

# **Determinants of Early First Sexual Intercourse (before 16) among Students Currently aged 14-19 in Secondary Schools in Cameroon's Capital City, Yaoundé**

**Proposed by**

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## **Abstract**

Sexual norms restricting sex till marriage have declined resulting to early initiation of sex. About half of the students interviewed in the course of this study who have started sex did so before 16. Early initiation of sex is a problem because it comes with little or no mastery of the complications that surround sex. It is often unprotected thereby exposing young people to STDS and unwanted pregnancies. The high prevalence rate of HIV/AIDS among young people in Cameroon is highly connected with early initiation of sex which is often unsafe. This study seeks to come out with the determinants of early initiation of sex using information collected on age at first sex and some characteristics of students in secondary schools in Cameroon's capital city, Yaoundé. The study was carried using a self-administered questionnaire. A binary logistic regression reveals that the key determinants of initiation of sex before 16 are the students' current educational level, circumstance of first sex (voluntary or forced) and parents' educational levels. The policy options dictated by findings from this study are the promotion of early comprehensive sex education for students even before they reach 10, the equipment of parents especially mothers with skills to help their child retard or practice safe sex and the prevention of the submission of children to forced sex.

Keywords: early sex, adolescents, unsafe sex

## **Background**

Sexual norms restricting sexual intercourse till marriages have declined considerably over the past decades in Developing Countries resulting to early initiation of sex. Scenes that encourage young people to go into early sex such as romantic films, pornographic films shown over the television, peer group influences etc. are becoming increasingly common. Adolescents who engage into early sex (below 16) are usually less likely to practice unsafe or unprotected sex. This increases their risks of being pregnant and acquiring sexually transmitted diseases including the deadly HIV/AIDS.

Early adolescent childbearing is associated with higher risks of stillbirths, maternal and child morbidity and mortality, limited life opportunities and lower socio-economic positions.

In Cameroon as in many other countries, early sexual activity and teenage pregnancies are important public health issues. Only 67.7% of respondents for this study who have begun sexual activity used condoms during their first sexual encounters. 20.7% girls who have started sexual activity reported that they have been pregnant at least once, 33.3% reported that they have committed at least one abortion, 5.8% reported having contacted a sexually transmitted disease and 40.7% reported having had at a live birth. These pregnancies are often mistimed or undesired. Adolescent pregnancy is widespread in Yaoundé and Cameroon in general. The health consequences of teenage pregnancies are not the only negative outcomes of teen sexuality. The social consequences are equally enormous for teen mothers. Teenage mothers are often limited economically and often abandoned by their partners and even parents. A large majority of teenage pregnancies are unwanted; consequently, many adolescents use many methods to eliminate them. Due to the fact that abortion is illegal in Cameroon unless performed for medical reasons, many persons especially adolescents seeking it often resort to untrained and unqualified personnel. These personnel carry out abortions under unsafe conditions which increase risk of morbidity and even death.

Early sexual is often unprotected and likely followed by continuous unprotected sex with multiple partners. This places young people not only on a high risk of pregnancy but also of infection by sexually transmitted diseases including the deadly HIV/AIDS. Young people in Cameroon are disproportionately infected by HIV/AIDS and this is largely connected to early and risky sex practices. This study seeks to identify the determinants of early sexuality among teens in order to provide information to policy-makers on how to tackle this worrisome issue that negatively affect teens in many spheres (education, employment, health, etc.).

## **Objectives of the Study**

This study seeks to:

- identify and analyze the determinants of early sexuality among students aged 15-19 in secondary schools in Yaoundé;
- to show how students who have begun sexual activity early differ from those who have not and
- present the mechanisms of intervention of the various variables that affect early sexuality (before 16).

-suggest some policy options for the combat of early sexuality in Cameroon based on the findings of this study

### **Ethical Considerations**

Letters requesting for permission to carry the survey were addressed to the principals of the various colleges chosen, and upon the principals' approval, the survey was conducted. The questionnaire was examined and approved by the Scientific Committee of the Central Bureau for Censuses and Population Studies of Cameroon.

### **Theoretical Considerations**

The key theoretical consideration for early adolescent sexuality used here is the curiosity and experimentation theory. Adolescence especially early adolescence (12-15 years) is a precarious stage in terms of sexuality. This age is usually known as the age of curiosity and experimentation especially as sex is concerned. Involvement in sexual activity is occurring sooner among youths of today than previous generations. At very tender ages, adolescents lack the cognitive and emotional maturity that is necessary to make wise decisions regarding their sexuality. They are equally ill-prepared to face the usually complicated consequences of sexuality.

Human sexuality is much more complex than the biological forces that initiate the sexual maturation process. As such, the development of adolescent sexuality includes not only physical development but also cognitive, emotional, social, and moral development. At approximately 12-15, young people develop biologically and begin to be interested in sexual issues. They try to satisfy their curiosity by reading information about sex and viewing images with sexual content. This may include anatomy books, photographs of naked people, pornographic material, etc. Today, youths can easily find these images in biology textbooks, some television programmes or on the internet. Frequently watching these scenes may push boys and girls to experiment with sex arousals through flirting and hugging those they are romantically interested in. This curiosity may eventually lead to the early experimentation of sex.

### **Limitations of the Study**

The study of determinants of early sexuality is a very complex issue. It involves a series of biological and non-biological factors which were not all captured by this study. Even though the variable used for this study enabled us to capture some determinants of the onset of sex before 16, the inclusion of variables such as ethnic background, the content of sex education received by respondents, opinion on the option of sex education taught in schools, the type of neighbourhood of residence, etc. could provide more explanatory variables.

## **Methods**

The colleges that participated in this study were picked from the public, denominational and lay private colleges in Cameroon's capital city, Yaoundé. These colleges were selected from among schools offering the Anglophone, and the Francophone subsystems of education. The selected came from all the seven subdivisions of the city. . Considering the fact that more students in this part of Cameroon belong to the Francophone subsystem of education, about three quarters of the respondents were made up of students from this sub-system. A deliberate effort was made to include technical colleges as well as general education colleges. The colleges selected, therefore, do not constitute a random sample.

A self-administered questionnaire, mostly composed of multiple choice questions was used for this study. The questions were asked in English and French, considering the fact that the selected schools were of the two educational subsystems. In all, 29 colleges took part in the study, and the questionnaire was administered to 2405 students aged 15-19, (1263 of the respondents were girls and 1142 were boys) in January, 2015. Students were chosen from classes ranging from the third to the sixth form, while attempting as much as possible to balance the proportion of boys.

The self-administered questionnaire was made up four parts. The first part of the questionnaire was designed to collect data on the students' demographics; the second part consisted of questions to evaluate students' exposure to sex education, their views on accessibility to contraception and sexual health advice and their preferences in implementing sex-education in schools. The third part focused on the first sex, the time of its initiation, its nature, the circumstance of its initiation and partners. The fourth section collected data on the outcomes of respondents' sexual activities, such as STIs, pregnancies, miscarriages, abortions and live births. Information relevant for this study was obtained from the first and third sections of the

questionnaire (information on the demographics of the respondents and data on the age at first sex, nature of first sex (protected or unprotected), partners of first and circumstances of this sex (forced or unforced).

A questionnaire and an envelope were handed over to each of the 100 students aged 15-19 chosen from each school. Before the distribution of questionnaires, an information statement was read out to the students, giving them detailed information on the aims of the study and how the respondents were selected, thereby also providing a platform for the students to ask questions about the study. In order to motivate students to provide honest answers, anonymity was assured and they were free to refuse to complete the questionnaire or any part of it. Responses were returned in sealed envelopes and the students were asked not to write their names on the questionnaires or on the envelopes. Frequencies for each question were established after entering the data using the Statistical Package for Social Sciences (SPSS) software.

### **Evaluation of Data Quality**

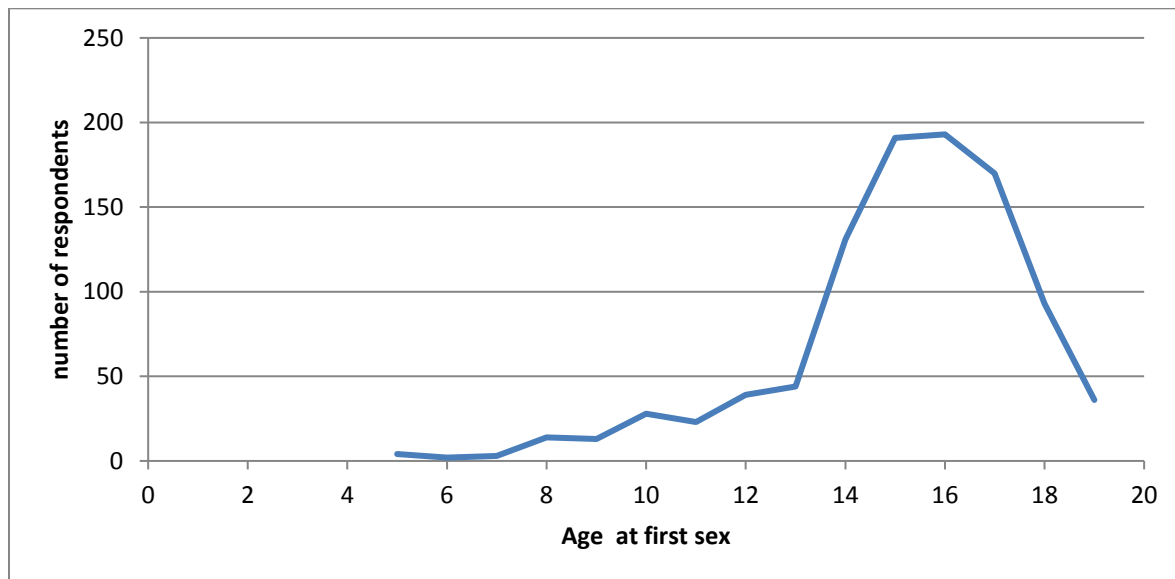
Data for this study was collected on 2405 individuals but the analysis here concerns only respondents who have had at least a sexual intercourse. The number of students who have had at least a sexual encounter is 948, (39.42%) of all those who were interviewed. Ages at first sex for 36 individuals reported as below ten years were judged to be abnormal and thus not included in the analysis.

Table 1: Evaluation of the Quality of Declaration of Age at First Sex

Nature of Responses	Number	%
Valid Responses	948	96
Invalid Responses	36	4
Missing Values	0	0

The non-response rate for the dependent variable which is age at first sex of 4% is low enough for the data to be judged acceptable. As expected, the declared ages at first sex increase sharply after 14 and declines sharply after 16. This is reflected by the data. This gives the impression that the declared ages at first sex were of fairly good quality.

Figure 1: Distribution of Respondents by Age at First Sex



Among the respondents who have started sex, 48.1% of them started sex before 16 and 51.9% started it at 16 or later. In this analysis, respondents who declared having had first sex before 10, about 4% were regarded from the analysis

### **Presentation of Variables**

#### **The Dependent Variable**

The dependent variable for this study is the declared age at first sex. For the purpose of this study, this variable is recorded into two modalities: -first sex intercourse before 16 and first sex after 16.

#### **Independent Variables**

Independent variables for this study are classed into three categories as follows

**Contextual Variables:** Father's educational level, mother's educational level and source of knowledge on contraception and reproductive health.

**Socio-relational Context:** Sex, circumstances of first sex (forced or voluntary), partner of first sex

**Socio-cultural variables:** religion, type of educational establishment ( public, lay private and denominational, type of education (general or technical), subsystem of education (Anglophone or Francophone) and cycle of secondary education currently being attended.

## **Data Analysis**

The analysis of data for this study involves two phases: - the descriptive and explanatory phases.

### **Descriptive Phase**

Descriptive analysis here involves two phases: bivariate and multivariate

#### **Bivariate analysis**

It involves the analysis of the results of cross-tabulation of each characteristic of respondents such as sex, religious affiliations, class currently attended, type of education, subsystem of education, type of educational establishment and exposure to sex education and age at first sex. It also involves a cross-tabulation of parents'/ guardians' characteristics notably their educational level and participants' ages at first sex.

#### **Descriptive Multivariate Analysis**

This involves using the software SPAD to come out with the profiles of students who begin sex early (before 16) and those who begin later (after 16).

#### **Explanatory Analysis**

Since the dependent variable for this study, start of first sex at 16 or after is a quantitative dichotomy, binary regression is the appropriate multivariate explanatory method to use. This method estimates the probability for an event to occur as a function of the independent variables. The dependent variable takes the modality 1 when the event occurs (early sexual intercourse) and 0 when it does not. In this way, the logistic regression estimates the possibility, that the student starts sex

early (before 16). It precisely estimates the net effect of associated variables to the early onset of sexual activity.

If  $P$  is the possibility that the event under investigation occurs,  $1-P$  is the possibility that it does not occur. The logistic regression probability in a linear form is  $L = \log(P/1-P)$  or  $L = b_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n$  where  $X_1, X_2, \dots, X_n$  are independent variables and  $b_0, b_1, b_2, \dots, b_n$  are regression coefficients of the model. The non-linear probabilistic form of the model is  $P = 1/(1 + \exp(-L))$ . This provides coefficients of regression “ $b_i$ ” from which odd ratios are calculated. An odd ratio greater than 1 indicates that there is a higher probability of the respondents to start sex before 16 in relation to the group of variables under consideration and vice versa.

### **Hierarchy of Explanatory Factors of Early Sexuality (before 16)**

In order to come out with a hierarchical order of the multiple explanatory factors which influence early sexuality (before 16), the relative contribution of the different explanatory variables is calculated using the following formula.

$$\text{Contribution of a Variable} = \frac{\text{Chi Square of the Saturated Model} - \text{Chi Square without the Variable}}{\text{Chi Square of the Saturated Model}}$$

## **Results**

### **Characteristics of Respondents**

The sample for this study comprised 2405 participants (1142 of them (47.5%) were boys and 1262 (52.5) were girls). The ages ranged from 15-19 with a mean age of 17. Most participants were of the Christian background, and especially of the Catholic faith, making up 58.21% of the sample. Protestants made up 22.62% of the sample while Moslems constituted only 7.52% and rest of the respondents were of other religions. All these participants were drawn from public, lay private and denominational schools, with 54.3% coming from public schools. Participants were also drawn from technical and grammar schools with 70% coming from grammars schools. This sample included participants from the two educational sub-systems in Cameroon (the Francophone and the Anglophone subsystems) with 83% of them coming



from the Francophone sub-system. A summary of these demographics of the respondents is found in appendix 1

## Data Analysis

Data analysis for this study is carried out in two stages. The first stage is descriptive data analysis and the second is explanatory.

### **Descriptive Data Analysis**

Descriptive data analysis here involves bivariate analysis, the analysis of the strength association between the dependent variable and independent variable using Crammer's V and multivariate descriptive analysis through factorial analysis.

### **Bivariate Analysis**

Bivariate analysis consists of the analysis of the frequency distribution of the dependent variable, first sex intercourse before 16 and various modalities of the independent variables. The outcome of this analysis is presented in the following paragraphs

As far as respondents' sex is concerned, this study shows that the proportion of boys that begin sexual activity before 16 (59.19%) is largely higher than that of girls (34.80%). The Chi Square Test shows a significant association between sex and the early onset of sex at a 5%.

60.42% of respondents who are Moslems and 58.82% of persons without a religious affiliation began sexual activity before 16. These proportions are 47.73%, 45.60%, 44.94% for Catholics, Protestants and members of other religions respectively. The Chi Square shows that at a 5% significant level, the religious affiliations of respondents and onset of sexual activity before 16 are associated.

The proportions of students whose fathers have either primary education (60.42) or secondary education (58.82%) that begin sexual activity before 16 is higher than for students whose fathers have no education (47.73%) or higher education (29.03%). The Chi Square Test shows an association between the respondents' fathers' educational levels and the early onset of sex at 5% significance.

The proportions of students whose mothers have either primary (55.52) or secondary education (56.52%) that begin sexual activity before 16 more than for those whose mothers have no education (44.14%) or

higher education (35.50%). The Chi Square Test shows an association between the respondents' mothers' educational levels and the early onset of sex that is significant at 5%.

The distribution of respondents who begin sex before 16 by sources of knowledge on sexual health and contraception is as follows :-family members (43.62%), schools (42.35%), health specialists (42.37%), the church (33.08%), friends(44.37% and other sources (40.91%). The Chi Square shows that at a 5% significant level, the source of information on contraception/sexual health and onset of sexual activity before 16 are associated.

The proportion of respondents that were forced to undergo first sex and who did so before 16 (62.50%) is significantly higher than that of respondents who voluntarily had first sex before 16 (53.83%). The Chi Square Test shows a significant association at 5% between the occurrence of first sex before 16 and whether it was voluntary or not.

This Chi Square Test reveals a significant association at a 5% significant level between first sex before 16 and type of partner of this sexual act. The distribution of respondents who had their first sex before 16 by partners of this first sex is as follows classmates (48.78%) and unspecified persons (27.20%), friends (56.00%), family members (72.73%) and teachers (64.54%).

In terms of type of school establishment currently being attended, the proportion of respondents that had their first sexual act before reaching 16 for public schools (55.07%) is than that of lay private and confessional schools (46.12% each). The Chi Square Test shows a significant association between respondents' type of school establishment currently being attended and the practice of early first sex (before16).

There is a near equality in the proportions of respondents who had their first sex before 16 that is undergoing general education (48.58%) and technical/ commercial education (47.85%). There is no significant association at a 5% level between early first sex and type of secondary education.

No significant difference in the proportion of respondents in the Anglophone subsystem who had their first sex before 16 (48.46%) and that of the Francophone subsystem (47.51%) exist. The Chi Square Test shows no significant association between respondents' subsystem of education currently being attended and the practice of early first sex (before16).

The proportion of respondents currently attending the second cycle of secondary education who had their first sex before 16 (29.4%) is significantly lower than that of respondents in the first cycle (66.45%). There is a significant association at a 5% significant level between early first sex (before 16) and cycle of secondary education.

#### Strength of Association between Independent Variables and Age at First Sex

The Chi Square Test tells us whether an independent variable is significantly statistically associated with the dependent variable or not. However, this test gives us no information on the strength of this association. The strength of association is given by the Crammer's V.

Table 1: Strength of Association between Independent Variables and the Dependent Variable (Age at First Sex)

<b>Variable</b>	<b>Strength of Association</b>	<b>Rank</b>
Religion	0.760	1
Educational subsystem	0.340	2
Partner of First Sex	0.256	3
Respondent's sex	0.243	4
Source of knowledge on sexual health and contraception	0.139	5
Mother's Educational level	0.129	6
Father's Educational Level	0.119	7
Circumstance of first sex	0.105	8
Type of Educational establishment	0.077	9

Nine of the twelve variables show some degree of significant association according to Crammer's V with the dependent variable, age at first sex. The variable with the strongest association is religions affiliation.

#### Multivariate Descriptive Analysis

The aim of this analysis is to come out with a reduced number variables and modalities that characterize respondents who begin sexual intercourse before 16 and those that start after this age.. This is possible through factorial analysis. This analysis results into a division of respondents into two groups.

The first group is made up of respondents who started sex before sixteen. They are essentially boys whose mothers have no education. They do not belong to the Christian or Moslem faith. Their main source of information on contraception and sexual health is the media. Their first sexual act was with either a classmate, family member or a teacher.

The second category is made up of respondents who had first sex after 16. They are essentially girls who are either Protestants Christians or Moslems. Their mothers have at least secondary education. Their sources of information on contraception and reproductive health are the church/ mosque, the school, health expert or the family.

#### Explanatory Analysis

Considering the fact that the dependent variable, first sex before 16 or not is qualitative and dichotomist, the appropriate technique for explanatory multivariate analysis is binary logistic regression. The step by step technique is used to come out with the net and gross effects of independent variables on the dependent variable, first sex before 16. This methodology helps us to:

- identify explanatory variables for early first sex (before 16);
- rank explanatory variables following their explanatory power;
- to come out with the mechanisms of intervention of explanatory variables of early first sex (before 16)

The step by step introduction of variables into the logistic regression model is as follows

M0: crude model

M1: Father's education

M2: M1+Mother's education

M3: M2 +Source of information on sexual health and contraception

M4: M3+Sex

M5: M4+Circumstance of first sex

M6: M5+partner of first sex

M7: M6+ Type of educational establishment

M8: M7+ Type of education

M9: M8 + subsystem of education

M10: M9+respondent's current educational level

M11: M10+ Religion

The Mo model gives the effects of each potential explanatory on the dependent variable in the absence of others and M11 is the saturated model which gives the net effects of each potential explanatory variable in the presence of all others. The net explanatory capacity of first sex before 16 is retained at 5% significance.

#### Evaluation of the Model

Before using a model, it is necessary to evaluate its strengths and weaknesses . This evaluation shows that the independent variables introduced into the model significantly explain the variance of the dependent variable. This evaluation shows that the twelve independent variables used do not completely explain the social phenomenon under study-first sex before16.

### **Identification and Influence of Determinants of First Sex Before 16**

#### **Identification of Determinants of First Sex Before 16**

The results furnished by the saturated model, the model that includes all the variables show that the key variables that explain the start of sex before 16 among the students studied are:- students current level of education measured by cycle of secondary education, partner of first sex, sex, circumstance of first sex, mother's and father's educational levels. These variables can be ranked based on their relative contributions using the formula:

$$\text{Contribution of Variable} = \frac{\text{Chi Square of the Saturated Model} - \text{Chi Square without the Variable}}{\text{Chi Square of the Saturated Model}}$$

Table 2: Classification of Determinants of First Sex before 16 by their Relative Contributions (%)

Variables	Chi Square of Saturated Model	Chi Square of the Unsaturated model	Relative Contributions (%)	Rank
Respondents current educational level	209.42	149.79	28.47	1
Partner of first sex	209.42	181.55	13.31	2
Circumstance of first sex	209.42	182.71	12.75	3
	209.42	192.89	8.08	4
Father's education	209.42	201.97	3.56	5
Mother's education	209.42	203.70	2.73	6

#### Influence of Explanatory variables

#### Influence of the Living Environment of the Student

The living environment here refers to the students' or respondents' source of information on contraception and sexual health, parents' educational levels. Among these variables, only the parents' education levels significantly influence first sex before 16. All things being equal, respondents whose fathers have secondary education are 1.5 times more likely than those whose fathers have tertiary education to be involved in sex before 16. There is no significant difference in the likelihood of being involved in sex before 16 among respondents whose fathers have no education, primary or tertiary education.

Respondents with mothers who have university education are 40% less likely to practice first sex before 16 compared to those whose mothers have either no or secondary education. However, no significant differences exist in the likelihood to encounter first sex before 16 for respondents with mothers with no education and primary education.

#### Influence of Relational Environment Variables

Three relational environment variables considered here are:- the sex of the respondent, the circumstance of the first sex and partner of the first sexual intercourse. These variables significantly influence the practice of the first sexual act before 16. Everything being equal, girls are 2.3 times more likely than boys to begin sex before 16.

Respondents whose first sex was forced are 60% less likely to have their first sex before 16 compared to those whose first sex was voluntary. Respondents whose first sex was with a partner who was not a classmate or family member or a teacher are 2.4 times more likely to have first sex before 16 than those whose partner of sex was with a friend. There is no significant difference between respondents whose partners of first sex were friends and those whose partners were others (unspecified persons).

#### **Influence of Socio-cultural Variables**

The socio-cultural variables used for analysis are the type of school establishment (public, lay private or confessional), the respondents' educational, educational subsystem (Francophone or Anglophone) and religion. Only the current level of education has a significant link with first sex before 16.

Respondents who are currently attending the second cycle of secondary education are 70% less likely than those currently attending the first cycle to begin sex before 16.

#### **Estimation of Marginal Effects of Explanatory Variables**

Estimates of marginal effects provide the differences in the influence of a variable and its modalities as one moves from one modality of the dependent variable to another (first sex before 16 and after 16).

**Table 3: Estimation of Marginal Effects of Explanatory Variables**

<b>Variables and Modalities</b>	<b>ME<sub>1</sub></b>	<b>EM<sub>2</sub></b>
<b>Father's Educational Level</b>	**	**

<i>No Education</i>	0,09(ns)	- 0,09(ns)
<i>Primary</i>	- 0,09(ns)	0,09(ns)
<i>Secondary</i>	-0,10**	0,10**
<i>Higher</i>	<i>Réf</i>	<i>Réf</i>
<b>Mother's Educational Level</b>	**	**
<i>No Education</i>	0,12(ns)	- 0,12(ns)
<i>Primary</i>	0,02(ns)	-0,2(ns)
<i>Secondary</i>	<i>Réf</i>	<i>Réf</i>
<i>Higher</i>	0,10**	-0,10**
<b>Circumstance of First Sex</b>	***	***
<i>forced</i>	0,23***	- 0,23***
<i>Voluntary</i>	<i>Réf</i>	<i>Réf</i>
<b>Partner of first sex</b>	***	***
<i>Classmate</i>	- 0,08(ns)	0,08(ns)
<i>Friend</i>	<i>Réf</i>	<i>Réf</i>
<i>Family member</i>	0,18(ns)	- 0,18(ns)
<i>Teacher</i>	0,11(ns)	- 0,11(ns)
<i>Friend</i>	- 0,21***	0,21***
<b>Sex</b>	***	***
<i>male</i>	<i>Réf</i>	<i>Réf</i>
<i>fémale</i>	- 0,21***	0,21***
<b>Respondent's Current Level of education</b>	***	***
<i>1<sup>er</sup> first cycle of secondary education</i>	0,32***	- 0,32***
<i>2<sup>nd</sup> cycle of secondary Education</i>	<i>Réf</i>	<i>Réf</i>

*EM1 = Marginal effects before 16 EM2 = Marginal Effects after 16*

\*\*\* significant at 1%, significant at 5%

Estimates of the marginal effects of the living milieu on the age at first sex shows that the educational level of parents significantly influence the probability of the offspring to begin sex at any given age. Everything being equal, the passage of the father of a respondent from university education to secondary education reduces the probability of the individual to have first sex before 16 by 10% but increases by 10% the probability to have this first sex after 16. The passage of respondent from a



mother with secondary education to a mother with tertiary education increases the probability of first sex before 16 by 10% but reduces the probability of the respondent to have first sex after 16 by 10%.

As far as socio-relational variables are concerned, the marginal effects show that the transformation from an individual who had voluntary first sex to one who had forced first sex increases the probability for the respondent to have first sex before 16 by 23% and reduces the possibility to have first sex after 16 years by 23%. For partners of first sex, the passage of respondents whose first sex occurred with a friend to an unspecified person (not family member or teacher nor classmates) reduces by 21% the probability for a that respondent to have first sex after 16.

As far as sex is concerned, the analysis of marginal effects shows that the passage of a respondent from a boy to a girl reduces the possibility to undergo first sex before 16 by 21% and increases the chance of having it after 16 by 21%.

Lastly, marginal effects of socio-cultural variables show that the passage of an individual from the second cycle of secondary education to the first increases the chances of having first before 16 by 32% and reduces by 32% the possibility of having the first sex after 16.

### **Mechanisms of Action of Determinants of Early First Sex (before16)**

#### **Mechanisms of Intervention of Variables of the Living Milieu: (Parents' Educational Levels)**

The effect of father's education becomes insignificant after the introduction of variables M2 to M9 but becomes significant with the introduction of religion and the respondent's current level of education. It can therefore be concluded that the father's education is only significant in explaining respondents' first sex before 16 when considered alone or with respondent's religion and current level of education. The difference observed between the effect of father's secondary and tertiary education on respondent's age at first is due to the fact that most fathers with tertiary education also have wives with university education who are Catholics.

The effect of respondents' mother's education on their ages at first sex remains significant and unchanged even with the introduction of other variables. However this effect is modified by the introduction of variables on sex and type of educational establishment. While the sex of the

respondent reduces the effect of mother's education on respondents' first sex before 16, type of educational establishment increases it.

## **Mechanism of Intervention of Determinants Linked to the Relational Environment**

Respondents' partner of first sex and the circumstance of first sex are variables of the relational environment that play significant roles in the explanation of the occurrence of first sex before 16 in the saturated model.

### **Sex**

When the variable on circumstance of first sex and partner of first sex are introduced into the model, the risk for girls getting into first sex before 16 increases by 11.5%. However, with the introduction of other variables, this difference reduces drastically. It seems that the sex of respondents influences their likelihood of first sex before 16 through the parents' education, source of knowledge on sexual health and contraception and circumstance of first sex. The difference in getting into first sex before 16 between female and male respondents is therefore due to differences in parents' education, absence or availability of information on contraception and sex education and the higher probability for girls than boys to being forced into sex before 16

### **Circumstance of First Sex**

The circumstance of the first sexual encounter is significant at 5% both on its own and in the presence of other variables of the the model. However, the introduction of other variables reduces its effects on first sex before 16.

### **Partner of First Sex**

In the absence of other variables respondents whose partner at first was unspecified (others) are 3.4 times than those whose partner was a friend to enter sexual activity before 16. This likelihood reduces by 20.6% when other variables are added to the variable on partner of first sex. It therefore appears that the effects of partner of first sex on first sex before 16 is governed by the sources of information on contraception and sexual health, parents' educational level and circumstance of first sex. The difference observed between male and female respondents in terms of the likelihood of getting into first sex before 16, may be due to the fact that boys are less involved in forced sex than girls.

### **Mechanisms Intervention of Determinants Linked to the Cultural Context**

The effect of the current educational level of respondents on their likelihood of starting sex before 16 is significant in the presence of all variables. However, the effects of type of education become insignificant with the introduction of the respondents level of education. The respondent's current level of education there inhibits the influence of type of educational on age at first sex before 16. The system of education in the absence of other variables influences the start of first sex before 16. However, this influence disappears completely in the presence of other variables.

### **Conclusion**

This study shows that early sexual activity (before 16) is common among students current aged 14-19 years in secondary schools in Cameroon's capital city, Yaoundé. Close to 50% of all the students who have begun sexual activity did so before reaching 16. This gives a mean age at first sex of 15.2 years. Close to 33% of this early sexual acts were unprotected thereby exposing these young people to the risk of infections by sexually transmitted diseases including HIV/AIDS and unwanted pregnancies at very tender ages. Unwanted pregnancies and sexually transmissible infections have devastating consequences on their health and education. One of the ways of retarding sexual activity is to identify its determinants in order to orientate policy. The key determinants of early sexuality among these students are their parents' educational levels especially the mother's, the sex of the student, the respondents' current educational levels, circumstance of first sex (voluntary or forced), partner of first sex and source of information on sexual and reproductive health. Considering the fact that boys are more likely to start sex before 16 than girls, efforts to retard sex while targeting both sexes, should place emphasis on boys. As children whose mothers have tertiary education are less likely than whose mothers have lower educational levels, giving potential mothers university education will be beneficial in future efforts of getting children to retard the start of sexual activity. This study has shown that girls who are forced to have first sex are 21% more likely than boys to enter first sex before 16. This calls for policy options that protect young people especially girls from being forced into sexual activity.

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### Annex 1: Some Characteristics of Respondents

<b>1.1 Respondents by Age and Sex</b>			
Age	Males	Females	Both Sexes
15	21.1	23.6	22.4
16	22.6	23.4	23.0
17	22.4	20.6	21.8
18	15.7	17.0	16.4
19	17.4	15.4	16.3
Total	1142 (47.5)	1263 (52.5)	2405 (100.0)
<b>1.2 Respondents by Religious Affiliations</b>			
Religion	Males	Female	Both Sexes
Catholics	59.1	57.4	58.2
Protestants	22.1	23.1	22.6
Orthodox	0.1	0.1	0.1
Moslems	7.7	7.4	7.5
Animists	0.1	0.1	0.1
Others	5.6	8.9	7.5
None	4.1	2.0	3.0
<b>1.3 Respondents by Type of Educational Establishment</b>			
Type of Educational Establishment	Male	Female	Both Sexes
Public	56.5	52.3	54.3
Lay Private	24.2	25.7	25.0
Denominational	19.3	21.5	20.7
<b>1.4 Respondents by Type of Education</b>			
Type of Education	Male	Female	Both Sexes
Technical	29.9	23.8	26.7
Grammar	70.1	76.2	73.3
<b>1.5 Respondents by Subsystem of Education</b>			
Subsystem of Education	Male	Female	Both Sexes
Anglophone	19.2	15.4	17.7
Francophone	80.8	84.6	82.3

### Annex 2: Characteristics of Respondents' First Sexual Acts

<b>2.1 Respondents(%) by Unset of Sexual Activity</b>			
Unset of Sexual Activity	Males	Female	Both Sexes
Yes	551(48.2%)	443 (34.3%)	984(40.9%)
No	591(51.8%)	820 (65.7%)	1441(59.1%)

2.2 Respondents by Age at First Sex			
10-14	34.8	16.9	26.9
15-19	65.2	83.2	73.1
Mean Age	14.7	16.2	15.2
Absolute Number	551(48.2%)	433(34.3%)	984
2.3 Respondents(%) by Partners of the First Sex			
Class mate	21.3	11.8	17.1
Persons in the neighborhood	61.2	39.7	51.7
Family member	2.0	2.8	2.3
teacher	3.8	5.1	4.4
Others	11.8	40.6	24.5
2.4 Respondents(%) by Voluntary or Non-Voluntary First Sex			
Voluntary	92.0	82.2	87.7
Non Voluntary	8.0	17.8	12.3
2.5 Respondents(%) by Protection or Non Protection during First Sex			
Protected	63.9	72.5	67.7
Unprotected	36.1	27.5	32.3

# **Determinants of Non-Protection during First Sex among Secondary School Students in Cameroon's Capital City, Yaoundé**

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## **Abstract**

The practice of unprotected sex is a very serious issue as it can result to sexually transmitted infections and unwanted pregnancies. The non-protection of the first sexual intercourse can result to habitual practice of subsequent unprotected sex. This study seeks to find out the key determinants of non-protection of the first sex among secondary school students aged 14-19 in Cameroon's capital city Yaoundé as way of providing information that can be useful for the promotion of safe sex abstinence. Information for this study was collected through a self-administered questionnaire administered to 2405 students in public, lay private and confessional schools. This study revealed that 49% of these students had started sexual activity. At first sex, 35% of students used no measure of protection against STDs or unwanted pregnancies. A binary logistic regression shows that the main determinants of non-protection during first sex are the age at first sex, circumstance of the first sex and the student's mother's educational level. Students who started sex at 10, 11 and 12 are close to six (6) times more likely than who started sex after 16 to undergo it unprotected. Students whose first sex was non-voluntary are 4.4 times more likely to go into it unprotected than students whose first sex was voluntary. Students whose mothers have tertiary education are 40% less likely to go into first sex unprotected than students with mothers with lower educational levels. There is need for comprehensive sex education for children to start before they reach 10, to promote female education and to equip parents especially mothers with skills to teach their children how to abstain from sex or practice safe sex and to prevent forced sex.

Keywords: first sex, unsafe sex, STDS, unwanted pregnancies

## **Background**

Unsafe sex is an important factor for disability and death the world over. In fact, the World Health Organization, W.H.O has declared unsafe sex as the second most important factor of disability in the poorest countries and the ninth most important in Developed Countries(Ezzati, 2002). In its efforts to encourage safe sex, UNAIDS (2010) reports that in 2009 alone, globally, there were 2.6 million

incidences of HIV out of which 1.8 million cases were in Africa. A large proportion of these cases resulted from unsafe sex. Still, as a result of unsafe or unprotected sex, many women commit unsafe abortions especially in Africa. Many of these abortions are carried out on women below 25 who are equally disproportionately infected by HIV/AIDS. Maternal deaths resulting from the practice of unsafe sex is a major cause of illness and death among women in Developing Countries including Cameroon. Apart from HIV/AIDS many thousands of persons are infected by many other STIs such as gonorrhoea, syphilis, chlamydia, genital warts and various forms of bacterial and protozoa infections as a result of the practice of unprotected sex.

Public health experts see unsafe sex as unprotected sex that leads to sexually transmitted diseases including HIV/AIDS. Risky or unprotected sex is common among people who begin sex early, among people involved in pre-marital sex and among people with multiple sex partners without the use of condoms. Because of the various risks linked to unsafe sex such as undesired pregnancies and infection by sexually transmitted diseases including the deadly HIV/AIDS, many campaigns carried out in Cameroon and elsewhere have focused on the promotion of safe sex or abstinence. Despite these campaigns, the practice of voluntary unprotected first sex is still very common. This study shows that voluntary first sexual act of 32.3% of respondents was unprotected thereby exposing them to all forms of risks related to unsafe sex at very tender ages as the mean age at first sex were as low as 15.2 years. The question that this study seeks to answer is **“what are the determinants of non-protection during the first sexual encounter of these students and what its policy implications?”** In order to answer this question, a logistic regression is carried out.

### **Ethical Considerations**

Letters requesting for permission to carry the survey were addressed to the principals of the various colleges chosen, and upon the principals' approval, the survey was conducted. The questionnaire was examined and approved by the Scientific Committee of the Central Bureau for Censuses and Population Studies of Cameroon.

### **Theoretical Considerations**

Many theories have been put forward to explain the practice of unsafe or safe sex. One of these theories is the symbolic interactionism perspective of unsafe sex. This theory states that the nature of sexual intercourse depends on the perspective and context. Unsafe sex may be good so long as it



is pleasurable. Contextually, sex between lovers may be viewed as safe and no protection will be used while commercial sex may be regarded unsafe and partners will use condoms.

Cognitive psychology theory on its part, suggests that an individual's sexual behaviour is guided by four elements which are susceptibility, benefits, barriers and severity. According to this theory, people usually evaluate the consequences of their behaviours in terms of the costs and benefits to be derived. If individuals evaluate the cost of unwanted pregnancies and sexually transmitted diseases including AIDS to be higher than the benefits to be derived from unprotected sex, they would practice safer sex.

The cultural theory supposes that the nature of sexual intercourse is influenced by the cultural belief. According to this theory, what constitutes unsafe sex depends on the society. Premarital sex can be viewed as a sin by a particular group while others will view it as a demonstration of becoming an adult. Even within the same cultural context, views about sex can change over time.

The practice of safe or unsafe sex is sometime viewed as a success or a failure of the socialization process. The family as the basic unit of socialization is expected to socialize its members especially children to avoid unsafe sex and its consequences including its unpleasant consequences. Apart of the family, the socialization of individuals is also conditioned by society. Parents who spend most of their time at work may not have time to socialize their children on the benefits of safe sex or abstinence until marriage. Schools may not consider sex education as part of their curriculum, and where they do, it might not they may not be sufficient to equip young people to adequately face the challenges of sexual life..

## **Methods**

The colleges that participated in this study were picked from the public, denominational and lay private colleges in Cameroon's capital city, Yaoundé. These colleges were selected from among schools offering the Anglophone, and some, the Francophone subsystems of education, and found in all the seven subdivisions of the city. . Considering the fact that more students in this part of Cameroon belong to the Francophone subsystem of education, about three quarters of the respondents were made up of students

from francophone sub-system. A deliberate effort was made to include technical colleges as well as general education colleges. The colleges selected, therefore, do not constitute a random sample.

A self-administered questionnaire, mostly composed of multiple choice questions was used for this study. The questions were asked in English and French, considering the fact that the selected schools were of the two educational subsystems. In all, 29 colleges took part in the study, and the questionnaire was administered to 2405 students aged 15-19, (1263 of the respondents were girls and 1142 were boys) in January, 2015. Students were chosen from classes ranging from the third to the sixth form, while attempting to balance the proportion of boys to that of girls as much as was possible.

The self-administered questionnaire was made up four parts. The first part of the questionnaire was designed to collect data on the students' demographics; the second part consisted of questions to evaluate students' exposure to sex education, their views on accessibility to contraception and sexual health advice and their preferences in implementing sex-education in schools. The third part focused on the first sex, the time of its initiation, its nature, the circumstance of its initiation and partners. The fourth section collected data on the outcomes of respondents' sexual activities, such as STIs, pregnancies, miscarriages, abortions and live births. Information relevant for this study was obtained from the first and third sections of the questionnaire (information on the demographics of the respondents and data on the age at first sex, nature of first sex (protected or unprotected, partners of first and circumstances of this sex (forced or unforced).

A questionnaire and an envelope were handed over to each of the 100 students aged 15-19 chosen from each school. Before the distribution of questionnaires, an information statement was read out to the students, giving them detailed information on the aims of the study and how the respondents were selected, thereby also providing a platform for the students to ask questions about the study. In order to motivate students to provide honest answers, anonymity was assured and they were free to refuse to complete the questionnaire or any part of it. Responses were returned in sealed envelopes and the students were asked not to write their names on the questionnaires or on the envelopes. Frequencies for each question were established after entering the data using the Statistical Package for Social Sciences (SPSS) software.

### **Definition of the Dependent Variable (Unprotected Sex)**

Unprotected sex here is also known as unsafe sex. It is defined as sex that is performed without the use of birth control to prevent pregnancy. It is performed without the use of a condom to prevent the spread of sexually transmitted diseases including HIV/AIDS.

Presentation of Variables

### **Dependent Variable**

The dependent variable used for this study is non-protection during first sex. Exceptionally declared ages at first sex (below 10 years) which represented 4% of responses were not retained for this analysis. These responses are viewed as abnormal.

### **Independent Variables**

The independent variables used for this study are divided into three categories:

**-Contextual variables** which include mother's and father's educational levels which has four modalities (no-education, primary education, first cycle secondary education, second cycle secondary education and tertiary education) and source of knowledge on contraception and sexual health (schools, church/mosque, internet, schools, the family, friends, etc.)

**-Socio-demographic** variables which involve sex of the respondents, age at first sex, circumstance of first sex (forced or voluntary), partner of first sex (teacher, classmate, family member, persons in the neighbourhood)

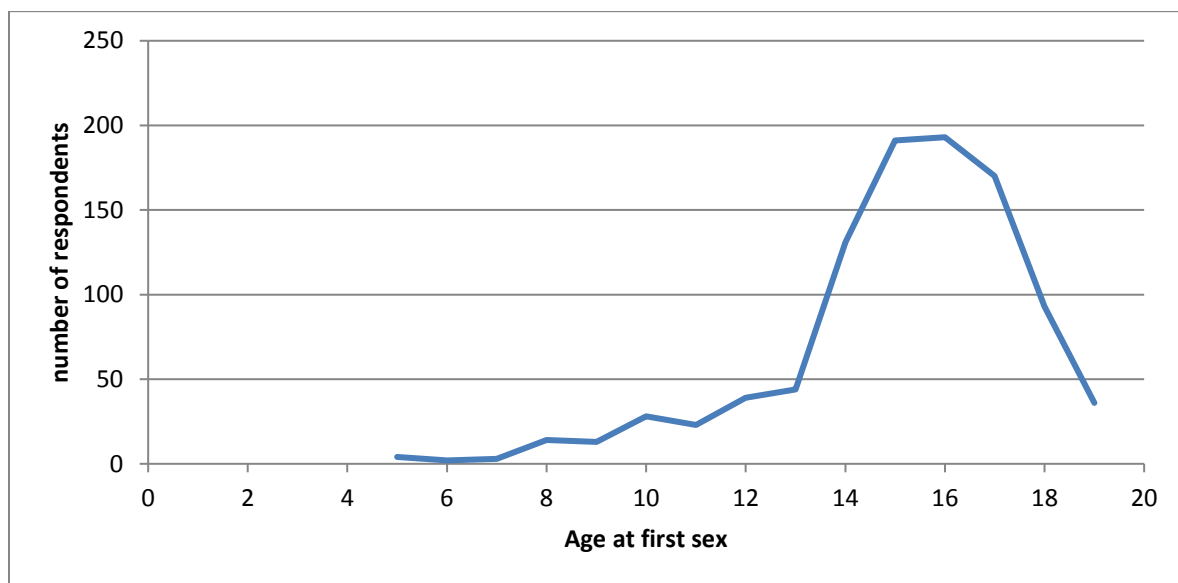
**-Socio-cultural** variables such as respondents' religious affiliations, type of educational establishment currently attended (public, lay private and confessional), type of education of education (grammar or technical/commercial), subsystem of education (Anglophone or Francophone subsystem) and current cycle of education (first or second)

N.B The non-response rate for each of these variables is zero.

### **Declarations of Age at First Sex**

As expected, the declared ages at first sex increase sharply after 14 and the fall after 16. This is reflected by the data. This gives the impression that the declared ages at first sex are good quality.

Figure 1: Distribution of Respondents by Age at First Sex



## Data Analysis

The analysis of data for this study involves two phases:- the descriptive and explanatory phases.

### Descriptive Phase

Descriptive analysis here involves two phases: bivariate and multivariate

### Bivariate analysis

It involves the analysis of the results of cross-tabulation of each characteristic of respondents such as sex, religious affiliations, class currently attended, type of education, subsystem of education, type of educational establishment and exposure to sex education and age at first sex. It will analysis involve a

cross-tabulation of parents'/ guardians' characteristics notably the educational level and participants' ages at first sex.

### **Descriptive Multivariate Analysis**

This involves using the software SPAD to come out with the profiles of students who begin sex early (before 16) and those who begin later (after 16).

### **Explanatory Analysis**

Since the dependent variable for this study, the non-protection during first sex is a quantitative dichotomy, binary regression is the appropriate multivariate explanatory method to use. This method estimates the probability for an event to occur as a function of the independent variables. The dependent variable takes the modality 1 when the event occurs (non-protection during first sex) and 0 when it does not. In this way, the logistic regression estimates the probability; the student undergoes first sex unprotected. It precisely estimates the net effect of associated variables to the non-protection during first sex.

If **P** is the possibility that the event under investigation occurs, 1-P is the possibility that it does not occur. The logistic regression probability in a linear form is  $L = \log(P/1-P)$  or  $L = b_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n$  where  $X_1, X_2, \dots, X_n$  are independent variables and  $b_0, b_1, b_2, \dots, b_n$  are regression coefficients of the model. The non-linear probabilistic form of the model is  $P = 1/(1 + \exp(-L))$ . This provides coefficients of regression "bi" from which odd ratios are calculated. An odd ratio greater than 1 indicates that there is a higher probability of the student going into first sex unprotected in relation to the group of variables under consideration and vice versa.

### **Hierarchy of Explanatory Factors of Non-Protection during First Sex**

In order to come out with a hierarchical classification of the multiple explanatory factors which influence the non-protection during first sex, the contribution of the different explanatory variables to the explaining first sex before 16 is calculated using the following formula:

$$\text{Contribution of Variable} = \frac{\text{Chi Square of the Saturated Model} - \text{Chi Square without the Variable}}{\text{Chi Square of the Saturated Model}}$$

Data Analysis

In order to come out with the determinants of non-protection during first sex among students in secondary schools in Cameroon's capital city, Yaoundé, two levels of data analysis are carried out. The first analysis is purely descriptive analysis followed by a more advanced multivariate analysis.

### **Descriptive Analysis**

Two types of descriptive analysis are carried out in this study. The first is a bivariate analysis and the second seeks to come out with the profile of respondents whose first sex was unprotected. This is factorial analysis.

### **Bivariate Analysis**

Bivariate analysis involves the behaviour of each independent variable and the dependent variable (non-protection during first sex considered in the absence of other independent variables).

A lower proportion of female respondents (27.55%) than males (33.66%) underwent first sex unprotected. The Chi Square Test shows an association between the sex of the respondent and the practice of unprotected sex at a 5% significant level.

The Chi Square Test shows no link between the religious affiliations of respondents and the practice of first sex unprotected at a 5% significance level.

This study reveals that the proportion of students whose first sex was unprotected reduces with the educational levels of the father (42%, 35.55%, 31.25% and 28% for fathers with no education, basic education, the first cycle of secondary education, the second cycle of secondary and tertiary education respectively). However, the Chi Square Test shows no significant association between these two variables. This same tendency is noticed with the mother's educational levels with proportions of 53.67%, 33.85%, 30.83% and 23.83% respectively). Unlike the father's educational

level, the Chi Square Test shows a significant association between mothers' educational level and the practice of non-protected during first sex by these students.

At a 5% significant level, the Chi Square Test reveals no significant association between the sources of information on contraception and reproductive health and non-protection during the first sexual encounter.

The proportion of respondents whose first sex was voluntary and unprotected (22.56%) is significantly lower than that for respondents whose first sex was non voluntary (39.39%). The Chi Square Test shows a significant association at the 5% between the nature of first sex and non-protection of the intercourse.

As far as the partners of first sex are concerned, the highest proportion of respondents who underwent it unprotected are those who had it with a family member (59.09%). The Chi Square Test shows a significant association between no protection during first sexual intercourse and the type of partner.

Irrespective of the type of educational establishment, the practice of unsafe sex during the first sex is fairly the same. These proportions are 29.07%, 31.14 and 31.36% for public, lay private and confessional schools respectively. However, there is no significance at 5% between the practice of unprotected sex at first sex and type of educational establishment.

For 34.5% of respondents who currently attend general secondary education, the first sex was unprotected against 25.5% for those attending technical or commercial secondary schools. There is a significant association between the practice of unprotected sex at first sex and the type of secondary education.

There is little difference between the proportions of respondents whose first sex was unprotected and subsystems of education (Anglophone or Francophone). These proportions are 31.13% and 30.64% respectively and the Chi Square Test shows no significant association at the 5% level.

28.34% of respondents who are currently attending first of secondary education reported that their first sexual intercourse was unprotected as against 31.83% of those currently attending the second cycle. However, the Chi Square Test shows no significant association between these two variables.

This study reveals that the mean age of respondents whose first sex was unprotected is 14.77 years and it is lower than that of respondents whose first sex was protected (15.69 years). The Chi Square Test shows that at a 5% significance level, an association between the practice of non-protection during first sex and age at first sex exists.

### **Measurement of Strength of Association between the Dependent Variable and Independent Variables**

The Chi Square Test tells us whether an independent variable is significantly statistically associated with the dependent variable or not. However, this test gives us no information on the strength of this association. The strength of association is given by the Cramer's V

**Table 1: Classification of the Degree of Association between Independent Variables and the Dependent Variable (Non-protection during First Sex)**

<b>Variable</b>	<b>Degree of Association</b>	<b>Rank</b>
Circumstance of first sex	0.245	1
Age at first sex	0.242	2
Mother's educational level	0.146	3
Partner of first sex	0.131	4
Type of educational establishment	0.083	5
sex	0.070	6

Among the 12 variables retained for this study, six individually show strong association with non-protection during first sex. These variables are circumstance of first sex, age at first sex, mother's educational level, partner of first sex, type of educational establishment and sex. The first rank is occupied by the circumstance of the first sex and this is easily understood as forced sex is usually very unlikely to be protected.



## **Multivariate Descriptive Analysis (Factorial Analysis)**

The aim of this section is to reduce the 12 variables and 43 modalities used for this study to few variables and modalities that best describe respondents whose first sex was either protected or was non-protected.

The first group is made of respondents whose first sex was not protected. This group is made up essentially of students whose first sex was before 16. Their fathers in a majority have only primary education. They belong to a religious affiliation which is not Catholic, Protestant or Islam. In a majority, they are found in the first cycle of secondary education. They have no source of information on sexual health and contraception and their first sex was with either a member of the family, a teacher or a friend. This first sex was equally forced.

The second group is made up of those whose first sex was protected. For this group, this first sex took place after 16. The fathers of this group of students in a majority have tertiary education. This group of respondents is either Protestants or Moslems and they are mostly in the second cycle of public schools. Their main sources of information on sexual and reproductive health including contraception are the family, the church, the school or health specialist. Their first sex was largely voluntary.

## **Explanatory Analysis (Binary Logistic Regression)**

The nature of the dependent variable used for this study makes binary logistic regression appropriate. This analysis enables us to identify determinants of non-protection during first sex. This is a causal analysis.

### **Presentation of the Model Used for this Analysis**

The binary logistic regression model used here involves the step by step introduction of variables into the model in order to follow up successive influences of independent variables on the dependent variable (non-protection during first sex). This enables us to:

- identify the explanatory variables of non-protection during the first sex ;

- come out with a classification of the explanatory factors of non-protection during the first sex;
- come out with the mechanisms of intervention of explanatory variables of non-protection during first sex
- And come out some policy recommendations based on the findings of this study.

The model used for this study has 12 variables which are introduced step by step as shown below

- 1.  $M_0$  : crude model**
- 2.  $M_1$  : father's educational level**
- 3.  $M_2$  :  $M_1$  + mother's educational level**
- 4.  $M_3$  :  $M_2$  + source of information on contraception and sexual health**
- 5.  $M_4$  :  $M_3$  + sex**
- 6.  $M_5$  :  $M_4$  + age at first sex**
- 7.  $M_6$  :  $M_5$  + circumstance of first sex**
- 8.  $M_7$  :  $M_6$  + partner of first sex**
- 9.  $M_8$  :  $M_7$  + type of school establishment**
- 10.  $M_9$  :  $M_8$  + type of education**
- 11.  $M_{10}$  :  $M_9$  + sub system of education**
- 12.  $M_{11}$  :  $M_{10}$  + respondent's educational level**
- 13.  $M_{12}$  :  $M_{11}$  + religion**

$M_0$  represents the crude model. It represents the effects of an independent considered alone on the dependent variable (non-protection during first sex).  $M_{12}$ , the global or saturated model gives the net effect of each independent variable on the dependent variable (non-protection during first sex) in the presence of other variables. The intermediary model which brings the mechanism of intervention of independent variables in the explanation of non-protection during first sex is illustrated  $M_1$  to  $M_{12}$

## **Identification of Determinants of Non-Protection during First Sex**

The result of binary logistic regression reveals that in the saturated model, only three out of the twelve (12) variables can be used to explain the practice of unsafe sex during first sex of students aged 14-19 in secondary schools in Cameroon's capital city Yaoundé. These variables are the respondent's mother's educational level, age at first sex and the circumstance of first sex.

### **Explanatory Variables for Non-protected First Sex by the Relative Explanatory Powers**

The classification of explanatory variables for non-protected first sex is derived from the formula:

$$\text{Contribution of a Variable} = \frac{\text{Chi Square of the Saturated Model} - \text{Chi Square without the Variable}}{\text{Chi Square of the Saturated Model}}$$

The application of the above formula gives the following classification of explanatory variables according to their relative contributions to the explanation of non-protection during first sex.

**Table: Relative Contribution of Explanatory Variables of Non-Protection during First Sex**

<b>Variable</b>	<b>Chi Square of saturated model</b>	<b>Chi Square of the Model without the variable</b>	<b>Relative Contribution (%)</b>	<b>Rank</b>
Age at first sex	145.03	95.66	34.04	1
Circumstance of first sex	145.03	102.42	29.38	2
Mother's Educational level	145.03	130.50	10.02	3

### **Variables Related to the Living Environment of the Respondent**

Variables related to the living environment of the respondent considered here are the contextual variables which are the father's educational level, mother's educational level and source of knowledge on contraception and sexual health. Among these variables, only the educational level of the mother significantly explains non-protection during first sex. Respondents whose mothers have secondary education are 40% more likely than those whose mothers have tertiary education not to any form of protection during first sex. There is no significant difference in non-protection during first sex by respondents whose mothers have no education, primary and secondary education

### **Socio-demographic Variables of Respondents**

Demographic variables used in this analysis are sex, age at first sex, circumstance of first sex and partner of first sex. Among these variables, age at first sex and partner of first sex contribute to significantly explain non-protection during first sex. As the circumstance of first sex is concerned, respondents whose first sex was forced are 4.3 times more likely than those whose first sex was voluntary to practice unprotected sex during first sex.

As far as age at first sex is concerned, respondents who began sex at 10, 11 and 12 years are 6.8, 4.3 and 4.5 times respectively more likely to do it without the use of condoms than those who went into first sex after 16. On the contrary, there is no significant difference between the non-uses of condoms during first sex for those who began sex after 12 years

### **Influences of Socio-cultural Factors**

The socio-cultural dimension of this study consists of type of educational establishment, subsystem of education of the religious affiliation of respondents and their level education at the time of first sex. The level of education at the time of first sex is the only explanatory socio-cultural variable that significantly explains the non-use of condoms during first sex. Respondents who had their first sex before 16 are more likely than those who had it after 16 not to use any form of protection during first sex.

### Mechanisms of Intervention of Explanatory Variables of the Practice of Non-protection during First Sex

#### Mechanisms of Intervention of Variables of the Living Milieu: (Mother's Educational Level)

Mother's education is significant in the crude as well as the saturated model as an explanatory factor of non-protection during first sex at 5% significant level. However, the modality "higher or tertiary education becomes after control for father's education and source of information on sexual health and contraception before subsequently becoming significant while the modality "no education" remains significant throughout the model. We notice a small change in the net odd ratios of different categories of the variable as we move from one model to another.

### Mechanisms of Intervention of Socio-demographic Variables

#### ❖ **Age at First Sex**

Age at first sex remains significant as an explanatory variable for non-protection during first sex even in the presence of all other variables of the model. However, variations of the odd ratios of some of its modalities exist. When the age at first sex is introduced into the model at M5, the deviation (gap) in the practice of non-protection during first sex observed in the crude model increases by 20.3% between those who had their first sex at 16 and 10 years of age. On the contrary, the difference between those had first sex at 14 and those who had at 16 disappear completely. It seems that age at first sex acts through sex, the source of information about contraception and sexual health and parents' educational levels to influence the practice of non-protection during first sex. The difference between respondents who had their first sex at 14 and those who had it at 16 in the crude model Mo is in part due to the presence of many boys with low access to information on safe sex.

### **Circumstance of First sex**

The results of the crude model shows that respondents who first sex was forceful are 4.4 times more likely to undergo it unprotected compared to those whose first sex was voluntary. The risk of undertaking first sex unprotected increases by 9% with the introduction of the variable on the circumstance of this sexual act. It later drops to its initial value of 4.4 with the introduction of type of education. It seems that the circumstance of first sex influences non-protection during first through the source of knowledge on sexual health and contraception, parents' level of education, type of educational establishment and subsystem of education. The difference between respondents whose first sex was forced and non-protected and those whose first sex was deliberate and unprotected at the crude model (Mo) is in part due to the presence of many boys with low access to information on safe sex.

### **Conclusion**

The practice of unprotected sex as when it early has far reaching negative consequences it exposes both partners to the risk of unwanted pregnancies and sexually transmissible infections. This study shows that an important proportion of students in secondary schools in Cameroon's capital city Yaoundé begin sex unprotected (32.3%). Starting sex unprotected can

be the beginning of a series of unprotected sex for an individual and measures need to be put in place to prevent unsafe sex especially at tender ages . Of the twelve variables used in this study to analyze the determinants of non-protection during first sex among students in secondary schools in Yaoundé, Cameroon, only three show significant contributions. These variables are age at first sex, circumstance of first sex and the mother's education level. Respondents who begin sex at 10, 11 and 12 years are on the average six (6) times more likely to do so unprotected than those who start it above twelve years. This means that sex education which most not only be focused on abstinence-only should begin very early even before children reach 10. This education should be comprehensive to include contraceptive use and how to practice safe sex. Another outcome of this study is that students whose mothers have tertiary education are 40% more likely to be protected during first sex compared to those whose mothers have no education, primary education or secondary education. This calls for the need to promote female education beyond secondary level and the provision of mothers with lower education with skills on sex education. This study shows again that students who were forced into first sex are 4.4 times more likely to do so unprotected compared to those who did it voluntarily. This calls for the need to protect young people against force sex which is very likely to expose them to all forms of risks associated with unsafe sex.

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**Annex 1: Results of Binary Logistic Regression of Potential Determinants of Non-Protection of First Sex by Students Aged 14-19 in Secondary Schools in Cameroon's Capital City, Yaoundé**







Family member	3.2***								0,5(ns)
Teacher	1.9(ns)								0,7(ns)
Other partners	0.7(ns)								2,7(ns)
<b>Type of establishment</b>	ns								
Public	<i>Ref</i>								
Lay private	0.9(ns)								
Private confessional	0.9(ns)								
<b>Type of Education</b>	**								
General	<i>Ref</i>								
technical	0.7**								
<b>Educational sun system</b>	ns								
Francophone	<i>Ref</i>								
Anglophone	1.1(ns)								
<b>Level of Education</b>	***								
2 <sup>nd</sup> cycle of secondary Education	<i>Ref</i>								
1 <sup>er</sup> cycle	0.8(ns)								
<b>religion</b>	ns								
catholic	<i>Ref</i>								
protestant	0.8(ns)								
musulman	0.9(ns)								
Other religion	1.3(ns)								
No religion	1.4(ns)								
<b>Chi Square</b>		4.34	19.17	26.60	31.11	84.47	131.78	133.87	
<b>Pseudo R2(%)</b>		0.37	1.64	2.28	2.66	7.23	11.27	11.45	

## Annex 2: Some Characteristics of Respondents

<b>1.1 Respondents by Age and Sex</b>			
Age	Males	Females	Both Sexes
15	21.1	23.6	22.4
16	22.6	23.4	23.0
17	22.4	20.6	21.8
18	15.7	17.0	16.4
19	17.4	15.4	16.3
Total	1142 (47.5)	1263 (52.5)	2405 (100.0)
<b>1.2 Respondents by Religious Affiliations</b>			
Religion	Males	Female	Both Sexes
Catholics	59.1	57.4	58.2
Protestants	22.1	23.1	22.6
Orthodox	0.1	0.1	0.1
Moslems	7.7	7.4	7.5
Animists	0.1	0.1	0.1
Others	5.6	8.9	7.5
None	4.1	2.0	3.0
<b>1.3 Respondents by Type of Educational Establishment</b>			

Type of Educational Establishment	Male	Female	Both Sexes
Public	56.5	52.3	54.3
Lay Private	24.2	25.7	25.0
Denominational	19.3	21.5	20.7
<b>1.4 Respondents by Type of Education</b>			
Type of Education	Male	Female	Both Sexes
Technical	29.9	23.8	26.7
Grammar	70.1	76.2	73.3
<b>1.5 Respondents by Subsystem of Education</b>			
Subsystem of Education	Male	Female	Both Sexes
Anglophone	19.2	15.4	17.7
Francophone	80.8	84.6	82.3

### Annex 3: Characteristics of Respondents' First Sexual Acts

<b>2.1 Respondents(%) by Unset of Sexual Activity</b>			
Unset of Sexual Activity	Males	Female	Both Sexes
Yes	551(48.2%)	443 (34.3%)	984(40.9%)
No	591(51.8%)	820 (65.7%)	1441(59.1%)
<b>2.2 Respondents by Age at First Sex</b>			
10-14	34.8	16.9	26.9
15-19	65.2	83.2	73.1
Mean Age	14.7	16.2	15.2
Absolute Number	551(48.2%)	433(34.3%)	984
<b>2.3 Respondents(%) by Partners of the First Sex</b>			
Class mate	21.3	11.8	17.1
Persons in the neighborhood	61.2	39.7	51.7
Family member	2.0	2.8	2.3
teacher	3.8	5.1	4.4
Others	11.8	40.6	24.5
<b>2.4 Respondents(%) by Voluntary or Non-Voluntary First Sex</b>			
Voluntary	92.0	82.2	87.7
Non Voluntary	8.0	17.8	12.3
<b>2.5 Respondents(%) by Protection or Non Protection during First Sex</b>			
Protected	63.9	72.5	67.7
Unprotected	36.1	27.5	32.3