Adolescents' Characteristics and Uptake of Contraceptive Methods: Evidence provided by the Performance Monitoring Accountability 2020 data from the Democratic Republic of the Congo

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Statement of equal authors' contribution

DM and GW designed the project. DM requested data from the PMA 2020 team; performed the analysis, and drafted the manuscript. PA, FC, MM, TM and GW contributed to the interpretation of the data and edited the manuscript. All authors read and approved the final manuscript.

Abstract

Background

Family planning (FP) is one of the effective strategies for preventing unwanted pregnancies and their harmful consequences for adolescents, families and the community. We aimed to identify the determinants of the low uptake of contraceptive methods among adolescents aged 15 to 19 in the Democratic Republic of Congo (DRC).

Methods

An analysis targeting teenage girls aged 15-19 was carried out on the data from a cross-sectional study performed by the Performance, Monitoring and Accountability 2020 project en 2018. This study was conducted among women aged 15-49, selected by random sampling in two-stage clusters from Kinshasa and Kongo Central provinces. The dependent variable was the "uptake of contraceptive methods", calculated as a proportion. Independent variables were: education status, marital status, province, religion, number of children, knowledge of contraceptive methods and household income. Pearson's chi-square and logistic regression tests helped to measure the relationship between variables using the alpha significance level of 0.05.

Results

We interviewed 943 adolescent girls. The uptake of any contraceptive method was estimated at 19.9%, 22.6% and 18.1% respectively for all

provinces, Kinshasa and Kongo Central; with no significant difference between provinces (p=0.089). In the same order, modern contraceptive's uptake was estimated at 12.0%, 9.9% and 13.4% respectively; no significant difference was found between provinces. However, traditional contraceptive prevalence calculated at 8.0% for all provinces, was higher in Kinshasa (12.7%) but lower (4.7%) in Kongo Central (p=0.000). Contraceptive unmet needs were estimated at 18.1% (all provinces), 22.9% (Kongo Central) and 11.2% (Kinshasa); with a significant difference between the provinces (p=0.000). Knowledge of contraceptive methods (AOR=2,495; 95%CI, 1,489-4,181; p=0,001), marital status (AOR=2,490; 95%CI, 1,564-3,967; p=0,000) and religion (AOR=3,385; 95%CI, 1,481-7,740; p=0,004) impacted the uptake of any contraceptive method by adolescents.

Conclusion

Progress in the uptake of contraceptive methods by adolescents is not yet sufficient. An important number of teenagers use traditional contraceptive methods, with a high risk of failure, since contraceptive knowledge remains weak. In order to effectively improve the use of FP services, correct information and comprehensive FP services should be provided to adolescents.

Abbrevations : FP : Family planning; DRC: Democratic Republic of the Congo; SRH: Sexual and Reproductive Health ; EA : enumeration areas ; PMA 2020 : Performance Monitoring Accountability 2020 ; IUDs: Intrauterine devices; MICS: Multi Indicators Clusters Suvery; DHS : Demographic and Health Survey ; MOH : Ministry of Health ; RHS : Reproductive Health Service ; RIPSEC : Renforcement Institutionnel pour des Politiques de Santé basées sur l'Evidence au Congo

Introduction

Almost half of the pregnancies among adolescent girls aged 15 to 19 living in developing countries are unwanted [1]. Teenage pregnancy can have a negative impact on the physical, emotional and socioeconomic lives of adolescent girls, their families and the entire community [2, 3]. The disturbed family structure, the low education status and aspiration and low income, seem to be systematically associated to unwanted pregnancies [4-7]. In addition, the mother's low level of education, alcohol consumption, poor school performance, higher frequency of sexual intercourse and lower age at first intercourse also seem to be directly linked to the onset unwanted teenage pregnancies [8]. In the African region, one in two unwanted pregnancies often ends in unsafe abortion [1, 9]. This places a huge burden on the economies and health systems of low-income countries [5-7, 10]. In many developing countries, the proportion of adolescents using contraceptive methods has increased considerably in the past two decades, mostly in adolescents than in older women [11,12]. Within the group of adolescents, contraceptive prevalence is high among those sexually active not living in union (37.0%) and those who are married with at least one child (30.0%). It remains low (5.2%) among married adolescents who do not yet have children [13]. In West and Central Africa, the demand of modern contraceptive methods by married adolescent girls who had not yet given birth was estimated at 12.6%. In 12 countries, including the Democratic Republic of the Congo (DRC), the satisfaction of the demand for modern

contraceptive methods remained less than 10% within the group of adolescents [13]. The number of adolescent girls facing the problem of unmet needs for modern contraception was estimated at 23 million worldwide in 2016 [1, 14]. Unmet need remains high among adolescent group (23%) compared to women aged 30 to 34 where it was estimated at 15% [3]. Addressing modern contraception's unmet need in adolescents aged 15 to 19 would reduce unintended pregnancies by 6.0 million per year; which means avoiding 2.1 million unplanned births, 3.2 million abortions and 5,600 maternal deaths [9]. Uptake of contraceptive methods is increasing in the African region, but discontinuation rates remain high [15]. Adolescent girls' adherence to contraceptive methods is poor ; a significant proportion stop using contraceptives in the first year or experience contraceptive failure [11]. The most commonly used contraceptives are injectables and implants. However, the current success of family planning is due to the widening of the range of methods, the promotion and prescription of postpartum contraception and the involvement of community workers [15]. The success is also due to the improvement in the commitment of states in favor of FP and the multiplication of initiatives targeting the FP [16].

Unfortunately, beyond improving the availability of contraceptive methods, a significant number of adolescents still face major obstacles to accessing FP: laws and policies can restrict access to services in some countries; adolescents are uncomfortable attending FP clinics, even those designed to be adapted for young people [3]. Most adolescents have

limited power to negotiate the uptake of contraceptive methods [3]; their knowledge about sexual and reproductive health (SRH) is poor. Some adolescents are unaware of the health risks they run by displaying risky behaviors [17] ; a significant proportion start sex too early in the context of low contraceptive uptake and high unmet need for contraception [18]. Poor knowledge results in limited access to information and poor access to effective contraceptive methods, especially among unmarried adolescent girls [19]. Living in rural areas ; associated with lack of education and resources reduce the ability to access health information and services. Out-of-school adolescents are more vulnerable as a result of the less informed choices they make [3]. Parents, health workers and teachers are recognized as reliable sources of SRH information by adolescents. However, the majority of teens use peers, family members, the media, and even pornography for information [19]. This results in limited access to quality FP information and services compared to adult women [18]. Interventions combining demand generation activities and the provision of user-friendly FP services can potentially increase adolescent contraceptive use [6,20]. They can help removing major bottlenecks, such as the unfavorable legal environment [21], the low availability of contraceptive services [22], adolescent stigmatization by healthcare providers and the low subsidization of FP [23].

In the DRC, the law states that anyone under the age of 18 is a minor ; and is placed under the authority of the guardian in all matters concerning the government of his person [24]. However, more than half

of adolescents become sexually active by the age of 17. In 2017, modern contraceptive prevalence was 19.1% among sexually active adolescents not in couple and unmet need for contraception was 56% in the same group [25]. In 2016, the incidence of unplanned pregnancies among women aged 15 to 49 in Kinshasa was estimated at least to six in 10 pregnancies; the majority ending in unsafe abortion. The abortion rate was 56 per 1,000 women of reproductive age [26]. To improve access to contraceptive methods by adolescents, initiatives are underway: community distribution of contraceptives by medical school students [27], community distribution of subcutaneous DMPA [28], extension of the range contraceptive methods in the community [29]. However, these strategies seem to have little impact on improving adolescent contraceptive uptake. Our aim was to identify the determinants of low uptake of contraceptive methods among adolescent girls aged 15 to 19 in the DRC.

Methods

An analysis targeting teenage girls aged 15-19 was carried out on the data from a cross-sectional study performed by the Performance, Monitoring and Accountability 2020 project en 2018 [30]. The survey involved 3,536 households, including 1,854 in Kinshasa and 1,682 in Kongo Central. A two-stage cluster design was used to select a representative sample of 58 enumeration areas (EA) in Kinshasa and 52

EA in central Kongo, using selection probabilities proportional to size. The sampling of EAs and the enumeration of households were carried out before starting data collection. In each EA, 33 households were selected by random sampling and all women aged 15 to 49 were interviewed, after giving their informed consent. Interviewers were recruited from adult women living nearby and trained in data collection process, using mobile phones. The other details on the methodology can be found on the website https://www.pmadata.org/data/survey-methodology

Dependent and independent variables

The dependent variable was **'uptake of contraceptive methods'**, a dichotomus variable calculated for all contraceptive methods (uc), modern methods (muc) and traditional methods (tuc). Contraceptive methods were classified according to WHO classification [31]. Uptake of contraceptive methods was calculated as a proportion of adolescents who used at least one contraceptive method at the time of the study. The following were included in the group of current contraceptive users: (1) women who used emergency contraception in the 12 months preceding the study; (2) and those applying the method of breastfeeding and amenorrhea for contraception, less than six months after childbirth and before the return of menstruation. We also calculated adolescent's unmet needs in FP as a proportion.

Seven dichotomus independent variables were retained: Educational status: high (for secondary education and above) vs weak (not passed

primary school); Marital status: married/living as a couple vs single; Province: Kinshasa vs Kongo Central; Religion: did not attend any church vs attended any church; Number of children: ≥1 children vs no child; Knowledge of FP methods: good (knew at least 13 out of 16 contraceptive methods) vs poor (knew less than 13 contraceptive methods); Household income: low (for lowest to middle wealth quintile) vs high (for High and highest wealth quintile)

Statistical analysis

Data were validated and weighted before the analyzes using Stata 14. Quantitative variables were summarized as means and medians with their standard deviations or interquartile range as appropriate. The qualitative variables were summarized as proportions with their confidence intervals. Bivariate analyzes were performed using Pearson's chi-square test to measure the association between dependent and the independent variables taken individually. Logistic regression was then carried out to maesure the association between dependent and independent variables grouped together in a statistical model. All analyzes were performed using an alpha significance level of 0.05. PMA 2020 surveys received approval from the ethics committees of the Johns Hopkins School of Public Health and the Kinshasa School of Public Health. The research protocol for performing secondary analyzes was reviewed and approved by the ethics committee of the Kinshasa School of Public Health (ESPK) under approval number ESP/CE/027/2018.

Results

The household response rate was 95.3% for Kinshasa and 98.5% for Kongo Central. Interviews were completed with 943 adolescent girls aged 15 to 19. The average age of the interviewees was 16.97 ± 1.44 years; 72.7% of respondents were in secondary school; 84.0% were single/never married; 66.4% lived with their parents, and 84.4% had not yet given birth. About 24.9% of participants were from highest economic quintile, while 15.0% came from the lowest economic quintile. **Table 1**

Uptake of any contraceptive method was estimated at 19.9% across the study, which represents 22.6% in Kinshasa and 18.1% in Kongo central; with no significant difference between provinces (p=0.089).

Uptake of modern contraceptive methods of 9.9%, 13.4% and 12.0% was reported respectively in Kinshasa, in central Kongo and overall ; any significant difference was found between the provinces (p = 0.100). About 8.0% of adolescent girls used traditional contraceptive methods overall. However, in Kinshasa, the use of traditional contraceptive methods was estimated at 12.7% ; statistically different from 4.7% in Kongo central (p = 0.000). About 18.1% of adolescent girls had unmet need for FP for all provinces, 11.2% in Kinshasa and 22.9% in Kongo Central ; the difference between the provinces was statistically significant (p = 0.000). **(Table 2)**

Six in ten contraceptive methods used by adolescents were modern methods ; and four in ten were traditional methods. Some adolescents used at least one contraceptive method of any kind at the same time. Thus, of all, the male condom was most used (34.0%), followed by contraceptive pills (12.0%). Uptake of long-acting reversible contraceptive methods was estimated at 9.0% and 1.0%, for implants and Intrauterine devices (IUDs), respectively. An important number of adolescents used traditional contraceptive methods as their first choice; these were rhythm methods (32.0%) and interrupted coitus (13.0%).

Figure 1

Continued uptake of contraceptives over a relatively long period of time is necessary to maintain its benefits. At the time of this study, 16.5% adolescents stopped using contraceptive methods ; the majority within the first year and the rest before the 5th year (data not shown).

Among adolescents who discontinued regular contraceptive uptake, the majority (42.0%) discontinued for infrequent sex, followed by early pregnancy (23.0%), high cost of contraceptives (10.0 %) and desire for pregnancy (10.0%). However, few adolescents advanced the reasons related to the accessibility of the FP methods (6.0%), the side effects (6.0%) and the refusal of the partner (3.0%). **Figure 2**

Regarding sources of contraceptives, the main was pharmacies (44%), followed by health facilities (42%). The other poorly used sources were community distributors, health providers and family members (data not shown).

Acceptability and use of contraceptive methods by adolescents requires that they have complete and correct information about each contraceptive method offered. About one in four adolescents (26%) was informed about FP through television, one in five (20%) by radio and one in six (16%) through health facilities. **Figure 3**

Of all contraceptive methods, the most cited by adolescents were the male condom (86%), followed by rhythm methods (65%), injectables (60%), implants (53%), pills (50%) and female condoms (50%). Other contraceptives were cited in just under half of the cases. **Figure 4**

Uptake of contraceptive methods by adolescent girls is influenced by their socio-demographic characteristics. According to our results, the use of traditional contraceptive methods was associated with knowledge of contraceptives (p=0.006) and the province (p=0.000). However, the modern contraceptive use was associated with knowledge of contraceptive methods (p=0,000), marital status (p=0,000), religion (p=0.005), the number of children (p=0.008) and the household income (p=0.04). Factors such as knowledge of contraceptive methods (p=0,000), marital status (p=0,000), religion (p=0.014) and number of children (p=0.035) were associated with the use of any contraceptive method by adolescent girls. Of all independent variables, only knowledge/information on contraceptive methods was associated with both the use of modern and traditional contraceptive methods by adolescents. **Table 3**

Logistic regression helped to measure the relationship between "uptake of any contraceptive method" and independent variables. After adjusting the data, we noted that three variables were associated with the use of any contraceptive method by adolescent girls. These are knowledge of contraceptive methods (p=0.001), marital status (p=0.000) and religion (p=0.004). Poor knowledge increases the probability of not using contraceptive methods by 2.5 (Adjusted OR=2.495; 95%CI, 1.489-4.181; p=0.001). Unmarried, widowed and divorced adolescents had a 1.5-fold higher probability of not using FP services and methods compared to married or living in couple adolescent girls (Adjusted OR=2.490; 95%CI, 1.564-3.967; p=0.000). Similarly, practice religion increased the likelihood of not using contraceptive methods by 3.5 times (Adjusted OR=3.385; 95%CI, 1.481-7.740; p=0.004). **Table 4**

Discussions

The results of this study suggest an improvement in the use of contraceptive methods by adolescent girls aged 15 to 19 since the results of the Demographic and Health Survey organized in 2013 [25] and since the development of the first strategic plan on FP in the DRC [32]. The increase in the use of contraceptive methods by adolescent girls is also confirmed by other studies, notably the MICS-6 survey implemented in 2017 [25]. However, as it can be seen from the results of recent studies, the improvement in the uptake of contraceptive methods is more marked in women aged 20-49 than in adolescents; this situation raises a problem

of availability of users-freindly FP services already reported [23] and equity to accessing FP services [25, 33]. We showed through this study that three factors (knowledge of contraceptive methods, marital status and religion) influence the uptake of contraceptive methods by adolescent girls. Although increasing significantly, the proportion of adolescent girls using modern contraception remains low compared to the African average. However, it reflects the considerable efforts made by the DRC in the supply of contraceptives ; in the organization and popularization of FP services. The national multi-sectoral FP strategic plan 2014-2020 set the target of 20% of modern contraceptive prevalence among women aged 15 to 49 by 2020 [32]; with the results showed in this paper, we believe it is possible to achiev the target by 2020. This progress is due to the gradual improvement in the supply of FP through health facilities [27] and the development of innovative approaches [28, 29].

From 2013 to 2019, the use of modern contraceptive methods improved less in the age group 15 to 19, from 5 to 11.9%. These results contrast with those found by Kennedy et al. [11] and Munakampe et al. [12] who reported more progress in adolescent contraceptive use than the group of women aged 20 to 49.

Male condoms are both the best known and most widely used contraceptive method by adolescent girls or their partners, followed by rhythm methods. These results corroborate those found during the above-mentioned DHS 2013 survey [33]. Aside from the male condom used by 3 in 10 adolescents, natural methods remain popular among adolescent

girls. Thus, the rhythm method is used by 3 in 10 adolescent girls and, in total, 7.9% use traditional contraceptive methods compared to 12.0% who used modern methods. Several studies indicate that the effectiveness of most natural FP methods remains fairly high, varying from 90 to 98% if the method is mastered and well applied by the couple [34-36]. However, the method of interrupted coitus remains the least effective. The success of using natural FP methods depends largely on the level of education, knowledge and practices of the users [37]. These facts require that adolescents benefit from effective sex education programs in order to prevent the occurrence of unwanted pregnancies resulting from the failure of any contraceptive method. The low contraceptive prevalence and significant unmet need for FP are contributing factors to the occurrence of early and unwanted pregnancies among adolescents, which often end in induced abortions in the African region [38].

Unlike the report produced by UNFPA [3] as well as the results provided by the MICS 6 report [25], our study showed that unmet need for modern contraception is still low among adolescent girls compared to adult women, in a context of high fertility [33] and unregulated pregnancies [26]. This situation requires awareness-raising work and the strengthening of adolescent sex education programs.

Adolescents make up almost a fifth of the world's population. By 2050, projections indicate that there should be more adolescents in sub-Saharan Africa than in any other region in the world [39]. Unless effective actions are taken to improve the health of adolescents, the future of humanity

may be jeopardized. Unmet need for contraception and the effectiveness of contraceptive methods used are key determinants of unwanted pregnancies [40]. Our results indicate a significant decrease in unmet FP needs among adolescents compared to previous studies [25, 33]. This obsevation can be explained by the fact that, unlike the above-mentioned studies which were organized nationwide, our study took place only in Kinshasa and Kongo Central, two provinces having benefited from significant FP support and close to political decision-makers from the Ministry of Health (MOH). However, adolescent girls residing in rural areas of the province of Kongo central have higher unmet FP needs (22.9%) than those residing in Kinshasa (11.2%). These results suggest a problem of equity in the distribution of health services in general, those of FP in particular, already highlighted by Mpunga et al. [22]. According to Gilda et al. [41], women with unmet FP needs cite infrequent sex, unmarried status, and the side effects of contraceptive methods as discouraging the use of modern contraception. These observations are consistent with the results found in our study. Findings from a study in eastern DRC found that barriers to FP adoption were both supply and demand-bound, including providers', users' and community's misconceptions regarding some modern contraceptive methods [42]. Agnes et al. [43] indicated that in regions where abortion was allowed, relatively low abortion rates are reported. This is probably due to the existence of effective sex education and FP programs. The incidence of abortion is high in countries

with restrictive laws and where the culture of prevention and access to contraception are less developed.

Limited knowledge of SRH by adolescents is an important cause of reduced access and upatake of FP services, especially among unmarried adolescents [19]. We found that less than 1 in 10 adolescents had good knowledge of FP methods and only 1 in 4 adolescents was informed about contraceptive methods from the media. These results are in phase with two studies which indicated that in addition to the lack of information, the lack of access to a source of contraceptive supplies [41] and the high cost of contraceptives [41, 44] contribute to the low contraceptive prevalence. Significant work must therefore be done to improve the adolescents' knowledge in FP and remove misconceptions, common to young people even those living in high income countries [45]. Parents, health workers, teachers [19] and peer educators [46] are reliable sources of information for adolescents. However, the majority of teens receive SRH information from peers, family members, and the internet. Munakampe et al [19] suggest the implementation of interventions involving parents and teachers in order to transmit healthy messages to adolescents. Schools are an important but underutilized source of information [46]. Parental controls further discriminate against adolescent sexual behavior, unlike communication about sexuality with other family members [47]. Open parental communication on sexuality and comprehensive sex education at school are emerging as protective factors against the occurrence of early and unwanted pregnancies. These factors identified by Krugu et al [48]

need to be targeted by intervention programs at the individual, interpersonal, school and community levels. At the provider level, the hostile or critical attitude, the long waiting time, the insufficient length of consultations, the insufficient package of services offered and the lack of confidentiality will dissuade adolescents from accessing SRH regardless of gender, age, religion, place of residence, ethnic group, parental education or household income [49].

FP programs today are increasingly based on the provision of hormonal contraceptive methods, putting aside natural or traditional methods, which are still preferred by some adolescents, according to our findings. A systematic review indicated that the unprofessional attitude of health workers and the lack of youth-friendly reproductive health service (RHS) prevent adolescents from accessing SRH sexual services in developing countries. Authors recommended providing youth-friendly RHS so that they are more widely used by adolescents [50]. According to Sneha et al [51], adolescent girls' willingness and ability to use FP methods and services are often negatively affected by interpersonal influences (peers, partners and parents); community influences (social norms) and macro-social influences notably involving religion.

Strengths and Limitations

This study covered a representative sample of adolescent girls aged 15 to 19 whose selection was made randomly. The data were weighted before the analyzes. However, its main weakness lies in the fact that it took place in two provinces not representative of the DRC.

Conclusions

This study showed an improvement in the uptake of contraceptive methods among adolescent girls aged 15-19. A significant proportion of adolescents use traditional contraceptive methods, especially in urban areas. Unmet FP needs are gradually decreasing, but remain high in rural areas. The use of contraceptive methods is influenced by knowledge of adolescent girls. However, the medias are no longer used by adolescents to learn about SRH and FP. In order to improve the use of contraceptive methods among adolescents, well-developed FP information and training programs for adolescents should be put in place.

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Table 1. Socio-demographic characteristics of adolescent girls interviewed in Kinshasa and Kongo Central, 2018 (N = 943)

Variables	Kinshasa (N=385)	Kongo Central (N=558)	All provinces (N= 943)
Adolescents age (yrs)			
Mean (SD)	16.93±1.41	16.99±1.47	16.97±1.44
Age groups (yrs)			
15 - 17	232 (60.4)	319 (57.1)	551 (58.3)
18 - 19	152 (39.6)	240 (42.9)	392 (41.6)
Household size (mean)	7.62±3.11	6.06±2.51	6.69±2.87
Education status			
Uneducated	1 (0.3)	31 (5.5)	32 (3.4)
Primary	49 (12.8)	148 (26.5)	197 (20.9)
Secondary	310 (80.7)	376 (67.3)	686 (72.7)
Superior	24 (6.2)	4 (0.7)	28 (2.9)
Marital status			
Married / living as a couple	34 (8.8)	107 (19.2)	141 (14.9)
Divorcee	0 (0.0)	10 (1.8)	10 (1.1)
Never married / Single	351 (91.2)	440 (79.0)	791 (84.0)
Relationship with the head of household			
Spouse	9 (2.3)	59 (10.6)	68 (7.2)
Daughter	231 (60.0)	395 (70.8)	626 (66.4)
Daughter-in-law	10 (2.6)	25 (4.5)	35 (3.7)
Granddaughter	64 (16.6)	32 (5.7)	96 (10.2)
Sister	29 (7.5)	10 (1.8)	39 (4.1)
Other	42 (10.9)	37 (6.6)	79 (8.4)
Already given birth			
No	356 (92.5)	440 (78.8)	796 (84.4)
Yes	29 (7.5)	118 (21.1)	147 (15.6)
Number of births			
0	359 (93.2)	449 (80.3)	808 (85.6)
1	23 (6.0)	95 (17.0)	118 (12.5)
2	3 (0.8)	15 (2.7)	18 (1.9)
Head of household religion			
No religion	9 (2.3)	20 (3.6)	29 (3.1)
Catholic	92 (23.9)	187 (33.4)	279 (29.6)
Protestant	29(7.6)	152 (27.2)	181 (19.2)
Kimbanguist	17 (4.4)	39 (6.9)	56 (5.9)
Muslim	9 (2.3)	7 (1.3)	16 (1.7)

Revival Church	174 (45.3)	64 (11.4)	238 (25.2)
Salvation Army	2 (0.5)	24 (4.3)	26 (2.7)
Bundu dia kongo	1 (0.3)	25 (4.5)	26 (2.7)
Others	51 (13.3)	41 (7.3)	92 (9.7)
Wealth Quintile			
Lowest	63 (16.4)	79 (14.1)	142 (15.0)
Lower	76 (19.7)	85 (15.2)	161 (17.1)
Middle	103 (26.7)	101 (18.1)	204 (21.6)
High	70 (18.2)	132 (23.6)	202 (21.4)
Highest	73 (18.9)	162 (29.0)	235 (24.9)

Table 2: Uptake of contraceptive methods and unmet need for family planning among adolescent girls aged 15-19 in the DRC, 2018

Variables	DRC (N*=943)	Kinshasa (N*=385)	Kongo Central (N*=558)	p value
Use of all contraceptive methods (n, %)				**0.089**
Yes	188 (19.9)	87 (22.6)	101 (18.1)	
No	755 (80.1)	298 (77.4)	457 (81.9)	
Use of modern contraceptive methods (n, %)				**0.100**
Yes	113 (12.0)	38 (9.9)	75 (13.4)	
No	830 (88.0)	347 (90.1)	483 (86.6)	
Use of traditional contraceptive methods (n, %)				**0.000**[**]
Yes	75 (8.0)	49 (12.7)	26 (4.7)	
No	868 (92.0)	336 (87.3)	532 (95.3)	
Unmet need for family planning (n, %)				**0.000**[**]
Yes	171 (18.1)	43 (11.2)	128 (22.9)	
No	772 (81.9)	342 (88.8)	430 (77.1)	

[*] The initial sample was weighted

[**] This probability reflects a statistically significant difference between the row and column variables

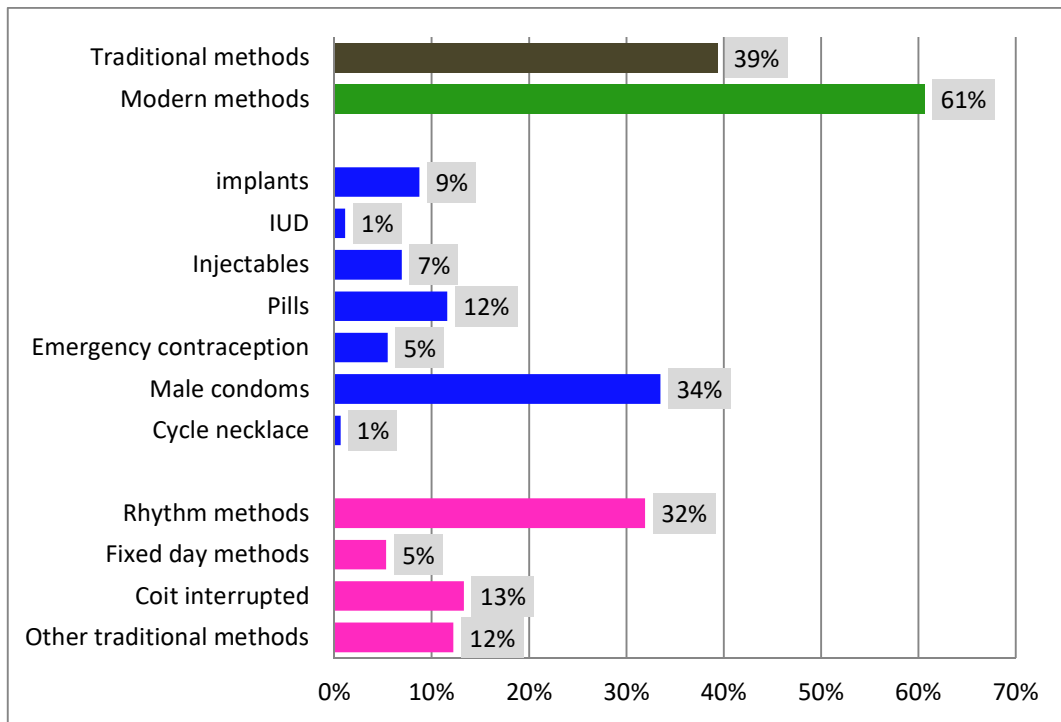**Table 3. Uptake of contraceptive methods according to socio-demographic characteristics of adolescents**

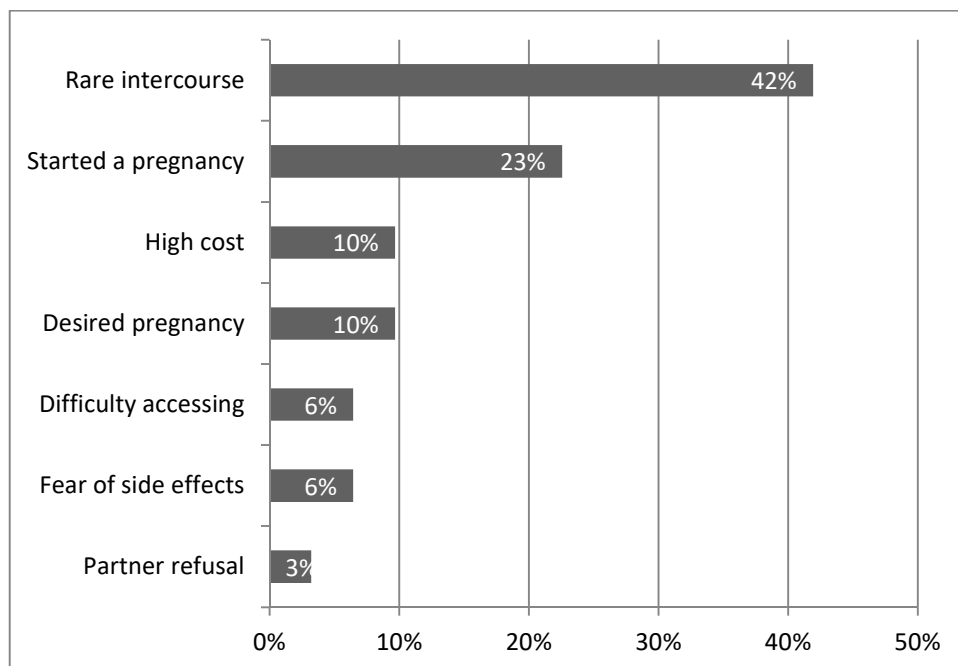| Variables	All contraceptive methods			Modern contraceptive methods			Traditional contraceptive methods		
	No (n, %)	Yes (n, %)	Probability	No (n, %)	Yes (n, %)	Probability	No (n, %)	Yes (n, %)	Probability
Knowledge of FP methods (N=939)			0.000*			0.000*			0.006*
Low	702 (93.5)	156 (83.0)		763 (92.5)	94 (82.5)		796 (92.0)	62 (82.7)	
High	49 (6.5)	32 (17.0)		62 (7.5)	20 (17.5)		69 (8.0)	13 (17.3)	
Education status (N=943)			0.107			0.550			0.095
Low	191 (25.3)	37 (19.7)		203 (24.5)	25 (21.9)		216 (24.9)	12 (16.2)	
High	564 (74.7)	151 (80.3)		626 (75.5)	89 (78.1)		652 (75.1)	62 (83.8)	
Marital status (N=942)			0.000*			0.000*			0.258
Single / widowed / divorced	646 (85.7)	137 (72.9)		704 (85.0)	78 (69.0)		724 (83.5)	58 (78.4)	
Married/ living as a couple	108 (14.3)	51 (27.1)		124 (15.0)	35 (31.0)		143 (16.5)	16 (21.6)	
Religion (N=943)			0.014*			0.005*			1.000
No	18 (2.4)	11 (5.9)		20 (2.4)	9 (7.9)		26 (3.0)	2 (2.7)	
Yes	737 (97.6)	177 (94.1)		809 (97.6)	105 (92.1)		842 (97.0)	72 (97.3)	
Already given birth (N=943)			0.035*			0.008*			0.883
No	649 (86.0)	150 (79.8)		713 (85.9)	87 (76.3)		736 (84.7)	64 (85.3)	
Yes	106 (14.0)	38 (20.2)		117 (14.1)	27 (23.7)		133 (15.3)	11 (14.7)	
Household income (N=943)			0.152			0.04*			0.741
Low	250 (33.1)	52 (27.7)		276 (33.3)	27 (23.7)		277 (31.9)	25 (33.8)	
High	505 (66.9)	136 (72.3)		554 (66.7)	87 (76.3)		591 (68.1)	49 (66.2)	
Provinces (N=943)			0.890			0.100			0.000*
Kongo Central	457 (60.5)	101 (53.7)		483 (58.3)	75 (66.4)		533 (61.3)	26 (34.7)	
Kinshasa	298 (39.5)	87 (46.3)		346 (41.7)	38 (33.6)		336 (38.7)	49 (65.3)	

Table 4. Factors associated with the low uptake of any contraceptive method by adolescent girls in Kinshasa and Kongo central

Variables	Nb./N (%)	crude OR (95% CI)	Probability	Adjusted OR (95% CI)	Probability
Knowledge of contraceptive methods					
Low	763/857 (89.0)	3.016 (1.900 – 4.787)	0.000	2.495 (1.489 – 4.181)	0.001*
High	62/82 (75.6)	-		-	
Educational status					
Low	203/228 (89.0)	1.471 (0.912 – 2.373)	0.113	1.555 (1.000 – 2.420)	0.05
High	626/715 (87.6)	-		-	
Statut marital					
Single / widowed / divorced	704/782 (90.0)	1.846 (1.101 – 3.094)	0.02	2.490 (1.564 – 3.967)	0.000*
Married/ living as a couple	124/159 (78.0)	-		-	
Religion					
Yes	809/914 (88.5)	2.614 (1.138 – 6.005)	0.024	3.385 (1.481 – 7.740)	0.004*
No	20/29 (69.0)	-		-	
Already given birth					
No	713/800 (89.1)	1.261 (0.753 – 2.113)	0.377	0.997 (0.595 – 1.670)	0.99
Yes	117/144 (81.3)	-		-	
Household income					
High	276/303 (91.1)	0.902 (0.620 – 1.310)	0.587	1.231 (0.840 – 1.804)	0.287
Low	554/641 (86.4)	-		-	
Provinces					
Kongo central	483/558 (86.6)	0.978 (0.692 – 1.384)	0.901	1.287 (0.896 – 1.846)	0.172
Kinshasa	346/384 (90,1%)	-		-	

Figure 1. Contraceptive methods used by adolescent girls aged 15-19 in Kinshasa and Kongo Central, 2018 (N = 188)

Traditional methods — 39%
Modern methods — 61%

implants — 9%
IUD — 1%
Injectables — 7%
Pills — 12%
Emergency contraception — 5%
Male condoms — 34%
Cycle necklace — 1%

Rhythm methods — 32%
Fixed day methods — 5%
Coit interrupted — 13%
Other traditional methods — 12%

Figure 2. Reasons given by adolescents when stopping contraceptive uptake

Figure 2. Reasons given by adolescents when stopping contraceptive uptake

- Rare intercourse: 42%
- Started a pregnancy: 23%
- High cost: 10%
- Desired pregnancy: 10%
- Difficulty accessing: 6%
- Fear of side effects: 6%
- Partner refusal: 3%

Figure 3. Main sources of family planning information for adolescents in Kinshasa and Kongo central (N = 943)
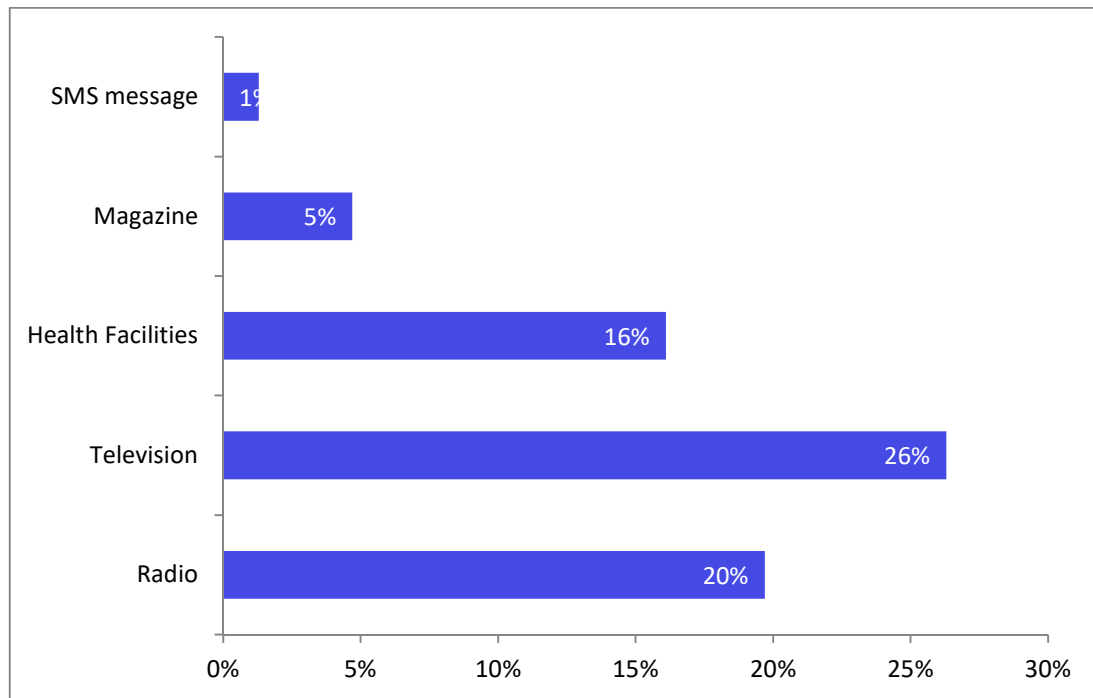
Figure 4. Contraceptive methods spontaneously cited by adolescent girls from Kinshasa and central Kongo (N = 943)

Method	Percentage
Male condoms	86%
Rhythm methods	65%
Injectables	60%
Implants	53%
Pills	50%
Female condoms	50%
Coit interrupted	46%
Female sterilization	44%
Cycle necklace	21%
IUD	16%
Other methods	16%
Emergency pill	14%
Breastfeeding Method	9%
Male sterilization	9%
Contraceptive jelly	6%
Diaphragm	3%