RISK FACTORS FOR ADOLESCENT PREGNANCY AND HIV IN BAFOUSSAM, CAMEROON

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ABSTRACT

Adolescent pregnancies contribute significantly to maternal morbidity and mortality accounting for 23% of the overall burden of disease due to pregnancy and childbirth among women of all ages. Pregnancy in adolescence is also associated with HIV infection and a fourfold risk of maternal mortality among adolescents younger than 16 years of age. HIV positive adolescents, even when on highly active antiretroviral therapy, are less likely than adults to achieve viral suppression and hence have a higher morbidity and carry a higher risk of spreading the infection, compared to adults.

When compared to young adults, children born to adolescents are more likely to be born preterm, have low birth weights and to die in the neonatal or infancy period. Given that HIV infected adolescents seem to be at higher risk of pregnancy, it is necessary to identify factors associated with both these conditions since any pregnancy (especially unplanned) in HIV positive adolescents carries with it the potential risk of spreading HIV infection, both horizontally through unprotected sex, and vertically to the unborn child.

Bafoussam is the regional headquarters and main trading centre for the West region, which is one of the 10 regions in Cameroon. Its indigenes belong to the enterprising Bamiléké tribes whose culture prohibits premarital sex, especially for females, with ancestral doctrines that discourage direct parental discussion on sex related issues with their children. Despite these taboos, adolescent sexual activity has high prevalence and carries with it the twin risks of adolescent pregnancy and infection with HIV.

The aim of this study was to investigate the prevalence of and the factors that place sexually active adolescents in Bafoussam at risk of becoming pregnant and/or contracting HIV infection.

A cross sectional survey was undertaken using an interviewer administered questionnaire. Our sample was a time delimited sequential sample consisting of 20 to 25-year-old mothers accessing selected health facilities in Bafoussam, between the months of March and May 2016, for their children's routine vaccination, who report being sexually active during their adolescent years. Potential participants were contacted individually, and their consent sought to participate in the study. Thereafter, they were invited for a short interview to determine if they were eligible for the study by virtue of their sexual activity during adolescence; before the full questionnaire was administered. To ensure that the participants gave their consent freely and willingly, they were not

interviewed by their usual health care providers. They were treated fairly and interviewed in discrete secure places without intruders, to ensure confidentiality. In addition, they were assured that they and their children would receive the same health care services if they refused to participate, or decided to withdraw at any time during the interview.

A total of 340 eligible participants were recruited among whom, 47.8% (95% CI: 42.3 – 53.3) had been pregnant in their adolescent years with 2.1% (95% CI: 0.9 – 4.5) getting pregnant before the age of 16. Among the sample, 10.4% (95% CI: 7.4 – 14.2) were HIV positive, with 3.3% (95% CI: 1.7 – 5.9) having been diagnosed with the HIV infection during adolescence.

Risk factors associated with adolescent pregnancy included; sexual intercourse debut before the age of 16 (AOR: 5.7, 95% CI: 2.7 – 12.1), absence of contraception at first sexual intercourse (AOR: 2.1, 95% CI: 1.2 – 3.6), being in a serious relationship with a male sexual partner (AOR: 1.7, 95% CI: 1.0 – 2.8) and having an employed male sexual partner (AOR: 1.7, 95% CI: 1.0 – 3.0). Factors that seemed to protect against adolescent pregnancy included, citing a teacher as the main source of information on the topics of sexuality and the reproductive system during adolescence (AOR: 0.5, 95% CI: 0.3 – 0.9) and having more than 10 years of formal education (AOR: 0.3, 95% CI: 0.2 – 0.5).

Risk factors associated with adolescent HIV infection were, absence of contraception at first sexual intercourse (AOR: 5.8, 95% CI: 1.4 – 24.3), coercion at sexual initiation (AOR: 10.5, 95% CI: 2.7 – 41.0), and citing the media as the main source of information on the topic of puberty during adolescence (AOR: 46.6, 95% CI: 2.6 – 842.4). Surprisingly, those who reported not knowing where to obtain all the methods of contraception during adolescence seemed to be protected against adolescent HIV infection (AOR: 0.2, 95% CI: 0.1 – 0.9).

Access to secondary and high school education should be facilitated for adolescents in Bafoussam and teachers should be capacitated to teach comprehensive sex education to pupils during early adolescence, so that they acquire sexual competence before initiating sexual activity. Adolescents in Bafoussam should be encouraged to and provided with skills to abstain from sex during early and middle adolescence. Access to condoms should be facilitated and adolescents in Bafoussam encouraged to use them consistently to protect themselves against pregnancy and HIV. Adolescents who experience coerced sex should be encouraged to seek healthcare support as soon as possible, so that post exposure prophylaxis for HIV can be initiated where necessary and legal action taken against offenders.

DECLARATION

I, Che Gilbert Ambe, hereby declare that this mini-thesis titled *'Risk factors for adolescent pregnancy and HIV in Bafoussam, Cameroon'* is my own work and has never been presented in any other institution. I also declare that any secondary information used has been duly acknowledged.

Signature : 

Date : 30 November 2017

KEYWORDS

Adolescent pregnancy

Adolescent HIV

Contraception

Condoms

Sexual coercion

Sexual competence

Sex education

Bafoussam

Cameroon

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CHAPTER ONE
INTRODUCTION

1.1 OVERVIEW

Worldwide, about 16 million adolescents aged 15 – 19 years and a further two million under the age of 15 years give birth, with an estimated three million unsafe abortions among 15 – 19-year-old adolescents every year (WHO, 2012a). Adolescent pregnancies contribute significantly to maternal morbidity and mortality accounting for 23% of the overall burden of disease due to pregnancy and childbirth among women of all ages (WHO, 2011; WHO, 2012b).

While pregnant adolescents are generally more likely than young adults to suffer from postpartum haemorrhage and puerperal endometritis (Conde-Agudelo *et al*., 2005), pregnancy in adolescence is also associated with HIV infection (Christofides *et al*., 2014; CNLS, 2010) and with a fourfold risk of maternal mortality among adolescents younger than 16 years of age (Conde-Agudelo *et al*., 2005). HIV positive adolescents, even when on highly active antiretroviral therapy, are less likely than adults to achieve viral suppression (Ryscavage *et al*., 2011) and hence carry a higher risk of spreading the infection, compared to adults.

When compared to young adults, children born to adolescents are more likely to be born preterm, have low birth weights and to die in the neonatal or post neonatal period (Chen *et al*., 2007a; Chen *et al*., 2008). Even though there is sparse information on the outcome of HIV exposed infants born to adolescent mothers, it is likely that infant morbidity and mortality are high in this group of children. Indeed, HIV negative children born to HIV positive mothers (HIV exposed children) are more likely to have low birth weights (Sofeu *et al.*, 2014) and are three times more likely to die before two years of age, when compared to their HIV unexposed counterparts (Marinda *et al*., 2007). Given that HIV infected adolescents seem to be at high risk of pregnancy (Agwu *et al*., 2011), it is necessary to identify factors associated with both these conditions since any pregnancy (especially unplanned) in HIV positive adolescents carries with it the potential risk of spreading HIV infection, both horizontally through unprotected sex, and vertically to the unborn child.

In Cameroon, about 25% of 15 – 19-year-old female adolescents have already started reproductive life. The fertility rate in this age group is 127 per 1000 women (Libite & Souaibou, 2012) with 30% of these births resulting from unplanned pregnancies (Fomo & Ngono, 2012). It is therefore not surprising that 13.4% of adolescent pregnancies end up in abortions (MINSANTE, 2014) and

that one in four deaths among 15 – 19-year-old female adolescents are maternal deaths (Libite, & Barrère, 2012a).

1.2 STUDY SETTING

Bafoussam is the regional headquarters and main trading centre for the West region, which is one of the 10 regions in Cameroon. Its indigenes belong to the enterprising Bamiléké tribes of the West Region with an organised informal financial system built on mutual trust that is made up of rotating credit and savings associations or *"tontines"*, which permit members with limited collateral security to gain substantial amounts of capital needed to start up and maintain their businesses in the informal sector (Verity, 2011).

The Bamilike culture also upholds family values which groom young boys and young girls into responsible adulthood, through various rites and close family members who serve as guardians; and prohibits premarital sex especially for females, with ancestral doctrines, that discourage direct parental discussion with children especially on sex related issues, greatly influencing individual attitudes and behaviours (Sidze, 2008; Rwenge, 2004a). Despite this, 72.9% of youths in Bafoussam are already sexually experienced with 23% of them having had their first sexual experience before they are 16 years of age (Rwenge, 2004b). This changing tendency could be a consequence of globalisation which has facilitated access to various media including the internet and foreign television channels which tend normalise adolescent sexual activity and maybe to some extent portray it as desirable (Hoggart *et al*., 2010).

Bafoussam has a population of over 300 000, with about 50% of its inhabitants estimated to be less than 18 years of age. Adolescents are estimated to constitute 23.3% of the population with half of them being females (BUCREP, 2011). French and the local dialects are widely spoken; however, English is also spoken by a small portion of the population.

Though there is limited information about the situation of HIV infection among adolescents in Bafoussam and the West Region as a whole, it is likely that its prevalence will follow the national trend, which has remained relatively unchanged ranging between 2.2% in 2004 (Mosoko & Affana, 2004) and 2.0 % in 2011 (Libite, & Barrère, 2012b) among 15 – 19-year-old female adolescents. Assuming that HIV positive adolescents were recently infected at the time of these studies (CNLS 2010), one could conclude that the incidence of HIV in this target population has not changed significantly since 2004.

According to Fomo & Evina (2012), 50% of female adults in the West Region are married before the age of 19; and have their first delivery before 20 years of age (Libite & Souaibou, 2012). About 17% of 15 – 49 old married women in the West Region have unsatisfied family planning needs possibly because of ignorance, or because men play a great role in deciding the size of the family and most women have not discussed this topic with their husbands (Fomekong & Tchekanda, 2012). Information on the family planning needs of unmarried women in this setting is limited possibly because premarital sexuality is unacceptable and socially disapproved of in the Bamiléké culture (Sidze, 2008). Most health facilities have services for voluntary HIV screening, with two health facilities that offer highly active antiretroviral therapy for HIV positive persons. About 12% of 15 – 19-year-old adolescents in the West Region are illiterate (Population Council, 2009).

Bafoussam has a cross section of health facilities, the majority of which are government owned and offer basic services such as antenatal care, simple deliveries, family planning and vaccination services. At least 95% of the population has no health insurance (Tezanou, Fomekong and Sohkadjie, 2012), which means that user fee constitutes the main form of health expenditure. Consultation fees at government facilities vary from about half a dollar in the integrated health centres to over three dollars in the regional hospital, which is unaffordable to most given that 28.9 % of the population lives on less than two dollars a day (INS, 2008).

1.3 PROBLEM STATEMENT

Given that heterosexual intercourse, the predominant mode of HIV transmission in this setting is also obviously a necessary factor for adolescent pregnancy, and both outcomes are likely to occur in a similar context (with related exposures), it seemed worthwhile to study any exposures that could possibly be risk factors with a focus on both outcomes (adolescent HIV and adolescent pregnancy) rather than one of them. Without this, it could be difficult to reduce adolescent maternal mortality/morbidity with its twinned high-level child mortality/morbidity.

1.4 PURPOSE OF STUDY

The purpose of this research was to identify and measure factors associated with HIV infection and pregnancy during adolescence in Bafoussam. Information from this study could be useful in the conception and implementation of programs to curb the incidence of pregnancy and HIV in adolescence, and thereby contribute to limit adolescent maternal mortality/morbidity as well as child mortality/morbidity.

CHAPTER TWO
LITERATURE REVIEW

2.1 DEFINITION OF CONCEPTS

WHO identifies adolescence as the critical transition in human growth and development that occurs after childhood and before adulthood, from ages 10 to 19 years (WHO, 2013). According to Dixon-Mueller (2008), adolescence can be further divided into three age categories which include early adolescence (ages 10 – 14), middle adolescence (ages 15 – 17) and late adolescence (ages 18 – 19). Given that adolescents are not fully capable of understanding the degree of control they have or can have over health decision making, they are particularly vulnerable to high-risk behaviours which expose them to unintended pregnancies, and infection from sexually transmitted infections including HIV (WHO, 2013).

2.2 CONSEQUENCES OF ADOLESCENT PREGNANCY AND HIV

Childbearing in adolescence has been associated with many unfavourable outcomes, both for the mothers and their offspring. Olausson and colleagues (2001) after analysing data from a national cohort of Swedish women born from 1940 – 1971 who bore children between 1954 and 1989, observed that adolescent motherhood was associated with low educational attainment, high parity and welfare dependency, even for adolescents from relatively comfortable backgrounds and for those who studied beyond elementary school.

Pregnancy in adolescence has been associated with multiple and older sexual partners, as well as HIV infection, in later life in a cohort of South African youths (Karim *et al*., 2014; Christofides *et al*., 2014). It seems likely that having a child while an adolescent, results in women then having multiple partners and older partners as a form of social and economic support but these practices then result in a higher risk of HIV infection. Conversely, Agwu *et al*., (2011) observed after following up HIV infected youths in a United States hospital based study that the incidence of pregnancy in this group was higher than that in the general population of their uninfected counterparts. Furthermore Fatti *et al*., (2014) observed after following up cohort of 956 HIV positive mother-infant pairs in public health facilities in the Eastern Cape province of South Africa that adolescents had higher rates of mother to child transmission of HIV when compared to adults. If we consider this finding within the context of the Cameroonian setting, then preventing adolescent pregnancy could contribute to reducing the rate of mother to child transmission of HIV.

In a hospital based study in Cameroon, Tebeu *et al*., (2011) observed that women who give birth before age 17 were about four times more likely to deliver prematurely when compared to 20 – 29-year-old women. In addition, Fraser *et al*., (1995) in a US large population based study demonstrated that pregnancy in adolescence is independently associated with low birth weight, small for gestational age and premature delivery. Also, Conde-Agudelo *et al*., (2005) in a multinational hospital based cross-sectional study observed that compared to young adults, pregnancy in adolescents younger than 16 years old is associated with a fourfold risk of maternal mortality, and early neonatal death, as well as low birth weight and preterm delivery in Latin American adolescents. If these findings were to be true for the Cameroonian context, then adolescent pregnancy would provide a non-negligible contribution to the already high background neonatal, infant and maternal mortality in Cameroon (UNICEF, 2012).

Finally, Tebeu *et al*., (2009) observed among a case series of patients in Nothern Cameroon seeking treatment for obstetric fistula (an obstetric complication associated with social stigma and isolation) that 86% of the cases were adolescents at their first delivery.

Considering these unfavourable outcomes, it therefore seems reasonable to delay as much as possible, adolescent childbearing in any given setting.

2.3 FACTORS ASSOCIATED WITH ADOLESCENT PREGNANCY AND HIV

Many factors have been associated with adolescent pregnancy and HIV. Idele *et al*., (2014) observed after analysing data from nationally representative household surveys and a variety of other sources that there is an increase in vulnerability to HIV infection during adolescence. Mchunu *et al*., (2012) in a cross-sectional population-based household survey in South African youths, found poverty, high sexually permissive attitudes, to be associated with adolescent pregnancy. Also, Acharya *et al*., (2010) in a systematic review observed that adolescents from large families and from cultures where girls had a limited say in decision making were more likely to get pregnant. It therefore seems from this literature that socio economic factors are associated with adolescent pregnancy.

However, adolescent perceptions may also play a major role. It has consistently been found across college and clinic samples of adolescents that there is a lack of a significant association between perceived susceptibility to HIV/AIDS (and hence also to pregnancy) and safe-sex behaviours (Whaley, 1999). Furthermore, Hoggart *et al*., (2010) found out in focus group discussions with London based female adolescents who had terminated their pregnancies that they might think they

are infertile if they fail to become pregnant after a few episodes of unprotected sex. This is evident in a participant's declaration:

"...the few times I had had sex with him, I never got pregnant, so I thought, like I said before, 'there must be something wrong with me why I can't conceive or carry a child'...", (Hoggart *et al*., 2010: 32)

Similarly, in a surveillance study to understand why adolescents wishing to avoid pregnancy became pregnant in the USA, 31.4% of the 4836 respondents who were not using contraception when an unintended pregnancy occurred, believed they could not get pregnant at the time, while 8% thought they or their partners were sterile (CDC, 2012).

Despite a high level of awareness about condoms and their role in HIV prevention, Puri (2002) observed among adolescent factory workers in Nepal that the use of a condom during sexual intercourse is low. The incapacity to translate this awareness into safer sex practices could be as a result of insufficient negotiation skills or motivation for effective contraceptive use (Brown *et al*., 2001; CDC, 2012).

Given that poor use of health services is a risk factor for adolescent pregnancy (Acharya *et al*., 2010), efforts have been made to provide youth-friendly services; however, experience from London shows that these services are unevenly provided and have a limited reach in meeting the sexual health needs of adolescents (Hoggart *et al*., 2010). Even though youth hold government hospitals and health facilities in a very positive light and regard them as their preferred source of obtaining contraception, many are reluctant to utilize their services due to societal stigma and misconceptions (Prata *et al*., 2013; Kube *et al*., 2014). Experience gathered from focus group discussions in Fundong and Njinikom (in the North-West region of Cameroon) shows that youths are afraid of being reported to their husbands/parents if found at health facilities or shops seeking for contraceptives, because they are perceived to be for married couples and that their use is linked to promiscuity, prostitution, and also to future infertility (Kube *et al*., 2014).

In a Chicago based successful family planning program for adolescents at high risk of pregnancy, some reasons they provided for attending the "teen clinic" were; "services are free", "easy to get here", "staff are friendly", "friends come here", "clinic is for teens only", "no parent consent required" and, "staff won't tell anyone" (Hertz *et al*., 1988: 427). Similarly, Kanthiti (2007) in a systematic review found that factors that facilitate adolescent use of family planning services in Africa include privacy, confidentiality, convenient location, hours of service provision, positive provider attitudes, friendly environment, knowledge of reproductive health and family planning

services, availability of contraceptive devices and services, peer involvement and low cost of services.

While persons who run the risk of getting pregnant generally also risk being infected with HIV, the reverse might not always be true in certain circumstances.

This is the case with those who use contraceptive methods other than the condom to prevent pregnancy. A declaration from this 23-year-old female in Kano, Nigeria provides a good example; "I met my boyfriend in church. We are both children of God and I know I can trust him. I only have sex with him because I love him, and I know that he is only with me. I protect myself from pregnancy [using the pill] but I know he will not give me AIDS" (Smith, 2004: 431). Analysis of data from the 2004 demographic health survey in Cameroon indicates that about one third of men in cohabiting couples are HIV positive while their partners are not (De Walque, 2006); therefore, Cameroonian women in stable relationships could actually be at risk of HIV if they behaved like this female.

This is also the case with those who engage in non-coital sex, especially anal sex to avoid pregnancy, but then place themselves at much higher risk of acquiring HIV infection. While the literature on these forms of sexual activity in Cameroonian adolescents seems sparse, 5% of female adolescents in Tanzania, and up to 10% of them in the USA and Sweden have been reported to engage in anal sexual activities (Chandra, Mosher, & Copen, 2011; Edgardh, 2000; Kazaura & Masatu, 2009). This finding calls for concern because anal sex is the highest risk sexual activity for contracting HIV (Patel *et al*., 2014).

CHAPTER THREE

METHODOLOGY

This chapter describes the aim and objectives of the study, the study design, study population, sample type, sampling procedure, and sample size. It continues with the data collection method used in the study, piloting, validity, reliability, generalisability and data analysis. The chapter concludes with the ethical considerations taken in the study.

3.1 AIM

The aim of this study was to investigate the prevalence of and the factors that place sexually active adolescents in Bafoussam at risk of becoming pregnant and/or contracting HIV infection.

3.2 OBJECTIVES

The objectives of this study were;

To estimate the prevalence of pregnancy and HIV during adolescence, among sexually active young adults in Bafoussam.

To determine risk factors associated with adolescent pregnancy among sexually active young adults in Bafoussam

To determine risk factors associated with adolescent HIV infection among sexually active young adults in Bafoussam

3.3 STUDY DESIGN

This was a cross sectional analytical study. This study design seemed to provide a convenient and inexpensive method to measure the prevalence of adolescent pregnancies and HIV infection; and the exposures acting as potential risk factors in our setting.

3.4 STUDY POPULATION

The population of interest consisted of people who had recently lived through their adolescent period and were sexually active adolescents, but practically identifying and obtaining access to this group could be quite difficult. Consequently, we decided to choose mothers aged from 20 to 25 years on their last birthday, who were visiting health facilities in Bafoussam for their children's

routine vaccination appointments. We chose 20 to 25-year-old persons because they had all gone through adolescence and therefore would have had the opportunity to experience our study outcomes. To ensure that our population was sexually active, we selected mothers; however, a further criterion was that they had to have been sexually active during their adolescence. The choice of mothers visiting vaccination units was for ease of access. By using this study population, we were likely to exclude those who did not bring their children for vaccination, those without children but who were sexually active, those who had children before 20 and who delayed subsequent childbearing until after the age of 25 years, as well as those aged 20 to 25 years whose children were not within the age range for vaccination. These exclusions could be a limitation of the study; however, given that vaccination coverage estimated using data from the Bafoussam district health service was at least 90%, and that over 99% of those who had children before 20 give birth again within five years, and that at least 80% of women have had children before the age of 25 (Libite & Souaibou, 2012) the choice our study population was unlikely to exclude many potential participants. Also, assuming that child bearing is a random process in the context of our study population, we could be comforted to say that those who had children past the vaccination age might not be very different from those included in the study. Thus, using this population was not likely to result in an inability to generalise the findings.

3.5 SAMPLE TYPE

Our sample was a time delimited sequential sample consisting of 20 to 25-year-old mothers accessing health services in Bafoussam between the months of March and May 2016, for their children's routine vaccination, who gave their consent to participate in the study. In addition, authorisation to participate in this study was gotten from the parents of unmarried participants who were less than 21 years old, in accordance with guidelines from the Cameroon National Ethics Committee. Mothers who could not communicate in English or French, the two official languages in Cameroon were excluded from the study; since the data collectors might be unable to communicate in other languages. Since it was expected that the attendance of vaccination services would be fairly random and constant all year round, we could say with some certainty that our sample was representative of the population of women aged 20 to 25 years.

3.6 SAMPLING PROCEDURE

All mothers who attended the vaccination sessions and whose children were waiting to be vaccinated, were contacted on an individual basis. The study procedure and its objectives were explained to eligible participants and their consent sought. Thereafter, they were invited for an interview with a female interviewer, after which they took up their places in the vaccination queue for their children to be vaccinated. Before the full questionnaire was administered, a short interview to evaluate the eligibility of the potential participant for the study was conducted.

3.7 SAMPLE SIZE

Given that 2% of 15 - 19-year-old adolescents (INS & ECF, 2012) and 5.1% of 15-19-year-old pregnant adolescents (CNLS, 2010) are HIV positive; with 23% of them having their first sexual experience before 16 years (Rwenge, 2004) and assuming that the prevalence of HIV is 6% in those who begin sexual activity before 16 and 1% in those who begin sexual activity later, we estimated a minimum sample size of 373 at the 95% confidence level and 80% power using Epi Info 7. We therefore aimed at recruiting at least 400 participants in our study.

3.8 DATA COLLECTION

Data was collected through interviewer administered questionnaires because we expected that many of the participants might be illiterate. Two female interviewers were selected and trained on how to administer the questionnaire at the selected vaccination sites. These sites were chosen from health facilities that cover all the levels of health care provision, and receive clients from all levels of social and economic strata in Bafoussam.

The training of interviewers was done by one trainer, at the same time and involved role plays and practice sessions with potential participants. The questionnaire was designed to capture information from respondents on their socio-demographic characteristics, sources of information on and knowledge of reproductive health, experience of heterosexual relationships and circumstances surrounding first and subsequent sexual encounters, knowledge and ever-use of contraceptive methods, condom knowledge and attitudes, as well as history of HIV infection, sexually transmitted infections and pregnancy in adolescence.

While information on the HIV status of participants was collected using the questionnaire, we verified this information from the antenatal registers, since were sure that almost all women coming to vaccinate their children and who attended antenatal services for their pregnancy would have had an HIV test done and the results could be found in the antenatal registers. Those who did

not know their HIV status because they did not attend antenatal services, or were not delivered in a health facility were to be counselled and tested for HIV according to the national HIV testing guidelines, by the clinic staff that routinely performed this function.

3.9 ANALYSIS

The data was analysed using Epi Info 7 and Microsoft Excel 2016. The mean, standard deviation, median and inter-quartile ranges were calculated for; age at sexual initiation, age difference between the participants and their sexual partners, age at first pregnancy, and age at HIV infection. For ordinal variables with many categories such as educational attainment, we regrouped the data into summary categories to obtain the proportions of those with six years or less of education (this corresponds to primary education), those with 7 – 10 years of education (this corresponds to secondary education), those with 11 – 13 years of education (this corresponds to high school education) and those with 14 years and above of education (this corresponds to university education).

For a nominal variable such as pregnancy in adolescent years, we calculated the proportion of those who got pregnant before 20 years and further calculated the proportions of those who got pregnant before 16 years (the legal age of marriage in Cameroon and the age below which pregnancies would be associated with considerable obstetric risks).

HIV status was gotten by calculating the proportion of those who reported HIV infection. HIV infection in adolescence was gotten by asking each participant the year she was first diagnosed HIV positive. Her year of birth was then subtracted from this year to get the age at infection. If the age was less than 20 years, then she was considered to have acquired HIV infection in adolescence. This HIV status of each participant was confirmed by verifying her HIV result that is routinely recorded in the antenatal register.

Bivariate analysis was done to investigate the association between the main exposure variables such as age at sexual initiation, educational attainment and the outcome variables of pregnancy in adolescence and HIV infection. The prevalence differences and prevalence ratios in the outcomes were calculated for those with and without exposure at the 95% confidence interval. Any associations between the exposures and the two main outcomes (adolescent HIV and pregnancy), found to be statistically significant on bivariate analysis were introduced into a multivariate model, to obtain their adjusted effects.

3.10 PILOTING

A pilot study was conducted with 20 participants from a health facility not included in the study to ensure that the questionnaire was administered in a standardised manner by both interviewers and to identify all the possible scenarios of ambiguity that needed amendments.

3.11 VALIDITY

By ensuring that the questionnaire was interviewer administered, we could minimise any error or bias in the responses due to any misunderstanding of the questions by participants.

Moreover, by including those in the 20 – 25-year age bracket (and not only 20, or 20 – 22-year olds), we could ensure that almost all of those who had a pregnancy or gave birth earlier; between the ages of 15 and 19 (that is experienced our outcome of interest), would have had another chance to give birth again between the ages of 21 and 25 (Libite & Souaibou, 2012); so as to have a chance to be recruited in our study. Without this consideration, our study might suffer from selection bias since we risked excluding those who gave birth in early or mid- adolescence (who might have different study characteristics) and finished all their vaccination appointments just before they turned 20 or 22 years of age.

Nevertheless, by using an interviewer administered questionnaire we ensured that the interviewers were adequately trained to remain open, and non-judgemental to all the responses provided by the participants so as not to influence the responses provided; especially those for sensitive questions such as age at sexual initiation, age of sexual partner and pregnancy in adolescence (the participants might possibly not report a pregnancy in adolescence because it uncovers premarital sex or early sexual initiation, and more so, if it was aborted). To ensure that participants would not refuse to participate in a study that probed into sensitive areas of their lives, female interviewers in a similar age range as the participants were recruited so that they could easily communicate with their peers. To ensure that the questionnaire was administered in a standardised way, the training of interviewers was done by one trainer, at same time and involved role plays and practice sessions with potential participants.

Potential confounding was assessed via multivariate logistic regression models.

3.12 RELIABILITY

All the interviewers were trained to ensure that they have the same understanding of all the items in the questionnaire in order to prevent inter-observer variation.

3.13 GENERALISABILITY

Given that the participants were sampled from both rural and urban settings in Bafoussam, the sample was likely to be representative of the overall spectrum of adolescents in the health district and hence the results could be generalised to all the adolescents in the West Region of Cameroon where the population has similar socio-cultural traditions. However, the findings might not be generalisable to the rest of Cameroon, since the cultural and sexual practices in the Northern, Centre, South and East regions may differ substantially from that in the West Region.

3.14 ETHICS

This study was done by administering a questionnaire. The risks of this activity were expected to be minimal and we did not foresee any major harm to any participants. However, some of the questions could cause psychological trauma to the participants by making them recall unpleasant incidences in their lives. Counselling and psychological support was arranged in the health facility for any participant who felt traumatised, free of charge.

The study did not specifically benefit the participants. However, information generated from the study could be used to develop strategies to prevent other adolescent pregnancies and HIV.

A participant information sheet was prepared with all the information that participants needed to know about the research. All potential participants were contacted on an individual basis and the study explained to them. They were then given the opportunity to accept or decline to participate in the research, while assuring them that they would not face any adverse consequences and that they and their children would receive the same health care services if they refused to participate, or decided to withdraw at any time during the interview. They were informed that they could withdraw at any point without providing any reasons for doing so.

Participants were treated fairly and interviewed in discrete secure places without intruders, to ensure confidentiality. All questionnaires were locked securely at the office of the investigator during the study. No names of participants or any information that could identify them was written on the questionnaires. Instead, the questionnaires were coded, and the codes linked to their names and respective health facilities so that the HIV status could later be verified in the antenatal registers. All documents with the codes and names of participants were locked securely at the office of the investigator during the study and destroyed after the information from them had been cross checked in the antenatal registers.

In addition, by ensuring that consent and interviewing of participants was not done by their usual health care providers who might be perceived as taking advantage of their vulnerability as health service seekers to “force” them to consent, it is unlikely that participants were exploited and that this study was non-maleficent.

The research protocol for this study was approved by the Cameroon National Ethics Committee and the University of the Western Cape Research and Ethics Committee

CHAPTER FOUR

RESULTS

Our findings have been presented under the following sections; first we give a brief overview of how we realised our sample for this study, then we present the age of the participants and the two major outcomes of this study (adolescent pregnancy and HIV). Thereafter, we present their sociodemographic parameters, characteristics of their first and subsequent sexual experiences, knowledge on contraception and various aspects of condom use during adolescence. Afterward, we present factors associated with our outcome variables using both absolute and relative bivariate analysis and then do logistic regression in the multivariate analysis (using the backward stepwise regression model), to find out which of these factors are the most important independent predictors of our outcomes.

4.1 SAMPLE REALISATION

A total of 428 potential participants born between the years 1991 and 1996 were recruited and interviewed. After reviewing the questionnaires, 39 were excluded giving a tentative sample of 389. Of the excluded questionnaires, one was from a participant who could neither state her date of birth nor give information on her age; while the other was from a participant who could not state whether she had a boy-friend or was sexually active in her adolescent years. The remaining 37 questionnaires were from participants whose calculated ages were less than 20 years by March 2016, when we started administering the questionnaire. After initial analysis, a further 49 questionnaires were excluded, yielding a final sample of 340 questionnaires for subsequent analyses. Of the excluded questionnaires, 46 were eliminated because their calculated age at their sexual intercourse debut ranged from 20 – 23 years (clearly indicating that they had never been sexually active as adolescents) and the remaining three because they did not provide enough information to determine the age at which they became sexually active. To the extent that the final sample of 340 was less than the calculated sample size of 373, the 95% confidence intervals for measures of prevalence and association were wider than planned for.

4.2 AGE OF PARTICIPANTS

In the sample of 340 questionnaires retained for analysis, the ages of the participants ranged from 20 to 25 years, with a mean of 22.9 years (median: 23 years; interquartile range: 21 – 24 years) and a standard deviation of 1.5 years (see Table 1 for age breakdown in years).

4.3 PREVALENCE OF ADOLESCENT PREGNANCY AND HIV

Of the 340 participants who provided information on their reproductive lives, 47.8% had been pregnant in their adolescent years (before the age of 20) and 2.1% before the age of 16 (Table 1). The mean, standard deviation and range for first pregnancy were respectively; 19.6 years, 2.1 years, and 14 – 25 years (median: 20 years; interquartile range: 18-21 years).

Table 1 shows the HIV status and the ages at diagnosis of infection, for HIV positive participants. 10.4% of the participants were HIV positive, with 3.3% having been diagnosed with HIV infection during adolescence (before the age of 20). The mean age, standard deviation and age range at diagnosis of HIV infection were respectively; 20.5 years, 1.8 years, and 16 – 24 years (median: 21 years; interquartile range: 18 – 22 years).

Table 1: Age distribution, age at first pregnancy and HIV status of young mothers presenting at Bafoussam infant welfare clinics in 2016.

	No.	%	95% CI
Age distribution in years (n = 340)			
20	6	1.8	0.7 – 4.0
21	82	24.1	19.7 – 29.1
22	51	15.0	11.5 – 19.4
23	73	21.5	17.3 – 26.3
24	62	18.2	14.4 – 22.9
25	66	19.4	15.4 – 24.1
Age in years at first pregnancy (n = 335)			
14 – 15	7	2.1	0.9 – 4.5
16 – 19	153	45.7	40.3 – 51.2
20 – 25	175	52.2	46.8 – 57.7
HIV status and age in years at diagnosis of infection (n = 338)			
Negative	303	89.6	85.8 – 92.3
Positive			
At age 16 – 19	11	3.3	1.7 – 5.9
At age 20 – 24	24	7.1	4.7 – 10.5

4.4 SOCIODEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS

Table 2 presents detailed information on the socio-demographic characteristics of the participants. It is worth noting that 11.7% and 20.5 % of the participants respectively lived in very poor (with no electricity and no radio) or poor (with only electricity or a radio set) homes; while 13 % and about 40% respectively, never lived with their parents or lived only with one parent, during their adolescent years. It is also interesting to note that 19.6 % of the participants were single mothers at the time of the study.

We also observed that 17.1 % of the participants had their first sexual experience before the age of 16, while 19.1 % of the participants had their first sexual experience with partners that were at least 10 years older than them and only 2.2% of them had a partner who was the same age or younger than them (See table 3 for a description of the dispersion of these numerical variables). Very few (2.7 %) of the participants reported having practised anal sex at their first experience, while the majority of the participants (71.1 %) used some form of contraception at first sex, with almost all of them using condoms. Parents and teachers were cited as the main sources of knowledge during adolescence on the topics of puberty, sexuality and the reproductive system.

Table 2: Socio-demographic and sexual characteristics of young mothers presenting at Bafoussam infant welfare clinics in 2016.

	No.	%	95% CI
Socio-demographic characteristics			
Highest Level of education (n = 334) *			
Primary	48	14.4	10.9 – 18.7
Secondary	163	48.8	43.3 – 54.3
High School	96	28.7	24.0 – 34.0
University	27	8.1	5.5 – 11.7
Socio-economic status (n = 332)			
Very low income	39	11.7	8.6 – 15.8
Low income	68	20.5	16.4 – 25.3
Middle income	167	50.3	44.8 – 55.8
High income	58	17.5	13.6 – 22.1
Civil status at time of study (n = 332)			
Married	111	33.4	28.4 – 38.8
Cohabiting	153	46.1	40.7 – 51.6
Single	65	19.6	15.5 – 24.4
Divorced	3	0.9	0.2 – 2.8
Provision of parental care during adolescence (n = 330)			
Both parents	156	47.3	41.0 – 52.8
Father only	15	4.5	2.7 – 7.6
Mother only	116	35.2	30.1 – 40.6
Other relations	43	13.0	9.7 – 17.3
Level of parental control during adolescence (n = 228)			
Knew the adolescents' whereabouts always	37	16.2	11.7 – 21.7
Knew the adolescents' whereabouts sometimes	165	72.4	66.1 – 78.1
Never knew the adolescents' whereabouts at anytime	26	11.4	7.6 – 16.3

Table 2: Continued			
	No.	**%**	**95% CI**
Characteristics at first and subsequent sexual experiences			
Age in years at first sexual intercourse (n = 340)			
9 – 15	58	17.1	13.3 – 21.6
16 – 19	282	82.9	78.4 – 86.7
Age difference in years between participants and their male partners at first sexual intercourse (n = 325)			
Males the same age or one year younger	7	2.2	1.0 – 4.6
Males < 6 years older	105	32.3	27.3 – 37.3
Males 6 – 10 years older	151	46.5	41.0 – 52.1
Males > 10 years older	62	19.1	15.0 – 23.9
Readiness to have sex at first experience (n = 340)			
Planned	278	81.8	77.2 – 85.6
Unexpected	62	18.2	14.4 – 22.9
Willingness to have sex at first experience (n = 338)			
Forced to have sex	40	11.8	8.7 – 15.9
Persuaded to have sex	21	6.2	4.0 – 9.5
Both partners willingly had sex	277	82.0	77.3 – 85.8
Type of sex at first experience (n = 340)			
Vaginal only	331	97.4	94.9 – 98.7
Vaginal and Anal	4	1.2	0.4 – 3.2
Vaginal, Oral and Anal	5	1.5	0.5 – 3.6
Type of relationship with sexual partner at first experience (n = 338)			
Casual	221	65.4	60.0 – 70.4
Serious	117	34.6	29.6 – 40.0
Contraception at first sex (n = 339)			
Yes	241	71.1	65.9 – 75.8
No	98	28.9	24.2 – 34.1
Method of Contraception at first sex amongst those that used it (n = 239)			
Condom	234	97.9	95.2 – 99.3
Others	5	2.1	0.7 – 4.8

Table 2: Continued			
	No.	**%**	**95% CI**
Subsequent use of contraception ever (n = 256)			
Yes	197	77.0	71.3 – 82.0
No	59	23.0	18.0 – 28.7
Frequency of subsequent contraception amongst those using it (n = 192)			
Always	124	64.6	57.4 – 71.3
Sometimes	68	35.4	28.7 – 42.6
Method of subsequent contraception amongst those using it (n = 193)			
Condom	185	95.9	92.0 – 98.2
Other	8	4.1	1.8 – 8.0
Knowledge on puberty, sexuality and reproduction during adolescence			
Main source of information on puberty (n = 337)			
Parents	98	29.1	24.4 – 34.3
Teachers	113	33.5	28.6 – 38.9
Siblings	59	17.5	13.7 - 22.1
Friends	64	19.0	15.0 – 23.7
Media	3	0.9	0.2 – 2.8
Main source of information on sexuality and reproductive system (n = 339)			
Parents	119	35.1	30.1 – 40.5
Teachers	115	33.9	29.0 – 39.3
Siblings	38	11.2	8.2 – 15.2
Friends	56	16.5	12.8 – 21.0
Media	11	3.2	1.7 – 5.9
Ever discussed sex related matters with (n = 326);			
Both parents	56	17.2	13.3 – 21.8
Father only	10	3.1	1.6 – 5.8
Mother only	164	50.3	44.8 – 55.9
Guardians	16	4.9	2.0 – 8.0
Never discussed sex related matters	80	24.5	20.0 – 29.7
Proportion of participants reporting symptoms of sexually transmitted infections during their adolescent years (n = 340)			
No symptom	25	7.4	4.9 – 10.8
1 – 2 symptoms	267	78.5	73.7 – 82.7
3 – 4 symptoms	48	14.1	10.7 – 18.4
***Those with primary, secondary, high school and university education had respectively 4 – 6, 7 – 10, 11 – 13, and more than 13 years of formal education.*			

Table 3 provides a description of the dispersal range of the numerical variables of age, age at first sex, age at first pregnancy, age at HIV infection and age difference between the participants and their first sexual partners.

Table 3: Descriptive statistics of dispersion for numerical exposure and outcome variables of young mothers presenting at Bafoussam infant welfare clinics in 2016.

	Mean	Standard deviation	Median	Interquartile range	Range
Age distribution (in years)	22.9	1.5	23	21 – 24	20 – 25
Age at first sex (in years)	17.0	1.6	17	16 – 18	9 – 19
Age difference (in years) between participants and their male partners at first sex	7.3	4.3	7	4 – 9	-1 – 38
Age at first pregnancy (in years)	19.6	2.1	20	18 – 21	14 – 25
Age at HIV infection (in years)	20.5	1.8	21	18 – 22	16 – 24

4.5 KNOWLEDGE OF CONTRACEPTIVE METHODS AND ASPECTS OF CONDOM USE DURING ADOLESCENCE

We observed that 98.5% of the participants had knowledge on the condom contraceptive method during their adolescent years, with 94% knowing where to obtain it. A large percentage of participants knew about each of the other individual contraceptive methods, but with a lesser percentage of them knowing where to obtain them, while 56% of the participants had knowledge about all the contraceptive methods with 37% knowing where to obtain all of them (see table 4 for details).

Table 4: Knowledge of, and knowledge on where to obtain contraceptive methods during their adolescent years, reported by young mothers presenting at Bafoussam infant welfare clinics in 2016.

Contraceptive method	Knowledge of method			Knowledge on where to obtain method		
	No.	**%**	**95% CI**	**No.**	**%**	**95% CI**
Pills **(n = 332)**	266	80.1	75.3 – 84.2	221	66.6	61.2 – 71.6
Injectable contraceptives **(n = 328)**	260	79.3	74.4 – 83.4	185	56.4	50.8 – 61.8
Condom **(n = 334)**	329	98.5	96.3 – 99.5	314	94.0	90.8 – 96.2
Intrauterine contraceptive device **(n = 335)**	255	76.1	71.1 – 80.5	171	51.0	45.6 – 56.5
Implant **(n = 328)**	263	80.2	75.4 – 84.3	175	53.4	47.8 – 58.3
Emergency contraceptive pills **(n = 334)**	257	77.0	72.0 – 81.3	210	62.9	57.4 – 68.0
Periodic abstinence **(n = 335)**	303	90.5	86.7 – 93.3	-	-	-
All methods **(n = 336)**	188	56.0	50.5 – 61.3	125	37.2	32.1 – 42.6

Table 5 evaluates the knowledge and attitudes of participants on various aspects concerning the use of condoms during adolescence. In general, the participants reported a low level of knowledge on and poor attitude towards condoms use during their adolescence. There are however a few exceptions, for example 94.5% of the participants disagreed that condoms can be used more than once. It is also worth noting that only 36.7% and 47.7% of the participants respectively, disagreed that they would feel embarrassed buying condoms and that suggesting condoms to their partners would mean a lack of trust in them. In order evaluate whether a participant had adequate knowledge on various aspects of condom use, we considered all those with a score of 7 and above on the 15-item questionnaire, whose results are presented in table 5. Using this criterion, we observed that 3.7 % of participants had adequate knowledge on various aspects of condom use during adolescence

Table 5: Proportion of young mothers presenting at Bafoussam infant welfare clinics in 2016 reporting correct knowledge on various aspects of condom use during their adolescent years.

Proposition	No.	%	95% CI
	AGREE		
Condoms are an effective method of preventing pregnancy **(n = 201)**	7	3.5	1.4 – 7.0
A girl can suggest to her boyfriend that he use a condom **(n = 206)**	8	3.9	1.7 – 7.5
A boy can suggest to his girlfriend that he use a condom **(n = 205)**	7	3.4	1.4 – 6.9
Condoms are an effective way of protecting against HIV/AIDS **(n = 202)**	8	4.0	1.7 – 7.7
Condoms are suitable for casual relationships **(n = 209)**	7	3.4	1.4 – 6.8
Condoms are suitable for steady, loving relationships **(n = 201)**	5	2.5	0.8 – 5.7
If unmarried couples want to have sexual intercourse before marriage, they should use condoms **(n = 203)**	7	3.5	1.4 – 7.0
Condoms are an effective way of protecting against sexually transmitted diseases **(n = 202)**	6	3.0	1.1 – 6.4
It is okay for a girl to refuse sex if her partner refuses to use a condom **(n = 209)**	6	2.9	1.1 – 6.1
It is okay for a boy to refuse sex if his partner refuses to use a condom **(n = 209)**	4	1.9	0.5 – 4.8
	DISAGREE		
Condoms can be used more than once **(n = 201)**	190	94.5	90.4 – 97.2
It would be too embarrassing for someone like me to buy or obtain condoms **(n = 199)**	73	36.7	30.0 – 43.8
If a girl suggested using condoms to her partner, it would mean that she didn't trust him **(n = 197)**	94	47.7	40.6 – 54.9
Condoms reduce sexual pleasure **(n = 194)**	120	61.9	54.6 – 68.7
Condoms can slip off the man and disappear inside the woman's body **(n = 197)**	91	46.2	39.1 – 53.2
Adequate knowledge on various aspects of condom use **(n = 215)**	8	3.7	1.6 – 7.2

4.6 FACTORS ASSOCIATED WITH ADOLESCENT PREGNANCY

Table 6 is a summary of 2 by 2 contingency tables which present the measures of association between potential exposures and our outcomes (adolescent pregnancy and adolescent HIV infection) on bivariate analysis, using prevalence differences and prevalence ratios. The chi square test (and the fisher's exact test where any expected cell value is less than 5) was used to confirm if an observed association was statistically significant at the 95% confidence level.

Factors found to be associated with adolescent pregnancy on bivariate analysis included early sexual initiation (before the age of 16), large age disparities between sexual partners, low socio-economic status, lower level of education (less than 11 years of formal education), and no use of contraception (see table 6 for details).

Having found in the literature from secondary analysis of the 2011 demographic health survey in Cameroon that the mean age difference between males and females at their first marriage ranges between 5.8 and 5.9 years (United Nations, 2015), the age differences between sexual partners were categorised into < 6 years, and ≥ 6 years for bivariate analysis. Using this categorisation, we observe that those whose male sexual partners were at least 6 years older than themselves were about one and a half times more likely to have an adolescent pregnancy when compared to those whose sexual partners were within the 5-year range age difference.

Concerning contraception (essentially condoms), we observe that there is an association between those who did not use it at first sex and adolescent pregnancy. This association persists in those who failed to use it in subsequent sexual encounters and in those who used it only occasionally, when compared to those who used it at every sexual encounter.

We also observe that those who planned their first sexual encounter and willingly had sex were less likely to have an adolescent pregnancy than those who were coerced or had sex unexpectedly. Also, those participants who described their male sexual partners as employed seemed more likely to be pregnant as adolescents, than those whose male partners were unemployed. Furthermore, those who reported that they were in a serious relationship with their partners were more likely to be pregnant than those who were in a casual relationship. In addition, those who reported teachers as their main source of information on the topics of sexuality and the reproductive system seemed less likely to have an adolescent pregnancy.

In order to determine if the associations observed on bivariate analysis between exposures and our outcomes were independent, we did multivariate analysis using backward stepwise logistic regression, which consists of introducing all the variables associated with our outcomes (on bivariate analysis) into a multivariate model. Thereafter, every variable which is found not to be associated with the outcome is removed from the model; each at a time, starting with the least associated until all the variables remaining in the model are found to be associated with the outcome, at the 95% confidence level. See appendix one for details of the multivariate models.

Table 7 presents the exposures that were found to be independently associated with our outcomes (adolescent pregnancy and adolescent HIV infection) after multivariate analysis. We observe that,

those who reported having first sex before the age of 16, those who did not use contraception at first sexual experience, those whose male sexual partners were employed, those who described their relationship with their male sexual partners as serious, and those with a lower level of education, seemed to be at risk of adolescent pregnancy. Those citing their teachers as their main source of information on the topics of sexuality and the reproductive system seemed to be protected against adolescent pregnancy (See table 7 for details). Because the variables, 'willingness for sex' and 'readiness for sex'; as well as, 'subsequent contraception' and 'frequency of subsequent contraception', were highly correlated, only 'willingness for sex' and 'subsequent contraception' were used in the multivariate model.

4.7 FACTORS ASSOCIATED WITH ADOLESCENT HIV

As noted above in the comments on adolescent pregnancy, Table 6 presents relative (prevalence ratios) and absolute (prevalence differences) bivariate measures of association between potential exposures and the outcome of adolescent HIV.

Factors associated with HIV infection in adolescence included; no use of contraception (condoms) at first sex, no use of contraception on subsequent sexual encounters, and being coerced or having unplanned sex at first sexual encounter. Associations were also found between; those who reported the media as the main source of information on the topic of puberty, those who knew all the methods of contraception, those who knew where to obtain all the methods of contraception, and adolescent HIV infection on bivariate analysis, even though these did not attain statistical significance (see table 6 for details). In order to determine the most important independent predictors of adolescent HIV, multivariate analysis was done with exposure variables found to be associated with it on bivariate analysis, using backward stepwise logistic regression. See appendix one for details of the adolescent HIV multivariate models.

Table 7 presents the exposures that were found to be independently associated with adolescent HIV after multivariate analysis. We observe that those who reported coercion, the absence of contraception at sexual initiation, and the media as the main source of information on the topic of puberty, seemed to be at risk of adolescent HIV. Surprisingly, those who reported knowing where to obtain all the sources of contraception also seemed to be at risk of adolescent HIV infection (see table 7 for details).

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Table 6: Factors associated with adolescent pregnancy and adolescent HIV in young mothers presenting at Bafoussam infant welfare clinics in 2016.

	Adolescent Pregnancy						Adolescent HIV					
Exposure variable	**n**	**PR**	**95% CI**	**PD (%)**	**95% CI**	**P value**	**n**	**PR**	**95% CI**	**PD (%)**	**95% CI**	**P value**
Age (years) at first sex	335						338					
9 - 15		1.8	1.5 - 2.2	34.9	22.4 – 47.3	< 0.001		0.5	0.1 – 3.8	-1.8	-5.8 – 2.2	0.4
16 -19		-										
Age difference (years)	320						323					
≥ 6		1.6	1.2 – 2.1	19.9	8.7 – 31.1	< 0.001		1.4	0.4 – 5.2	1.1	-2.8 – 5.1	0.4
< 6		-										
Socio-economic status	327						330					
Low or very low income		1.5	1.2 – 1.9	20.0	8.6 – 31.3	< 0.001		1.2	0.4 – 4.1	0.7	-3.6 – 5.0	0.5
Middle or high income		-										
Provision of parental care												
Guardians	196	1.3	0.9 – 1.7	11.3	-5.7 – 28.2	0.1	198	1.4	0.2 – 11.6	0.9	-4.4 – 6.2	0.6
Mother or Father	283	1.2	0.9 – 1.5	7.7	-4.0 – 19.3	0.1	285	0.7	0.2 – 2.9	-0.9	-4.8 – 2.9	0.5
Both parents		-										
Parental control	224						228					
Sometimes or never knew whereabouts		1.3	0.9 – 1.9	12.1	-5.6 – 29.7	0.1		0.0	Undefined	-5.8	-9.1 – -2.5	0.1
Always knew whereabouts		-										
Discussion on sexuality	134						136					
Never discussed with any parent or guardian		1.0	0.7 – 1.5	1.2	-15.8 – 18.2	0.4		0.7	0.0 – 11.0	-0.5	-4.8 – 3.7	0.7
Discussed with both parents		-										
Main source of information on puberty												
Media	100	1.3	0.6 – 2.9	14.1	-40.2 – 68.4	0.5	101	10.9	1.5 – 76.5	30.3	-23.2 – 83.7	0.1
Friends	161	0.9	0.6 – 1.2	-7.3	-23.0 – 8.5	0.2	161	1.0	0.2 – 6.0	0.1	-5.4 – 5.6	0.7
Siblings	154	1.0	0.7 – 1.3	-1.7	-18.0 – 14.6	0.4	157	0.6	0.1 – 5.2	-1.4	-6.1 – 3.4	0.5
Teachers	208	0.8	0.6 – 1.1	-9.3	-22.9 – 4.2	0.09	210	1.2	0.3 – 5;1	0.5	-4.3 – 5.4	0.6
Parents		-										

Table 6: Continued												
	Adolescent Pregnancy						Adolescent HIV					
Exposure variable	**n**	**PR**	**95% CI**	**PD (%)**	**95% CI**	**P value**	**n**	**PR**	**95% CI**	**PD (%)**	**95% CI**	**P value**
Main source of information on sexuality and reproductive system												
Media	129	0.5	0.2 – 1.4	-25.3	-53.1 – 2.5	0.06	129	0.0	Undefined	-4.2	-7.9 – -0.6	0.6
Friends	171	1.1	0.8 – 1.5	5.9	-10.1 – 22.0	0.2	174	0.4	0.1 – 3.5	-2.5	-7.5 – 2.6	0.4
Siblings	156	1.0	0.7 – 1.4	-2.5	-20.8 – 15.7	0.4	156	1.2	0.3 – 6.1	1.0	-7.0 – 9.0	0.5
Teachers	232	0.8	0.6 – 1.0	-13.1	-25.8 – -0.4	0.02	232	0.6	0.2 – 2.5	-1.6	-6.3 – 3.1	0.4
Parents		-										
Contraception at first sex	334						337					
No		1.5	1.2 – 1.9	21.1	9.6 – 32.6	< 0.001		4.3	1.3 – 14.5	5.5	0.2 – 10.9	0.02
Yes		-										
Subsequent contraception	252						255					
No		1.4	1.1 – 1.9	17.9	3.5 – 32.3	0.01		4.5	1.0 – 19.7	5.4	-1.4 – 12.1	0.05
Yes		-										
Frequency of subsequent contraception	189						192					
Sometimes		1.5	1.1 – 2.1	17.4	2.8 – 32.0	0.01		3.6	0.3 – 39.5	2.1	-2.2 – 6.4	0.3
Always		-										
Relationship with partner	333						336					
Serious		1.3	1.0 – 1.6	12.0	0.9 – 23.2	0.02		0.4	0.1 – 1.9	-2.4	-5.9 – 1.1	0.1
Casual		-										
Level of Education	330						333					
High school or University		0.4	0.3 – 0.6	-33.8	-44.1 – -23.6	< 0.001		1.0	0.3 – 3.4	0.1	-3.9 – 4.0	0.6
Primary or Secondary		-										
STI Symptoms	335						338					
Yes		1.2	0.7 – 2.1	9.3	-11.4 – 30.0	0.2		0.8	0.1 – 6.0	-0.8	-8.7 – 7.1	0.6
No		-										
Readiness for sex	335						338					
Unexpected		1.4	1.1 – 1.8	16.9	3.3 – 30.6	0.01		7.8	2.4 – 25.8	9.8	1.8 – 17.8	0.001
Planned		-										

Table 6: Continued												
	Adolescent Pregnancy						Adolescent HIV					
Exposure variable	**n**	**PR**	**95% CI**	**PD (%)**	**95% CI**	**P value**	**n**	**PR**	**95% CI**	**PD (%)**	**95% CI**	**P value**
Willingness for sex	334						336					
Forced or persuaded		1.4	1.1 – 1.7	16.8	3.1 – 30.4.	0.01		8.1	2.4 – 26.6	10.2	2.0 – 18.5	0.001
Both willingly		-										
Knowledge of all contraception methods	331						334					
No		0.9	0.7 – 1.1	-7.0	-17.8 – 3.8	0.1		0.3	0.1 – 1.3	-3.4	-7.0 – 0.2	0.07
Yes		-										
Knowledge on where to obtain all contraception methods	320						334					
No		1.1	0.8 – 1.4	3.3	-8.0 – 14.6	0.3		0.4	0.1 – 1.1	-3.7	-8.2 – 0.7	0.06
Yes		-										
Adequate condom knowledge	210						213					
No		1.2	0.5 – 2.9	9.4	-27.9 – 46.7	0.5		Undefined	Undefined	5.4	2.3 – 8.5	0.2
Yes		-										
Employment status	335						338					
Employed		1.5	1.1 – 1.8	17.9	7.1 – 28.6	0.001		2.9	0.6 – 13.3	2.9	-0.6 – 6.4	0.1
Unemployed		-										

PR = Prevalence Ratio PD (%) = Prevalence Difference in percentage format

Table 7: Factors associated with adolescent pregnancy and adolescent HIV in young mothers presenting at Bafoussam infant welfare clinics in 2016 after controlling for confounding

	Adolescent Pregnancy			Adolescent HIV		
Exposure variable	**Adjusted POR**	**95% CI**	**P value**	**Adjusted POR**	**95% CI**	**P value**
Age (years) at first sex				–	–	–
9 – 15	5.7	2.7 – 12.1	< 0.001	–	–	–
16 -19	–			–	–	–
Relationship with partner				–	–	–
Serious	1.7	1.0 – 2.8	0.06	–	–	–
Casual	–			–	–	–
Employment status of male partner				–	–	–
Employed	1.7	1.0 – 3.0	0.04	–	–	–
Unemployed	–			–	–	–
Level of Education				–	–	–
High school or University	0.3	0.2 – 0.5	< 0.001	–	–	–
Primary or Secondary	–			–	–	–
Main source of information on sexuality and reproductive system				–	–	–
Teachers	0.5	0.3 – 0.9	0.02	–	–	–
Parents	–			–	–	–
Contraception at first sex						
No	2.1	1.2 – 3.6	0.01	5.8	1.4 – 24.3	0.02
Yes				–		
Main source of information on puberty	–	–	–			
Media	–	–	–	46.6	2.6 – 842.4	0.01
Parents, siblings, friends	–	–	–	–		
Knowledge on where to obtain all contraception methods	–	–	–			
No	–	–	–	0.2	0.1 –0.9	0.04
Yes	–	–	–	–		
Willingness for first sex	–	–	–			
Forced or persuaded	–	–	–	10.5	2.7 – 41.0	0.001
Both willingly	–	–	–	–		

POR = Prevalence Odds Ratio

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 PREVALENCE OF ADOLESCENT PREGNANCY AND ADOLESCENT HIV

The prevalence of adolescent pregnancy (47.8%) obtained in this study is similar to the national prevalence (49.4%) observed by Libite and Souaibou (2012) among 20 – 24-year-old youths, in the 2011 demographic and health survey. This trend is similar to that observed in neighbouring Congo Brazzaville and the Democratic Republic of Congo; both of which are characterised by a low contraceptive prevalence and adolescent premarital sex, just like in Cameroon (Fenn *et al*., 2015; UNFPA, 2012). Given that 50% of female adults in our setting are married before the age of 19 (Fomo and Evina, 2012), adolescent pregnancy may be desirable in this subpopulation. Assuming that many more people get married with age, and considering the fact that 79.5% of our study participants (aged 20 – 25 years) were in a marriage union, it is possible to conclude that our findings are consistent with those observed by Fomo and Evina, and that our study participants might equally desire adolescent pregnancy. However, we observe that 30% of Cameroonian mothers giving birth by age 20 did not desire to have a pregnancy then (Fomo and Ngono, 2012), and that 72.5% of female sexually active unmarried adolescents as well as 43% of married female adolescents interviewed in the 2011 demographic health survey in Cameroon reported not wanting a child in the following two years (WHO, 2016). This finding appeals for campaigns to render contraceptives available and accessible in a setting where contraceptive prevalence even among married adolescents is less than 15% (UNFPA, 2012) and there is evidence that at least some did want to delay pregnancy. Santelli *et al*., (2007) observed after analysing data from the 1995 and 2002 versions of the United States National Survey of Family Growth that 77% of the decline in pregnancy risk among 15 to 17-year-old adolescents, was attributable to improved contraceptive use. However, the relatively high rates of contraceptive use (77%) are inconsistent with the high rates of pregnancy observed in our study. Calves and Meekers (1997) observed a similar trend in a survey among youths in the capital of Cameroon, Yaoundé, wherein 58% of female adolescents had used condoms at least once, with 18% of them declaring to have had at least one abortion; even though the cost and the risk associated with such an act (considered illegal in Cameroon and hence often performed in clandestine and unsafe conditions) are likely to be prohibitive for the participants. This could mean that participants do not know how to use condoms, or do not use them with all sex acts and hence their optimal efficacy in this context could be compromised, even though they report high rates of use. A pointer from our study to support this assertion could be the very low proportion (3.7%) of those observed to have an

adequate knowledge on various aspects of condom use. Crosby *et al*., (2002) observed in a sample of 158 college students in the USA that up to 40% of participants surveyed, reported errors in condom use. If the hypothesis of inadequate skills to effectively use condoms is true for adolescents in our setting, then in addition to rendering contraceptives available and accessible, adolescents would need to be provided with the skills needed to use condoms. However, given that premarital sex is still a taboo in our study setting, there is need for further research to study potential factors that could affect the acceptability, availability and correct and consistent use of contraceptives among sexually active unmarried adolescents in Bafoussam.

The prevalence of adolescent HIV (3.3%) is higher than both the 2.8% prevalence observed in the general population of the West Region of Cameroon, and the 1.6% prevalence reported among youths in the same region; as well as the 2% national prevalence reported for adolescents, by Libite, and Barrère (2012b) in the 2011 demographic and health survey. This can be explained by the fact that our study sample consisted of sexually active adolescents (who are likely to be at a higher risk of HIV infection) than the random sample (representative of all adolescents) which was used in the 2011 demographic and health survey.

We also observe that the prevalence of adolescent HIV is 14 times less than that of adolescent pregnancy, even though we could expect a similar prevalence for both outcomes; given that condoms (the main method of contraception used by participants in our study) have a comparable efficacy in the prevention of both HIV and pregnancy (Davis and Weller, 1999). A possible explanation for this is that the population prevalence of adolescent HIV in our setting is quite low, hence inherently limiting the risk of HIV infection, while fecundity amongst adolescents is very high at 127 per thousand women (Libite & Souaibou, 2012), hence raising the inherent risk of pregnancy. Moreover, the risk of getting an HIV infection during an unprotected per vaginal act is at least 40 times less than that of getting pregnant for the same exposure (Patel *et al*., 2014; Colombo and Masarotto, 2000).

Nevertheless, we observe that this prevalence is high by international standards, as Cameroon is counted among the 15 countries with a high burden of adolescent HIV (*Slogrove et al*., 2017). Once more, this calls for sensitisation campaigns targeting both parents, adolescents and youths for the use of condoms in sexual encounters with partners whose HIV status is not known. Combining such campaigns with comprehensive sex education in schools could increase the consistent use of condoms among the 35% of inconsistent condom users, and initiate its use among the 23% of our study participants who never used condoms. This strategy could have a similar effect amongst the close to 50% of adolescent girls who declared that they either engaged in regular unprotected sex or inconsistent use of condoms, in a sample of 566 sexually active students from a government

secondary school in Yaoundé - Cameroon (Foumane *et al*., 2013). Tarkang (2014) observed in a survey of 210 female students attending secondary schools in Limbe - Cameroon that those who felt free to discuss condom use with their parents, or any adult member of the family, reported more condom use during sexual encounters than those who did not, indicating that family support could potentially boost condom use. Although those citing teachers as their main source of information on the topics of sexuality and the reproductive system seemed to be protected against adolescent pregnancy, this was not the case with adolescent HIV. A possible explanation to this is that teachers are likely to teach sexuality education from a shallow perspective, giving emphasis to abstinence only, at the expense of comprehensive sexuality education "which goes beyond a focus on prevention of pregnancy and sexually transmitted infections" (UNFPA, 2014: 6). A clue to support this assertion is the fact that almost all our study participants (including those citing teachers as their main source of information on the topics of sexuality and the reproductive system) had very little knowledge on the use of condoms. Similarly, even though most of our study participants had discussed sex related matters with at least one parent, it is likely that the use of condoms was never discussed. We therefore believe that comprehensive sexuality education could have a larger impact on the prevention of adolescent pregnancy and adolescent HIV. However, as stated above, there is need for further research to determine how these interventions could be introduced and tailored to our study setting

5.2 FACTORS ASSOCIATED WITH ADOLESCENT PREGNANCY

As stated earlier in the literature review, adolescents are particularly vulnerable to high-risk behaviours which expose them to unintended pregnancies and sexually transmitted infections including HIV. In this study, we observe that participants who had their first sexual experience early (before the age of 16); as well as those who described their male sexual partners as employed were independently at risk of adolescent pregnancy.

Shu *et al*., (2016) and Ma *et al*., (2009) in large surveys among Chinese students observed a similar association between sexual debut at an early age and unplanned pregnancy in females and female sexual partners of male participants in the study. Similarly, Diniz and Koller (2012), observed in a study involving 226 cases and 226 controls of low income adolescents selected from nine cities in Brazil, that cases (those with an adolescent pregnancy) initiated sex averagely 1.3 years earlier than the controls. This could possibly be explained by the fact that early sexual initiators in our setting probably got married early (Maswikwa *et al.*, 2015) had a liberal attitude towards pregnancy (Ekundayo *et al*., 2007), used condoms incorrectly, were likely to have been lured into risky sex through social media; or after watching adult rated films (Ankomah *et al*, 2011). Hattori and DeRose (2008), in a survey to find out young women's perceived ability to refuse sex in a sample of 1483

unmarried youths residing in the cities of Douala and Yaoundé (Cameroon), observed that the participants reported having a lower ability to refuse sex in their relationships with men who offer to pay their school fees (and provide financial assistance) than in relationships with men in positions of power over them. Furthermore, while having a child for an employed male sexual partner could be seen by our female study participants as a means of securing the relationship for an eventual marriage union (Preston-Whyte, 1994), it is also possible that the employed men could desire having a pregnancy given their financial viability and capacity to cater for the unborn child. Miettinen (2010), in a survey to investigate factors associated with voluntary childlessness in a sample of 1244 Finnish adults, observed that unemployed males were 6 times more likely to relinquish child bearing than their employed counterparts. Although Meekers and Calvès (1999), in a survey aimed at examining the gender differentials in adolescent sexual activity and reproductive health risks, in a sample of 1600 youths from the towns of Edea and Bafia (Cameroon), postulated that the study participants might likely use condoms to prevent pregnancy, rather than sexually transmitted infections, Smith (2004) observed in in-depth life-history interviews among Igbo youths in Nigeria, that men regarded women who requested condoms for birth control as promiscuous. Similarly, Murray *et al*., (2013) in a qualitative study to explore factors related to contraceptive use in a sample of 51 female African American youths attending reproductive health care clinics in the USA, observed that discontinuation of condoms was viewed as a symbol of trust and that attempts to reintroduce them into a trusting relationship were sending messages of potential infidelity to partners, even though many of the participants expressed fear of getting pregnant. Even though our study reveals that the absence of contraception at first sex is independently associated with adolescent pregnancy, it seems from this literature that participants in serious relationships are likely not to use condoms during sexual encounters. More importantly for women, being in a serious or secure relationship could be a prerequisite for child bearing (Tough, Vekved, and Newburn-Cook, 2012). Daniluk_and Koert. (2017) in a survey to identify the factors that determine the timing of childbearing in a sample of 500 childless Canadian women of childbearing age observed that 84% of the participants cited being in a stable relationship as a very important factor. Considering this from the perspective of our study, it is likely that those in a serious relationship were likely to consolidate their union through marriage, hence the desire for bearing children.

In addition, we observe that those who studied beyond secondary school; as well as those who stated teachers in comparison to parents, as the main source of information on the topics, sexuality and the reproductive system, seemed to be protected against adolescent pregnancy. Similarly, Macdowall *et al*., (2015) observed after analysing data from 3408 participants in a sub-sample of 17 – 24-year-old

youths from the third British national survey of sexual attitudes and lifestyles, that citing school teachers in comparison to other sources as the main source of information on sexual matters, was associated with not having first sex before the age of 16 and an increased likelihood of using a condom at first sex with a new partner, in the year preceding the study, while citing a parent was only associated with an increased likelihood of using a condom at first sex with a new partner in the year preceding the study. Thus, it is likely that those citing teachers in our study as their main source of information on the topics, sexuality and the reproductive system had a greater "responsible decision-making" (WHO, 2009: 3) capacity than those who did not. Responsible decision-making involves information gathering, critical thinking, as well as evaluating consequences of actions (WHO, 2009). Relating this to our study, it is likely that teachers played a critical role in providing information to participants on the variety of life choices (other than adolescent motherhood) available to them, helped them to think critically about their actions (such as early sex, engaging in age disparate relationships) as well as evaluate their consequences (such as undesired pregnancy, school drop-out) and decide whether it was worth taking them. The fact that information on the topic, sexuality and the reproductive system from parents in our study seems insufficient to protect participants from adolescent pregnancy could be related to the fact that direct parental discussion with children especially on sex related issues in our study setting is a taboo (Sidze, 2008).

While those who got educated beyond secondary school were less likely to get pregnant than those who did not, our study might not provide enough information or evidence to infer a causal association from this finding. For example, we cannot say for sure from our study whether schooling beyond the secondary level is protective against adolescent pregnancy or adolescent pregnancy limits schooling beyond the secondary level. Biddlecom *et al*., (2008) in a study to investigate the association between premarital sex and leaving school during adolescence, using survey data from national surveys in four African countries, observed that girls appear more vulnerable to leaving school once they engage in premarital sex. Also, Marteleto, Lam, and Ranchhod (2008), observed after analysing data from a cohort of 1393 students aged between 14 and 16 years, who were followed up between 2002 and 2005 in the Cape Area Panel Study (South Africa) that those who performed poorly on a literacy and numeracy examination (a measure of educational achievement) were more likely to become sexually active by 2005. Considering the association between low socioeconomic status, and poor academic performance (Muriungi, 2017), it is possible to conclude from the preceding literature that female adolescents with a low socioeconomic status are likely to perform poorly in school, initiate sex earlier (hence get pregnant) and drop out of school. Seen from this perspective, socioeconomic status might be more important in determining adolescent pregnancy, rather than educational status; in other words, those who have an adolescent pregnancy are likely not to complete secondary school.

However, as already observed from the British survey (Macdowall *et al*., 2015), the provision of sexual education in school is associated with later sexual debut and use of contraception; and, in addition, the proportions of those citing school as the main source of information on sexual matters, is similar among those with varied levels of socioeconomic status. In this light, it is possible to conclude that those who succeed to complete secondary education are likely to initiate sex later and use contraception irrespective of their socioeconomic status. Thus, the effect of socioeconomic status on adolescent pregnancy is likely to be mitigated in our context if access to secondary school is facilitated for girls, comprehensive sex education is taught in schools and those with special learning needs are identified and assisted.

However, given inadequacies in syllabus and the significant variability of the content (abstinence only, comprehensive sex education, abortion, incest, rape) and the context (Anglophone or Francophone sub-systems of education, language teachers or biology teachers, primary or secondary school teachers), in which sexual education is taught in Cameroon, adolescent students are likely to have knowledge gaps and lack skills on this topic (Nchia *et al*., 2013). This could also explain the very low levels of knowledge we observed among participants in this study, on various aspects of condoms and their use.

We believe that the high proportion of participants with at least primary education in our study, is probably explained by the fact that the government of Cameroon has instituted free primary education. If secondary and high school education is subsidised, then the 14% of those with primary education only in our study, as well as the 49% of those with only secondary education in our study could have the opportunity to further their education and benefit from the protective effect education against adolescent pregnancy.

From an absolute point of view, we observe that measures aimed at delaying first sexual intercourse until after the age of 15; as well as schooling beyond the secondary level could each potentially prevent over one third of adolescent pregnancies in our study population. Also, we observe that encouraging the use of contraception at first sexual encounter could potentially prevent 21.1% of adolescent pregnancies. Furthermore, we observe that adolescents who have sex with an employed male partner could be exposed to a 17.9% excess risk of pregnancy. While it might not be plausible to stop adolescents in our study setting not to have sex with employed male sexual partners, it seems reasonable to caution them against factors that might be associated with employed partners, notably the inability to negotiate sex or use condoms during sexual encounters. While having teachers as the main source of information on the topics of sexuality and the reproductive system seems to potentially protect only 12.8% of adolescents from pregnancy in our study setting, it is worth noting from the literature above that teachers, if capacitated, could have a potential role to play in delaying

first sex, and encouraging the use of contraception among sexually active adolescents in our study setting.

A possible explanation why exposure variables such as age difference and socioeconomic status were found to be associated with adolescent pregnancy only on bivariate analysis could be that they were confounded by the use (or absence) of contraception during sexual encounters. However, Pradhan, Wynter, and Fisher (2015), in a systematic review observed that the association between socioeconomic status and adolescent pregnancy was inconsistent in the nine studies they reviewed for information on this variable. We also note from the literature above that the use and frequency of contraception during sexual encounters is influenced by the mutual trust that the sexual partners have for each other. This could also explain why the association between the variables subsequent contraception, as well as frequency of subsequent contraception and adolescent pregnancy was found only on bivariate analysis. If we admit the inability of young women to refuse sex and negotiate the use of condoms from men who offer them financial assistance (Hattori and DeRose, 2008) as stated above, then it is possible that women in our study who were coerced into sex were likely to have employed partners. If this is true, then sexual coercion (or willingness for first sex) is likely to be confounded by the association between it and employment status and adolescent pregnancy and could explain why the association was only found to be significant on bivariate analysis. Nevertheless, Miller *et al*., (2014) in a survey of 3539 females aged 16 – 29 years attending family planning clinics in Pennsylvania, observed an independent associated between coercion and pregnancy.

Given that premarital sex and direct parental discussion with children especially on sex related issues are regarded as a taboo in our study setting (Sidze, 2008; Rwenge, 2004a), we think that those who claimed to have discussed with their parents on issues of sexuality received very shallow information that was insufficient to protect them against adolescent pregnancy. Similarly, because premarital sex is prohibited, many of the participants who claimed to know where they could obtain all the methods of contraception might not have had the opportunity to obtain and use them since they could be stigmatised for engaging in premarital sex. This is confirmed by the fact that only 36.7% of our study participants stated that they would not feel embarrassed to buy or obtain condoms. Because the questions on STI symptoms were broad and nonspecific, it is possible not to find any association between the presence of these symptoms and adolescent pregnancy. The absence of any associations between the exposures, parental care as well as parental control and our study outcomes could be because the questionnaire was not designed to collect enough information on these topics. For example, information on parental violence and provision of participants' basic needs during adolescence; all of which could affect parental care were not collected. Furthermore, while parental control and monitoring of adolescents could involve setting limits to their activities such as time

spent outside the home; enquiring about their whereabouts or any material things they saw them with (for example money and clothes), and following up their friendships (Waomi *et al*; 2011), our study depended only on information about their whereabouts to establish an association with our outcomes of interest.

5.3 FACTORS ASSOCIATED WITH ADOLESCENT HIV

We observe from this study that those who were coerced into sex, as well as those who did not use contraception (condoms) at first sex and those who cited the media as their main source of information on the topic of puberty, were at risk of contracting adolescent HIV. In addition, we also observed very low levels of reporting of anal sex in our study (which did not permit us to investigate any association between this exposure and adolescent HIV). This was probably because of the method by which information on anal sex was obtained (face to face interviews).

While there is evidence in the literature to show that forced sexual initiation contributes significantly to a woman's risk for HIV infection (Jewkes *et al*., 2010; Stockman, Lucea, and Campbell, 2013); Durevalla and Lindskog (2015) observed after analysing demographic health survey data from 10 Sub-Saharan African countries that this could be because violent men are more likely to become HIV positive and then infect their spouses, rather than women's risky sexual behaviour, or their inability to protect themselves from HIV.

Even though Lantos, Bajos, and Moreau (2016), through a French national sexual health survey of adolescents and young adults observed that more than a quarter of the participants who used condoms at sexual initiation discontinued them before the end of their relationship; Shafii *et al*., (2004) and Shafii, Stovel, and Holmes (2007), observed after analysing data from a national sample of American adolescents who were followed up between 1994 and 2002, that, those who used condoms at sexual debut did not report more sexual partners, were more likely to continue using them during subsequent sexual encounters, and experienced fewer sexually transmitted infections than their counterparts who did not use condoms at their sexual debut. Viewed in relation to our study, it therefore seems that adolescents who did not use condoms at first sex might be exposed to subsequent risky and unprotected sex, with HIV being a natural consequence.

If we also assume that the use of contraception, notably condoms on subsequent sexual encounters is dependent on its use at the debut of first sexual intercourse (Shafii *et al*., 2004; Shafii, Stovel, & Holmes, 2007) then we could possibly explain why the use of contraception on subsequent sexual encounters in our study is associated with adolescent HIV on bivariate analysis, but not on multivariate analysis.

Palmer and colleagues have described the relationship between "sexual competence" (Palmer *et al*., 2017: 91) at first sex and subsequent sexual health status using data from a sub-sample of 17 – 24-year-old youths in the third British national survey of sexual attitudes and lifestyles. According to their analyses, women who lacked sexual competence at first intercourse were more likely to report a sexually transmitted infection, an unplanned pregnancy in the past year and experience non-volitional sex. Palmer and colleagues define sexually competent youths at first sex as those who both willingly had sex, at the right time, used contraceptive protection, and described their decision to have sex as autonomous. Given that age at first sex is correlated with sexual competence (Palmer *et al*., 2017) and in relation to our study, it is possible to conclude that the participants with our study outcomes (adolescent pregnancy and adolescent HIV) were more likely to be sexually incompetent at sexual initiation.

Given that globalisation has facilitated access to various media including the internet and foreign television channels which tend to normalise risky adolescent sexual activity (Hoggart *et al*., 2010), it is not surprising that those citing the media as their main source of information on the topic of puberty are at risk of adolescent HIV infection.

Lack of knowledge on where to obtain contraceptives, which within the study context was almost always condoms was found to be associated with protection against HIV infection. The implication is that those who know where to obtain contraception (condoms) are more likely to contract HIV, but because our study is cross sectional making it difficult to establish the temporality between certain exposures (knowledge of all contraception sources) and our outcome of interest (adolescent HIV infection) from this type of study design, we want to believe that knowledge of all contraception sources (essentially condoms) is likely to be a consequence rather than a cause of adolescent HIV infection. It is probable that those who got infected with HIV received information (on the use of condoms and on where to obtain condoms) from health care providers in order to prevent themselves from getting re-infected with other strains of HIV and to protect others from getting HIV through sexual intercourse. In addition, they might also have been provided with information on other contraceptive methods to avoid unintended pregnancies, which carry a potential risk of mother to child transmission of HIV.

From an absolute perspective, we observe that 5.5 % of adolescent HIV infections could potentially be prevented if they had used condoms at their sexual intercourse debut, while up to 30% of adolescent HIV infections could potentially be prevented in those citing the media as their main

source of information on puberty in our study setting, if they were provided with other accurate and reliable sources of information on this topic. We also observe that a 10% excess risk of adolescent HIV infection could be prevented if sexual coercion is eliminated at first sexual experience in our study setting. Given the potential role teachers could play in providing reliable information and skills on the topics of puberty, sexuality, and the acquisition of sexual competence at first sexual intercourse, it seems necessary that these issues be adequately addressed in the training curriculum of teachers, with follow up during in-service training.

While adolescent pregnancy and adolescent HIV are likely to share related exposures, we would expect that associations observed between exposures such as early age at sexual initiation, citing teachers as main source of information on the topics of sexuality and reproductive system, and adolescent pregnancy, would also be observed with adolescent HIV; but this was not the case with our study. As already noted above, a possible explanation for this is the relatively low risk of getting an HIV infection during an unprotected per vaginal act, compared to that of getting pregnant for the same exposure. In addition, because, the prevalence of adolescent HIV infection in comparison to adolescent pregnancy is relatively low, most sexual acts in our study did not incur any risk at all (zero risk) of HIV infection (because there was no exposure to HIV during the sexual encounter). Thus, if there exists any association between these exposures and adolescent HIV, it will require a larger sample size to prove it. Contrary, to our expectations, we did not find any association between age disparate relationships (having a male sexual partner who was 6 years older) and adolescent HIV infection in our study. Street, Reddy and Ramjee (2015), had a similar finding after following up a cohort of 1355 adolescent and adult females who had age disparate relationships for a period of 24 months in South Africa.

Finally, even though adolescents in our study setting are more likely to be concerned about preventing pregnancy than sexually transmitted infections (Meekers and Calvès, 1999) and HIV, we observe from our study the use of condoms at first sexual intercourse debut has the potential of protecting adolescents against both outcomes. It is probable that a message like ***"Use condoms at every sexual encounter to prevent pregnancy"*** could be more acceptable and more likely adhered to by unmarried schooling adolescents, who are likely not to desire a pregnancy while in school (and who are more likely to perceive the immediate adverse effects of a pregnancy than HIV infection) than ***"Use condoms at every sexual encounter to prevent HIV infection",*** for many reasons. Firstly, the transformative effects of pregnancy on the adolescent's physical appearance are so evident that it cannot be hidden (unlike HIV infection contracted at same time as pregnancy) or concealed from

observers in the adolescent's environment, hence the stigma and shame (of raising a child if the adolescent is unmarried) associated with it. Secondly, because abortion is illegal in Cameroon, a pregnancy (and eventually childbirth) in a school going female adolescent almost always results in at least a temporary interruption of schooling (unlike HIV infection). However, my personal experience from health facilities and schools in Bafoussam indicates that HIV prevention activities have been disproportionately promoted at the expense of adolescent pregnancy, even though both are most likely to be transmitted through unprotected heterosexual per vaginal sex (Norton *et al*., 2012) in our study setting. For example, it is not uncommon to find that an adolescent or a youth visiting a health facility could be tested and counselled for HIV without receiving any information on pregnancy prevention. This trend has been intensified by a recent directive from the Ministry of Public Health in Cameroon that recommends that the HIV test be proposed to everyone who seeks the services of healthcare facilities. Norton *et al*., (2012) observed in a sample of undergraduate youths from the University of Connecticut in the USA that participants exposed to pregnancy or STI interventions, reported greater condom use and less risky sexual behaviour than those exposed to the HIV intervention. This by implication could mean changing the focus of prevention interventions from adolescent HIV to adolescent pregnancy or at least prompt a study to evaluate the effect of such a change in strategy, on condom use and risky sexual activity in our setting. Even though there have been fears that the promotion and distribution of condoms might increase adolescent sexual activity, findings from an empirical study have proven otherwise (Sellers, McGraw, and Mckinlay, 1994). In conclusion, since most adolescent sexual activities are likely to occur within the context of romantic relationships, it is important that they be taught to identify circumstances (such as dating alone, touching private parts) that could predispose them to risky or unplanned sexual activities (Coyle *et al*., 2014).

5.4 PREVALENCE OF VARIOUS RISK FACTOR VARIABLES

Though the condom is the method of contraception that was overwhelmingly used by more than 95% of participants in our study, we observe that 29% of our study participants did not use contraception during their first act of sexual intercourse while 23% never ever used contraception, with 12% being forced to have sex at their first sexual intercourse debut. We also observe that most of our study participants (80%) were either married or cohabiting, while 98% of them had male sex partners that were older. Furthermore, we observe a low divorce rate, and a very high prevalence (93%) of sexually transmitted infections reported during adolescence in our study participants.

That the condom is the most popular method of contraception used by adolescents is unsurprising. Martinez, Copen, and Abma (2011), observed in a national survey in the United States that 68% of

adolescents who reported using contraception at first sexual intercourse, used a condom, and that over 95% of those who ever reported the use of contraception, used condoms. They also, similarly to our study, observed that 11% of adolescents in the survey did not really want to have sex at their sexual intercourse debut, just like Koenig *et al*, (2004) who also observed a 14% prevalence of sexual coercion at first sex in a sample of 575 sexually active adolescents in Rakai – Uganda. However, contrary to our findings, only 22% and 2% of sexually active adolescents in the United States national survey above, never respectively used contraception at first sex nor ever used contraception in their lifetime. This could possibly be because societal norms are likely to be tolerant about the use of condoms, and they are likely to be more accessible to adolescents in the United States, than in our study setting.

Unlike in our study, only 74% of female youths who had sex before age 20 in the United States survey had male partners who were older than them. However, this tendency in age difference between partners observed in our study is similar to the regional and national trend in Cameroon (Population Council, 2009). The prevalence of sexually transmitted infections in our study is very high compared to the 38% observed by Forhan *et al*., (2009) in a national representative sample of American female adolescents. While we believe that the method (questionnaire based on symptoms) used to collect information on this variable is non-specific and could over-estimate the actual prevalence of sexually transmitted infections, we also think that because most of the male sexual partners in our study were much older than their female counterparts, this could constitute an additional risk. Moreover, the prevalence observed in our study is a cumulative measure which estimates the probability of a lifetime infection during adolescence unlike the point estimate observed in the American adolescents.

The marriage and divorce rates follow the national trend observed by Fomo and Evina (2012) in the 2011 demographic health survey for the age group of our study participants.

5.5 LIMITATIONS OF THIS STUDY

Given the small sample size of our study, its ability to detect associations between potential risk exposures and our study outcomes, especially for adolescent HIV was limited. While the minimum sample size for our survey was calculated at 373 (using estimations for adolescent HIV which was projected to yield a larger sample size compared to adolescent pregnancy) our actual study sample consisted of 340 participants. This was because 46 potential participants who declared to have been in a dating relationship during their adolescent years, never had sexual intercourse during adolescence. This eventuality was not anticipated during the conception of our study because

according to Fekadu (2001), as well as Blair and Madigan (2016), many youths initiate sex on a first date or shortly thereafter (within one month).

Secondly, we observed that many participants did not respond to questions on the topics concerning contraception and knowledge on the use of condoms, with non-response rates attaining 43% for some questions. While it may be difficult to explain these non-response rates, we think that many questions on these topics required some intellectual effort, especially for those referring to knowledge in adolescence, and most of the participants were not ready for that. It is also possible that some of the participants might have been embarrassed by these questions or that they did not want to waste time thinking about a response, when they should probably attend to the needs of their children, a priority for every mother. If those who did not respond differ significantly from those who did, then our conclusions based on observations from condom knowledge and contraception may be biased.

Furthermore, due to our study design, it may be difficult to determine the temporal sequence of exposure and outcome in some situations. Specifically, for the exposure level of education and outcome adolescent pregnancy, it is difficult to determine if participants who did not complete secondary school were likely to be pregnant; or if those who got pregnant while in school were likely not to complete secondary education.

Finally, given the differences in sexual norms and behaviours between participants from our study setting (Bafoussam) and those from other regions of Cameroon, notably the Centre and South regions (Rwenge, 2004a), it may be inappropriate to generalize the findings of our study.

5.6 CONCLUSIONS

Adolescent pregnancy prevalence is very high at 48%, while adolescent HIV infection prevalence is relatively low at 3.3% amongst sexually active adolescents, but higher than the general adult population HIV prevalence of 2.8% in the West Region.

Adolescents in Bafoussam who initiate sexual activity before the age of 16, use contraception (overwhelmingly condoms) at their sexual intercourse debut, are in a relationship with an employed partner and are in a serious relationship, are, in decreasing order of strength of association, more likely to get pregnant and respectively have a 34.9 %, 21.1%, 17.9 %, 12% potential excess risk of pregnancy.

Sexually active adolescents who have more than 10 years of formal education and those who cite their teachers as their main source of information on the topics of sexuality and the reproductive system, are less likely to get pregnant, with 33.8 % and 13.1 % of potential adolescent pregnancies are likely to be prevented if these exposures are removed.

Sexually active adolescents who cite the media as the main source of information on the topic of puberty, who were coerced into first sex and who did not use contraception at first sex, are more likely to be infected with HIV and have a 30.3 %, 10.2 % and 5.5 % respectively excess risk of HIV infection.

Factors not found to be associated with adolescent pregnancy and adolescent HIV infection, or associated only on bivariate analysis, in this study, were: having a male sexual partner who was 6 or more years older, low socio-economic status, subsequent contraception after first sexual encounter, not living with parents or living with a single parent during adolescence, absence of parental control during adolescence, not discussing about sexuality during adolescence with a parent, presence of sexually transmitted infections during adolescence and not having adequate knowledge on the use of condoms during adolescence.

5.7 RECOMMENDATIONS

Adolescents in Bafoussam should be encouraged and provided with skills to abstain from sex during early and middle adolescence through comprehensive sex education in schools. Teachers should be capacitated to teach comprehensive sex education to pupils and students in schools in Bafoussam during early adolescence, so that they acquire sexual competence before initiating sexual activity.

Access to condoms should be facilitated and adolescents in Bafoussam encouraged to use them consistently, to protect themselves against pregnancy, HIV and other STIs.

Adolescents in Bafoussam who experience coerced sex, whether within or outside of a sexual relationship, should be encouraged to seek healthcare support as soon as possible, so that post exposure prophylaxis for HIV can be initiated where necessary and legal action taken against offenders.

Access to secondary and high school education should be facilitated for adolescents in Bafoussam. One measure to promote access to education could be provision of subsidies to public and private schools, so that school fees can be reduced or abolished.

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APPENDICES

APPENDIX 1

Multivariate models – Factors associated with adolescent pregnancy and HIV

Table 7: Factors associated with adolescent pregnancy in young mothers presenting at Bafoussam infant welfare clinics in 2016 (Backward Logistic Regression Step 1).

Exposure variable	Adjusted OR	95% CI	P value
Age (years) at first sex			
9 - 15	5.0	2.1 – 12.0	< 0.001
16 -19	-		
Age difference (years)			
≥ 6	1.1	0.6 – 2.3	0.7
< 6	-		
Socio-economic status			
Low or very low income	0.8	0.4 – 1.6	0.5
Middle or high income	-		
Main source of information on sexuality and reproductive system			
Teachers	0.4	0.2 – 0.8	0.01
Parents, siblings, friends, media	-		
Contraception at first sex			
No	3.6	0.9 – 14.3	0.07
Yes	-		
Subsequent contraception			
No	1.7	0.8 – 3.7	0.2
Yes	-		
Relationship with partner			
Serious	2.7	1.3 – 5.3	0.01
Casual	-		
Level of Education			
High school or University	0.3	0.1 – 0.6	0.001
Primary or Secondary	-		
Willingness for first sex			
Forced or persuaded	1.6	0.7 – 3.7	0.3
Both willingly	-		
Employment status			
Employed	2.1	1.0 – 4.4	0.04
Unemployed	-		

Table 7: Factors associated with adolescent pregnancy in young mothers presenting at Bafoussam infant welfare clinics in 2016 (Backward Logistic Regression Step 2).

Exposure variable	Adjusted OR	95% CI	P value
Age (years) at first sex			
9 - 15	5.1	2.2 – 11.8	< 0.001
16 -19	-		
Socio-economic status			
Low or very low income	0.7	0.4 – 1.5	0.4
Middle or high income	-		
Main source of information on sexuality and reproductive system			
Teachers	0.5	0.2 – 0.9	0.03
Parents, siblings, friends, media	-		
Contraception at first sex			
No	3.6	0.9 – 13.8	0.07
Yes	-		
Subsequent contraception			
Sometimes	1.7	0.8 – 3.7	0.2
Always	-		
Relationship with partner			
Serious	2.7	1.3 – 5.4	0.01
Casual	-		
Level of Education			
High school or University	0.3	0.1 – 0.6	0.001
Primary or Secondary	-		
Willingness for first sex			
Forced or persuaded	1.6	0.7 – 3.6	0.3
Both willingly	-		
Employment status			
Employed	2.2	1.1 – 4.2	0.02
Unemployed	-		

Removed: ***Age difference***

Table 7: Factors associated with adolescent pregnancy in young mothers presenting at Bafoussam infant welfare clinics in 2016 (Backward Logistic Regression Step 3).			
Exposure variable	**Adjusted OR**	**95% CI**	**P value**
Age (years) at first sex			
9 - 15	5.2	2.3 – 12.0	< 0.001
16 -19	-		
Main source of information on sexuality and reproductive system			
Teachers	0.5	0.3 – 0.9	0.03
Parents, siblings, friends, media	-		
Contraception at first sex			
No	3.7	1.0 – 14.4	0.06
Yes			
Subsequent contraception			
Sometimes	1.5	0.7 – 3.3	0.3
Always	-		
Relationship with partner			
Serious	2.8	1.4 – 5.5	0.002
Casual	-		
Level of Education			
High school or University	0.3	0.1 – 0.5	< 0.001
Primary or Secondary	-		
Willingness for first sex			
Forced or persuaded	1.6	0.7 – 3.7	0.2
Both willingly	-		
Employment status			
Employed	2.2	1.1 – 4.2	0.02
Unemployed	-		

Removed: ***Socio-economic status***

Table 7: Factors associated with adolescent pregnancy in young mothers presenting at Bafoussam infant welfare clinics in 2016 (Backward Logistic Regression Step 4).

Exposure variable	Adjusted OR	95% CI	P value
Age (years) at first sex			
9 - 15	5.7	2.7 – 12.1	< 0.001
16 -19	-		
Main source of information on sexuality and reproductive system			
Teachers	0.6	0.3 – 1.0	0.03
Parents, siblings, friends, media	-		
Contraception at first sex			
No	2.0	1.2 – 3.5	0.01
Yes			
Relationship with partner			
Serious	1.9	1.1 – 3.3	0.02
Casual	-		
Level of Education			
High school or University	0.3	0.2 – 0.5	< 0.001
Primary or Secondary	-		
Willingness for first sex			
Forced or persuaded	1.7	0.9 – 3.4	0.1
Both willingly	-		
Employment status			
Employed	1.7	1.0 – 3.0	0.05
Unemployed	-		

Removed: ***Subsequent contraception***

Table 7: Factors associated with adolescent pregnancy in young mothers presenting at Bafoussam infant welfare clinics in 2016 (Backward Logistic Regression Step 5).

Exposure variable	Adjusted OR	95% CI	P value
Age (years) at first sex			
9 - 15	5.7	2.7 – 12.1	< 0.001
16 -19	-		
Main source of information on sexuality and reproductive system			
Teachers	0.5	0.3 – 0.9	0.02
Parents, siblings, friends, media	-		
Contraception at first sex			
No	2.1	1.2 – 3.6	0.01
Yes			
Relationship with partner			
Serious	1.7	1.0 – 2.8	0.06
Casual	-		
Level of Education			
High school or University	0.3	0.2 – 0.5	< 0.001
Primary or Secondary	-		
Employment status			
Employed	1.7	1.0 – 3.0	0.04
Unemployed	-		

Removed: **Willingness for first sex**

Table 7: Factors associated with adolescent HIV in young mothers presenting at Bafoussam infant welfare clinics in 2016 (Backward Logistic Regression Step 1).			
Exposure variable	**Adjusted OR**	**95% CI**	**P value**
Contraception at first sex No Yes	38.0 -	2.4 – 597.0	0.01
Subsequent contraception No Yes	1.2 -	0.2 – 9.1	0.9
Main source of information on puberty Media Parents, siblings, friends	132.1	3.7 – 4771.6	0.01
Willingness for first sex Forced or persuaded Both willingly	23.5 -	2.0 – 277.8	0.01
Knowledge of all contraception methods No Yes	0.1	0.0 – 3.6	0.2
Knowledge on where to obtain all contraception methods No Yes	0.5	0.1 – 4.2	0.5

Table 7: Factors associated with adolescent HIV in young mothers presenting at Bafoussam infant welfare clinics in 2016 (Backward Logistic Regression Step 2).			
Exposure variable	**Adjusted OR**	**95% CI**	**P value**
Contraception at first sex No Yes	6.0 -	1.4 – 25.3	0.01
Main source of information on puberty Media Parents, siblings, friends	59.5	3.1 – 1158.4	0.01
Willingness for first sex Forced or persuaded Both willingly	9.8 -	2.4 – 39.3	0.001
Knowledge of all contraception methods No Yes	0.4	0.0 – 4.0	0.5
Knowledge on where to obtain all contraception methods No Yes	0.4	0.1 – 2.1	0.3

Removed: ***Subsequent contraception***

Table 7: Factors associated with adolescent HIV in young mothers presenting at Bafoussam infant welfare clinics in 2016 (Backward Logistic Regression Step 3).			
Exposure variable	**Adjusted OR**	**95% CI**	**P value**
Contraception at first sex			
No	5.8	1.4 – 24.3	0.02
Yes	-		
Main source of information on puberty			
Media	46.6	2.6 – 842.4	0.01
Parents, siblings, friends			
Willingness for first sex			
Forced or persuaded	10.5	2.7 – 41.0	0.001
Both willingly	-		
Knowledge on where to obtain all contraception methods			
No	0.2	0.1 – 0.9	0.04
Yes			

Removed: ***Knowledge of all contraception methods***

APPENDIX 2

QUESTIONNAIRE (English and French)

Questionnaire (English)

Section 1: Socioeconomic and family characteristics

I would like to start by asking you a few questions about your family as well as your sexual and reproductive life when you were an adolescent, but can I just check first;		
1.1	What is your year of birth?	
1.2	What day and month were you born? Day.....Month.....	
1.3	How old were you at your last birthday? .....Years old	CROSS-CHECK WITH DATE OF BIRTH AND RECONCILE
1.4	Is this your first child? Yes.....No.....	If No, go to Question 1.6
1.5	How old is he/she? Age:.....Years	
1.6	How old is your eldest child? Age:.....Years	
1.7	Have you ever been pregnant before you gave birth to your first child? Yes.....No.....	
1.8	How old were you when you first became pregnant? Age:.....Years	If first pregnancy was before 20 years, go to Question 1.10
Now, let us think back to your adolescent years (I mean the period in your life before you turned 20 years of age)		
1.9a	When growing up as an adolescent did you ever have a boy friend? (By boy friend, I mean someone to whom you were sexually or emotionally attracted and whom you 'dated') Yes.....No.....	If Yes, go to Question 1.10
1.9b	Did you ever have sexual relations with any boy or any man, before you turned 20 years of age? Yes.....No.....	If NO then, not eligible for study - ***END QUESTIONNAIRE HERE.***
1.10	Now let me ask a few personal questions. Are you married? Yes.....No.....	If NO, go to Question 1.13
1.11	Has your marriage been solemnized at the Mayor's office? Yes.....No.....	
1.12	In which year and month did you solemnize your marriage.....	
1.13	Have you ever been married before? Yes.....No.....	If NO, go to Question 1.15
1.14	Are you divorced? Yes.....No.....	
1.15	Are you cohabiting (living with a man in the same house)? Yes.....No.....	If YES, go to Question 1.17
1.16	Are you single (living with your parents or other relations)? Yes.....No.....	
1.17	Have you ever-attended school? Yes.....No.....	If No, go to question 1.23
1.18	What is the highest level of schooling you completed? Primary Secondary High School University	
1.19	What class/form/grade/year did you complete at this school? Class Form Year	
1.20	Are you currently attending regular school, college or university? Yes.....No.....	If Yes, go to Question 1.23
1.21	In which year did you leave school, college or university? Year:....	

1.22	Why did you leave school? Failed exams No money Wanted to learn a trade Got pregnant Completed final year of school Completed the degree/diploma/certificate (university) Others: specify.....	
1.23	When you were growing up as an adolescent (I mean before you turned 20 years of age), which of these did you have in your home; Electricity Radio Running water TV Computer Microwave Washing machine	Electricity and/or Radio only = Low socio-economic status Running water and/or TV = middle socio-economic status Computer and/or Microwave and/or Washing machine = High socio-economic status
1.24	Now I have some questions about work. When growing up as an adolescent (By adolescent, I mean before you turned 20 years of age) did you ever work for pay? Yes.....No.....	If no go to question 1.27
1.25	How old were you when you started working for pay? .....Years	
1.26	What type of work did you do? (Probe for type of work)	
Now I have some questions about your family.		
1.27	When growing up as an adolescent (By adolescent, I mean before you turned 20 years of age), did you have the opportunity to live with your father in the same household? Yes.....No.....	If NO go to question 1.31
1.28	Did you find it difficult or easy to talk with your father about things that are important to you? Very easy Easy Average Difficult Very difficult	
1.30	Did you ever discuss sex-related matters with your father? Yes.....No.....	
	If YES Often or occasionally? Often Occasionally Never	
1.31	When growing up as an adolescent (By adolescent, I mean before you turned 20 years of age), did you have the opportunity to live with your mother in the same household? Yes.....No.....	If No, go to question 1.35

1.32	Did you find it difficult or easy to talk with your mother about things that are important to you? Very easy Easy Average Difficult Very difficult	
1.33	Did you ever discuss sex-related matters with your mother? Yes.....No.....	
	If YES Often or occasionally? Often Occasionally Never	
1.34	Did your mother have co-wives? Yes.....No..... If Yes, How many?.....	
1.35	Who was/were your guardian(s) in the household when you were growing up as an adolescent? Uncle Aunt Cousin Brother Sister Other (specify.....)	
1.36	Did you find it difficult or easy to talk with this person about things that are important to you? Very easy Easy Average Difficult Very difficult	
1.37	Did you ever discuss sex-related matters with this person? Yes.....No.....	
	If YES Often or occasionally? Often Occasionally Never	
1.38	How will you describe the level of control your parent(s)/guardian(s) had over you when you were growing up as an adolescent? She/he/They always knew where I was and what I was doing.... She/he/They sometimes knew where I was and what I was doing... She/he/They never knew where I was or what I was doing...	

Section 2: Sources of information on, and knowledge of reproductive health

*Young people learn about **puberty** - I mean the ways in which boys' and girls' bodies change during the adolescent years - from many sources. They may learn from teachers at school, parents, brothers and sisters, from friends, from doctors or they may learn from books, films and magazines. Now think back to the years when you were growing up as an adolescent (that is before you turned 20 years of age);*

Questions 2.1: What was the most important source of information for you on this topic?
Questions 2.2: And the second most important?
Circle the corresponding numbers under the columns for each question below.

		Question 2.1	Question 2.2	
		Most Important source of information	Second Most Important source of information	
	School teacher	01	01	
	Mother	02	02	
	Father	03	03	
	Brother	04	04	
	Sister	05	05	
	Uncle	06	06	
	Aunt	07	07	
	Friend	08	08	

*Now I want to ask you a similar question about sources of information on the **sexual and reproductive systems of men and women** - I mean where eggs and sperm are made and how pregnancy occurs. Now think back to the years when you were growing up as an adolescent (that is before you turned 20 years of age);*

Questions 2.3: What was the most important source of information for you on this topic?
Questions 2.4: And the second most important?
Circle the corresponding numbers under the columns for each question below.

		Question 2.3	Question 2.4	
		Most Important source of information	Second Most Important source of information	
	School teacher	01	01	
	Mother	02	02	
	Father	03	03	
	Brother	04	04	
	Sister	05	05	

	Uncle	06	06	
	Aunt	07	07	
	Friend	08	08	

Section 3: Knowledge and ever-use of contraceptive methods

I have some questions about contraception - I mean ways in which men and women can avoid getting pregnant. Think back to the years when you were growing up as an adolescent (that is before you turned 20 years of age). Tell me the methods of contraception you had heard of.
What other methods had you heard of?

CIRCLE CODE 1 [Yes (spontaneous)] *IN COLUMN 2 FOR EACH METHOD MENTIONED.*

FOR EACH METHOD IN THE TABLE NOT ALREADY MENTIONED, READ THE DESCRIPTION IN COLUMN 1 TO PROMPT RESPONDENT TO REMEMBER THE METHOD; AND THEN RECORD ANSWER (CIRCLE CODE 2 [Yes: prompted] *) IN COLUMN 2.*

FOR EACH METHOD THE RESPONDENT MENTIONED, ASK QUESTIONS IN COLUMN.3AND 4

	COLUMN.1	*COLUMN.2*	*COLUMN.3*	*COLUMN 4*
		Knowledge of Method	When did you hear about this method? ***If method heard when respondent was 20 years or older, do not ask question in column 4***	At that time, did you know any place or person where young people could obtain this method? Knowledge of Source
3.1	Pill Women can take a pill every day	1.Yes (spontaneous) 2.Yes (prompted) 3.No	Before I was 20years old. When I was 20 years or older	Yes No
3.2	Injection Women can have an injection every 2 or every 3 months	1.Yes (spontaneous) 2.Yes (prompted) 3.No	Before I was 20years old. When I was 20 years or older	Yes No

3.3	Condom A man can put a rubber device on his penis before intercourse	1.Yes (spontaneous) 2.Yes (prompted) 3.No	Before I was 20years old. When I was 20 years or older	Yes No
3.4	T – Tube/Intrauterin contraceptive devic A small device can be inserted in a woman's womb to prevent her from getting pregnant	1.Yes (spontaneous) 2.Yes (prompted) 3.No	Before I was 20years old. When I was 20 years or older	Yes No
3.5	Implant A Small device can be inserted in a woman's arm to prevent her from getting pregnant	1.Yes (spontaneous) 2.Yes (prompted) 3.No	Before I was 20years old. When I was 20 years or older	Yes No
3.6	Emergency Contraceptive Pills A woman can take pills soon after intercourse	1.Yes (spontaneous) 2.Yes (prompted) 3.No	Before I was 20years old. When I was 20 years or older	Yes No
3.7	Periodic Abstinence/Rhythm couple can avoid sex on days when pregnancy is most likely to occur.		Before I was 20years old. When I was 20 years or older	

Section 4: Heterosexual relationships

Let me ask a few questions about the men you have met in your life.	
If Questions 1.9a and 1.9b have not been asked, then ask:	
Did you ever date any other man before or after you met your first boy friend? Yes.....No....	If NO, GO TO QUESTION 4.4

Let us call this man A		GO TO QUESTION 4.2
If response to Questions 1.9a is YES, then ask:		
You told me that you had a boyfriend when growing up as an adolescent. Let me ask a few questions about this boy friend;		GO TO QUESTION 4.1
If response to Questions 1.9b is YES, then ask:		
You told me you had sexual relations with a man, while you were an adolescent. Let me ask a few questions about this man;		GO TO QUESTION 4.1
4.1	For now let us call this man A	
4.2	Was this the first boy (man) you dated in your life? Yes.....No.....	
4.3		
4.4	In which year did you start your relationship with A	
4.5	How old was *A* then? Age: .....years	
4.6	When you started your relationship was *A* single, married, divorced or separated? Single Engaged to be married Married Divorced Separated Widowed	
4.7	When you started your relationship with A, was A a full time student, working or neither? Full time student Working full time Working part time Unemployed	
4.8	During the time you were 'dating' A did you 'date' anyone else? Yes.....No..... If Yes; then say, We will call this second man B	
4.9	How would you describe your relationship with B? Was (is) it (a) a casual friendship; (b) a serious relationship but with no intention of marriage; or (c) an important relationship that might lead to marriage? (a) Casual (b) Serious (c) Important/might lead to marriage (d) Engaged to be married	

Ask questions 3.10 to 3.12 only If response to Question 1.9a is YES		
4.10	Did you and A have any physical contact, such as holding hands, hugging or kissing? Yes.....No.....	
4.11	Did you ever kiss A on the lips? Yes.....No.....	
4.12	Did A ever have sex with you? Yes.....No.....	
4.13	What kind of sex did A have with you? Oral: He put his penis in my mouth Vaginal: He put his penis in my vagina Anal: He put his penis in my anus	*MULTIPLE RESPONSES PERMITTED*
Think back to the first time you had vaginal sex with A		*ONLY ASK If RESPONSE TO QUESTION 4.13 INCLUDES VAGINAL SEX*
4.14	In which year did that happen? Year.....	
4.15	How old were you then? Age: .....years	
4.16	How old was A then? Age: .....years	
4.17	Would you say, *READ OUT* (a) I forced A to have intercourse against his will (b) I persuaded A to have intercourse (c) A persuaded me to have intercourse (d) A forced me to have intercourse against my will (e) We were both equally willing	
4.18	And would you say it was planned or unexpected? Planned Unexpected	
4.19	Did you or A do anything to avoid a pregnancy? Yes.....No.....	
4.20	What method did you use? Condom Pill Injection Withdrawal Safe period Other……	
4.21	Apart from that time, did you and A ever use a method to avoid pregnancy? Yes.....No.....	

4.22	IF YES Always or sometimes? Always Sometimes	
4.23	What method did you and A mostly use? Condom Pill Injection Withdrawal Safe period Other (specify)……..	*MULTIPLE RESPONSES PERMITTED*
4.24	Where did you or A mostly get this method? Shop Pharmacy Govt. Clinic/Health Centre/Hospital Private Doctor/Nurse/Clinic Friend Other (specify)…….. Don't know	*CHOOSE ONLY ONE*
4.25	Whose decision was it to use a method always/sometimes/never? Was it mainly your decision, A'S decision or a joint decision? My decision A's decision Joint decision	
4.26a	Did you ever become pregnant by *B*? Yes.....No.....	
4.26b	Were you ever concerned that you might get HIV/AIDS or another sexually transmitted disease from A? Yes.....No.....	
	If YES Very or somewhat? Very concerned Somewhat concerned Not concerned	
4.27	Were you able to do anything to reduce this risk? Yes.....No.....	*If NO, GO TO QUESTION 4.29*
4.28	What did you do? Use condoms We both tested ourselves for HIV and we were all HIV negative Other (specify).....	
Now think back to the first time you had anal sex with A - I mean the first time that he put his penis in your anus.		*ONLY ASK If RESPONSE TO QUESTION 4.13 INCLUDES ANAL SEX*
4.29	In which year did that happen? Year.....	
4.30	Would you say, *READ OUT* (a) I forced A to have intercourse against his will (b) I persuaded A to have intercourse (c) A persuaded me to have intercourse (d) A forced me to have intercourse (e) We were both equally willing	

4.31	And would you say it was planned or unexpected? Planned Unexpected	
4.32	On that first time did you or A do anything to prevent infection from HIV? Yes.....No.....	
4.33	What method did you use? Condom Lubrifiants We had ourselves tested in a hospital and we were both HIV negative Other (specify).....	
If respondent had mentioned the names of two men at the beginning of section 4, then ask;		
Please let me inquire about your relationship with B, GO TO QUESTION 4.34		
OR		
Apart from *A*, did you ever have any other boy friend or an intimate relationship another man before you turned 20 years of age? Yes.....No.....		*IF NO, GO TO SECTION 5*
How many of these other relationships had you had in total before you turned 20? Number.....		
We will call these men B, C, D, E, etc		
4.34	In which year did you meet *B*? Year...	
4.35	How old was *B* then?	
4.36	When you started your relationship was *B* single, married, divorced or separated? Single Engaged to be married Married Divorced Separated Widowed	
4.37	When you started your relationship with *B*, was *B* a full time student, working or neither? Full time student Working Neither	
4.38	How would you describe your relationship with *B*? Was (is) it (a) a casual friendship; (b) a serious relationship but with no intention of marriage; or (c) an important relationship that might lead to marriage? (a) Casual (b) Serious (c) Important/might lead to marriage	

	(d) Engaged to be married	
4.39	Did *B* ever have sex with you? Yes.....No.....	
4.40	What kind of sex did *B* have with you? Oral: He put his penis in my mouth Vaginal: He put his penis in my vagina Anal: He put his penis in my anus	*MULTIPLE REPONSES PERMITTED*
Think back to the first time you had vaginal sex with B		*ONLY ASK If RESPONSE TO QUESTION 4.40 INCLUDES VAGINAL SEX*
4.41	In which year did that happen? Year.....	
4.42	How old were you then? Age: .....years	
4.43	How old was *B* then? Age: .....years	
4.44	Would you say, *READ OUT* (a) I forced *B* to have intercourse against his will (b) I persuaded *B* to have intercourse (c) *B* persuaded me to have intercourse (d) *B* forced me to have intercourse against my will (e) We were both equally willing	
4.45	And would you say it was planned or unexpected? Planned Unexpected	
4.45	Did you or *B* do anything to avoid a pregnancy? Yes.....No.....	
4.46	What method did you use? Condom Pill Injection Withdrawal Safe period Other……	
4.47	Apart from that time, did you and *B* ever use a method to avoid pregnancy? Yes.....No.....	
4.48	IF YES Always or sometimes? Always	

	Sometimes	
4.49	What method did you and *B* mostly use? Condom Pill Injection Withdrawal Safe period Other (specify)……..	*MULTIPLE REPONSES PERMITTED*
4.50	Where did you or *B* mostly get this method? Shop Pharmacy Govt. Clinic/Health Centre/Hospital Private Doctor/Nurse/Clinic Friend Other (specify)…….. Don't know	*CHOOSE ONLY ONE*
4.51	Whose decision was it to use a method always/sometimes/never? Was it mainly your decision, *B*'s decision or a joint decision? My decision *B*'s decision Joint decision	
4.52	Did you ever become pregnant by *B*? Yes.....No.....	*IF NO, GO TO QUESTION 4.54*
4.53	What happened to the pregnancy? Abortion Miscarriage Live-birth	
4.54	Were you ever concerned that you might get HIV/AIDS or another sexually transmitted disease from *B*? Yes.....No.....	*If NO, GO TO QUESTION 4.56*
4.55	YES Very or somewhat? Very concerned Somewhat concerned Not concerned	
4.56	Were you able to do anything to reduce this risk? Yes.....No.....	
4.57	What did you do? Use condoms We both tested ourselves for HIV and we were all HIV negative Other (specify).....	
Now think back to the first time you had anal sex with B - I mean the first time that he put his penis in your anus.		*ONLY ASK If RESPONSE TO QUESTION 4.40*

		INCLUDES ANAL SEX
4.58	In which year did that happen? Year.....	
4.59	Would you say, *READ OUT* (a) I forced *B* to have intercourse against his will (b) I persuaded *B* to have intercourse (c) *B* persuaded me to have intercourse (d) *B* forced me to have intercourse (e) We were both equally willing	
4 .60	And would you say it was planned or unexpected? Planned Unexpected	
4.61	On that first time did you or B do anything to prevent infection from HIV? Yes.....No.....	
4.62	What method did you use? Condom Lubrifiants We had ourselves tested in a hospital and we were both HIV negative Other (specify).....	

Section 5: Condom knowledge and attitudes

People have different opinions about condoms. I will read out some opinions. For each one, I want you to think back to your adolescent years (before you turned 20) and tell me whether you agreed or disagreed, or whether you did not know. Let me also know if your opinion has changed since then.		Agree		Don't know/not sure		Disagree	
NOTE: ONLY ONE RESPONSE WITH THE SAME LETTER OF THE ALPHABET CAN BE CHOSEN FOR ANY ROW. FOR EXAMPLE: if for question 5.1 , the first response is1a, the other possible responses are; 1b, 2b, or 3b		Before I turned 20	Now	Before I turned 20	Now	Before I turned 20	Now
5.1	Male Condoms are an effective method of preventing pregnancy	1a	1b	2a	2b	3a	3b
5.2	Male Condoms can be used more than once	1a	1b	2a	2b	3a	3b
5.3	A girl can suggest to her boyfriend that he use a condom	1a	1b	2a	2b	3a	3b
5.4	A boy can suggest to his girlfriend that he use a condom	1a	1b	2a	2b	3a	3b
5.5	Condoms are an effective way of protecting against HIV/AIDS	1a	1b	2a	2b	3a	3b

5.6	Condoms are suitable for casual relationships	1a	1b	2a	2b	3a	3b
5.7	Condoms are suitable for steady, loving relationships	1a	1b	2a	2b	3a	3b
5.7	It would be too embarrassing for someone like me to buy or obtain condoms	1a	1b	2a	2b	3a	3b
5.9	If a girl suggested using condoms to her partner, it would mean that she didn't trust him	1a	1b	2a	2b	3a	3b
5.10	Condoms reduce sexual pleasure	1a	1b	2a	2b	3a	3b
5.11	Condoms can slip off the man and disappear inside the woman's body	1a	1b	2a	2b	3a	3b
5.12	If unmarried couples want to have sexual intercourse before marriage, they should use condoms	1a	1b	2a	2b	3a	3b
5.13	Condoms are an effective way of protecting against sexually transmitted diseases	1a	1b	2a	2b	3a	3b
5.14	It is okay for a girl to refuse sex if her partner refuses to use a condom	1a	1b	2a	2b	3a	3b
5.15	It is okay for a boy to refuse sex if her partner refuses to use a condom	1a	1b	2a	2b	3a	3b

Section 6: HIV and sexually transmitted infections

In your adolescent years (before you turned 20), did you ever experience any of the following symptoms?

6.1

1. Pain, burning or stinging when passing urine
2. Passing urine more often than usual
3. Genital wart / lump
4. Genital ulcer / sore
5. Abnormal vaginal discharge
6. Unpleasant odour associated with vaginal discharge
7. Vaginal pain during sex
8. Abnormal bleeding between periods
9. Bleeding after sex (not during a period)
10. Lower abdominal or pelvic pain (not related to periods)
11. None of these

6.2

Have you ever been tested for HIV at any time in your life before you got pregnant for your first child?

□ Yes

□ No

If YES, what was the test result? Positive.....Negative.....

Which year was that? Year.....

IF HIV POSITIVE, GO TO QUESTION 6.4

6.3

How many children do you have? Number.....Please let me know if you were tested for HIV when you were pregnant for them.

IF RESPONDENT DECLARES TO BE HIV POSITIVE TO ANY OF THE QUESTIONS BELOW, GO TO QUESTION 6.4

□ First child: Year of Birth.....Tested for HIV during that pregnancy? Yes....No.....

If YES what was the HIV Test Result? Positive.....Negative.....

□ Second child: Year of Birth.....Tested for HIV during that pregnancy? Yes....No.....

If YES what was the HIV Test Result? Positive.....Negative.....

□ Third child: Year of Birth.....Tested for HIV during that pregnancy? Yes....No.....

If YES what was the HIV Test Result? Positive.....Negative.....

□ Fourth child: Year of Birth.....Tested for HIV during that pregnancy? Yes....No.....

If YES what was the HIV Test Result? Positive.....Negative.....

6.4

In which health facility did you attend antenatal visits during your last pregnancy?

Name of health facility.....

If the respondent has declared HIV positive to any of the questions above, then ask,

6.5

Are you already on antiretroviral treatment? Yes.....No.....

Questionnaire (French)

Section 1: Paramètres socioéconomiques et familiaux

Je vais commencer par vous poser quelques questions concernant votre famille, votre vie sexuelle et reproductive quand vous étiez adolescente, mais avant ça permettez-moi de vérifier une chose;		
1.1	Quelle est votre année de naissance ?.....	
1.2	Quel jour et quel mois, êtes-vous née? Jour.....Mois.....	
1.3	Quel âge avez-vous atteint à votre dernier anniversaire ?.....Ans	***VERIFIER LA COHERENCE AVEC LA DATE NAISSANCE, RETABLIR SI NECESSAIRE***
1.4	Est-ce votre premier enfant ? Oui.....Non.....	Si Non, allez à la Question 1.6
1.5	Quel âge a-t-il/elle? Age:..... Ans	Si l'âge de l'enfant indique que sa mère l'accouché avant l'âge de 20 ans, allez à la Question 1.10; si non, allez à la Question 1.7.
1.6	Quel âge a votre enfant le plus âgé? Age:..... Ans	
1.7	Avant l'accouchement de votre premier enfant aviez-vous déjà été enceinte ? Oui.....Non.....	Si Non, allez à la Question 1.9a
1.8	Quel âge avez-vous à votre toute première grossesse? Age:..... Ans	Si la première grossesse était avant l'âge de 20 ans, allez à la Question 1.10
Parlons de votre adolescence (Je veux dire la période de votre vie avant que vous n'ayez 20 ans)		
1.9a	Pendant votre adolescence, avez-vous déjà eu un copain? C'est-à-dire, avez-vous déjà connu quelqu'un qui vous a attiré sexuellement ou affectivement et avec qui vous êtes sorti? Oui.....Non.....	Si Oui, allez à la Question 1.10
1.9b	Avez-vous eu des relations sexuelles avec un garçon ou un homme avant d'avoir 20 ans ? Oui.....Non.....	Si NON, alors, pas éligible pour l'étude. ***TERMINER LE QUESTIONNAIRE ICI***
1.10	Permettez mois de vous poser quelques questions personnels. Vous êtes mariée? Oui.....Non.....	Si Oui, allez à la Question 1.13
1.11	Votre mariage a-t-elle été célébré à la Mairie? Oui.....Non.....	
1.12	En quelle année et quel mois avez-vous célébré votre mariage.....	
1.13	Avez-vous déjà été mariée avant? Oui.....Non.....	Si Non, allez à la Question 1.15
1.14	Vous êtes divorcée? Oui.....Non.....	
1.15	Cohabitez-vous (vivre avec un copain dans la même maison)? Oui.....Non.....	Si Oui, allez à la Question 1.17
1.16	Etes-vous célibataire ? (vivre avec les parents ou d'autrerelations)? Oui.....Non.....	

1.17	Avez-vous été à l'école? Oui.....Non.....	Si Non, allez à la Question 1.23
1.18	Quel est le plus haut niveau d'études que vous avez atteint ? Primaire Secondaire	
1.19	Quelle est la dernière classe que vous avez fréquentée dans cet établissement scolaire ? Classe Année	
1.20	Actuellement, fréquentez-vous régulièrement une école, un lycée ou une université ? A temps complet ou à temps partiel? Oui.....Non.....	Si Oui, allez à la Question 1.23
1.21	En quelle année avez-vous quitté l'école, le lycée ou l'université ? Année……..	
1.22	Pourquoi avez-vous quitté l'école? J'ai échoué à l'examen Pas d'argent Je voulais apprendre un métier J'étais enceinte J'ai terminé mes études à l'école J'ai terminé mes études universitaires Autres: (préciser.).....	
1.23	Pendant votre adolescence (Je veux dire la période de votre vie avant que vous n'ayez 20 ans), laquelle (lesquelles) des choses suivantes avez-vous eu dans votre maison; Electricité Radio L'eau du robinet Téléviseur Ordinateur Réchaud a micro-onde Machine à laver	Electricité et/ou Radio = Niveau socio–économique bas ; L'eau du robinet et/ou Téléviseur = Niveau socio–économique moyen ; Ordinateur et/ou Réchaud a micro-onde et/ou Machine à laver = Niveau socio–économique élevé
1.24	Je vais maintenant vous poser quelques questions sur le travail : Pendant votre adolescence (Je veux dire la période de votre vie avant que vous n'ayez 20 ans), avez-vous eu un emploi rémunéré? Oui.....Non.....	Si Non, allez à la Question 1.27
1.25	A quel âge avez-vous eu votre premier emploi rémunéré ? .....Ans	

1.26	Quel genre de travail faisiez-vous? APPROFONDIR.....	
Je vais maintenant vous poser quelques questions sur votre famille		
1.27	Pendant votre adolescence (Je veux dire la période de votre vie avant que vous n'ayez 20 ans), avez-vous vécu avec votre père dans la même maison? Oui.....Non.....	Si Non, allez à la Question 1.31
1.28	Parler avec votre père des choses qui vous étaient importantes semblait … Très facile Facile Assez difficile Difficile Très difficile	
1.30	Avez-vous déjà discuté de questions liées à la sexualité avec votre père? Oui.....Non.....	
	Si Oui, souvent ou occasionnellement? Souvent Occasionnellement Jamais	
1.31	Pendant votre adolescence (Je veux dire la période de votre vie avant que vous n'ayez 20 ans), avez-vous vécu avec votre mère dans la même maison? Oui.....Non.....	Si Non, allez à la Question 1.35
1.32	Parler avec votre mère des choses qui vous étaient importantes semblait … Très facile Facile Assez difficile Difficile Très difficile	
1.33	Avez-vous déjà discuté de questions liées à la sexualité avec votre mère? Oui.....Non.....	
	Si Oui, souvent ou occasionnellement? Souvent Occasionnellement Jamais	
1.34	Votre mère, a-t-elle eu des coépouses? Oui.....Non..... Si Oui, Combien?.....	
1.35	Pendant votre adolescence, qui était votre parrain dans la maison ou vous viviez? Oncle Tante Cousin	

	Frère Sœur Autre (préciser.....)	
1.36	Parler avec cette personne des choses qui vous étaient importantes semblait … Très facile Facile Assez difficile Difficile Très difficile	
1.37	Avez-vous déjà discuté de questions liées à la sexualité avec cette personne? Oui.....Non.....	
	Si Oui, souvent ou occasionnellement? Souvent Occasionnellement Jamais	
1.38	Comment pouvez-vous décrire, le niveau de contrôle que vos parent(s)/parrains avaient sur vous pendant votre adolescence? Elle/Il/Ils savait/savaient toujours où je me trouvais et ce que je faisais.... Elle/Il/Ils savait/savaient parfois où je me trouvais et ce que je faisais.... Elle/Il/Ils savait/savaient jamais où je me trouvais et ce que je faisais....	

Section 2 : Santé de reproduction : sources d'information et connaissances

Les jeunes ont beaucoup de sources d'information sur la puberté - c'est-à-dire les transformations du corps des garçons et des filles à l'adolescence. Ils peuvent s'informer auprès des enseignants, des parents, des frères et sœurs, des amis, des médecins, ou dans les livres, les films et les magazines. Maintenant, repensez à votre adolescence (c'est-à-dire, avant que vous n'ayez 20 ans)
Questions 2.1: Quelle a été votre principale source d'information sur la puberté ?
Questions 2.2: Et votre deuxième source d'information ?
Entourer le numéro correspondant dans la colonne de chaque une des questions

	Question 2.1	Question 2.2	
	Principale source d'information sur la puberté	Deuxième source d'information	
Enseignant	01	01	
Mère	02	02	
Père	03	03	
Frère	04	04	
Sœur	05	05	
Oncle	06	06	
Tante	07	07	
Amis	08	08	

Maintenant, je veux vous poser une question similaire à propos de sources d'information sur ***les systèmes reproductifs des hommes et des femmes*** *- Je veux dire, là où les œufs et les spermatozoïdes sont fabriqués, comment une grossesse survient et comment les garçons doivent traiter les filles et vice-versa. Maintenant, repensez à votre adolescence (c'est-à-dire, avant que vous n'ayez 20 ans)*
Questions 2.3: Quelle a été votre principale source d'information sur ce sujet ?
Questions 2.4: Et votre deuxième source d'information ?
Entourer le numéro correspondant dans la colonne de chaque une des questions

	Question 2.3	Question 2.4	
	Principale source d'information	Deuxième source d'information	
Enseignant	01	01	
Mère	02	02	
Père	03	03	
Frère	04	04	
Sœur	05	05	
Oncle	06	06	
Tante	07	07	
Amis	08	08	

Section 3: Connaissance et utilisation des méthodes contraceptives

Je voudrais vous poser quelques questions sur la contraception - c'est-à-dire les méthodes permettant d'éviter une grossesse. Maintenant, repensez à votre adolescence (c'est-à-dire, avant que vous n'ayez 20 ans) Dites-moi les méthodes de contraception que vous aviez entendu parler ? Quelles autres méthodes aviez-vous entendu parler ?

POUR CHAQUE METHODE MENTIONNEE, ENTOURER LE CODE 1 DANS LA COLONNE 2.

POUR CHAQUE METHODE QUI N'A PAS ETE MENTIONNEE SPONTANEMENT, LIRE SA DESCRIPTION DANS LA COLONNE 1 ET INDIQUER LA REPONSE DANS LA COLONNE 2.

POUR CHAQUE METHODE CONNUE, POSER LES QUESTIONS FIGURANT DANS LES COLONNES 3ET 4.

	COLONNE1	*COLONNE.2*	*COLONNE.3*	*COLONNE 4*
		Connaissance de la méthode	Quand avez-vous entendu parler de cette méthode? ***Si la méthode a été entendue lorsque le répondant avait 20 ans ou plus, ne pas poser la question sur la colonne 4.***	A cette époque, connaissiez-vous un endroit ou une personne chez qui les jeunes pouvaient obtenir cette méthode ? Connaissance d'une source de la méthode
3.1	Pilule Les femmes peuvent prendre une pilule tous les jours.	1.Oui (spontané) 2.Oui (suggéré) 3. Non	Avant que je n'aye 20 ans Lorsque j'avais 20 ans ou plus	Oui Non
3.2	Contraceptifs injectables Les femmes peuvent recevoir une injection tous les 2 ou 3 mois	1.Oui (spontané) 2.Oui (suggéré) 3. Non	Avant que je n'aye 20 ans Lorsque j'avais 20 ans ou plus	Oui Non

3.3	Préservatif Un homme peut mettre un capuchon en caoutchouc sur son pénis avant d'avoir un rapport sexuel	1.Oui (spontané) 2.Oui (suggéré) 3. Non	Avant que je n'aye 20 ans Lorsque j'avais 20 ans ou plus	Oui Non
3.4	Stérilet Un petit dispositif peut être inséré dans l'utérus d'une femme pour l'empêcher de tomber enceinte	1.Oui (spontané) 2.Oui (suggéré) 3. Non	Avant que je n'aye 20 ans Lorsque j'avais 20 ans ou plus	Oui Non
3.5	Implant Un petit appareil peut être inséré dans le bras d'une femme pour l'empêcher de tomber enceinte	1.Oui (spontané) 2.Oui (suggéré) 3. Non	Avant que je n'aye 20 ans Lorsque j'avais 20 ans ou plus	Oui Non
3.6	« Pilule du lendemain » Une femme peut prendre des pilules peu de temps après avoir eu un rapport sexuel	1.Oui (spontané) 2.Oui (suggéré) 3. Non	Avant que je n'aye 20 ans Lorsque j'avais 20 ans ou plus	Oui Non
3.7	Abstinence périodique Un couple peut éviter d'avoir des rapports sexuels les jours où la probabilité d'une grossesse est maximale		Avant que je n'aye 20 ans Lorsque j'avais 20 ans ou plus	

Section 4: Relations hétérosexuelles

Je vais vous poser des questions sur les hommes que vous avez eu a rencontrez dans votre vie.		
Si les Questions 1.9a et 1.9b n'ont pas été posée, demandez:		
Aviez-vous eu à sortir avec un home avant ou après que vous n'ayez rencontré votre premier copain. Oui.....Non....		SI NON, ALLEZ A LA QUESTION 4.4
Appelons cet homme A		ALLEZ A LA QUESTION 4.2
Si la réponse à la Question 1.9a c'est Oui, demandez:		
Vous m'avez dit que pendant votre adolescence vous aviez un copain. Je vais vous poser quelques questions à propos de lui;		ALLEZ A LA QUESTION 4.1
Si la réponse à la Question 1.9b c'est Oui, demandez:		
Vous m'avez dit que pendant votre adolescence vous aviez eu des relations sexuelles avec un homme. Je vais vous poser quelques questions sur à propos de lui		ALLEZ A LA QUESTION 4.1
4.1	Appelons cet homme A	
4.2	Ce garçon (homme), est ce qu'il était le premier garçon (home) que vous aviez sortir dans votre vie? Oui.....Non.....	
4.3		
4.4	En quelle année aviez-vous rencontrée A?	
4.5	Quel âge avait *Aà* cette époque? Age: .....ans	
4.6	Quand votre relation avec *A*a débuté, était-il célibataire, marié, divorcé, ou séparé? Célibataire	

	Fiancé Marié Divorcé Séparé Veuf	
4.7	Quand votre relation avec A a débuté, était-il étudiant à temps complet, travaillait-il, ou ni l'un, ni l'autre ? Etudiant à temps complet Travail à plein temps Travail à temps partiel Sans-emploi	
4.8	Lorsque vous sortiez avec *A* aviez-vous sorti avec une autre personne? Oui.....Non.....	
4.9	Comment décririez-vous votre relation avec A ? a) C'était (c'est) une amitié passagère? ; b) une relation sérieuse, sans intention de mariage; ou c) une relation importante susceptible de déboucher sur un mariage ? a)Passagère b) Sérieuse c) Importante/mariage éventuel d) Fiancés en vue d'un mariage	
Poser les questions 3.10 to 3.12 seulement si la réponse à la Question 1.9a est Oui		
4.10	Est-ce que *A* et vous avez des eu contacts physiques ? Par exemple, est-ce que vous vous teniez les mains, est-ce que vous vous preniez dans les bras ou est-ce que vous vous embrassez ? Oui.....Non.....	
4.11	Avez-vous déjà embrassé *A* sur la bouche? Oui.....Non.....	
4.12	*A*; avait-il eu des rapports sexuels avec vous? Oui.....Non.....	
4.13	*A*; quel type de rapports sexuels avait-il eu avec vous? Oral: Il mettait son pénis dans ma bouche Vaginal: Il mettait son pénis dans mon vagin Anal: Il mettait son pénis dans mon anus	*PLUSIEURS REPONSES PERMIS*
Repensez à la premier fois que vous avez eu des rapports sexuels vaginal avec A		*DEMANDEZ SEULEMENT SI LES RAPPORTS VAGINAL SONT INCLUS DANS LA REPONSE A LA QUESTION 4.13*

4.14	C'était en quelle année? Année.....	
4.15	Quel âge aviez-vous à cette époque? Age: .....ans	
4.16	*A;* quel âge avait-il à cette époque? Age: ..... ans	
4.17	Diriez-vous ? *LIRE A HAUTE VOIX* (a) J'ai contraint *A* à avoir un rapport sexuel contre sa volonté (b) J'ai persuadé *A* d'avoir un rapport sexuel (c) *A* m'a persuadé d'avoir un rapport sexuel (d) *A* m'a contraint à avoir un rapport sexuel (e) Nous en avions tous les deux envie	
4.18	Diriez-vous que ce rapport sexuel était prévu ou inattendu ? Prévu Inattendu	
4.19	Est-ce que *A* ou vous avez fait quelque chose pour éviter une grossesse ? Oui.....Non.....	
4.20	Quelle méthode avez-vous utilisé ? Préservatif Pilule Contraceptifs injectables Technique du retrait Période d'infécondité Autre (Préciser)……	
4.21	A part cette fois, *A* et vous avez-vous déjà utilisé une méthode pour éviter la grossesse ? Oui.....Non.....	
4.22	Si OUI, Toujours ou Parfois ? Toujours Parfois	
4.23	Quelle méthode *A* et vous avez-vous principalement utilisé ? Préservatif Pilule Contraceptifs injectables Technique du retrait Période d'infécondité Autre (Préciser)……	*PLUSIEURS REPONSES POSSIBLES*
4.24	Qui vous a fourni cette méthode, à vous ou à *A* ? Magasin Pharmacie Dispensaire/hôpital public Médecin/infirmière libéral(e)/établissement privé Ami(e) Autre (Préciser)…….. Ne sais pas	*CHOISSISSEZ UNE SEULE REPONSE*
4.25	Qui a décidé d'utiliser une méthode de contraception (toujours/quelquefois/jamais)? Vous-même, *A,* ou vous deux ? Moi	

	Nous deux	
4.26	Avez-vous déjà eu peur d'attraper le SIDA ou une autre maladie sexuellement transmissible en ayant des rapports sexuels avec *A* ? Oui.....Non.....	
	Si Oui, Très peur ou Assez peur ? Très peur Assez peur Pas du tout	
4.27	Avez-vous pu faire quelque chose pour réduire le risque d'infection ? Oui.....Non.....	*SI NON, ALLEZ A LA QUESTION4.29*
4.28	Qu'avez-vous fait ? J'ai utilisé un préservatif Nous avons fait le test de dépistage du VIH; *A* et moi, nous étions négatifs Autre (préciser)…….	
Repensez à la première fois que vous avez eu des rapports sexuels anal avec A – Je veux dire, la première fois qu'il a mis son pénis dans votre anus.		*DEMANDER SI LA LE RAPPORT ANAL EST INCLU DANS LA REPONSE A LA QUESTION 3.13*
4.29	C'était en quelle année? Année.....	
4.30	Diriez-vous ? *LIRE A HAUTE VOIX* (a) J'ai contraint *A* à avoir un rapport sexuel contre sa volonté (b) J'ai persuadé *A* d'avoir un rapport sexuel (c) *A* m'a persuadé d'avoir un rapport sexuel (d) *A* m'a contraint à avoir un rapport sexuel (e) Nous en avions tous les deux envie	
4.31	Diriez-vous que ce rapport sexuel était prévu ou inattendu ? Prévu Inattendu	
4.32	Est-ce que *A* ou vous avez fait quelque chose pour l'infection au VIH ? Oui.....Non.....	
4.33	Qu'avez-vous fait ? J'ai utilisé un préservatif J'ai utilisé un lubrifiant Nous avons fait le test de dépistage du VIH; *A* et moi, nous étions négatifs Autre (préciser)…….	
Si le répondant a mentionnée les noms de 2 hommes au début de la section 4, demandez;		
Je veux en savoir a propos de votre relation avec B, ALLEZ A LA QUESTION4.34		

OU		
En dehors de *A*, avez-vous eu un autre copain ou une autre relation intime avec un homme avant d'atteindre 20 ans? Oui.....Non.....		*SI NON, ALLEZ A LA SECTION* 5
Combien de ces relations en totale ? Nombre.....		
Appelons ces hommes B, C, D, E, etc		
4.34	En quelle année avez-vous rencontré *B*? Année…...	
4.35	*A;* quel âge avait-il à cette époque? Age: ..... ans	
4.36	Quand votre relation avec *A*a débuté, était-il célibataire, marié, divorcé, ou séparé? Célibataire Fiancé Marié Divorcé Séparé Veuf	
4.37	Quand votre relation avec *B* a débuté, était-il étudiant à temps complet, travaillait-il, ou ni l'un, ni l'autre ? Etudiant à temps complet Travail à plein temps Travail à temps partiel Sans-emploi	
4.38	Comment décririez-vous votre relation avec *B* ? a) C'était (c'est) une amitié passagère? ; b) une relation sérieuse, sans intention de mariage; ou c) une relation importante susceptible de déboucher sur un mariage ? a)Passagère b) Sérieuse c) Importante/mariage éventuel d) Fiancés en vue d'un mariage	
4.39	*B*; avait-il eu des rapports sexuels avec vous? Oui.....Non.....	
4.40	*B*; quel type de rapports sexuels avait-il eu avec vous? Oral: Il mettait son pénis dans ma bouche Vaginal: Il mettait son pénis dans mon vagin Anal: Il mettait son pénis dans mon anus	*PLUSIERS REPONSES PERMIS*

Repensez à la premier fois que vous avez eu des rapports sexuels vaginal avec A		*DEMANDEZ SEULEMENT SI LES RAPPORTS VAGINAL SONT INCLUS DANS LA REPONSE A LA QUESTION 4.40*
4.41	C'était en quelle année? Année.....	
4.42	Quel âge aviez-vous à cette époque? Age: .....ans	
4.43	*B;* quel âge avait-il à cette époque? Age: ..... ans	
4.44	Diriez-vous ? *LIRE A HAUTE VOIX* (a) J'ai contraint *B* à avoir un rapport sexuel contre sa volonté (b) J'ai persuadé *B* d'avoir un rapport sexuel (c) *B* m'a persuadé d'avoir un rapport sexuel (d) *B* m'a contraint à avoir un rapport sexuel (e) Nous en avions tous les deux envie	
4.45	Diriez-vous que ce rapport sexuel était prévu ou inattendu ? Prévu Inattendu	
4.45	Est-ce que *B* ou vous avez fait quelque chose pour éviter une grossesse ? Oui.....Non.....	
4.46	Quelle méthode avez-vous utilisé ? Préservatif Pilule Contraceptifs injectables Technique du retrait Période d'infécondité Autre (Préciser)……	
4.47	A part cette fois, *B* et vous avez-vous déjà utilisé une méthode pour éviter la grossesse ? Oui.....Non.....	
4.48	Si OUI, Toujours ou Parfois ? Toujours Parfois	
4.49	Quelle méthode *B* et vous avez-vous principalement utilisé ? Préservatif Pilule Contraceptifs injectables Technique du retrait	*PLUSIEURS REPONSES PERMIIS*

	Période d'infécondité Autre (Préciser)……	
4.50	Qui vous a fourni cette méthode, à vous ou à *B* ? Magasin Pharmacie Dispensaire/hôpital public Médecin/infirmière libéral(e)/établissement privé Ami(e) Autre (Préciser)…….. Ne sais pas	*CHOISSISSEZ UNE SEULE REPONSE*
4.51	Qui a décidé d'utiliser une méthode de contraception (toujours/quelquefois/jamais)? Vous-même, *B*, ou vous deux ? Moi *B* Nous deux	
4.52	B vous a-t-il déjà mise enceinte ? Oui.....Non.....	*SI NON, ALLEZ A LA QUESTION 4.54*
4.53	Comment la grossesse s'est-elle terminée ? Avortement Fausse couche Naissance vivante	
4.54	Avez-vous déjà eu peur d'attraper le SIDA ou une autre maladie sexuellement transmissible en ayant des rapports sexuels avec *B* ? Oui.....Non.....	*SI NON, ALLEZ A LA QUESTION 4.56*
4.55	Si Oui, Très peur ou Assez peur ? Très peur Assez peur Pas du tout	
4.56	Avez-vous pu faire quelque chose pour réduire le risque d'infection ? Oui.....Non.....	
4.57	Qu'avez-vous fait ? J'ai utilisé un préservatif Nous avons fait le test de dépistage du VIH; *A* et moi, nous étions négatifs Autre (préciser)…….	
Repensez à la première fois que vous avez eu des rapports sexuels anal avec A – Je veux dire, la première fois qu'il a mis son pénis dans votre anus.		*DEMANDER SI LA LE RAPPORT ANAL EST INCLU DANS LA REPONSE A LA QUESTION 4.40*

4.58	C'était en quelle année? Année.....	
4.59	Diriez-vous ? *LIRE A HAUTE VOIX* (a) J'ai contraint *B* à avoir un rapport sexuel contre sa volonté (b) J'ai persuadé *B* d'avoir un rapport sexuel (c) *B* m'a persuadé d'avoir un rapport sexuel (d) *B* m'a contraint à avoir un rapport sexuel (e) Nous en avions tous les deux envie	
4 .60	Diriez-vous que ce rapport sexuel était prévu ou inattendu ? Prévu Inattendu	
4.61	Est-ce que *B* ou vous avez fait quelque chose pour l'infection au VIH ? Oui.....Non.....	
4.62	Qu'avez-vous fait ? J'ai utilisé un préservatif J'ai utilisé un lubrifiant Nous avons fait le test de dépistage du VIH; *A* et moi, nous étions négatifs Autre (préciser)…….	

Section 5: Préservatif: connaissances et attitudes

Les gens ne pensent pas tous la même chose au sujet du préservatif. Je vais vous lire certaines affirmations. Pour chacune d'entre elles, *repensez à votre adolescence (c'est-à-dire, avant que vous n'ayez 20 ans),* puis dites-moi si vous étiez d'accord ou pas d'accord, ou si vous n'aviez pas d'avis, à cette époque. Dites-moi aussi si votre avis a changé par rapport à cette époque		D'accord		Ne sais pas/indécise		Pas d'accord	
N.B: SEUL UNE REPONSE AVEC LA MEME LETTRE D'ALPHABETE PEUT ETRE CHOISI POUR UNE LIGNE. *PAR EXAMPLE: Si pour la question 5.1, la première réponse est 1a, les autres réponses possible seront; 1b, 2b, ou 3b*		Avant que je n'aye 20 ans	Maint enant	Avant que je n'aye 20 ans	Maint enant	Avant que je n'aye 20 ans	Maint enant
5.1	Le préservatif est un moyen efficace d'éviter la grossesse	1a	1b	2a	2b	3a	3b
5.2	Le préservatif est réutilisable	1a	1b	2a	2b	3a	3b
5.3	Une fille peut suggérer à son copain de porter un préservatif	1a	1b	2a	2b	3a	3b
5.4	Un garçon peut proposer à sa copine de porter un préservatif	1a	1b	2a	2b	3a	3b
5.5	Le préservatif protège efficacement contre le VIH/SIDA	1a	1b	2a	2b	3a	3b
5.6	Le préservatif est utile pour des relations occasionnelles	1a	1b	2a	2b	3a	3b
5.7	Le préservatif est utile pour des relations stables, où les deux partenaires s'aiment	1a	1b	2a	2b	3a	3b
5.7	Je serais très gêné(e) d'acheter ou de me procurer des préservatifs	1a	1b	2a	2b	3a	3b
5.9	Si une fille suggérait à son partenaire de porter un préservatif, ça voudrait dire qu'elle ne lui fait pas confiance	1a	1b	2a	2b	3a	3b
5.10	Le préservatif diminue le plaisir sexuel	1a	1b	2a	2b	3a	3b
5.11	Le préservatif peut glisser du pénis et disparaître dans le corps de la femme	1a	1b	2a	2b	3a	3b

5.12	Si un couple veut avoir des rapports sexuels avant le mariage, il doit utiliser un préservatif	1a	1b	2a	2b	3a	3b
5.13	Le préservatif protège efficacement des maladies sexuellement transmissibles	1a	1b	2a	2b	3a	3b
5.14	Une femme peut refuser le sexe si son partenaire ne veut pas porter le préservatif	1a	1b	2a	2b	3a	3b
5.15	Un homme peut refuser le sexe si son partenaire ne veut pas porter le préservatif	1a	1b	2a	2b	3a	3b

Section 6: VIH et infections sexuellement transmissibles

Pendant votre adolescence (avant d'atteindre 20 ans), aviez-vous eu l'un des symptômes suivants?

6.1

1. Douleur, ou brulures mictionnels
2. Uriner plus souvent que d'habitude
3. Verrues génitales
4. Ulcère génital
5. Pertes blanches anormales
6. Odeurs nauséabonds associés aux pertes blanches
7. Douleurs vaginales pendant les rapports sexuels
8. Saignements anormaux entre les règles
9. Saignements après les rapports sexuels (pas pendant les règles)
10. Douleurs abdominales basses ou pelviennes (nonassociées aux règles)
11. Aucun de ces symptômes

6.2

Avez-vous été dépisté pour le VIH avant que vous ne tombiez enceinte pour votre premier enfant ?

□ Oui

□ Non

Si OUI, quel était le résultat? Positive.....Négative.....

C'était en quelle année? Année.....

SI VIH POSITIVE, ALLEZ A LA QUESTION 6.4

6.3

Combien d'enfants avez-vous? Nombre.....Dites-moi si vous avez fait le test de dépistage du VIH pendant leurs grossesses.

SI LE REPONDANT DECLARE ETRE VIH POSITIVE A L'UNE DES QUESTIONS SUIVANTES, ALLEZ A LA QUESTION 6.4

□ Premier enfant: Année de naissance.....Dépisté pour le VIH pendant la grossesse?
Oui……Non…….

Si OUI, quel était le résultat? Positive.....Négative.....

□ Deuxième enfant: Année de naissance.....Dépisté pour le VIH pendant la grossesse? Oui……Non…….
Si OUI, quel était le résultat? Positive.....Négative.....
□ Troisième enfant: Année de naissance.....Dépisté pour le VIH pendant la grossesse? Oui……Non…….
Si OUI, quel était le résultat? Positive.....Négative.....
□ Quatrième enfant: Année de naissance.....Dépisté pour le VIH pendant la grossesse? Oui……Non…….
Si OUI, quel était le résultat? Positive.....Négative.....

6.4
Dans quelle formation sanitaire avez-vous fait les consultations prénatales pour votre dernière grossesse ? Nom de la formation sanitaire.....

Si le répondant déclare être VIH positive, demandez ;
6.5
Avez-vous commencé le traitement antirétroviral? Oui…..Non……

APPENDIX 3

INFORMATION SHEET (English)

Project Title: Risk factors for adolescent pregnancy and HIV in Bafoussam, Cameroon

Name of Principal Investigator: Dr Che Gilbert Ambe

What is this study about?

This is a research project being conducted by CHE GILBERT AMBE at the University of the Western Cape. We are inviting you to participate in this research project because you are a young adult and you can provide us with useful information about risk factors for HIV and pregnancy in adolescence.

Objective of this study

The purpose of this research is to identify and measure factors associated with HIV infection and pregnancy during adolescence in Bafoussam. Information from this study could be useful in the conception and implementation of programs to reduce the incidence of pregnancy and HIV in adolescence.

What will I be asked to do if I agree to participate?

You will be asked to respond to a questionnaire which will help us get information on your knowledge of reproductive health, experience of heterosexual relationships, circumstances surrounding your first and subsequent sexual encounters, knowledge and ever-use of contraceptive methods, as well as history of HIV infection, sexually transmitted infections and pregnancy while you were an adolescent. This will take about 20 minutes of your time and will be done only once.

Would my participation in this study be kept confidential?

We will do our best to keep your personal information confidential. To help protect your confidentiality, we will interview you in a quiet place with no intruders. All the information you provide in the questionnaire will be locked securely in a drawer at the office of the Regional AIDS Control Coordinator. After we extract information from the questionnaire, we will destroy them. The extracted information will be stored in a password protected database, so that only the researcher can access it. If we write a report or article about this research project, your identity will be protected to the maximum extent possible.

What are the risks of this research?

We do not foresee any major harm to participants. However some of the questions may cause you psychological trauma by making you recall unpleasant incidences in your life. Should this happen, then counselling and psychological support will be arranged in this health facility for you free of charge.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigators learn more about factors associated with HIV infection and pregnancy during adolescence in Bafoussam. We hope that, in the future, other people might benefit from this study through improved understanding of risk factors, and implementation of programs to reduce the incidence of pregnancy and HIV in adolescence

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

What if I have questions?

This research is being conducted by Che Gilbert Ambe, School of Public Health at the University of the Western Cape. If you have any questions about the research study itself, please contact Che Gilbert Ambe at the Regional AIDS Control – West Regional Delegation of Public Health; Tel: (+237) 675 07 44 45.

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

CNERSH

Tel: 243 67 43 39

Email: cnethique_minsante@yahoo.fr

Dr Che Gilbert Ambe

Regional Technical Group for the fight against AIDS.

Bafoussam – Cameroon

Tel: +237 675 07 44 45; Email: gilbertche@yahoo.com

Prof Helen Schneider

School of Public Health

Head of Department

University of the Western Cape

Private Bag X17

Bellville 7535

soph-comm@uwc.ac.za

Prof José Frantz

Dean of the Faculty of Community and Health Sciences

University of the Western Cape

Private Bag X17

Bellville 7535

chs-deansoffice@uwc.ac.za

INFORMATION SHEET (French)

NOTICE D'INFORMATION

Titre du Projet: Facteurs de risques pour les grossesses adolescentes et du VIH à Bafoussam, Cameroun

Nom de l'investigateur Principal : Dr Che Gilbert Ambe

Quelle est cette étude?

C'est un projet de recherche mené par Dr Che Gilbert Ambe, étudiant à l'Université du Western Cape. Nous vous invitons à participer à ce projet de recherche parce que vous êtes un jeune adulte et vous pouvez nous fournir des informations utiles sur les facteurs de risque pour le VIH et la grossesse dans l'adolescence.

Objectif de cette étude

Le but de cette recherche est d'identifier et de mesurer les facteurs associés à l'infection à VIH et la grossesse pendant l'adolescence à Bafoussam. Les données de cette étude pourraient être utiles dans la conception et la mise en œuvre des programmes visant à réduire l'incidence des grossesses et le VIH à l'adolescence.

Qu'est-ce qui est attendu de moi, si je suis d'accord pour participer?

Vous serez invité à répondre à un questionnaire qui nous aidera à obtenir des informations sur votre connaissance de la santé reproductive, l'expérience des relations hétérosexuelles, les circonstances entourant votre premier rapport sexuelle et les rapports ultérieures, les connaissances et l'utilisation des méthodes contraceptives, l'histoire de l'infection à VIH, les infections sexuellement transmissibles et les grossesses quand vous étiez une adolescente. Cet entretien va se faire une seule fois et ça prendra environ 20 minutes de votre temps.

Ma participation à cette étude, serait-elle confidentielle?

Nous ferons de notre mieux pour garder les informations que allez nous fournir confidentielles. Pour aider à protéger votre confidentialité, nous allons vous interviewer dans un endroit calme avec aucun intrus. Toutes les informations que vous fournissez dans le questionnaire seront verrouillées dans un tiroir au bureau du Coordonnateur Régional de la lutte contre le sida. Après avoir extrait des informations dans les questionnaires, nous allons les détruire. Les informations extraites seront conservées dans une base de données protégée par mot de passe, de sorte que seul le chercheur pourrait y accéder. Si nous écrivons un rapport ou un article sur ce projet de recherche, votre identité ne sera pas dévoilée.

Quels sont les risques de cette recherche?

Nous ne prévoyons pas de graves aux participants. Toutefois, certaines questions peuvent vous traumatiser psychologiquement en vous faisant vous souvenir incidences désagréables dans votre vie. Si cela vous arrive, nous allons vous référer pour le conseil et un soutien psychologique dans cette formation sanitaire et vous serez prise en charge gratuitement.

Quels sont les bénéfices de cette recherche?

Cette recherche n'a pas été conçu pour vous aider personnellement, mais les résultats peuvent aider les enquêteurs en apprendre davantage sur les facteurs associés à l'infection à VIH et la grossesse pendant l'adolescence à Bafoussam.

Nous espérons que, dans le futur, d'autres personnes pourraient bénéficier de cette étude par une meilleure compréhension des facteurs de risque, et la mise en œuvre des programmes visant à réduire l'incidence des grossesses adolescentes et le VIH

Est-ce que je dois participer dans cette recherché? Est-ce que je peux cesser d'y participer à tout moment?

Votre participation à cette recherche est entièrement volontaire. Vous pouvez choisir de ne pas participer du tout. Si vous décidez de participer à cette recherche, vous pouvez arrêter de participer à tout moment. Si vous décidez de ne pas participer à cette étude ou si vous cessez de participer à n'importe quel moment, vous ne serez pas pénalisé. Aussi, vous n'allez pas perdre des services ou prestations auxquelles vous avez droit.

Que faire si j'ai des questions?

Cette recherche est menée par Che Gilbert Ambe, étudiant à École de Santé Publique (School of Public Health) à l'Université du Western Cape. Si vous avez des questions à propos de cette projet de recherche, vous pouvez contacter Che Gilbert Ambe à l'Unité Régional de Lutte Contre le sida – Délégation Régionale de la Santé Publique de l'Ouest; Tel: (+237) 675 07 44 45.
Si vous avez des questions concernant cette étude et vos droits en tant que participant dans cette recherche ou si vous voulez signaler les problèmes que vous avez rencontrés liés à l'étude, vous pouvez contacter:

CNERSH

Tel: 243 67 43 39

Email: cnethique_minsante@yahoo.fr

Dr Che Gilbert Ambe

Groupe Technique Régional de lutte contre le sida.

Bafoussam – Cameroon

Tel: +237 675 07 44 45; Email: gilbertche@yahoo.com

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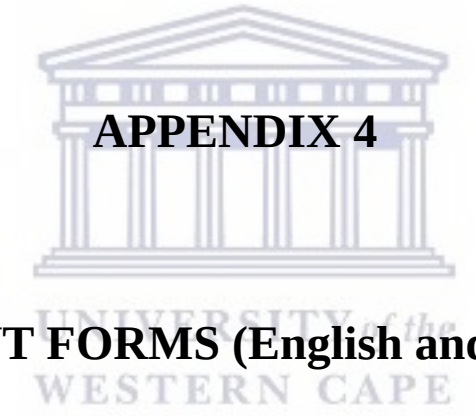

APPENDIX 4

CONSENT FORMS (English and French)

CONSENT FORM (English)

I the undersigned Ms…….. having been invited to participate in the research study entitled **Risk factors for adolescent pregnancy and HIV in Bafoussam, Cameroon** whose principal investigator is

Dr Che Gilbert Ambe

Regional Technical Group for the fight against AIDS.

Bafoussam – Cameroon

Tel: +237 675 07 44 45; Email: gilbertche@yahoo.com

- I have understood the contents of the information which I have received concerning this study
- I have understood the objectives this study
- All my questions have been answered to my satisfaction
- The risks and benefits of this study have been explained to me
- I understand my consent to participate in this study is free and voluntary
- I understand that my consent to participate in this study does not exempt the investigators from their responsibilities, and that I conserve all my legal rights

I agree freely to participate in this study under the conditions provided in the information sheet; that is to respond to the questionnaire.

Bafoussam the:

Principal Investigator Participant …….

Dr Che Gilbert Ambe (name and address)

Regional Technical Group for the fight against AIDS.

Bafoussam – Cameroon

Tel: +237 675 07 44 45; Email: gilbertche@yahoo.com

CONSENT FORM (French)

FORMULAIRE DE CONSENTEMENT

Je soussignée, Mme/Mlle……..

Avoir été invité à participer au travail de recherche intitulé **Facteurs de risques pour les grossesses adolescentes et du VIH à Bafoussam, Cameroun** dont l'investigateur principal s'appelle

Dr Che Gilbert Ambe

Groupe Technique Régional de lutte contre le sida.

Bafoussam – Cameroon

Tel: +237 675 07 44 45; Email: gilbertche@yahoo.com

- J'ai bien compris la notice d'information qui m'a été remise concernant cette étude
- J'ai bien compris le but et les objectifs de cette étude
- J'ai reçu toutes les réponses aux questions que j'ai posées
- Les risques et bénéfices m'ont été présentés et expliqués
- J'ai bien compris que je suis libre d'accepter ou de refuser d'y participer
- Mon consentement ne décharge pas les investigateurs de la recherche de leurs responsabilités, je conserve tous mes droits garantis par la loi

J'accepte librement de participer à cette étude dans les conditions précisées dans la notice de l'information, c'est –à-dire de répondre aux questions d'enquête

Fait à Bafoussam le :

Investigateur Principal Participant …….

Dr Che Gilbert Ambe (noms et adresse)

Groupe Technique Régional de lutte contre le sida.

Bafoussam – Cameroon

Tel: +237 675 07 44 45; Email: gilbertche@yahoo.com

APPENDIX 5

Ethics clearance and research authorisations

Ethics clearance from University of the Western Cape

UNIVERSITY of the WESTERN CAPE

OFFICE OF THE DEAN
DEPARTMENT OF RESEARCH DEVELOPMENT

09 November 2015

To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape approved the methodology and ethics of the following research project by:
Dr A Che Gilbert (School of Public Health)

Research Project:	Risk factors for adolescent pregnancy and HIV in Bafoussam, Cameroon.
Registration no:	15/7/11

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

Private Bag X17, Bellville 7535, South Africa
T: +27 21 959 2988/2948 . F: +27 21 959 3170
E: pjosias@uwc.ac.za
www.uwc.ac.za

Research authorisation: Bafoussam Regional Hospital

REPUBLIQUE DU CAMEROUN
Paix – Travail – Patrie
MINISTERE DE LA SANTE PUBLIQUE
SECRETARIAT GENERAL
DELEGATION REGIONALE DE L'OUEST
HOPITAL REGIONAL
DIRECTION
B.P. : 980 Bafoussam

REPUBLIC OF CAMEROON
Peace –Work – Fatherland
MINISTRY OF THE PUBLIC HEALTH
GENERAL SECRETARIAT
WEST REGIONAL DELEGATION
REGIONAL HOSPITAL
HEAD OFFICE
P.O. BOX : 980 Bafoussam

N°257/L/MINSANTE/SG/DRSPO/HRB/D. *Bafoussam, le* 12 FEV 2016

Le Directeur de l'Hôpital Régional
BAFOUSSAM

Au
Docteur CHE Gilbert AMBE
Coordonnateur GTR-Ouest
BAFOUSSAM

Objet: Autorisation de recherches.

Docteur,

Je viens par la présente, vous signifier mon accord pour l'utilisation de nos installations à l'effet de réaliser vos travaux de recherche (**Risk factors for adolescent pregnancy and HIV in Bafoussam**) en vue de l'obtention de votre Diplôme.

Seulement, vous aurez à vous soumettre aux exigences liées à la recherche (présentation de la Clairance Ethique et l'autorisation administrative).

Veuillez agréer, Docteur, mes sincères salutations.

LE DIRECTEUR

Docteur FETSÉ TAMA Gérard
Médecin de Santé Publique

Research authorisation: Mifi (Bafoussam) Health District

REPUBLIQUE DU CAMEROUN
Paix- Travail- Patrie

MINISTERE DE LA SANTE PUBLIQUE

SECRETARIAT GENERAL

DELEGATION REGIONALE DE L'OUEST

DISTRICT DE SANTE DE MIFI

Ministère de la Santé Publique

REPUBLIC OF CAMEROON
Peace- Work- Fatherland

MINISTRY OF PUBLIC HEALTH

SECRETARIAT GENERAL

WEST REGIONAL DELEGATION

MIFI HEALTH DISTRICT

Bafoussam le, 02 FEB 2016

Le Chef District Santé

A

Dr CHE Gilbert AMBE.

Objet : Autorisation de recherche

Suite à votre demande, j'ai l'honneur de vous donner mon accord pour mener l'étude dans le District de Santé de Mifi, sur les **Facteurs de risques pour les grossesses adolescentes et du VIH à Bafoussam (Risk factors for adolescent pregnancy and HIV in Bafoussam)**.

LE CHEF DISTRICT SANTE

Dr Mabanguap Dan...
CHEF SERVICE DE SANTE DE DISTRICT DE LA ...