Access to contraceptives for adolescents in northern Nigeria – a cross-sectional study from three secondary health facilities in Kaduna metropolis, Kaduna [version 1; peer review: 1 approved with reservations]

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Abstract

Background: In 2015, the United Nations Development Programme (UNDP) noted that countries will need to meet the increasing demand for contraceptives by the over 600 million 15- to 19-year-olds around the world. Although the unmet need for contraception for Women of Child Bearing Age (WCBA) in Nigeria is 12.7%, the value is higher (35.3%) among adolescents aged 15 – 19 years. Additionally, the unmet need for family planning (FP) among WCBA in Kaduna state is 5.8%, with 33.3% of women aged 20-24 years in Kaduna reported to have had a live birth before the age of 18 years. This study sought to evaluate adolescent contraceptive use in three referral health facilities of Kaduna metropolis.

Methods: This is a descriptive cross-sectional desk review of 5543 FP clients that attended three referral centers between 2014 and 2016. Data on their age, parity and the use of contraceptives were collected from the clinic registers and analyzed using SPSS 22.

Results: The FP client age ranged from 12 to 57 years, of which only 3.6% were adolescent. The annual proportion of adolescent contraceptive users ranged from 3.1 – 4.1%. More than 96% of the adolescents had given birth to at least one child. Around 62% of the adolescents used injectable contraceptives but there was no IUD use reported by any adolescent.

Conclusions: The low proportion of adolescent contraceptive users and their limited choice of contraceptive methods, emanating from multiplicity of client and provider bias, calls for innovative interventions to meet the contraceptive needs of adolescents.

Keywords

Contraceptives, adolescents, method mix, contraceptive access, modern Contraceptive Prevalence Rate
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Introduction

Adolescents are defined as young people from the age of 10–19 years, which can be divided into early (10–14 years) and late (15–19 years). Only the late adolescents are a composite part of women of child bearing age (WCBA) (15–49 years), for whom maternal health services provisions including family planning are made available in most countries. In 2015, the United Nations Development Programme (UNDP) noted that countries will need to meet the increasing demand for contraceptives by the world’s population of 15- to 19-year-olds, of which there are more than 600 million. The inability to meet this need will perpetuate negative health consequences of early, unprotected sex by adolescents such as unintended pregnancy, unsafe abortions, pregnancy-related mortality/morbidity and sexually transmitted infections (STIs) including Human Immunodeficiency Virus (HIV), as well as their social and economic costs. This is further buttressed by the fact that annually, an average of three million unsafe abortions occur worldwide among female adolescents aged 15–19 years.

The 2013 Nigeria Demographic and Health Survey (NDHS) reported that 15.6% of adolescent girls first had sexual intercourse by the age of 15 years and 28.2% of women in this age range are in union (currently married or living together with a man as if married). Although 13% of those in union wanted to space their pregnancies, only 2.1% were using any pregnancy prevention method at the time. The majority of births to adolescent mothers in developing countries occur within marital life.

Around 15% (range 6%–67%) of adolescent girls in developing countries aged 15–19 who are married or in a relationship are using modern contraceptive methods. This is lower than the rate amongst all WCBA. The NDHS reported an increase in modern contraceptive prevalence rate (mCPR) from 9.7% to 9.8% among married WCBA between 2008 and 2013, while amongst adolescents aged 15–19 years it reduced from 2.4% to 1.2% in the same five-year period.

Expanding options and choices for the poorest women and adolescent girls is the most important thing to do, as stated by Dr Natalia Kanem, UNFPA Executive Director. WHO has recommended that women from menarche through to 40 years of age can use oral combined hormonal contraceptives (CHCs) without restriction, while young women (menarche to < 18 years) can generally use DMPA injections. Sexually active adolescents who are unmarried have very different needs from those who are married and want to postpone, space or limit pregnancy. The choice of method may also be influenced by factors such as sporadic patterns of intercourse and the need to conceal sexual activity and contraceptive use. Other key social and behavioral considerations for adolescents choosing a contraceptive method include the risk of STIs, including HIV, and the preference to use methods that do not require a daily regimen for convenience. Nevertheless, adolescents, married or unmarried, have also been shown to be less tolerant of side-effects and therefore have high discontinuation rates.

Adolescents are eligible to both access and use of all the same methods of contraception as adults. IUDs account for close to half of family planning methods used in Eastern Europe and Central Asia, while three methods alone account for 73% of the mCPR in Latin America and the Caribbean; female sterilization (37%), the pill (22%) and male condoms (13%). The contraceptive methods of preference in the Arab States are the pill and IUD, which together account for 85% of the mCPR. A study from Brazil indicated that male condoms are the method most commonly used by adolescents, given that they are readily accessible and inexpensive. Other reports from developing countries showed that the pill and the injection accounts for more than 70% of their total use of modern methods, followed by male condoms (21%) and IUDs (5%).

Studies have shown that sexually active unmarried adolescents do not seek to become pregnant, while the majority of their married peers do not wish to become pregnant at an early age or, in cases where they already have a child, prefer to delay the next pregnancy. Unfortunately, unmet need for contraception is common among sexually active adolescents. These are group of adolescents who want to stop or delay childbearing but are not using any method of contraception. This varies by age, sex, region and marital status. More than a third of adolescent girls with this unmet need in developing countries live in sub-Saharan Africa. The current unmet need for contraception for married adolescents aged 15–19 in 14 developing countries ranged from 7%–62%.

One major outcome of an unmet need for family planning is unwanted pregnancy, which contributes to high levels of unsafe abortion and deaths among girls aged 15–19 years in LMICs. Therefore, improved access and utilization of contraceptives is key to preventing these problems.

Most adolescents have poor access to contraceptive information and services, especially long acting hormonal methods and intrauterine devices. This is a result of restrictive laws and policies, fear of confidentiality, judgmental health workers and the belief that some contraceptive methods are inappropriate for nulliparous women.

Several studies have proposed strategies to remove barriers to contraceptive services in order to urgently meet the contraceptive needs of adolescents. These include proper education and counselling before and at the time of method selection, expanding method choices, reducing costs of services and improving communication and information through the mass media. Importantly, adolescents must be provided accurate information and given opportunities to ask questions and discuss their concerns. These strategies should be reinforced through peer-education, inter-personal communication and information, education communication materials (such as posters and leaflets) to influence their social norms. Service providers should be trained and encouraged to avoid denying them of their right to receive comprehensive and confidential information on pregnancy prevention with abstinence, delay in sexual initiation and contraceptive counselling and services, in order to make informed decisions on contraceptive choices.

As of 2015, Kaduna State has an estimated projected population of 8,103,075, of which 1,620,615 (20%) were WCBA.
(15–49 years) and 745,483 (9.2%) were female adolescents. Additionally, there were 162,095 couples targeted for Family Planning (FP) services in the public health sector, which constitutes 2% of the total population. Among WCBA in the state, 5.8% had an unmet need for FP services and the value is higher among married adolescents in Nigeria, at 13.1%.

The State has three public FP referral clinics within the Kaduna metropolis, located in Kwaro General Hospital (KGH), Yusuf Dantsosho General Hospital (YDGH) and Sabon Tasha General Hospital (STGH). These clinics provide the bulk of Long Acting Reversible Contraceptives (LARCs) due to the availability of skilled manpower. Nevertheless, 33.3% of women aged 20–24 were reported to have had a live birth before the age of 18. Therefore, for Kaduna State to attain the target mCPR of 45.6% by 2018, its FP services must reach all WCBA, especially adolescents, as captured in the Nigerian FP2020 blue print. This study aimed to evaluate the use of FP services by adolescents in the referral health facilities of Kaduna metropolis. The objectives were to collect the data in the FP registers; disaggregate the data by age, parity and types of contraceptives used by adolescents; and estimate the contraceptive method mix index for adolescent clients. Together, these were considered to establish whether adolescents can adequately access the available FP services in these referral centers.

Methods

Study design

This is a descriptive cross-sectional desk review of FP registers of clients that attended KGH (n=2364), YDGH (n= 2328) and STGH (n= 851) between 2014 and 2016. This is limited to existing records from January 2014 to December 2016 in the FP clinic registers during the study period. The service providers were not allowed to update any assumed incomplete sections of the registers and client cards. All the client’s data in the FP registers were included in the study. The data capturing template was designed on SPSS (version 22.0) to include indices in the national FP register like name of the facility, year attending facility, client number, age, parity, months attending clinic and contraceptive method administered. Other indices that were not major outcome of this study were excluded e.g. State, LGA, ward, serial number, name of client, address/telephone number and sex.

Study area

The record review and data entry took place within the hospital FP units while ensuring minimal disruption to its daily proceedings.

Sample size

The study sample size for the three health facilities were estimated from the enumerated health facility catchment area population, estimate of WCBA and prevailing mCPR using Slovin’s Formula \( n = \frac{N}{1 + N (e^2)} \). Where \( n \) is sample size, \( N \) is the population size of the selected community (community is defined as WCBA using contraceptives as at that period in Kaduna as reported in the 2013 NDHS by mCPR of 18.5%) and \( e \) is the level of significance (a p-value of 0.05 will be considered to be statistically significant). This gives a minimum sample size of 311, 355 and 357 for GHK, YDGH and STGH, respectively. Thus, a total minimum sample size of 1023 was used. The sample frame used were the FP client registers of 2014 to 2016 that were available in the FP units of the three secondary health facilities.

Data collection

Records for all the 5543 FP clients registered from 2014 to 2016 in the FP units of the three hospitals were reviewed between the months of October to December 2017 by the trained data clerk. The clinic name, client registration number, year attending clinic, client age, parity, months attending clinic and types of contraceptives used were extracted for each client from the registers by the data clerk. The data were inserted into the data template in SPSS 22. All data entries without the client registration numbers, which also could not be corrected after alignment with the primary data source (clinic FP registers), were deleted. The final percentage data completeness was 92% for KGH, 97% for YDGH and 100% for GHST. The collected data were analyzed using SPSS 22 to generate frequencies, proportions, percentages, averages and range.

The contraceptive method mix was estimated by subtracting the prevalence rates between the most prevalent modern method and the third most prevalent method, divided by the total modern method prevalence in a given country. This quantifies the degree to which women use a range of methods at the country level. It is a good representation of the availability of good quality, human rights-based, family planning services. A method mix index of 60 and above is classified as low method mix, i.e. high dominance of one method, while an index of between 30 and 60 is middle method mix. An index of less than 30 denotes high method mix index, i.e. low dominance of one method.

Ethical approval

This study was approved by the health research ethics committee of the Ministry of health and human services Kaduna State, Nigeria (MOH/ADM/744/Vol.1/513).

Results

The three health facilities all together has a catchment population of 192,554, of which 22% (42,361) were WCBA. The study population are the 7,837 WCBA using contraceptives during the period of 2014 to 2016, estimated from the mCPR of 18.5% for Kaduna State. The estimated minimum sample size using the Slovin’s formula was 1023, as shown in Table 1.

A total of 5750 registered all-female FP client were sampled for the three-year study period of which 5543 (96.4%) had complete client registration numbers. These 5543 also had complete data on months of clinic attendance and types of contraceptives used. The percentages of missing data for other parameters varied as follows; age (0.05%), gravidity (80.5%) and parity (59.6%).

There were a total of 200 adolescents, which constitutes 3.6% of the total client population. The annual proportion of adolescent contraceptive users ranged from 3.1–4.1%, with an average of
Table 1. Estimates of minimum sample size for the three health facilities.

| Facility                      | Facility Catchment Area Population | WCBA (22%) | mCPR (18.5%) | Sample size: n = N/1 + N(e²) |
|-------------------------------|-----------------------------------|------------|--------------|-----------------------------|
| General Hospital Kavo         | 34,093                            | 7500       | 1388         | 311                         |
| Yusuf DanTsogo General Hospital | 76,930                           | 16924      | 3131         | 355                         |
| Sabon Tasha General Hospital  | 81,531                            | 17937      | 3318         | 357                         |
| TOTAL                         | 192,554                           | 42,361     | 7,837        | 1023                        |

3.6%. The absolute number of adolescent clients had increased by 80% over the three-year period.

The total client ages ranged from 12 – 57 years with an average of 27 years. The majority (85%) of the adolescents were between the ages of 18–19 years.

Data on 80.5% and 59.6% of client gravidity and parity, respectively, were missing in the FP registers. Only 1079 clients in GHK and STGH had their gravidity recorded in the FP registers. The gravidity for all clients ranged from 0–14, with an average of four for all clients. The average gravidity for adolescent client was two.

The parity status of the 2328 clients recorded in the YDGH family planning register for 2014 to 2016 was not indicated. Most (96.7%) of the FP clients with available data on parity (2238 clients in GHK and STGH) have had a live birth with an average parity of four. The parity among the adolescent ranged between one and four, with an average of two. Only 3.3% of the adolescent clients had never had a child (Figure 1).

As indicated in Figure 2, the commonest contraceptive used by all the clients were injectables (56.5%) and implants (29.3%). The commonest contraceptives used by the adolescents were injectables (62.8%), implants (23.1%) and pills (11.6%). Only 2.5% of the adolescents used the condoms while none of them used either the IUD, sterilization or natural methods.

The overall method mix index for all clients was 47.7%, while the method mix for adolescents was 51.0%, indicating a middle method mix index (i.e. no dominance of one method) for both age groups. Nevertheless, adolescents’ users still demonstrate slightly higher but not significant dominance of one modern contraceptive method (i.e. injectables).

Discussion

The study reported a low proportion of adolescents (< 4.5%) amongst women that utilized modern contraceptives and the limited FP methods chosen by adolescents in all the three secondary health facilities located within Kaduna metropolis during the study period. This is less than half of the known proportion of adolescents in the state, which is 9.2%³. This is low, especially in a country where 13.1% of married adolescents have an unmet need for contraception⁴. This is due to the age-long bias (i.e. wrong beliefs, restrictive laws and policies, judgmental health workers, and societal pressure) to and limited choice for family planning and other sexual reproductive health services and information for adolescents⁵,⁶,⁹,¹². This finding further strengthens the need for ongoing reprogramming strategies aimed at the provision of more adolescent-friendly family planning services and information⁹.

Although there was an 80% increase in the absolute number of adolescent contraceptive users between 2014 and 2016, the reported annual proportion of adolescent contraceptive users fluctuates between 3.1 – 4.1% of all users, with an average of 3.6% (Table 2). These results further confirmed the reported low utilization of FP services in northern Nigeria, especially amongst adolescents, and the associated high unmet need for contraception among married adolescents⁴. This may be due to an existing preference for a large family and misconceptions about family planning services. Additionally, other challenges still exist within the community, the family, service providers and among adolescents relating to the access and utilization of FP services, ranging from sociocultural and health concerns to financial limitations⁵,⁶,⁹,¹². Therefore, despite the slight national
Table 2. Annual proportion of adolescent contraceptive users in the health facilities 2014 – 2016.

| Year | Total Users (#) | Adolescent Users (#) | Adolescent Users (%) |
|------|-----------------|----------------------|----------------------|
| 2014 | 1221            | 50                   | 4.1                  |
| 2015 | 1930            | 60                   | 3.1                  |
| 2016 | 2392            | 90                   | 3.8                  |
| Total | 5543            | 200                  | 3.6                  |

Table 3. Age distribution of contraceptive users in the health facilities 2014–2016.

| Age (Years) | Frequency | Percent |
|-------------|-----------|---------|
| 12          | 1         | 0.0     |
| 14          | 1         | 0.0     |
| 15          | 3         | 0.1     |
| 16          | 15        | 0.3     |
| 17          | 10        | 0.2     |
| 18          | 94        | 1.7     |
| 19          | 75        | 1.4     |
| 20–24       | 1605      | 29.0    |
| 25–29       | 1688      | 30.5    |
| 30–34       | 1134      | 20.5    |
| 35–39       | 626       | 11.3    |
| 40–44       | 210       | 3.8     |
| 45–49       | 50        | 0.9     |
| 50–54       | 7         | 0.1     |
| 55–59       | 16        | 0.3     |
| Error data  | 3         | 0.1     |
| Missing data| 5         | 0.1     |
| Total       | 5543      | 100.0   |

Figure 2. Distribution of clients by types of contraceptive used in the health facilities 2014–2016. Note: Condoms (Male and female condoms), Pills (Exculus, Microgynon), Injectables (Noristerat and DMPA-IM, DMPA-SC), Implants (Implanon NXT, Jadelle), IUD (Cu-T), Sterilization (Tubal ligation), Natural methods (Cycle beads).

As shown in Table 3, the age range of the 5543 contraceptive users reviewed were from 12 to 57 years old, of which only 200 (3.6%) were adolescents. This proportion was expected to be much higher, considering the fact that adolescent girls constitute around 22.8% of the female population in Nigeria. Additionally, 85% of the adolescents were between 18 and 19 years of age, thus excluding the majority of early adolescents in a place where 15.6% of adolescent girls had their first sexual intercourse at age 15. This may be because societal pressure prohibiting the use of contraceptive methods, especially by adolescents, still exists, which is enabled by associated factors including the age difference between partners for adolescent...
girls that marry older men, social isolation, limited mobility and pressures to prove fertility by becoming pregnant early and often. Thus, contraception is often considered only after a first child is born. This contraceptive use is inappropriate in a place where 33.3% of women aged 20–24 years have had a live birth before the age of 18 years and where 13% of those currently in union want to space their pregnancy, but only 2.1% are using any pregnancy prevention method.

Figure 1 shows that greater than 96% of the adolescent family planning users had given birth to at least one child. These are reports from only two (KGH and STGH) of the three health facilities because the family planning register in the third health facility (YDGH) has no record of client parity. Nevertheless, this is much higher than the value of 33.3% reported from the 2013 population survey for the state. It should be noted that the present data source is facility based, which is likely to exclude unmarried adolescents that may not like to expose their private sexual reproductive health practices, especially to the not too friendly and sometimes judgmental health workers. The prevailing culture which expects married adolescents to commence childbearing immediately after marriage in order to demonstrate their fertility also accounts for this. Contraception is often only considered after a first child is born. Furthermore, in Nigeria, family planning clinics are mostly attended by married women, excluding a significant population of sexually active unmarried adolescents that may be using some methods of FP.

More than half (62.8%) of the adolescent clients used injectable contraceptives, as shown in Figure 2. None of them used the IUD, sterilization or natural family planning methods. This is similar to reports from other developing countries, which showed that the pill and the injection accounts for more than 70% of their total use of modern methods, followed by male condoms (21%) and IUDs (5%). Although adolescents are eligible to both access and use of all the same methods of contraception as adults, limitations still exist due to provider bias, inadequate information, restrictive laws and policies, fear of confidentiality and the belief that some contraceptive methods are inappropriate for nulliparous women. More obviously, adolescents have poor access to information and services for long-acting hormonal methods and intrauterine devices, mainly emanating from provider bias during client counselling and the cost of such methods.

Limitations
This study is primarily limited by being a desk review of client data that were not purposely collected for the study. There is the possibility of some clients not having been registered after service, missing pages or missing registers. Bias, such as double counting, may occur from horizontal referral among the participating facilities and client revisits to the same facility. The data available were also not disaggregated by important parameters such as the marital status or extent of sexual activity engaged in by the clients.

Conclusions
The low proportion of adolescent contraceptive users and the limited choice of contraceptive methods made by them indicate an urgent need to implement programs that will improve their contraceptive utilization, remove barriers to services and improve service coverage. These include the provision of adolescent friendly services, peer-education, as well as age-customized inter-personal communication and effective client-centered counselling before and at the time of method selection, in order to help adolescents, address their particular needs and help them make informed and voluntary decisions.

Implications and contribution
This finding brings forth the ineffectiveness of previous policies and programs on adolescent contraceptive needs. It elucidates the unmet need and inadequate contraceptive methods mix for married adolescents and highlights the need for a more in-depth study to unravel the root cause of the non-utilization of a wider range of methods, including the IUD, by adolescents.

Data availability
Underlying data
Open Science Framework: Access to contraceptives for adolescents in northern Nigeria – a cross-sectional study from three secondary health facilities in Kaduna metropolis, Kaduna

https://doi.org/10.17605/OSF.IO/U9HXR

This project contains the following underlying data:
- Access to contraceptives for adolescents in northern Nigeria.sav_Revised.sav (de-identified raw data collected from client records)
- Access to Contraceptives for Adolescents in Northern Nigeria>Data Dictionary.docx

Data are available under the terms of the Creative Commons Zero “No rights reserved” data waiver (CC0 1.0 Public domain dedication).

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The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Acknowledgments
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Summary:

The manuscript by Alayande and colleagues collected data from family planning registers, and sought to disaggregate the data by age, parity and types of contraceptives used by adolescents, and to estimate the contraceptive method mix index for adolescent clients. The authors intended to use this to establish whether adolescents can adequately access the available FP services in the referral centers where they collected data. The authors used a cross-sectional design, specifically a desk review to address their research objective. Both contraceptive use and method choice were found to be low among adolescents. The data were descriptive but lacked sufficient depth due to the limitation of data availability in the FP registers.

Specific suggestions for improvement follow:

Introduction:
1. Page 3, paragraph 1: The authors wrote, “In 2015, the United Nations Development Programme (UNDP) noted that countries will need to meet the increasing demand for contraceptives by the world’s population of 15- to 19-year-olds, of which there are more than 600 million.” Are more recent data available to make this point?

2. Page 3, paragraph 2: The authors should please update with figures from the 2018 NDHS final report which is now available.

3. Page 3, paragraph 5: I presume all these percentages are referring to adolescents. Kindly provide an explanation for why 37% of adolescents in Latin America & the Caribbean are opting for female sterilization.

4. Page 4, paragraph 2: The authors wrote, “Therefore, for Kaduna State to attain the target mCPR of 45.6% by 2018, its FP services must reach all WCBA, especially adolescents, as captured in the Nigerian FP2020 blueprint.” This reads as if the year 2018 is in the future, but it is in fact in the
past. The authors should rephrase for clarity.

5. The last sentence of the Introduction reads, “Together, these were considered to establish whether adolescents can adequately access the available FP services in these referral centers.” The answer to the question implied in this statement has not been clearly articulated in this manuscript. Can adolescents adequately access the available FP services in the referral centers studied?

Methods:
1. The study variables were not adequately described. For instance, the authors wrote in the first paragraph of the Methods section, “Other indices that were not major outcomes of this study were excluded e.g. State, LGA, ward, serial number, name of client, address/telephone number and sex.” What was the major outcome, and how was it measured?

2. Data collection, 2nd paragraph: The authors wrote, “The contraceptive method mix was estimated by subtracting the prevalence rates between the most prevalent modern method and the third most prevalent method, divided by the total modern method prevalence in a given country.” Given that this study was limited to Kaduna, how did the authors operationalize this definition in the present study?

3. Page 5, paragraph 3: What proportion of observations on gravidity & parity were missing for adolescents? There is a disconnect between the description of Figure 1 and the Figure itself. On its own, the message of Figure 1 is unclear. The authors need to improve on their use of graphics to display results.

4. Page 5, last paragraph of Results: The authors wrote, “The overall method mix index for all clients was 47.7%, while the method mix for adolescents was 51.0%, indicating a middle method mix index (i.e. no dominance of one method) for both age groups.” Which age groups are the authors referring to? The sentence lacks sufficient clarity as mention is made of all clients, on the one hand, and adolescents on the other. The authors should clarify what they mean by “age groups” in this context.

5. Figure 2: The authors should include information on adolescents on the same graph as all clients, to produce a clustered bar chart.

6. Table 3: What do the authors mean by “error data”?

Discussion:
1. Results are being presented for the first time in the Discussion section. Tables 2 & 3, as well as Figure 1 should be properly described in the Results section.

General comments:
1. A few unanswered questions remain: Why did the authors choose to study access to contraceptives by adolescents in secondary, rather than primary health facilities? It is likely that clients that seek contraceptives at primary health facilities are systematically different from those who go to secondary facilities, even though choice is likely to be expanded at secondary facilities. Furthermore, pharmacies and patent medicine stores may be considered to be sources that adolescents feel more comfortable with, especially for condoms and pills. The discussion should include the authors’ perception of the types of adolescents captured by these data. Are some adolescents likely to seek contraceptives from non-traditional means, such as through friends and
peers? Who else is missed in this desk review? Are there adolescent subgroups that may be over-represented in this study?

2. This manuscript will benefit from copy-editing.

3. The manuscript does not seem to have enough in it to adequately answer the research questions, especially because of insufficient information on variables of interest, such as gender, marital status and parity. I suggest the authors convert it to a mixed methods study and obtain more information through focus group discussions, to better explore access of adolescents to contraception.

Is the work clearly and accurately presented and does it cite the current literature?
Partly

Is the study design appropriate and is the work technically sound?
No

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Partly

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
No

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Women's Health; Reproductive Health; Family Planning

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.