

Sexual Orientation and Associated Factors among Adolescents in Cameroonian Cities

—Factors Associated with Sexual Orientation in Adolescents

Eboutou Ivan¹, Nguefack Félicitée^{1*}, Meguieze Claude-Audrey¹,
Ngassam Tchouamo Cindy Brenda¹, Dongmo Tsopfack Félicie Cindy²,
Mboringong Kwedi Fanny¹, Danwe Danwang Welba¹, Nseme Etouckey Eric¹

¹Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Yaoundé, Cameroon

²School of Health and Medical Sciences-CATUC-Kumbo, Bamenda, Cameroon

Email: *dongfel@yahoo.fr

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Abstract

Introduction: Over time, new sexual practices other than the common ones are frequently described. This work aimed to determine the sexual orientation and its associated factors among adolescents attending school in two big cities in Cameroon. **Methodology:** A cross-sectional study with prospective data collection took place from November 2021 to April 2022 in eight secondary schools (four in Yaoundé and four in Douala). We conducted non-probability, consecutive sampling on school-going, sexually active adolescents between the ages of 14 and 19 years. A self-administered questionnaire to students was used to study their sexual orientations and practices. Univariate and multivariate analyses made it possible to find the associated factors using the chi-square test. **Results:** We included 1274 adolescents with an average age of 18 years; majority were boys (54.8%) for a sex ratio of 1.21. Most (49.7%) were from two-parent families. Cisgender was the most common self-gender identity (89.6%). The main sexual orientation was heterosexuality (82.3%), followed by bisexuality (9.7%) and homosexuality (8%). The average age at first sexual intercourse (coitarche) was 15 years and the coitarche was consenting in 84.1%. Sexual practices included: kissing (94.7%), fondling (93.4%), vaginal penetration (80.6%), oral sex (40.4%), masturbation (22.8%), fisting (18.4%), and anal penetrations (17.5%). The majority of sexual intercourse acts (55.8%) took place without protection; 24.6% of adolescents practiced them with a person of the same sex and 18.4% with several others simultaneously. The factors associated with heterosexuality were age ≤ 17 years (aOR: 2.44 [1.36 - 4.40]; $p = 0.003$), self-identification opposite to primary sexual characteristics (aOR: 12.05 [5.13 - 28.29]; $p < 0.001$), absence of consent during the first coi-

tus (aOR: 7.09 [3.61 - 13.93]; $p < 0.001$) and a history of sexual intercourse with a person of the same sex (aOR: 94.17 [43.36 - 183.39]; $p < 0.001$). **Conclusion:** Although most adolescents are heterosexual in the school environment, the authors raise the importance of providing guidance in the aspect of sexual orientation particularly on the psychological and behavioral level considering age, self-gender identity, sexual consent, and using protection during the sexual experience.

Keywords

Sexual Orientation, Practice, Identity, Factors, Teenager, Cameroon

1. Introduction

Adolescence is a period during which young people explore their relationships with their environment, particularly with their peers, and develop a sexual identity [1]. Embryology determines the sex, however, the biological reality, is not always expressed linearly; there are cases of denial of assigned sex where adolescents have a sexual orientation other than the common practice [1]. This refers to the ability of each to feel deep emotional, affective, and sexual attraction towards individuals of the opposite sex (heterosexual), of the same sex (homosexual), or of more than one sex (bisexual), and to maintain intimate and sexual relations with them [2].

In Africa, culture and social norms have always been favorable to heterosexuality and harsh towards all other forms of sexuality; however, minorities of sexual orientation have experienced a significant emergence in recent years despite the denial of their existence and the lucrative and mystical character attributed to them [3]. A study carried out by Awolowo, in Nigeria noted in 2015 that 4.9% of students were bisexual and 0.1% homosexual; 11.8% had varying degrees of attraction to the opposite sex [4].

In 2012, due to the hostile environment in Cameroon, few men expressed their true sexual orientation, hence the increase in bisexual practices [5]. They justified their union with women for two main reasons: concealing their sexual orientation from society and the desire to have children [5]. In a study carried out in the health districts of Yaoundé V, 10.1% of adolescents declared themselves to be bisexual and 6.3% homosexual [6]. However, sexual orientation remains a taboo subject, insufficiently explored in educational circles, although some adolescents have adopted and applied it in schools. This article reports sexual orientation and associated factors among adolescents in two cities in Cameroon.

2. Methodology

This cross-sectional descriptive study took place from November 2021 to April

2022 in eight public secondary schools with general, technical, and mixed streams; and also in the secular and denominational private sectors, in the cities of Yaoundé and Douala.

We conducted consecutive and exhaustive sampling. The sample size was obtained using the following formula:

$$N = \frac{t^2 \times p(1-p)}{m^2},$$

n = Sample size;

p = The prevalence of heterosexual adolescents at the health districts of the city Yaoundé V, was 83.6% [6].

We considered confidence level of 1.96, m the margin of acceptable error of 0.05, which implies the 95% confidence interval.

The minimum sample size was therefore 211.

We collected data using a pre-tested and self-administered questionnaire with 3 main items. They included sexual orientation: type of sexual attraction as well as sexual practices, *i.e.* sexual acts performed, sexual partners, place of sex, and the use of barrier methods during sex. We also collected data related to socio-demographic characteristics, signs of recognition of partners, habits, and sexual practices. To be selected, the teenager had to be at least 10 years old and sexually active, however, due to the insistence of the school administrators, we were limited to the students of the junior and senior classes who provided written consent with their parents and a form with complete information. The anonymous questionnaires were filled out during free time in the classrooms according to the exams conditions. It was under the supervision of a guidance counselor and/or a supervisor and/or a teacher who ensured that confidentiality is respected, he supplied in case of any difficulties or misunderstanding of a question (see questionnaire in annex).

We analyzed data according to frequencies, averages, and standard deviations. Fischer's exact test was used for comparison between proportions. A univariate analysis followed by a binary logistic regression made it possible to search for the factors associated with sexual orientation with a significance level of p less than 5%.

3. Results

3.1. Sociodemographic Characteristics

The average age of adolescents was 18.04 ± 0.99 years; 73.6% were between 18 and 19 years old and the extremes were between 14 and 19 years old. Males were more frequent (54.8%), with a sex ratio of 1.21. The most declared self-gender identity was cisgender, at 89.6% (Table 1).

3.2. Age and Behavior at Sexual Initiation

Most of the adolescents, 73.6%, were over 15 years old at coitarche, the average being 15.54 ± 2.35 years; only 84.1% consented. In the majority of cases (67.2%), the family home was the place where it took place (Table 2).

3.3. Sexual Behavior of Adolescents at the Time of the Survey

Most adolescents (73.9%) declared only one sexual partner at the time of the survey. Some admitted to having had previous sexual practices with a person of the same sex (24.6%) and or simultaneously with several people (18.4%). The use of a physical contraceptive during sexual intercourse was noted in 44.2% (**Table 3**). The main sexual orientation was attraction to the opposite sex, notably heterosexuality (82.3%).

3.4. Sexual Orientation According to Sex and Reasons Mentioned

Whether they were heterosexual, bisexual or homosexual, the main reason motivating the choice of sexual orientation was a natural instinct in the respective proportions of 85.1%, 57.8%, and 51.6% (**Table 4**).

Table 1. Sexual behavior of adolescents according to the time of the survey.

Variables	Number (N = 1274)	Percentage (%)
Multiple partners		
Yes	332	26.1
No	942	73.9
Nature of sexual partners		
Same-sex	314	24.6
Opposite sex	960	75.4
Simultaneous multiple partners		
Yes	234	18.4
No	1040	81.6
self-gender identity		
Cisgender	1142	89.6
Unisexual transgender	97	7.6
Bisexual transgender	35	2.6
Orientations or sexual attraction toward others		
People of the opposite sex	1048	82.3
People of the same sex	102	8
People of the opposite sex and of the same sex	124	9.7
Male condom use		
Yes	563	44.2
No	711	55.8

Table 2. Different sexual orientations and reasons.

Variables	Sexual orientation		
	Heterosexuals N = 1142 (n = %)	Homosexuals N = 102 (n = %)	Bisexual N = 124 (n = %)
Sex			
Male	579 (55.2)	63 (61.8)	56 (45.2)
Feminine	469 (44.8)	39 (38.2)	68 (54.8)
Reasons for sexual attraction			
natural instinct	971 (85.1)	64 (51.6)	59 (57.8)
Religion	119 (10.4)	0	0
None	40 (3.5)	51 (41.1)	42 (41.2)
Environmental influence	0	5 (4)	1 (1)
Desire to have children	12(1)	0	0
Others*	0	4 (3.2)	0

Others* = curiosity, the quest for more pleasure, depression.

Table 3. Distribution of adolescents according to signs of recognition between sexual partners.

Variables	Number (N = 1274)	Percentage (%)
Existence of signs of recognition (N = 1274)		
Yes	131	10.3
No	1143	89.7
Identification mark (N = 131)		
Bracelet	71	54.2
Necklace	31	23.7
Ring	23	17.6
Nickname	19	14.5
T-shirt	12	9.2
Ankle bracelet	7	5.3
Earring	4	3.1
Others	20	15.3

Table 4. Factors associated with sexual orientation: multivariate analysis.

Variables	Sex of the person toward whom the adolescent has a preference		ORa [95% CI]	p adjusted
	Same and/or opposite N = 226; not (%)	Opposite N = 1048; not (%)		
Age (years)				
≤17	75 (33.2)	261 (24.9)	2.44 [1.36 - 4.40]	0.003
Self-gender identity in relation to primary sexual characteristics				
Opposite	68 (30.1)	29 (2.8)	12.1 [5.13 - 28.29]	<0.001
Two types of gender	25 (11.0)	10 (1.0)	19.8 [5.61 - 69.93]	<0.001
Consent at first sexual intercourse				
No	78 (34.5)	124 (11.8)	7.09 [3.61 - 13.93]	<0.001
Actions taken during sexual intercourse				
Kiss	220 (97.3)	987 (94.2)		0.436
Caress	218 (96.5)	972 (92.7)		0.102
Masturbation	113 (50.0)	177 (16.9)		0.265
anal sex	104 (46.0)	119 (11.4)		0.881
oral sex	150 (66.4)	365 (34.8)		0.083
Fisting	59 (26.1)	175 (16.7)		0.081
Types of relationships maintained				
Free relationships	109 (48.2)	327 (31.2)		0.515
Number of sexual partners				
Two	41 (18.1)	121 (11.5)		0.089
History of sexual intercourse with a person of the same sex				
Yes	207 (91.6)	107 (10.2)	94.17 [43.36 - 183.39]	<0.001
History of simultaneous sexual intercourse with several people				
Yes	76 (33.6)	158 (15.1)		0.646

Sexual acts usually performed

Figure 1 shows that the top three acts performed were kissing (94.7%), fondling (93.4%) and vaginal sex (80.6%).

3.5. Identity Signs between sexual Partners

Signs of recognition between sexual partners were reported by 131 pupils, or 10.3%. The most described signs were wearing a bracelet (54.2%), a necklace (23.7%) and rings (17.6%).

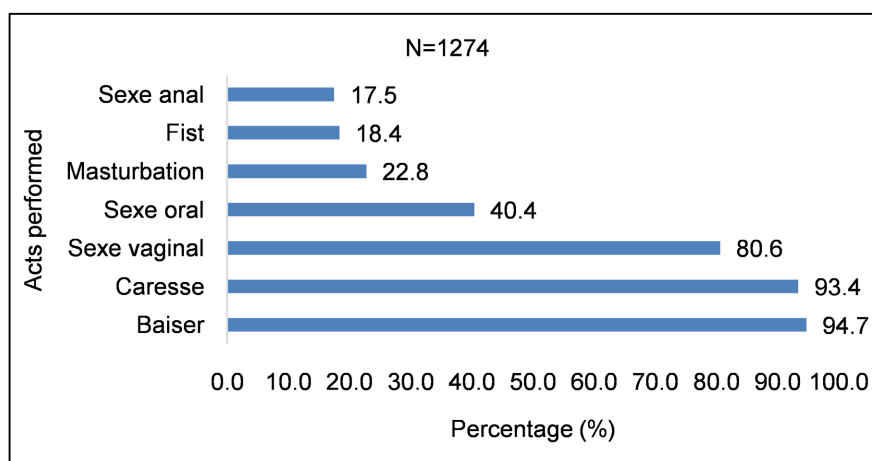


Figure 1. Acts performed during sexual intercourse.

3.6. Factors Associated with Sexual Orientation: Multivariate Analysis

Independent risk factors associated with same-sex and/or opposite-sex sexual attraction were identified (**Figure 1**). Adolescents under 17 years of age were three times more likely to have same-sex and/or opposite-sex attraction (aOR: **2.44**; $p = 0.003$). Also, the consideration of the self-gender identity opposite to primary sexual characteristics multiply the risk by twelve (aOR: **12.05**; $p < 0.001$), meanwhile mixed self-identification were nineteen time more to exposed to the risk (aOR: **19.80**; $p < 0.001$). Lack of consent during coitarc here presented seven time another risk factor (aOR: **7.09**; $p < 0.001$). Adolescent with a history of sexual intercourse with a person of the same sex were ninety four time more likely to have same-sex and/or opposite-sex attraction (aOR: **94.17**; $p < 0.001$) However, free relationships, the number of sexual partners and the actions taken during sexual intercourse did not influenced the sexual orientation.

4. Discussion

Sexual orientation remains a dynamic concept whose data are updated daily. This cross-sectional study involved 1274 adolescents attending secondary schools in the cities of Yaoundé and Douala. The rapid growth of the different components of society and the impact of associated sexual practices, particularly among adolescents, are the reasons why we proposed to conduct this study. The main limit of this work was the minimum threshold of 14 years imposed by the heads of secondary schools, an age above which we were authorized to submit the questionnaire because of the immaturity of younger students. There might also be information bias linked to the still taboo nature when addressing the issue of sexual orientation with people in our community. An anthropological study as well as the focus group would provide ample information on this subject. Despite these limitations, the authors of this work believe that the study's anonymous setting, sample size, and anonymity during data collection nevertheless made it possible to characterize the sexual behavior of adolescents in the school

environment.

4.1. Self-Consideration and Sex

The most common self-gender identity was cisgender in 89.6% followed by transgender in 10.1% of cases. Among transgender people, 7.6% said they were the opposite gender to their birth sex and 2.6% to both genders. These figures are similar to those of a recent study carried out in ten Pittsburgh high schools which revealed in 2021 that 10% of students considered themselves “transgender or non-binary or of uncertain gender” [7]. Littman in a study carried out in 2018 found that this phenomenon was marked by the appearance of transgender homes in society. This high rate in our context could be explained by a change in lifestyle among adolescents related to the phenomenon of globalization imposing social network connections, increasing social acceptability, and the presence of similar cases in the environment.

4.2. Sexual Orientation

The main orientation of adolescents was heterosexual (82.3%); bisexuals accounted for 9.7% and homosexuals 8% of cases. In 2019 in Cameroon, Essiben *et al.* in a survey of sexual risk behaviors among adolescents in the city of Yaoundé reported similar results with 83.6% heterosexual, 10.1% bisexual, and 6.3% d homosexuals [8]. Our results are also similar to those obtained by Ifop in France, which estimated in 2019 at 82.7%, the proportion of exclusive heterosexuals, 5.6% heterosexuals attracted to people of the same sex, 4.8% presumed bisexuals with 0.9% non-presumed, and 3.2% homosexuals [9]. This panorama of adolescent sexuality could be explained by the popularization in the media of sexual minorities and increasingly greater comfort in declaring one’s sexual identity [10].

4.3. Reasons for Sexual Orientation

Whether they were heterosexual, bisexual or homosexual, the main reason motivating the choice of sexual orientation was a natural instinct in the respective proportions of 85.1%, 57.8%, and 51.6%. Nearly half of adolescents classified as sexual minorities fail to explain the reason for their difference from others. These results coincide with the hypotheses according to which sexual orientation has biological bases, notably cerebral [11], hormonal [12] and immune [13].

4.4. Age and Behavior at Sexual Initiation

The average age at first sexual intercourse was 15.54 years. This result is similar to those of other Cameroonian studies carried out by Foumane in 2013 [14] and Essiben in 2019 [6] which found mean ages of 15.3 and 15.1 years respectively. In Cameroon, the penal code qualifies as precocious a sexual relationship undertaken before the age of 15 [15]. This code is not widely enough popularized and the trend towards early sexuality would be due, among other things, to the

phenomenon of globalization facilitated by access to new communication techniques, urbanization, and the evolution of social norms [6]. Juvenile delinquency and family poverty would also contribute.

The majority (84.1%) of adolescents were consenting during the first sexual intercourse as highlighted in 2004, a study conducted in Bamenda in Cameroon in which 69.1% of adolescents were consenting [16]. Our results could be explained by the relationship of trust established between the partners, and the influence of friends (13.2%) as reported by Rwenge *et al.* in 2004 in Cameroon [16]. In addition, the family home was the place where sexual intercourse took place in almost 3/4 (76.5%) of the situations. This could be explained, as Father Joseph *et al.* noted in 2017, by the low purchasing power of Cameroonian adolescents [17].

4.5. Sexual Behavior of Adolescents at the Time of the Survey

Regarding sexual acts, the most noted were vaginal penetration (80.6%), oral (40.4%), and masturbation (22.8%). These results can be superimposed on those of a survey conducted in 2017 on young people in a university in France which found that 95% practiced vaginal sex, 89% oral sex and 83% masturbation [18]. Our results could be explained by the growing consumption of pornography by adolescents with the advent of new lifestyles linked to telephone communication.

The practice of anal penetration was noted in 17.5%; it contrasted with only 8% of declared homosexuals. This disparity shows that this practice is not necessarily linked to sexual orientation, or even to a defined population, as Claire *et al.* also noted in 2017 in France, which found 20% of anal sex practice among French adolescents [18]. It is a practice considered to be one of the riskiest concerning contaminations, in particular by sexually transmitted infections, also HIV, Human Papilloma Virus (HPV) infections, as well as anatomical cancers [19] [20]. Indeed, risky sexual acts were noted in our sample in significant proportions represented by: oral sex (40.4%), fisting (18.4%), and anal penetration (17.5%). It could have been an opportunity to explore the variety of pleasures or ways around vaginal penetration when it was not possible. The other risky sexual behaviors described were multiple partnerships found in 26.1%, maintaining sexual relations with a partner of the same sex 24.6%, simultaneous multiple partnerships 18.4% and unprotected sexual relations (55.8%). These increasingly common behaviors could be explained by the fact that the main sources of information on sexuality are social networks, the Internet and the mass media [6]. Also, the rarity of male condom use among adolescents would be strongly associated with purchasing power, and the nature of their sexual relations which are occasional, and unplanned with a tendency to precocity, as Essiben *et al.* noted in 2019 [6].

4.6. Signs of Recognition between Sexual Partners

Signs of recognition between sexual partners were described in 10.3% of adoles-

cents and included wearing a bracelet (54.2%), a necklace (23.7%) and rings (17.6%). Our results show that jewelry identifies individuals, as do visible signs of our belonging to a religious, ethnic, professional, political, or sexual group. They say in their own way our social identity. The 1970s marked the return of identity jewelry and the 2000s imposed a utilitarian function on it: homosexuals claimed the earring and lesbians the wearing of rings [21].

4.7. Factors Associated with Sexual Orientation

The independent risk factors associated with sexual attraction other than heterosexual were age ≤ 17 years (aOR: 2.44; $p = 0.003$), and a history of sexual intercourse with a person of the same sex (aOR: 94.17; $p < 0.001$). This mimics the results of a Cameroonian study where it was found that more than half of the sample (50.2%) had expressed their non-heterosexuality and had already had a homosexual relationship before the age of 18 [19]. The absence of consent during the first sexual intercourse (aOR: 7.09; $p < 0.001$) also seems to be a predisposing factor for homosexual or bisexual sexual orientations. A survey on violence against women in France carried out in 2000, comparing homosexual and heterosexual women, found that the first sexual intercourse was less often consensual for homosexual women (20.6%, $p < 0.001$) as for other women (14.8%, $p < 0.001$) [22].

Self-gender identity opposite to primary sexual characteristics (aOR: 12.05; $p < 0.001$) or mixed self-gender identity (aOR: 19.80; $p < 0.001$) predisposed more to be homo- or bisexual. A European prospective cohort for the investigation of gender incongruence in 2021, noted that the majority of transgender men (55.2%) were homosexual [23]. In 2013 in a series of Italian transgender people, all men said they had a partner and the majority also said they were attracted to women (89.6%). In the same study, most transgender women had a male partner and 82.6% said they were attracted to men [24].

5. Conclusion

The present study among adolescents shows that despite the heterosexual majority, a significant percentage is exposed to risky sexual practices, particularly infectious diseases. The authors raise the importance of the supervision of their sexual orientation, particularly on the psychological and behavioral level by considering age, self-esteem, consent, and protection during sexual acts.

6. Limitations of the Study

Our study has some limitations; the fact that school heads refused to allow the collection of data from adolescents in lower grades did not permit us to cover all the age groups concerned. Nevertheless, this restriction made it possible to narrow down the sexual orientation of participants who were well understood in terms of sexuality. On the other hand, not all those who were eligible gave their consent to the study; amongst them would be those with a true sexual identity

being sought.

The topic of sexuality is taboo in our environment, and homosexuality is not yet regulated by legal tests. The fear of sharing one's true sexual identity and of being rejected by society would have made some of the data unreliable. However, the framework of the survey, with its anonymity, as well as the preparation and confidence-building of the participants, would have eliminated some of the doubts.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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QUESTIONS	REPONSES
1) Age (years)	
2) Biological sex: Male = 1; Fememale = 2	
3) Region of origin: Far-nord = 1; Nord = 2; Adamaoua = 3; Centre = 4; East = 5; Littoral = 6; West = 7; Nord-West = 8; South-West = 9; South = 10; Foreign = 11	
4) Statute : in couple (boyfriend/girlfriend) = 1; Fiancé(e) = 2; Married = 3; Single = 4	
5) How do you consider yourself? A boy = 1; A girl = 2; other = to specify = 3	
6) What type of family do you belong to? Single parent = 1; Two-parent = 2; Blended = 3; Adoptive = 4	
7) What religion are you? Catholic, Muslim, Pentecostal (Christian) = 1; Muslim = 2; Animist = 6; Atheist = 7; Other = to be specified	
8)	
a) To whom are you sexually attracted? People of the opposite sex to you = 1; People of the same sex as you = 2; People of the opposite sex and of the same sex as you (girls and boys) = 3; Neither girls nor boys = 4; Other = specify = 5	
8)	
b) Why?	
10) How old were you at first sexual intercourse (in years)?	
11) With whom did you initiate sexual intercourse? a classmate = 1; a friend = 2; an adult = 3; other = to be specified	
12) Where was it? In a motel/hotel = 1; at home = 2; in the establishment = 3; with friends = 4; in public places (nightclub, snack bar, restaurant,...) = 5; other = to specify = 6	
13) Was this intercourse consensual? Yes = 1; No = 2	
14) Presently, what do you do in your routine practice of sex (Answer yes or no)?	
<ul style="list-style-type: none"> • Kiss (kissing with the mouth): Yes = 1; No = 2 • Caressing: Yes = 1; No = 2 • Masturbation: Yes = 1; No = 2 • Oral sex: Yes = 1; No = 2 • Oral Sex Buccal: Yes = 1; No = 2 • Vaginal Sex: Yes = 1; No = 2 • Fist (sexual act of inserting the arm of one partner into an orifice, either the vagina or the anus, of the other partner) anus of the other sexual partner = 7: Yes = 1; No = 2 • Other (please specify): Yes = 1; No = 2..... 	
15) How many partners do you have sex with? One = 1; Two = 2; More than two = 3	

Continued

16) What types of relationships do you have?

Open relationship = 1, Couple = 2, Casual relationship = 3; Other = to specify = 4

17) On average, how many times do you have sex per month?.....

18) Generally, where do you have sexual intercourse (multiple responses possible)?

Motels/Hotels: Yes = 1; No = 2

Home: Yes = 1; No = 2

In the establishment: Yes = 1; No = 2

At friends' houses: Yes = 1; No = 2

In public places (nightclub, snack bar, restaurant,...): Yes = 1; No = 2

Other (please specify): Yes = 1; No = 2.....

19) Have you ever had sex (kissing, fondling, masturbation, penetration) with a person of the same sex? Yes = 1; No = 2

20) Have you ever had sex with multiple partners? Yes = 1; No = 2

21) If so, were they:

Same sex = 1; Opposite sex = 2; A mixture of both = 3

22) Have you ever used a sex toy? Yes = 1; No = 2

23) If yes, which ones?

24) Do you usually use safer sex? Yes = 1; No = 2

25) Do you have any signs of recognition with a sexual partner? Yes = 1; No = 2

26) Si oui, pouvez-vous les citer?

.....
.....
.....

27) Lors de vos sorties, quels lieux fréquentez-vous (plusieurs réponses possibles)?

- Motels/Hôtels: Oui = 1; Non = 2
- Appartementsmeublés: Oui = 1; Non = 2
- Boite de nuit: Oui = 1; Non = 2
- Snack bar: Oui = 1; Non = 2
- Restaurant: Oui = 1; Non = 2
- Autre (à préciser): Oui = 1; Non = 2

28) Consommez-vous de l'alcool? Oui = 1; Non = 2

29) Consommez-vous du tabac? Oui = 1; Non = 2

30) Consommez-vous d'autres drogues? Oui = 1; Non = 2

31) Si oui, lesquelles (plusieurs réponses possibles)?

- Cocaïne: Oui = 1; Non = 2
- Tranquillisants (diazépam): Oui = 1; Non = 2
- Cannabis (marijuana): Oui = 1; Non = 2
- Narcotiques (héroïne, morphine, tramadol): Oui = 1; Non = 2
- Autre (à préciser): Oui = 1; Non = 2.....