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Risk Factors Influencing Unintended Pregnancy and Sexually Transmitted Infections among Adolescents and Young Adults in Douala IV Municipality

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Abstract

Unintended pregnancy and sexually transmitted infections (STIs) represent major public health concerns among adolescents and young adults in sub-Saharan Africa. This cross-sectional study assessed the prevalence of unintended pregnancy and identified associated risk factors influencing STI transmission among adolescents and young adults in Douala IV municipality, Cameroon. A structured questionnaire was administered to 400 participants aged 15 - 24 years, selected through stratified random sampling from schools, communities, and health facilities. Data were analyzed using SPSS version 25.0. The prevalence of unintended pregnancy was found to be 31.7%, with significantly higher rates among females aged 20 - 24, those out of school, and those with low contraceptive knowledge. Additionally, 45.5% of respondents reported a history of at least one STI symptom. Key risk factors included early sexual debut, multiple sexual partners, inconsistent condom use, alcohol consumption, and low parental communication. Findings underscore the urgent need for comprehensive sexuality education and youth-friendly health services.

Keywords

Unintended Pregnancy, Sexually Transmitted Infections, Adolescents, Douala

1. Introduction

Adolescents and young adults represent a vulnerable group regarding sexual and

reproductive health outcomes globally. In sub-Saharan Africa, the prevalence of unintended pregnancies and STIs among young people continues to raise major public health concerns (World Health Organization [WHO], 2022a). Each year, approximately 16 million adolescent girls aged 15 - 19 give birth, and about 3 million undergo unsafe abortions due to unintended pregnancies (WHO, 2017).

In Cameroon, the 2018 Demographic and Health Survey revealed that nearly one in three adolescent girls aged 15 - 19 had already begun childbearing, with many pregnancies being unplanned (Institut National de la Statistique & ICF, 2019). These unintended pregnancies contribute to maternal morbidity, school dropout, and perpetuated poverty (United Nations Population Fund [UNFPA], 2020).

Unintended pregnancies often arise from limited contraceptive access, inadequate knowledge, and gender-based power imbalances (Bearinger et al., 2007). STIs—especially chlamydia, gonorrhea, syphilis, and HIV—remain prevalent among adolescents, with over one million new infections daily worldwide (WHO, 2022b). Cameroonian reports show increasing STI cases among youth, particularly in urban settings such as Douala (Ministère de la Santé Publique du Cameroun, 2023).

Cultural taboos and insufficient sexual education hinder informed decision-making among adolescents (Tchouakam et al., 2020). Despite UNESCO's (2018) call for comprehensive sexuality education (CSE), fewer than 40% of secondary schools in Cameroon integrate it into their curriculum (UNICEF Cameroon, 2020). Moreover, many adolescent report stigma or judgment from healthcare providers when seeking reproductive services (Pathfinder International, 2019).

Douala IV municipality faces high youth unemployment, poverty, and limited access to youth-friendly services (UN-Habitat, 2021). This study aimed to identify socio-demographic and behavioral risk factors influencing STIs and unintended pregnancy among adolescents and young adults in this municipality, thereby informing evidence-based interventions.

2. Materials and Methods

2.1. Study Design and Setting

This was a community-based, descriptive cross-sectional study conducted over a period of three months (January to March 2025) in the Douala IV municipality, Littoral Region of Cameroon. Douala IV is a highly populated urban district comprising neighborhoods such as Bonaberi, Bépanda, and Mabanda, characterized by high youth density, school dropout rates, and limited access to youth-oriented reproductive health services.

2.2. Study Population and Inclusion Criteria

The target population consisted of adolescents and young adults aged 15 to 24 years residing in Douala IV. Both males and females were included in the study, provided they had initiated sexual activity and consented to participate. The in-

clusion criteria required participants to be within the target age range, reside in the municipality for at least six months, and be available and willing to complete the questionnaire. Adolescents under 18 years were included after obtaining parental or guardian consent and participant assent. Individuals who were mentally or physically unable to respond to the questions were excluded.

2.3. Sample Size Determination

Participants were adolescents and young adults aged 15 - 24 years who had initiated sexual activity and resided in the area for at least six months. Parental consent was obtained for minors. The sample size was calculated using Cochran's formula for cross-sectional surveys. Parameters included an expected prevalence of 0.5 (to maximize sample size), a precision (margin of error) of ±5%, and a 95% confidence level. This yielded a minimum sample of 355 participants. To increase statistical power and account for potential non-response, the final sample was increased to 400.

2.4. Sampling Technique

A multi-stage stratified random sampling method was employed. First, the municipality was divided into health areas. Within each area, neighborhoods were randomly selected. From each selected neighborhood, households were visited using systematic sampling. One eligible participant per household was interviewed. To ensure representativeness, efforts were made to include both in-school and out-of-school youths, as well as those attending youth-friendly health centers.

2.5. Data Collection Tools and Procedure

A multi-stage stratified random sampling method was employed. First, the municipality was divided into health areas. Data were collected using a structured, pretested questionnaire developed in English and French. The tool included four sections:

- Socio-demographic information
- Sexual and reproductive history
- Knowledge and use of contraceptives
- History of STI symptoms and risk behaviors

The questionnaire was self-administered for literate participants and interviewer-administered for those requiring assistance. Six trained data collectors and two supervisors oversaw data collection, ensuring confidentiality and accuracy. A pilot test was conducted in a nearby municipality (Douala III) with 20 participants to validate the tool's clarity and reliability. Necessary modifications were made prior to the main survey.

2.6. Study Variables

- Dependent Variables:
  - Prevalence of unintended pregnancy (self-reported)

- ○ Self-reported symptoms of STIs (e.g., genital sores, abnormal discharge, dysuria)
- Independent Variables:
- ○ Age, gender, educational level, marital status
- ○ Age at sexual debut, number of sexual partners, condom use, alcohol use, parental communication, school status, exposure to sexual education
- Variable Construction Clarification

The composite score for contraceptive knowledge was developed from 10 items assessing awareness of modern contraceptive methods, with a total score range of 0 - 10. Scores below 5 were classified as "low knowledge". Similarly, the parental communication score was based on 8 items evaluating frequency and openness of discussions on sexual and reproductive health, with scores below 4 considered "low communication".

2.7. Data Management and Analysis

Collected data were coded, entered into Microsoft Excel, and exported to SPSS version 25.0 for statistical analysis. Descriptive statistics were used to determine frequencies and proportions. Chi-square tests were used to assess associations between categorical variables and outcomes (unintended pregnancy and STI symptoms). Binary logistic regression was performed to identify independent predictors of each outcome, with a significance threshold set at $p < 0.05$.

2.8. Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board of the Faculty of Health Sciences, University of Douala (Ref: 2024/074/UB/FHS/IRB). Administrative authorization was granted by the Douala IV Health District and local community leaders. Written informed consent was obtained from all participants aged 18 years and above. For minors, assent was obtained alongside parental consent. Participation was voluntary, and confidentiality was strictly observed throughout the study. No identifying information was recorded.

3. Results

3.1. Socio-Demographic Characteristics of Respondents

A total of 400 adolescents and young adults aged 15 to 24 years participated in the study. The majority were aged between 18 - 20 years (40%), followed by those aged 21 - 24 years (37.5%) and 15 - 17 years (22.5%) (Table 1). Most respondents were single, with a roughly equal distribution of males and females.

Table 1. Socio-demographic characteristics.

Age Group	Frequency	Percentage
15 - 17	90	22.5
18 - 20	160	40.0
21 - 24	150	37.5

3.2. Prevalence of Unintended Pregnancy

Among female respondents, 32% reported having experienced at least one unintended pregnancy (Table 2). The majority of unintended pregnancies occurred in the 20 - 24 age group, particularly among those who were no longer in school or had low knowledge of contraceptive methods.

Table 2. Prevalence of unintended pregnancy.

Pregnancy Status	Frequency	Percentage
Intended	136	68.0
Unintended	64	32.0

3.3. Reported STI Symptoms

Nearly half of the participants (45.5%) reported having experienced at least one symptom suggestive of a sexually transmitted infection (STI) in the past year. The most common symptoms were genital discharge (30%), painful urination (23.8%), and lower abdominal pain (21.2%). Genital sores were reported by 15% of respondents (Table 3).

Table 3. Reported STI symptoms.

Symptom Type	Frequency	Percentage
Genital discharge	120	30.0
Painful urination	95	23.8
Genital sores	60	15.0
Lower abdominal pain	85	21.2

3.4. Risk Factors for STI Transmission

Risk factors significantly associated with STI symptoms included early sexual debut (25%), having multiple sexual partners (35%), inconsistent condom use (40%), and alcohol use before sex (22.5%) (Table 4). Logistic regression analysis confirmed that multiple sexual partners (OR = 2.4, $p < 0.01$) and inconsistent condom use (OR = 3.1, $p < 0.001$) were strong independent predictors of reported STI symptoms.

Table 4. Risk factors for STIs.

Risk Factor	Frequency	Percentage
Early sexual debut (<16)	100	25.0
Multiple sexual partners	140	35.0
Inconsistent condom use	160	40.0
Alcohol use before sex	90	22.5

The multivariable logistic regression analysis identified several independent

predictors of unintended pregnancy among female respondents (Table 5). Adolescents aged 20 - 24 years were significantly more likely to report an unintended pregnancy compared to those aged 15 - 17 years (AOR = 2.10, 95% CI: 1.15 - 3.85, p = 0.016). Being out of school (AOR = 1.95, 95% CI: 1.05 - 3.62, p = 0.034) and having low contraceptive knowledge (AOR = 2.45, 95% CI: 1.35 - 4.43, p = 0.003) were also associated with higher odds of unintended pregnancy. Although early sexual debut and low parental communication showed elevated odds, their associations did not reach statistical significance.

Table 5. Logistic regression of factors associated with unintended pregnancy among female respondents.

Covariate	AOR	95% CI	p-value
Age 20 - 24 (vs. 15 - 17)	2.10	1.15 - 3.85	0.016
Out of school (vs. in school)	1.95	1.05 - 3.62	0.034
Low contraceptive knowledge	2.45	1.35 - 4.43	0.003
Early sexual debut (<16 years)	1.60	0.82 - 3.12	0.160
Low parental communication	1.70	0.92 - 3.14	0.088

For reported STI symptoms, multiple behavioral and social factors remained significant after adjustment (Table 6). Respondents with multiple sexual partners had more than twice the odds of reporting STI symptoms (AOR = 2.40, 95% CI: 1.45 - 3.98, p = 0.001), while inconsistent condom use was the strongest predictor (AOR = 3.10, 95% CI: 1.95 - 4.92, p < 0.001). Alcohol use before sex (AOR = 1.75, 95% CI: 1.02 - 3.00, p = 0.041) and low parental communication (AOR = 1.68, 95% CI: 1.01 - 2.81, p = 0.046) also significantly increased the likelihood of STI symptoms. Early sexual debut and low contraceptive knowledge showed positive but non-significant associations.

Table 6. Logistic regression of factors associated with reported STI symptoms among adolescents and young adults.

Covariate	AOR	95% CI	p-value
Multiple sexual partners	2.40	1.45 - 3.98	0.001
Inconsistent condom use	3.10	1.95 - 4.92	<0.001
Alcohol use before sex	1.75	1.02 - 3.00	0.041
Early sexual debut (<16 years)	1.55	0.88 - 2.75	0.122
Low parental communication	1.68	1.01 - 2.81	0.046
Low contraceptive knowledge	1.42	0.80 - 2.52	0.223

4. Discussion

4.1. Overview of Key Findings

This study highlights significant reproductive health challenges among adolescents and young adults in Douala IV, where unintended pregnancy and sexually

transmitted infections (STIs) remain pressing public health issues. The prevalence of unintended pregnancy (32%) and self-reported STI symptoms (45.5%) reflects a substantial burden, consistent with national estimates from the 2018 Cameroon Demographic and Health Survey (Institut National de la Statistique & ICF, 2019) and global WHO data showing that adolescent girls face a disproportionate risk of early and unintended pregnancies (UNFPA, 2020; WHO, 2022a). High rates of STI symptoms, including genital discharge (30%) and painful urination (23.8%), also align with WHO's concerns regarding youth sexual health in sub-Saharan Africa (WHO, 2022b; Ministère de la Santé Publique du Cameroun, 2023).

4.2. Behavioral Determinants of Reproductive Health Outcomes

Behavioral factors play a central role in shaping these outcomes. Early sexual debut was reported by 25% of participants and is linked to lower contraceptive use and increased risk of both unintended pregnancy and STIs (Kramer & Abenhaim, 2016). Inconsistent condom use (40%) and multiple sexual partnerships (35%) were common and emerged as strong predictors of STI symptoms, consistent with regional studies emphasizing unprotected sex, alcohol consumption (22.5% before sex), and multiple partnerships as key risk factors (Chandra-Mouli et al., 2019; Diouf et al., 2020; Ndeh et al., 2021). These risky behaviors frequently cooccur in low-resource urban contexts like Douala IV, where adolescents face economic hardship, peer pressure, and limited social support.

4.3. Gender Dynamics and Power Relations

Gender dynamics further exacerbate adolescent vulnerability. Coercive or transactional sexual relationships, particularly involving older or economically powerful partners, restrict adolescent girls' ability to negotiate condom use, contributing to high rates of unprotected sex (Jewkes & Morrell, 2010). Regression analyses confirmed that being aged 20 - 24 years, out of school, and having low contraceptive knowledge were significant predictors of unintended pregnancy. Meanwhile, inconsistent condom use and multiple sexual partnerships were the strongest predictors of STI symptoms. Alcohol use before sex and weak parental communication also increased risk, highlighting the combined influence of individual behaviors, gendered power relations, and family-level factors (Kramer & Abenhaim, 2016; Ndeh et al., 2021).

4.4. Structural and Systemic Barriers

Structural and systemic barriers reinforce these vulnerabilities. Many participants exhibited limited knowledge of contraception, indicating significant gaps in reproductive health education (Tchouakam et al., 2020). Despite UNESCO and WHO recommendations for implementing comprehensive sexuality education (CSE) (UNESCO, 2018; WHO, 2022a), integration in Cameroon remains weak and inconsistent (UNICEF Cameroon, 2020). Moreover, youth-friendly health services are inadequate, with adolescents often reporting judgmental attitudes,

lack of privacy, and confidentiality breaches from healthcare providers (Pathfinder International, 2019). These factors discourage them from seeking preventive care such as STI screening or contraceptive counseling. The socio-economic context of Douala IV—marked by urban poverty, unemployment, and limited recreational or counseling structures—further fuels risky sexual behavior among out-of-school and economically marginalized youth (UN-Habitat, 2021).

4.5. Implications for Intervention and Policy

The findings underscore the need for multisectoral interventions that address the behavioral, structural, and contextual determinants of adolescent reproductive health risks. Key priorities include scaling up comprehensive sexuality education (UNESCO, 2018; UNICEF Cameroon, 2020), expanding access to confidential and youth-friendly reproductive health services (Pathfinder International, 2019), and reinforcing community and parental involvement. Programs should also target gender-sensitive strategies that empower adolescents—particularly girls—to negotiate safer sexual practices. Additionally, policy frameworks should be effectively implemented and monitored to ensure alignment with evidence-based approaches (Ministère de la Santé Publique, 2021). Promoting consistent condom use, reducing multiple sexual partnerships, and tackling gender-based vulnerabilities are critical to mitigating the burden of unintended pregnancy and STIs among adolescents and young adults in Douala IV.

4.6. Study Limitations

This study has certain limitations. First, outcomes such as unintended pregnancy and STI symptoms were self-reported, which may be subject to recall bias and social desirability bias. Second, STI diagnoses were based on reported symptoms rather than laboratory confirmation, which could have led to misclassification. Finally, the cross-sectional design limits the ability to infer causal relationships between identified risk factors and outcomes.

5. Conclusion

This study demonstrates that adolescents and young adults in Douala IV face a substantial burden of unintended pregnancy and sexually transmitted infections, driven by both behavioral and structural factors. Regression analyses revealed that being out of school, limited contraceptive knowledge, multiple sexual partnerships, inconsistent condom use, alcohol use before sex, and weak parental communication significantly increased vulnerability to poor reproductive health outcomes. These findings underscore the urgent need for multisectoral interventions that combine comprehensive sexuality education, expanded access to youth-friendly reproductive health services, and community-based strategies to strengthen parental engagement. Policies that prioritize adolescent education and empower young people with accurate knowledge and skills are essential for reducing risky sexual behaviors and improving long-term reproductive health outcomes. By addressing both individual

and contextual risk factors, stakeholders can design more effective, evidence-based programs that protect the health and future of Cameroon's youth.

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Conflicts of Interest

The authors declare no conflict of interests degrading the publication of this paper.

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