-Natal and Mpumalanga, were significantly related to access to contraception with *P*-value of 0.02, 0.00 and 0.01, respectively.

Respondents who were dwelling in the traditional house were 11% more likely to have access to contraception with a confidence interval of (0.8329-1.4777) while those that dwell in other houses were 25% less likely to have access to contraception with a confidence interval of (0.3189-1.7739). None of the dwelling types is significantly associated with access to contraception as *P* > 0.05.

Employment status of the respondents showed that employed respondents were 1% more likely to have access to contraception with a confidence interval of (0.7968-1.2938) while unemployed had no likelihood with access to contraception with a confidence interval of (0.7985-1.2680). None of the employment status categories is significantly associated with access to contraception as *P* > 0.05.

Respondents that were within the 3rd quintile of wealth-income were 55% more likely to have access to contraception compared to those in the 4th quintile who were 19% less likely to have access to contraception. Test of significant relationship showed that only respondents in the 3rd quintile are significantly related to access to contraception as *P* < 0.05.

Respondents who had secondary education were 95% more likely to have access to contraception with a confidence interval of (0.7421-5.1121) compared to those without education who were 26% less likely to have access to contraception with a confidence interval of (0.4134-1.3319). The test of relationship showed there is no significant relationship between female respondents and access to contraception as *P* > 0.05.

**Discussion**

This study examined the factors contributing to inadequate access to contraception and sources of contraception during the 2019 novel coronavirus (2019-nCoV) in South Africa using the first national income dynamic study-coronavirus rapid mobile survey (NIDS-CRAM) dataset conducted on 2019-nCoV. I was able to describe national-level variation in accessing contraception and sources of contraception during the 2019-nCoV lockdown in the year 2020, and the role which demographic and economic characteristics played. The result of this study acquired and contributed to the existing literature on how inadequate access to contraception can increase the unmet need for contraception which may lead to poor sexual and reproductive health outcomes. The study further expands the scope of unmet need for contraception to inadequate access during 2019-Nov due to lockdown and social distancing.

The study is in concordance with the study that concluded that inadequate or limited access to contraception is part of the contributing factors to unmet need for contraception (9). The result showed that three in every ten South Africans experienced a limited access to contraception during the pandemic. A study conducted in Indonesia and Kenya on preferred sources of
contraception showed that the majority of the population preferred public/government hospitals to obtain their contraception prescriptions (42) (43). This is in line with the study result in that more than two-thirds of South Africans preferred public/government hospitals to obtain their contraception prescriptions. This could be one of the reasons why the respondents were unable to access contraception as most public or government hospitals were occupied or overwhelmed due to the influx of 2019-nCoV patients (33) (34) and also limited transportation as a result of lockdown/social distancing (12) (44).

The study further showed evidence that there is variation in respondents' adopted sources of contraception as all selected demographic and economic variables were significantly associated with the source of contraception. This means that South Africans demographic or economic characteristics determine their sources of contraception. This is also in line with a study conducted in Kenya that showed a large variation in socio-demographic characteristics of respondents and sources of contraception (43).

As the access to contraception continues to be a major contributor to high unmet needs in developing countries (8), this study results showed that South Africans who were aged 65 years and above, those who were Asian/Indians, those who were White population, those who resides in Free state, Mpumalanga and KwaZulu-Natal provinces and finally, those who were in 3rd quintile of wealth-income experienced inadequate access to contraception during the 2020 lockdown/social distancing due to 2019-nCoV pandemic. This is contrary to the studies conducted in South Africa and Ghana prior to the 2019-nCoV pandemic in term of sociodemographic characteristic of respondents that were affected (45) (46).

The use of secondary datasets has its limitations as some questions of interest to further probe the respondents in terms of retrospective questions were not asked during data collection, and this limited the scope of the study. However, this study results showed similarity in most studies, commentaries and editorial opinions that obstruction in sexual and reproductive services in the ongoing 2019-nCoV pandemic could lead to high unmet need for contraception (15) (33) (17) and to the best of my knowledge this is the first paper that holistically employed NIDS-CRAM dataset to examine how 2019-nCoV influence limited access to contraception, preferred sources of contraception and demographic & economic characteristics of South Africans affected.

**Conclusion and Recommendation**

The study concluded that demographic and economic characteristics of South Africans influenced their adopted sources of contraception and that limited access was experienced among the aged population, population groups other than black South Africans, those who reside in Free state, Mpumalanga and KwaZulu-Natal provinces and those who were either poor nor rich, i.e. those in the 3rd quintile of wealth income. Policies, strategies and interventions that will carter for the contraception demands during the ongoing or future pandemic should be targeted at those with similar demographic and economic characteristics. This will not only reduce the unmet need for contraception in South Africa but will tackle the unequal family planning use coverage.

**Consent for Publication**
Not Applicable

Availability of data and materials

The National Income Dynamics Study-Coronavirus Rapid Mobile Survey (NIDS-CRAM) repressed dataset can be accessed via the NIDS website (http://www.nids.uct.ac.za). Alternatively, data that includes sensitive information may be obtained via the University of Cape's application process with Dataset (www.datarst.uct.ac.za).

Competing interests

The author declares no competing interests.

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Author contributions

OB conceptualized the study, writing the first draft, analysis & interpret the results and overall editing of the manuscript.

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