

Knowledge, Attitudes, and Practices of Female High School Adolescents Regarding Modern Contraceptive Methods in Brazzaville in 2024

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Abstract

Introduction: The objective of this study was to analyze the knowledge, attitudes, and practices of female high school adolescents in Brazzaville regarding modern contraceptive methods in 2024. **Population and Methods:** This was an analytical KAP (Knowledge, Attitudes, and Practices) study conducted from February 1 to July 25, 2024, including non-probabilistically selected female adolescents present in high schools who provided their assent or informed consent. The variables studied included sociodemographic, sexual, and reproductive characteristics, as well as knowledge, attitudes, and practices. **Results:** 400 adolescents were interviewed. The mean age was 17.1 ± 1.4 years, 57% were sexually active, 11.4% had previously experienced a pregnancy, and 69.2% had undergone an induced abortion. They demonstrated insufficient knowledge of modern contraceptive methods (78.3%), prejudicial ignorance in 15.3% of cases, with varying levels of certainty; inadequate attitudes (70%), and inadequate practices (62.9%). Analysis of associated factors revealed that insufficient knowledge level influences attitude (OR = 0.47, 95% CI = 0.282 - 0.785, $p = 0.004$); insufficient knowledge level influences practice (OR = 0.124, 95% CI = 0.061 - 0.25, $p < 0.000001$); inadequate attitude influences practice (OR = 2.848, 95% CI = 1.567 - 5.174, $p = 0.001$); and sexual inactivity influences the knowledge level (OR = 0.442, 95% CI = 0.256 - 0.765, $p = 0.004$). **Conclusion:** Strengthening education through the integration of a structured sexual and reproductive health education program into the school curriculum starting from the secondary level would contribute to improving contraceptive practices among female high school adolescents.

Keywords

KAP, Contraception, Adolescents, High School Girls, Brazzaville

1. Introduction

Modern contraception, defined as the set of reversible methods (hormonal, mechanical, and chemical) that allow the prevention of unwanted pregnancies, is a pillar of family planning [1] [2]. It represents a major public health challenge and plays a key role in reducing maternal mortality, which remains a concerning issue in low-income countries: 346 deaths per 100,000 births, compared to only 10 in developed countries [2].

Adolescence is a critical transition phase marked by significant physical, psychological, and social changes [3]. This period is often associated with early sexual activity, with a median age of first sexual intercourse at 14 years [4]. In 2019, 21 million young girls (aged 15 - 19) became pregnant; 50% of these pregnancies were unwanted and often led to dangerous clandestine abortions [5]. This phenomenon is driven by ignorance and low utilization of modern contraceptive methods [6] [7]. In Congo, the situation is alarming: the rate of early pregnancies increases from 19.8% at age 16 to 25.9% at age 17 [8]. Despite the risks of complications and the repressive legal framework surrounding abortion, data remain poorly documented. It is in this context that we aimed to analyze the knowledge, attitudes, and practices of female high school adolescents in Brazzaville regarding modern contraceptive methods in 2024.

2. Population and Methods

This was an analytical KAP (Knowledge, Attitudes, and Practices) study conducted from February 1 to July 25, 2024 (6 months) in two public general education high schools in the city of Brazzaville, listed under the Departmental Directorate of Preschool, Primary, Secondary Education, and Literacy, namely: Nganga Édouard High School and the Revolution High School. The selection of the two high schools was motivated by their central location in the city of Brazzaville—a determining criterion, as the positioning of these two educational establishments allows them to attract students from all districts of the city, thereby ensuring a certain representativeness of adolescent girls from the entire city and not just from specific areas.

The target population consisted of female adolescents enrolled and regularly attending the aforementioned high schools during the 2023-2024 school year. Excluded were female high school adolescents with medical or psychological conditions that would make participation in the study difficult or inappropriate, as well as those who had participated in a similar study in the six months prior.

The 400 students were selected using simple random sampling. The sample size was calculated using the SCHWARTZ formula, with the modern contraceptive prevalence among adolescents estimated at 39% according to the Demographic and Health Survey EDSC2/2011-2012 in the Republic of Congo [9], increased by 10%.

The variables studied were:

- Sociodemographic, sexual, and reproductive characteristics: age, nationality,

place of residence, level of education, marital status, religion, age at first sexual intercourse, parity, induced abortion;

- Knowledge: overall and partial knowledge;
- Attitudes: perceptions, beliefs, and misconceptions regarding modern contraceptive methods;
- Practices: modern contraceptives previously used, mode of use, source of supply, current use of modern contraceptives, and recourse to a health agent.

To ensure the effective implementation of the survey, a pre-test was conducted to assess the female high school adolescents' understanding of the questionnaire. This pre-test was carried out with 5 female high school students from each grade level, randomly selected from a public high school not included in the study. This phase allowed for the adjustment of certain questions and the adaptation of the questionnaire to the comprehension level of this population.

Data analyses were performed using SPSS version 25 software.

The questionnaire was adapted from CAP (Knowledge, Attitudes, and Practices) tools published in previous studies on contraception in sub-Saharan Africa [10]-[12]. It consisted of 30 items, including 12 on knowledge, 10 on attitudes, and 8 on practices. Scoring rules and classification thresholds were defined for each domain.

The knowledge level was judged as "sufficient" when the score of correct answers was $>7/14$ and "insufficient" when the score of correct answers was $\leq 7/14$.

Attitudes were judged as "appropriate" when the score of correct answers was $>25/50$ and "inappropriate" when the score of correct answers was $\leq 25/50$.

Practices, for their part, were judged as "good" when the score of correct answers was $>5/10$ and "poor" when the score of correct answers was $\leq 5/10$.

An analysis of the certainty level of responses was also conducted using the response quality spectrum for Instruction 1 by Dieudonné Leclercq [13]. This method categorizes knowledge questions into a spectrum where the investigator marks the given response and circles the degree of certainty or probability percentage among the following six options: 0%, 20%, 40%, 60%, 80%, 100%. If the respondent had no knowledge of the question, the investigator was required to indicate a certainty level of 0%.

Attitudes were evaluated using a Likert scale, with a predefined scale featuring the following response options: totally agree, agree, disagree, totally disagree. Practices were considered good if they met the usage norms for the various methods, and poor if they did not comply with these norms.

Pearson's Chi-square test was used to compare percentages. Subsequently, the Odds Ratio (OR) and its 95% confidence interval (CI) were calculated; these measures were used to assess the correlation between two qualitative variables, with a p-value less than 5%.

The study received approval from the Ethics Committee of the Faculty of Health Sciences at Marien Ngouabi University. For minor participants, double consent was obtained (written assent from the adolescents and consent from the parent/legal guardian).

3. Results

3.1. Sociodemographic, Sexual, and Reproductive Characteristics (Table 1 and Table 2)

3.1.1. Evaluation of Response Certainties

The analysis of responses using Instruction 1 of Dieudonné Leclercq's cognitive and metacognitive diagnosis allowed us to identify the following certainties:

- Incorrect Responses (RI) = 15.3%
- Correct Responses (RC) = 84.7%

From the RI, we detected that:

- 12.7% of the misconceptions are harmful (8.7% of RI with maximum certainty)
- 2.6% of the misconceptions are unusable with 0% recognized ignorance
- The imprudence index is 3.1%

Table 1. Sociodemographic, sexual, and reproductive characteristics of female high school adolescents in Brazzaville from February 1 to June 30, 2024.

Variables	Number (n)	Percentages (%)
Age		
14 - 15 years	52	13
16 - 17 years	191	48
18 - 19 years	157	39
Nationality		
Congolese	378	94.5
Foreign	22	5.5
Place of Residence		
Makélékélé	47	11.7
Bacongo	43	10.7
Poto-poto	29	7.2
Moungali	49	12.3
Ouenzé	77	19.3
Talangai	68	17
Mfilou	48	12
Madibou	2	0.5
Djiri	37	9.3
Level of Education		
Second Year	153	38.3
Penultimate Year	91	22.7
Final Year	156	39

Table 2. Sexual and reproductive characteristics of female high school adolescents in Brazzaville from February 1 to July 30, 2024.

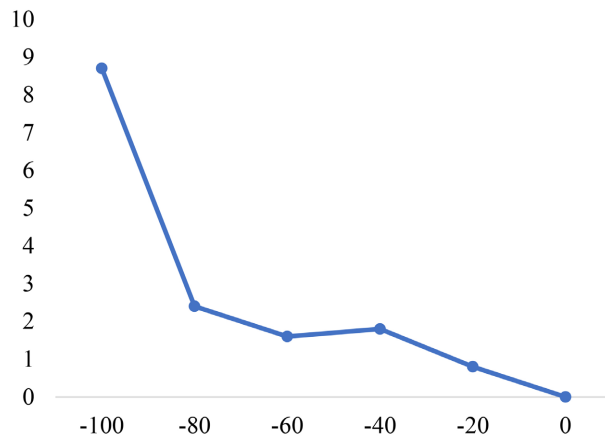
Variables	Number (n)	Percentages (%)
Existence of a Partner		
Yes	230	57.5
No	170	42.5
Sexual Activity		
Yes	228	57
No	172	43
Age at First Sexual Intercourse		
10 - 15 years	94	41.2
16 - 17 years	96	42.1
18 - 19 years	38	16.7
Cumulative Partners		
Only 1	157	69
2 or more	71	31
Gravidity		
Nulligravida	202	88.6
Primigravida	22	9.6
Oligogravida	4	1.8
Parity		
Nulliparous	218	95.6
Primiparous	9	3.9
Oligoparous	1	0.4
Induced Abortion		
None	6	23.1
One	18	69.2
Two or more	2	7.7

The overall knowledge level was insufficient in 78.3% of the female high school adolescents and sufficient in the remaining 21.7%.

The graphical spectrum of incorrect responses is represented in **Figure 1**.

Regarding the correct responses, we detected that:

- 58.4% of knowledge is usable;
- 26.3% of knowledge is unusable with 7.4% recognized ignorance;
- The confidence index is 14.1%.

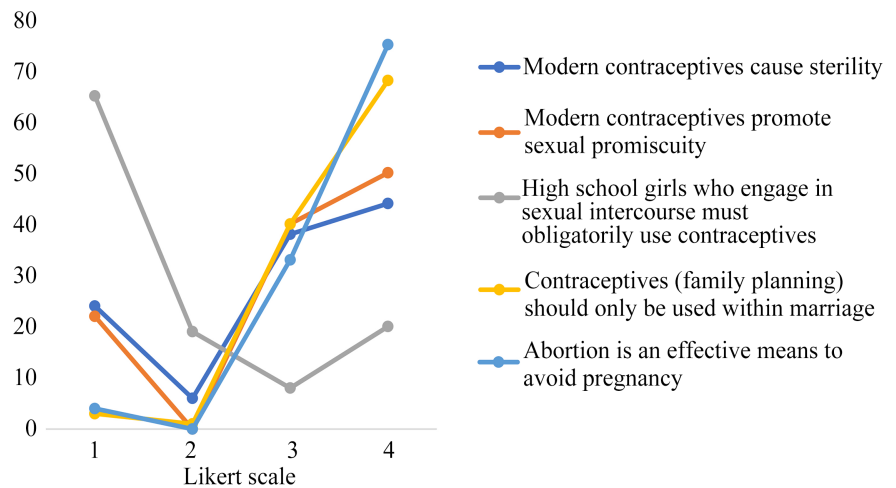


Note: Vertical axis (Y-axis): Represents the percentage (%) or score of responses falling into specific spectral categories. Horizontal axis (X-axis): Represents the degree of certainty (certainty levels) or the probability percentage associated with incorrect responses, ranging from -100 to 0 (corresponding to the options: 0%, -20%, -40%, -60%, -80%, -100%).

Figure 1. Distribution of the spectral qualities of incorrect responses from female high school adolescents regarding modern contraceptive methods.

3.1.2. Evaluation of the Attitude Level

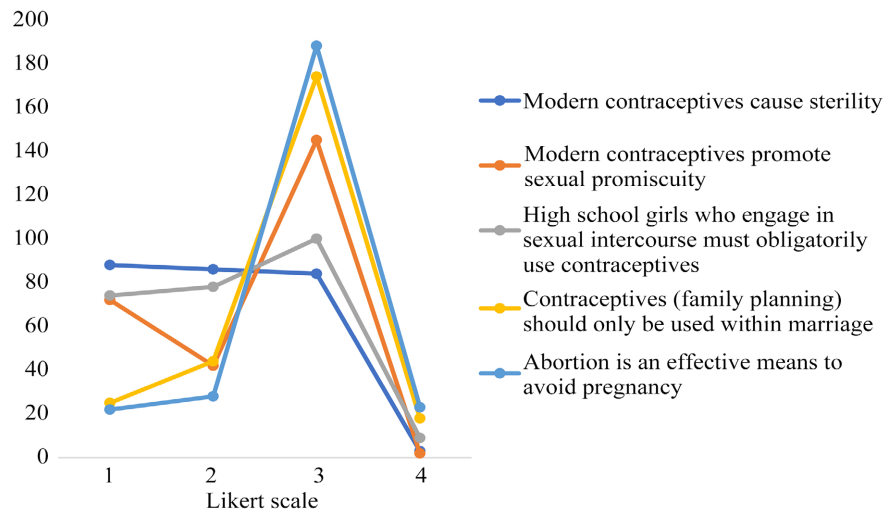
The adapted attitudes of female high school adolescents regarding modern contraceptive methods in Brazzaville from February 1 to July 30, 2024, are represented in **Figure 2**.



Note: Vertical axis (Y-axis): Represents the number of adolescents (n)/percentage (%) who responded to each statement regarding attitudes. Horizontal axis (X-axis): Represents the Likert scale options, numbered from 1 to 4 (corresponding to the predefined choices: strongly agree, agree, disagree, strongly disagree).

Figure 2. Representation of the adapted attitudes of female high school adolescents regarding modern contraceptive methods in Brazzaville from February 1 to July 30, 2024.

The maladapted attitudes of female high school adolescents regarding modern contraceptive methods in Brazzaville from February 1 to July 30, 2024, are represented in **Figure 3**.



Note: Vertical axis (Y-axis): Represents the number of adolescents (n), with a scale ranging from 0 to 200. Horizontal axis (X-axis): Represents the Likert scale options, numbered from 1 to 4 (corresponding to the predefined choices: strongly agree, agree, disagree, strongly disagree).

Figure 3. Representation of the maladapted attitudes of female high school adolescents regarding contraceptive methods in Brazzaville from February 1 to July 30, 2024.

The overall attitude level of female high school adolescents regarding modern contraceptive methods was adapted in 30% of the female high school adolescents and maladapted in the remaining 70%.

3.1.3. Evaluation of the Practice Level

The overall practice level of female high school adolescents regarding modern contraceptive methods was good in 37.1% of the female high school adolescents and poor in the remaining 62.9% (Table 3).

Table 3. Detailed distribution of the practices of female high school adolescents regarding modern contraceptive methods in Brazzaville from February 1 to July 30, 2024.

Variables	Number (n)	Percentages (%)
Previous Use of a Modern Contraceptive		
Yes	202	90.6
No	21	9.4
Type of Contraceptive Used		
Condom	145	71.8
Pill	49	24.3
Implant	5	2.5
Erroneous Molecules	59	29.2
Mode of Use		
Good Use	91	45
Poor Use	111	55

Continued

Source of Supply		
Pharmacy	116	57.4
Health Center	6	3
ACBF	-	-
Social Circle	11	5.4
School	-	-
Shop	22	10.9
Street Vendor	79	39.1
Current Use of a Modern Contraceptive		
Yes	148	73.3
No	54	26.7
Consultation with a Health Agent		
Yes	30	14.9
No	172	85.1

4. Report on Influences

4.1. Influence of Sociodemographic, Sexual, and Reproductive Characteristics on Knowledge (Table 4)

The distribution of the sociodemographic, sexual, and reproductive characteristics of adolescent high school girls in Brazzaville from February 1 to July 30, 2024, is presented in **Table 4**.

Table 4. Distribution of the influence of sociodemographic, sexual, and reproductive characteristics of female high school adolescents on their knowledge level regarding modern contraceptive methods in Brazzaville from February 1 to July 30, 2024.

	Knowledge Level		OR (IC95%)	p-value
	Insufficient	Sufficient		
	n (%)	n (%)		
Place of Residence				0.011*
Bacongo	26 (8.9)	11 (13.6)	1.382 (0.555 - 3.44)	0.487
Djiri	23 (7.9)	12 (14.8)	1.704 (0.688 - 4.219)	0.249
Madibou			-	0.999
Makélékélé	39 (13.4)	7 (8.6)	0.586 (0.218 - 1.579)	0.291
Mfilou	35 (12)	11 (13.6)	1.027 (0.421 - 2.502)	0.954
Moungali	27 (9.2)	15 (18.5)	1.815 (0.771 - 4.272)	0.172

Continued

Ouenzé	65 (22.3)	8 (9.9)	0.402 (0.158 - 1.024)	0.056
Poto-Poto	26 (8.9)	2 (2.5)	0.251 (0.053 - 1.184)	0.081
Talangai	49 (16.8)	15 (18.5)		
Have you ever had sexual intercourse?				0.003*
No	129 (44.2)	21 (25.9)	0.442 (0.256 - 0.765)	0.004
Yes	163 (55.8)	60 (74.1)		
Number of Partners				0.049*
Only 1	236 (80.8)	73 (90.1)	2.165 (0.987 - 4.751)	0.054
2 or more	56 (19.2)	8 (9.9)		

4.2. Influence of Knowledge and Attitudes on Practices (Table 5)

The distribution of the influence of knowledge and attitude levels of adolescent high school girls on their practices regarding modern contraception in Brazzaville from February 1 to July 30, 2024, is presented in **Table 5**.

Table 5. Distribution of the influence of the knowledge level and attitudes of female high school adolescents on their practices regarding modern contraception in Brazzaville from February 1 to July 30, 2024.

Variables	Practice		OR (IC 95%)	p-value
	Poor n (%)	Good n (%)		
Knowledge				
Insufficient	112 (88.2)	36 (48.0)	0.124 (0.061 - 0.25)	<0.000001
Sufficient	15 (11.8)	39 (52.0)	-	-
Attitudes				
Maladapted	92 (72.4)	36 (48.0)	2.848 (1.567 - 5.174)	0.001
Adapted	35 (27.6)	39 (52.0)	-	-
Total	127 (100)	75 (100)		

5. Discussion

Our study was conducted only in two public general education high schools, selected through reasoned choice. Consequently, although the results are relevant, they cannot be generalized to all female high school adolescents in the city of Brazzaville, nor to those in other departments.

The female high school adolescents were aged 14 to 19 years, with a mean age of 17.1 ± 1.4 years. Dramé *et al.* in Guinea Conakry in 2023 [14] reported similar findings, where the mean age was 17.3 years.

More than half of the participants were sexually active. Oko *et al.* in Congo Brazzaville had already reported in 2024 a high prevalence of early sexual intercourse at 72.7% [15]. We attribute this proportional difference to the heterogeneity (boys and girls) of the population selected by the authors.

Although Congolese society is pro-natalist, this does not apply to adolescents, as seen in our study. The majority of those who had previously been pregnant had already undergone at least one clandestine abortion, thereby exposing them to the risk of serious complications [16] [17].

These facts highlight, on the one hand, the undesirability of early pregnancies [18]-[21]; and on the other hand, a lack of knowledge about modern contraceptive methods [20].

In order to adopt good contraceptive practices, the female high school adolescents in Brazzaville need to acquire knowledge on the subject. The overall analysis of their knowledge revealed that 78.3% of the adolescents had an insufficient knowledge level regarding modern contraceptive methods. Nearly identical conclusions, with 86% of cases, were drawn by Mbou Essié *et al.* in 2018 [22], whose population consisted of postpartum women in the same region. The absence of teaching modules on sexual and reproductive health in secondary schools, as well as sociocultural barriers to the use of contraceptive methods, are the causes [8]. These observations contrast sharply with those reported by Debuo *et al.* in 2023 in Ghana, where 78.5% of high school girls had an adequate knowledge level regarding modern contraceptive methods, explained by the existence of several sensitization campaigns on modern contraceptives that had a significant influence on the entire population, particularly students [23].

In our study, the distribution of RI (Incorrect Responses) takes the form of a steep J-shaped curve to the left; this is concerning, as 8.7% of the 15.3% incorrect responses from the female high school adolescents were given with maximum certainty (100%), and it is noted that 12.7% of the misconceptions are harmful. These harmful misconceptions, spanning all the questions, suggest the need for educational reinforcement by integrating a structured sexual and reproductive health education program into the school curriculum starting from secondary level, with interactive sessions including educational games, debates, and simulations to strengthen learning.

However, we noted that the Imprudence index, or the average certainty accompanying incorrect responses, at 3.1% here, was reassuring because it is low.

Regarding correct responses, it would be desirable for their distribution on the graphical spectrum to have its peak as far to the right as possible (also a J-shaped curve). This is the case in our study, where the curve takes a steep J-shape to the right, which is satisfactory. It is observed that 58.4% of the knowledge is usable, including 29.9% perfect responses (correct with 100% certainty), 18.9% doubtful responses (correct with 20% and 40% certainty), and 7.4% admitted ignorance. The Confidence index, or the average certainty accompanying correct responses, is 14.1%, which is very low.

The Confidence and Imprudence indices are impact indicators that will serve as references in evaluating knowledge after the educational reinforcement of the school curriculum with the structured sexual and reproductive health education program.

In our context, the overall attitudes were predominantly maladapted. This result reflects the existence of erroneous beliefs, misconceptions, or reluctance to use modern contraceptive methods. Our results are comparable to those of Ramathuba *et al.* in South Africa [20], who reported that 63% of adolescents exhibited a negative attitude toward modern contraceptives. These authors justify these results by the presence of prejudices related to religion and morality, which consider the use of contraceptives as reprehensible and conducive to premarital sexual relations.

The female high school adolescents mostly had poor contraceptive practices. Dramé *et al.* [14] found a proportion of 99% of female students with a poor level of contraceptive practices, underscoring the importance of persistent barriers to the effective use of modern contraceptive methods in African contexts.

The influence of insufficient knowledge on attitudes and practices aligns with the conclusions of Ramathuba *et al.* [24], according to which the information deficit remains one of the major determinants of risky contraceptive behaviors in sub-Saharan Africa.

6. Conclusion

Female high school adolescents are predominantly nulligravid and sexually active. They exhibit insufficient knowledge, maladaptive attitudes, and poor contraceptive practices. This finding underscores the major influence of the knowledge level on attitudes and behaviors, calling for reinforcement of reproductive health education, as well as facilitated access to services adapted to their needs.

Conflicts of Interest

There is no conflict of interest.

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