

*Full Length Research Paper*

# **Unintended pregnancy and sexually transmissible infections amongst adolescents and young adults in Douala IV municipality, Cameroon: Prevalence, knowledge, and associated factors**

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Adolescent pregnancy remains a significant public health challenge especially in sub-Saharan Africa, with a resultant significant morbidity and mortality. The aim of this study was to determine the prevalence and knowledge of unintended pregnancy and sexually transmitted infections (STIs) amongst adolescents and young adults in the Douala IV municipality. A school-based cross-sectional study was carried out in the Douala IV municipality from January to February 2023. A questionnaire was used to collect data on the prevalence, knowledge of unintended pregnancy and STIs from adolescents and young adults from 10 secondary schools. A logistic regression was used to determine factors independently associated to the prevalence and knowledge of unintended pregnancy and STIs. The data was analysed in SPSS version 25. Of the 42 (6%) females that had been pregnant, 30 (76.9%) were unintended. The knowledge of unintended pregnancy was poor (65%). Factors independently associated with good knowledge of unintended pregnancy were the class, age, type of school, and sex. The prevalence of STI among students was 22%. The knowledge of STIs was poor (52%) with 22% reporting a past experience of STIs. Factors independently associated with the prevalence of STIs were language and being sexually active. Good knowledge of STIs was associated with the class, age, school type, and sex. The prevalence of unintended pregnancy among adolescent and young adults was high. The knowledge of adolescents and young adults on unintended pregnancy and STIs was poor. The class, gender, language, school type, and age were factors associated with the prevalence and knowledge of unintended pregnancy and STIs.

**Key words:** Unintended pregnancy, adolescents, young adult, prevalence, knowledge, Douala IV municipality.

## **INTRODUCTION**

Adolescence is the period of growth and development (Henri et al., 2020). It is a period of critical transition in which takes place between childhood and adulthood life, characterized by a significant growth and stages

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are associated with specific sexual and reproductive health issues including high risks of unintended pregnancy, STIs, unsafe abortion, HIV/AIDS infection, and difficulty accessing contraception (Wirsiy, 2019).

Adolescent pregnancy is a pregnancy occurring in girls aged 10 to 19. It constitutes a serious health and social problem worldwide (Liang et al., 2019). It remains a significant public health challenge and a developmental setback, especially in sub-Saharan Africa, where high rates have been reported with a resultant significant morbidity and mortality (Wirsiy, 2019). It is established that each year approximately 21 million girls aged 15 to 19 years and 2 million girls aged less than 15 years become pregnant in developing countries (Singh et al., 2010). In the same light, an estimate of 16 million girls aged 15 to 19 years and 2.5 million girls under the age 16 years give birth in developing countries (Singh et al., 2010).

In Cameroon, 1.7% of adolescents (15 to 19 years) has experienced sexual intercourses and had carried out intentional abortion. This condition of unintended pregnancy and its consequences often lead adolescents and families to precarious situations like abortion, school drop-outs, financial loss, family break-ups, other social effect, and sometimes death (Melody and Tracy, 1992).

Unintended pregnancy and sexually transmissible infections amongst adolescents and young adult have been reported to be high (26%) (WHO, 2023) with teenagers and young adults, including university students, being the mostly affected (Martin et al., 2015). Adolescents and young adults with unintended pregnancy and STIs face multiple challenges (physiological and psychological changes) that can result in behaviour changes and potentially impact their young women's life prospects (Alemayehu et al., 2018; Gutmacher Institute, 2023; Henri et al., 2020).

Adolescent contribute 28% of maternal mortality in Cameroon (Tebeu et al., 2015). In order to develop an intervention aim to address the problems of unintended pregnancy and STIs in adolescent and young adults in Cameroon, there is an urgent need to update the data on the prevalence of unintended pregnancy and STIs in adolescent and young adults and to identify the associated factors. It is for these reasons that unintended pregnancy and STIs have taken center stage in research pertaining to adolescent and young adult's sexual and reproductive health.

A study conducted in Kumbo East Health district in Cameroon showed a high prevalence of teenage pregnancy (60.75%) and this study indicated low contraceptive use, socio-economic status, and physical violence as associated factors (Donatus et al., 2018) with teenage pregnancy.

The aim of this study was therefore to determine the prevalence and knowledge of unintended pregnancy and STIs amongst adolescents and young adults in Douala IV municipality in Cameroon.

## MATERIALS AND METHODS

### Study design and population

This study was a school-based cross-sectional study in which a questionnaire was used to collect data on the prevalence and knowledge of unintended pregnancy and STIs among adolescents and young adults attending secondary schools in Douala IV municipality. The target population was adolescents 10 to 19 years and young adults 20 to 24 years old. Included in the study were all adolescents and young adults in each selected schools that gave their consent to participate in the study. A total number of 1316 of students from 10 secondary schools were enrolled into the study.

### Study settings

The study was conducted in Douala IV municipality of the littoral region of Cameroon in 10 selected secondary establishments (GBHS Bojongo, GBHS Bonaberi, Lycee polyvalent de Bonaberi, GBHS Mambanda, Atlanta Bilingual College, CEGET Bilingual College, DAAS College, Petit Rousseau College, Horizon Bilingual College, and All Saints Bilingual College). Douala IV is among the 6 municipalities of the Wouri division in the littoral region. Douala IV municipality has an estimated surface area of 21,000 ha with a population density of 145 persons/km<sup>2</sup>. Based on urbanization, Douala 4th district with 250,626 inhabitants has public, private, and confessional schools as a result of its large population and cosmopolitan nature. It harbours national and international students, most of whom are adolescents and young adults.

### Selection of schools

The schools in the Douala IV were divided into government, private, and confessional and 4 government schools, 5 private schools, and 1 confessional school were conveniently selected for the study. In each school selected, students were recruited from all the classes in a consecutive manner.

### Data collection

Data were collected using a pretested questionnaire that contained four main domain including socio-demography, prevalence of unintended pregnancy, prevalence of STIs and risk factors of unintended pregnancy and STIs amongst adolescents and young adults. In each school, French and English speaking students were gathered in separate classrooms and the questionnaires were shared to them. The questions were read in the preferred language (English or French) and they ticked the right answers on the questionnaire.

### Data analysis

The data collected were entered in a template designed in Kobo Collect and exported into a Microsoft Excel spread sheet for cleaning/editing and finally analysed using the Statistical Package for Social Sciences (SPSS) Version 26. The proportion of students who knew about unintended pregnancy and those who had experienced STIs were determined.

Association between predictors (demographic characteristics, school types) were determined using the Chi-square test. Predictors that had p-values  $\leq 0.2$  were further considered for a multivariate logistic regression to identify factors independently associated with unintended pregnancy and STIs.

### Ethical considerations

Ethical clearance was sought from the Institutional Review Board of the University of Douala, specifically the Faculty of Medicine and Pharmaceutical Sciences of Douala. Administrative authorizations were obtained from the Regional Delegate of Public Health for the Littoral Region in Douala and from the Regional Delegate of Secondary Education for the same region. Additionally, permissions to conduct research in schools were granted by the principals of the ten selected secondary schools in Douala IV.

Prior to the distribution of questionnaires, written informed consent, and parental-assent forms were sought and obtained from parents.

### RESULTS

A total of 1316 participants were included into the study of which 174 were from confessional schools, 642 from private, and 500 from government schools.

#### Demographic characteristics

Of the 1316 respondents, 710 (54%) were within the age group 14 to 17 years, while 59 (4.5%) had ages within 22 to 25 years. The mean age was  $16.5 \pm 2.64$ . Above half, 707 (54.4%) of the respondents were males, 1294 (97.3%) were single, 867 (65.9%) were English speaking, while 449 (34.1%) were French speaking and 1126 (87%) were Christians. More, 422 (32.1%) of the respondents were in upper sixth (Table 1).

#### Prevalence of unintended pregnancy and STIs among adolescents and young adults in the Douala IV municipality

Figure 1 presents the prevalence of unwanted pregnancy and STIs among adolescents and young adults in the Douala IV municipality. Of the 593 females enrolled into the study, 42 (6%) had been pregnant (Figure 1A), of which 30 (76.9%) of the pregnancies were unintended. With regards to the prevalence of STIs amongst adolescents and young adults, 51 (22%) have had STIs (Figure 1B).

The only demographic factor that was significantly associated with the prevalence of unintended pregnancy was religion ( $\chi^2 = 5.2$ ,  $p = 0.023$ ).

Table 2 presents the factors independently associated with STI amongst adolescents and young adults in the Douala IV municipality. The odds of adolescents and young adults who were French speaking to have an STI was 2.64 times higher compared to those who were English speaking (AOR=2.64, CI [1.05-6.65],  $p = 0.040$ ). The odds of adolescents and young adults who were sexually active to have an STI was 5.15 times higher compared to those who were not sexually active (AOR=5.15, CI [1.98-13.38],  $p = 0.001$ ).

#### Knowledge of unintended pregnancy amongst adolescents and young adults in Douala IV municipality

Regarding where adolescents and young adults got their information on unintended pregnancy, 591 (76%) said they got information from school followed by 424 (54.5%) who got their information from parents and next by 273 (35.1%) who got their information on unintended pregnancy from the television. More, 469 (59.9%) of the adolescents and young adults said they have heard about unintended pregnancy while 314 (40.1%) had not heard of the term unintended pregnancy. Majority, 377 (88.3%) of adolescents and young adults gave a correct definition of unintended pregnancy while 50 (11.7%) of them gave an incorrect definition of unintended pregnancy. Also, 507 (91%) of adolescents and young adults said unintended pregnancy is gotten through direct sexual contact while 17 (3.1%) said it is gotten through body fluid (Table 3).

The overall knowledge of adolescents and young adults on unintended pregnancy in Douala IV municipality was scored on a total score of 7. Below average, 461 (35%) had a good knowledge on unintended pregnancy while 855 (65%) had a poor knowledge on unintended pregnancy.

Table 4 presents the factors independently associated with knowledge of unintended pregnancy among adolescents and young adults in Douala IV municipality. The odds of adolescents and young adults attending public schools to have a good knowledge on unintended pregnancy was 1.76 times higher compared to those attending confessional schools (AOR=1.76, CI [1.11 to 2.77],  $p = 0.016$ ). The odds of adolescents and young adults having good knowledge of unintended pregnancy increased with the class of the students (AOR=8.53, CI [2.53 to 28.81]  $p = 0.001$ ) for upper sixth, AOR=6.34, CI [0.88 to 21.46],  $p = 0.003$  for lower sixth, and AOR=3.37, CI [1.02 to 11.09],  $p = 0.046$  for form five. The odds of adolescents and young adults within the age group 22 to 25 years having a good knowledge on unintended pregnancy was 0.30 times less likely compared to those that in the age group 10 to 13 years (AOR=0.30, CI [0.11 to 0.82],  $p = 0.019$ ).

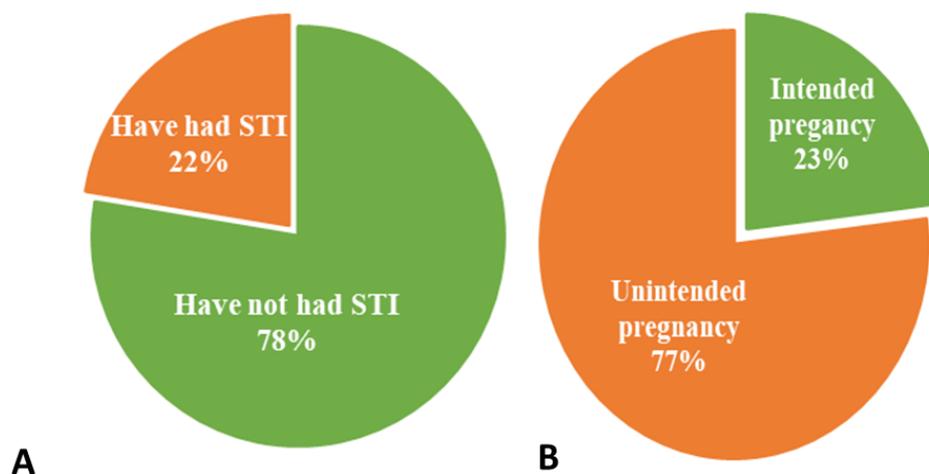
More so, the odds of male adolescents and young adults having good knowledge on unintended pregnancy were 0.09 times lower compared to females (AOR=0.09, CI [0.07 to 0.13],  $p < 0.001$ ).

#### Level of awareness of STIs amongst adolescents and young adults in Douala IV municipality, Cameroon

With regards to the knowledge of adolescents and young adults on STIs, 982 (77%) had heard of STIs, 760 (83.7%) gave a correct definition of STIs. Regarding where adolescents and young adults get their information

**Table 1.** Demographic characteristics of adolescents and young adults in Douala IV municipality.

Variable	Categories	Frequency (n)	Percent
Age group	10 - 13	143	10.9
	14 - 17	710	54
	18 - 21	404	30.7
	22 - 25	59	4.5
	Total	1316	100
Sex	Female	593	45.6
	Male	707	54.4
	Total	1300	100
Marital status	Married	35	2.7
	Single	1259	97.3
	Total	1294	100
Language	English	867	65.9
	French	449	34.1
	Total	1316	100
Class	Form 1	39	3
	Form 2	41	3.1
	Form 3	48	3.6
	Form 4	144	10.9
	Form 5	313	23.8
	Lower sixth	309	23.5
	Upper sixth	422	32.1
	Total	1316	100
	Religion/faith	Christian	1126
Muslim		142	11
Others		26	2
Total		1294	100

**Figure 1.** Prevalence of unwanted pregnancy and STIs amongst adolescents and young adults in Douala IV municipality, Cameroon.

**Table 2.** Factors independently associated with STI amongst secondary school children in the Douala IV municipality.

Variable	Parameter	AOR	95% CI		p-value
			Lower	Upper	
Type of school	Public	2.52	0.58	10.91	0.216
	Private	2.13	0.55	8.32	0.277
	Confessional	1			
Language	French	2.64	1.05	6.65	0.040
	English	1			
Sexually active	Yes	5.15	1.98	13.38	0.001
	No	1			
Age group	22 - 25	1.10	0.15	7.93	0.926
	18 - 21	0.40	0.07	2.27	0.300
	14 - 17	0.94	0.16	5.43	0.945
	10 - 13	1			
Sex	Male	0.66	0.28	1.54	0.336
	Female	1			
Person living with	Others	2.59	0.61	11.00	0.197
	Mother only	0.36	0.07	1.86	0.223
	Guardian	0.58	0.17	1.98	0.383
	Father only	0.56	0.16	2.02	0.376
	Family member	1.70	0.27	10.73	0.574
	Both parents	1			

AOR: Adjusted odd ratio; CI: confident interval.

**Table 3.** Level of awareness on unintended pregnancy amongst adolescents and young adults in the Douala IV municipality.

Variable	Categories	Frequency (n)	Percent
Source of information on unintended pregnancy	School	591	76
	Newspapers/magazines	125	16.1
	Church/Mosque	103	13.2
	Parents	424	54.5
	Friends	257	33.0
	Television	273	35.1
	Internet	254	32.6
	Hospital	262	33.7
	Total	2289	294.2
Heard about unintended pregnancy	No	314	40.1
	Yes	469	59.9
	Total	783	100
Definition of unintended pregnancy	Correct	377	88.3
	Incorrect	50	11.7
	Total	427	100
How to contact unintended pregnancy	Direct sexual contact	507	91
	Direct contact	42	7.5
	Through body fluid	17	3.1
	Total	566	101.6

**Table 4.** Factors independently associated with good knowledge of unintended pregnancy among adolescents and young adults in Douala IV municipality.

Variable	Categories	AOR	95% CI		p-value
			Lower	Upper	
School type	Public	1.76	1.11	2.77	0.016
	Private	1.00	0.64	1.57	0.992
	Confessional	1			
Class	Upper sixth	8.53	2.53	28.81	0.001
	Lower sixth	6.34	1.88	21.46	0.003
	Form 5	3.37	1.02	11.09	0.046
	Form 4	2.35	0.73	7.61	0.153
	Form 3	0.49	0.12	2.00	0.318
	Form 2	0.39	0.08	1.95	0.251
	Form 1	1			
Age group	22 - 25	0.30	0.11	0.82	0.019
	18 - 21	0.52	0.24	1.12	0.096
	14 - 17	0.67	0.33	1.33	0.249
	10 - 13	1			
Sex	Male	0.09	0.07	0.13	<0.001
	Female	1			
Religion	Others	0.28	0.07	1.04	0.057
	Muslim	0.96	0.59	1.55	0.861
	Christian	1			

AOR: Adjusted odd ratio; CI: confident interval.

on STIs, 1078 (87.1%), 689 (55.7%), and 674 (54.4%) got their information from school, parents, and internet, respectively. The main preventive methods of STIs reported by the adolescents and young adults were abstinence 907 (71.6%), use of condom 864 (68.2%), and fidelity to partner 565 (44.6%) (Table 5).

The overall knowledge of adolescents and young adults on STIs was scored on a total of 9. Above average 683 (52%) had a poor knowledge on STIs while 633 (48%) had a good knowledge on STIs.

Table 6 presents the factors independently associated with knowledge on STIs among adolescents and young adults in Douala IV municipality. The odds of adolescents and young adults having good knowledge on STIs increased with the class of the student (AOR=5.76, CI[1.80 to 18.43],  $p=0.003$ ) for upper sixth, (AOR=5.23, CI[1.67 to 16.37],  $p=0.005$ ) for form five, and (AOR=4.30, CI[1.39 to 13.30],  $p=0.011$ ) for form 4. The odds of adolescents and young adults within the age group 22 to 25 years having good knowledge on STIs were 2.72 times higher compared to those within the age group 10 to 13 years (AOR=2.72, CI=1.11 to 6.70,  $p=0.030$ ). The odds of male adolescents and young adults having good knowledge on STIs were 2.34 times higher compared to

female (AOR=2.34, CI[1.83 to 2.99],  $p<0.001$ ).

## DISCUSSION

From the findings, 6% of adolescents and young adults had been pregnant, of which 76.9% of the pregnancies were unintended. This high prevalence of unintended pregnancy could be due to the poor perception regarding contraceptive use and uncontrolled early sexual debut. It could also be due to the lack of sexuality education in schools and at home.

Others studies conducted in Cameroon, reported higher prevalence of 92.8% (Loveline, 2019). This proportion of unintended pregnancy observed in this study was higher compared to the 25.3 and 40% reported by Barrow et al. (2022) and Ngomba et al. (2017), respectively.

There was a significant association between the nature of pregnancy and religion. These findings are in contrast with the low contraceptive use reported in previous studies (Adeneye et al., 2017; Donatus et al., 2018). Socio-economic status and physical violence were factors that were associated with unintended pregnancy

**Table 5.** Level of awareness of STIs amongst adolescents and young adults in Douala IV municipality.

Variable	Categories	Frequency (n)	Percent
Heard about sexually transmissible infections	No	294	23
	Yes	982	77
	Total	1276	100
Definition of STIs	Correct	760	83.7
	Incorrect	148	16.3
	Total	908	100
Where Information on STIs was gotten	School	1078	87.1
	Newspapers/magazines	279	22.5
	Parents	689	55.7
	Friends	396	32
	Internet	674	54.4
	Hospital	582	47
	Church/Mosque	359	29
	Television	429	34.7
How sexually transmissible infections can be prevented	Total	4486	362.4
	Abstinence	907	71.6
	Use of condom	864	68.2
	Masturbation	145	11.4
	Maintain one sex partner	565	44.6
	I don't know	155	12.2
Total	2636	208.1	

**Table 6.** Factors independently associated with knowledge of STIs among adolescents and young adults in Douala IV municipality.

Variable	Categories	AOR	95% CI		p-value
			Lower	Upper	
Class	Upper sixth	5.76	1.80	18.43	0.003
	Lower sixth	5.79	1.82	18.46	0.003
	Form 5	5.23	1.67	16.37	0.005
	Form 4	4.30	1.39	13.30	0.011
	Form 3	1.05	0.28	3.95	0.941
	Form 2	1.38	0.39	4.85	0.616
	Form 1	1			
Age group	22 - 25	2.72	1.11	6.70	0.030
	18 - 21	1.75	0.86	3.57	0.121
	14 - 17	1.31	0.68	2.50	0.422
	10 - 13	1			
Sex	Male	2.34	1.83	2.99	<0.001
	Female	1			
Religion	Others	1.67	0.70	4.01	0.251
	Muslim	0.99	0.68	1.46	0.977
	Christian	1			

AOR: Adjusted odd ratio; CI: confident interval.

among teenagers (Donatus et al., 2018).

Findings of this study are also in contrast with those reported in a study carried out by Lukasse et al. (2015) in which prevalence of unintended pregnancy was associated to younger age, less educated, economic hardship, and not living with their partner (Lukasse et al., 2015).

With regards to the prevalence of STIs amongst adolescents and young adults in Douala IV municipality, 22% of them reported to have had STIs. This is lower compared to the 79% reported in a study carried out in Mozambique (Menéndez et al., 2010). However, it is higher compared to the 14.6% reported in Ethiopia (Mengistu et al., 2021) and 19.4% reported by Ginindza et al. (2017). The low percentage of students who experienced STIs in our study could probably be due to the fact that only a small proportion of students were sexually active in our study. Adolescent and young adults who are sexually active are more likely to contract STIs compared to those who were not sexually active.

Adolescents and young adults that were French speaking were more likely to contract an STI compared to those that were English speaking.

Overall, a lesser proportion (35%) of adolescents and young adults had a good knowledge on unintended pregnancy. This could be due to the fact that a greater proportion of the adolescents and young adults were not sexually active in this study. Regarding where adolescents and young adults got their information on unintended pregnancy, major source reported by the participants were school, parents, and television. Majority of adolescents and young adults gave a correct definition of unintended pregnancy. Also, most of adolescents and young adults said unintended pregnancy is gotten through direct sexual contact.

The knowledge on unintended pregnancy varied significantly with the types of schools, with students in the public school having higher odds of good knowledge compared to those in confessional schools. This could be due to the fact that confessional schools are faith based and thus more likely to advise their students to abstain from premarital sexual intercourse which they consider as a sin or not to be in accordance with their religious belief. Knowledge of unintended pregnancy also increased with the class of students. Those in higher classes were more knowledgeable since they might have been exposed to sexual relationships, or discussions on sexuality issues with their peers.

Adolescents and young adults who were within the age group 22 to 25 years were less likely to have good knowledge on unintended pregnancy compared to those that were within the age group 10 to 13 years. Also, female adolescents and young adults were more likely to have good knowledge compared to males. This is due to the fact that only females get pregnant and thus may be more knowledgeable of unintended pregnancy than males.

Regarding knowledge of adolescents and young adults on STIs, above average of the respondents had a poor knowledge on STIs. These findings are in line with a study carried out in Molyko, Buea which showed that 41.2% of youths had good knowledge on sexually transmitted infections (PHCS, 2022). This is also in line with a study conducted by Nigussie and Yosef (2020) in Ethiopia. The authors' results are in contrast with those of Sobze et al. (2016) in a study carried out in Dschang which reported a high knowledge level with over 3/4 of students having an acceptable level of knowledge regarding STIs (Sobze et al., 2016). These findings are also in contrast with a study conducted in Ghana (Munawar et al., 2022).

Most of the adolescents and young adults had heard of STIs with most of them giving a correct definition of STIs. Findings of the present study are in line with a study carried out by Subbarao and Akhilesh (2017). The primary sources of information reported by the adolescents and young adults were school, parents, and the internet. This is consistent with a study conducted by Subbarao and Akhilesh (2017), where participants identified teachers, the internet, and media as their main sources of information (Subbarao and Akhilesh, 2017), as well as a study by Munawar et al. (2022) in Ghana, where the main sources of information reported by participants were parents (mothers), school, and the internet (Munawar et al., 2022). Findings of this study are in contrast with a study conducted in Mbalmayo, Cameroon in which parents accounted for only 24% as source of information on STIs. The main preventive methods of STIs reported by the adolescents and young adults were abstinence, use of condom, and maintaining one sex partner. These findings are in line with those of Monebenimp et al. (2006) in which condom was listed as the first method to prevent STI/AIDS (Monebenimp et al., 2006).

There was a significant association between the adolescents and young adult's knowledge on STIs with language, class, age group, sex, and being sexually active. Being a male and in higher classes favored good level of knowledge on STIs. Sex and academic year were factors significantly associated with knowledge on STIs in a study carried out in Ethiopia (Nigussie and Yosef, 2020). The findings are in contrast with those of Ferreira et al. (2021) which identified single/separated/divorced/widow(er) marital status; income equal to or less than the minimum wage in a study in Brazil as risk factors of poor knowledge of STIs (Ferreira et al., 2021).

One of the limitations of this study was that not all the schools in the Douala IV were involved in the study. The fact that these findings were from a cross sectional study could not provide an in-depth understanding of unintended pregnancy and STIs among adolescents and young adults in the Douala IV municipality. The qualitative aspect of this work was carried out and the data is being analysed for subsequent publications. Some recall bias could be registered since adolescents

were evaluated based on past experiences.

Nevertheless, the data collected in this study adds up to the existing data on unintended pregnancy among adolescents in Cameroon. This study could serve as a baseline study to inform a school-based intervention by the government and stakeholders to address the problems of unintended pregnancy and STIs among adolescents in Cameroon.

## Conclusion

The prevalence of unintended pregnancy was high in the Douala IV municipality. The knowledge of adolescents and young adults on unintended pregnancy and STIs was poor. Factors associated with good knowledge of unintended pregnancy and STIs were the class of students, age, type of school, and sex. The prevalence of STI among students was 22%. Factors associated with the prevalence of STIs were language of study and being sexually active. The high prevalence and poor knowledge of unintended pregnancy and STIs among adolescents highlights the necessity of a school-based intervention study to educate and upgrade adolescent and young adult knowledge.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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