

Paper 1 (Work in progress)

Adolescents sexual behavior and risk of HIV
in Bobo-Dioulasso, Burkina Faso.

Abstract

Based on the sentinel sites information, the HIV rate was estimated to 7.2% for Burkina Faso at the end of 1997. In order to have thinner data, useful for designing local interventions, a representative cross-sectional survey was conducted in Bobo-Dioulasso in year 2000. Behavioural and biological information were collected on 2400 people aged between 13 and 49.

The current study is related to the sub-sample of adolescent people (13-19 years). It first analyses the sero-status and then, some sexual behaviours considered in the literature as risky in regard of HIV infection.

The results show that six adolescents (5 girls and 1 boy) are infected by HIV. It is however surprising to notice that five of the six infected adolescents (the boy and 4 of the 5 girls) say they never had sex. If their statements were true, it would require to look for ways of HIV transmission in Bobo-Dioulasso, other than sex, for more appropriate strategies to fight against the disease.

The analysis of the adolescents' sexual behaviours (sexually active adolescents) show however risky behaviours regarding HIV infection and therefore, early interventions towards this category of the population are needed.

Keywords : Sexual behavior, HIV/AIDS prevention, Adolescents, Bobo-Dioulasso.

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Background

Strategies to fight against HIV/AIDS pandemic sometimes focus on the populations considered as at high risk. Thus, the people with multi partners, the commercial sex workers, the drug users who share needles are the targets. These strategies are sometimes based on the Thai model which allowed a quick reduction of the seroprevalence through intensive campaigns of sensitization toward target groups (Ainsworth, 2000).

Less attention is sometimes paid on younger people. According to the UNAIDS recent estimations, almost 16000 new infections occur every day in the world. 90% of them occur in Africa. Among these new cases, 50-60% are among young people (UNAIDS/WHO, 1998).

The period of adolescence is characterised by a frequent change of sexual partners ; the unconcern and the feeling of invulnerability expose the adolescents to the risk of contamination with HIV and other sexually transmitted infections (STIs). The young girls are particularly vulnerable for biological and behavioral reasons : the immaturity of development of the genital organs (Dixon-Mueller, 1996) and the tendency to worry about getting pregnant but not about STIs, increase the risk of HIV infection among the adolescent girls. Furthermore, the fact that these girls often have sexual relationship with older (compared to themselves) men (with probably longer sexual experience), exposes them to more risk of HIV infection and other STIs.

Significant change in HIV prevalence among young people can reflect new trends in the epidemic. Indeed, because of their age, young people will have become infected relatively recently (UNAIDS/WHO, 2002).

Based on the Sentinel Sites records and the UNAIDS estimations, the HIV rate for the Burkina Faso general population was estimated to be 7.2% by the end of year 1997. That makes Burkina Faso the second country in West Africa with highest HIV rate (Méda et al., 1998).

As one step In order to document the situation of STIs and HIV in Burkina Faso, we conducted a survey in Bobo-Dioulasso to establish the rate of the prevalence in the general population – with an emphasis on young people - and to identify the factors which determine the level of the infection (sexual behavior and practices, condoms using, importance of classic STIs, etc)¹. The aim was to use this information to design interventions to help young people protect each other and also as baseline for evaluating the interventions to be put on place.

The focus of this paper on the adolescents is justified by the hope that fighting against AIDS epidemics may easily succeed on the side of this category of the population because one could shape their behavior to a protected one contrary to the adults who already have rooted sexual behavior that is difficult to change.

Data and methods

Data

The data used for the study come from a cross-sectional survey conducted in Bobo-Dioulasso - the country's second largest city - on a representative sample of the population aged from 13 to 49. The survey interviewed people on their sexual behavior; blood tests were conducted as well.

Obtaining informed consent was required from everyone before taking blood and urine samples, and also vaginal secretion for women and urethral secretion for men. The different samples were sent to the laboratory of Centre Muraz where they were for analyses.

Each sampled person had a unique code, which is on the individual questionnaire and is also registered on all the sample tubes for the same individual. This identification code has been the key for matching biomedical results with the socio-demographic characteristics of the individual.

An identification card was given to each eligible person, allowing him to go to the Centre Muraz and get the results of the medical tests (other than that of serology). The same card gave a right to a free HIV/AIDS test for the persons who desired it; the results of the serology test made during the survey were strictly anonymous and not correlated.

When the results of the surveyed people showed health problems (STIs other than HIV/AIDS), the biomedical workers involved in the survey brought the results back to the concerned persons, including the medicine needed to treat the infection².

Methods

The analysis is structured in two parts. The first one consists of a descriptive analysis and the second one is the multivariate analysis.

In the descriptive analysis, the main characteristics of the sample are presented and then the adolescents' knowledge about HIV/AIDS and their sero-status are described. The behavior of both male and female sexually active adolescents is analysed by age at the first sex experience, the age of

the first sexual partner and the use of condoms. In terms of HIV/AIDS prevention, the age at first sex can be used to determine the degree of vulnerability of the person and specially the adolescent, in the sense that too early sexual relationship happens when the organs are still developing and that the person also lacks experience on that issue; therefore, this person can be exposed to more risk of contamination.

Another element of adolescents' vulnerability is the age of their first partner. If the intercourse happens with an older person, it means that the partner is probably more experienced in the domain and that he has therefore, more risk of having been contaminated and thus, to contaminate the adolescent partner.

For a better protection against HIV/AIDS, the condom use must be systematic, specially when the sexual intercourses occur outside the marriage but is it so? I'll analyse the issue through the sexually active adolescents' to the questions related to condom use.

In the second part of the analysis, I use a multivaried approach. I consider the condom use at the first sex experience as the dependent variable. It is a dichotomous variable coded "1" if a condom has been used and "0" if not. The independent variables are the following: age, marital status, level of schooling, ethnic group, religion, place of birth, age at first sex, knowing at least one family planning method by the time of the first sex experience. For this analysis, I use the logistic regression model.

Results

Principal characteristics of the adolescents

The table on Annex 1 shows the distribution of the adolescent population according to their principal socio-demographic characteristics. A little more than half of the 830 adolescents are females (56.1%) and the remainder (43.9%) are males. The age average and the median age are the same (16 years) for males and females. Three adolescents out of five (60.0%) are born in Bobo-Dioulasso ; two out of three (66.2%) for males and a little more than half (55.2%) for females. The "importation" of the young female workforce to the city of Bobo-Dioulasso may explain part of the relatively high proportion of females (44.8%) who come from outside of Bobo-Dioulasso, compared to males (33.8%).

Diverse ethnic groups compose the sample. The surveyed youth are from almost forty ethnic groups³. However the country's dominant ethnic group (Mossi) remains the dominant one in the Bobo-Dioulasso sample, with almost one out of three adolescents (29,2%). The autochthonous ethnic group

comes on second position (17.5%), followed by small ethnic groups representing each less than 10% of the sample.

Almost seven adolescents out of ten (70.0%) declare they are Muslim. The remaining one third are Christians and essentially catholic.

Eight out of ten adolescents attended school (81.4%) versus 18.6% who have never been to school. The break down by sex shows that almost one male adolescent out of ten (9.1%) didn't get chance to attend school compared to one out of four female adolescents (26.0%)⁴.

The breakdown by activity for adolescents who attended school shows that the majority of them remain students (three adolescents out of five remain students). More than one female adolescent out of five is housewife. That is consistent with the idea of girls "importation" to Bobo-Dioulasso for urban families housework.

About seven adolescents out of ten are still alone (70.1%). However one female adolescent out of three (33,0%) has already experienced marital life. Even the majority of the adolescents are still alone at the time of the survey, almost all (91.4%) think that marriage is a necessity.

Adolescents knowledge about HIV/AIDS

Almost all adolescents interviewed, have heard about HIV/AIDS (97.2%). Regarding the paths of infection, the sexual way has been mentioned by three adolescent out of four (76.8%). The blood's path has also been mentioned in a third of the cases (32,8%). It is a concern to notice that almost one female adolescent out of five (21.0%) versus 7,7% of male adolescents didn't know nothing on how the disease is transmitted.

Almost two adolescents out of three 67.8% (75.5% for females and 61.8% for males) know that an healthy looked person could have been infected. If less than one adolescent out of five (17.5%) declare to know someone who is infected by HIV, there are more adolescents (37.5%) who have known someone who died by AIDS.

Concerning the measures for preventing HIV, condom use is the most mentioned precaution (70.6% including 61.7% for females and 81.8% for males). The second precaution after condom use is abstinence, mentioned by almost one adolescent out of five (21.8%); faithfulness to the partner is mentioned by a bit less than one adolescent out of six (16.4%).

Adolescents HIV testing

Less than 2% (1.3%) of the 830 sampled adolescents declare they have done the HIV test. The rate is almost the same for both males (1.4%) and females (1.3%). All female adolescents who did the test declare they know their sero-status compared to three of the five male adolescents who did it.

To the question of whether the adolescents want (or want again) to know their sero status, the answer is yes for a bit more than 3 out of 4 (who ever heard about HIV – 77.6% including 73.1% for females and 83.2% for males).

Among the reasons given by adolescents to justify the fact that they haven't done the HIV test, there are essentially : for almost one third of them (30.6%), "they have not thought about it yet". For a bit more than one adolescent out of five (23.3%), the lack of information is the reason; a bit fewer (17.1%) don't want it and for about one out of ten adolescents (9.3%), the fear of the results is the main reason for not having done the HIV test. For both female and male adolescents, the fact that they have not thought about the test yet seems to be the main reason for not having done the HIV test.

Sero-status

The results show that the prevalence rate is 5.25% for the all sample of the population aged between 13 and 49 (4.37% for males and 6.00% for females) (Baya et Méda., 2001). Concerning the adolescent age group, six (including 1 male and 5 females) are HIV positive. All cases are HIV-1 sub-type. None of the HIV positive adolescents knows his sero-status. The male infected adolescent is 16 years old while one of the infected young women is 13 years old, two are 16 years old and two are 19 years old.

Sexual behaviours

Sex experience

Five of the six infected adolescents (the male one and four females) declared they had never had sex. If their statement is true, it would mean that other ways of transmission, different from the sexual one are to be suspected in the Bobo-Dioulasso adolescent population.

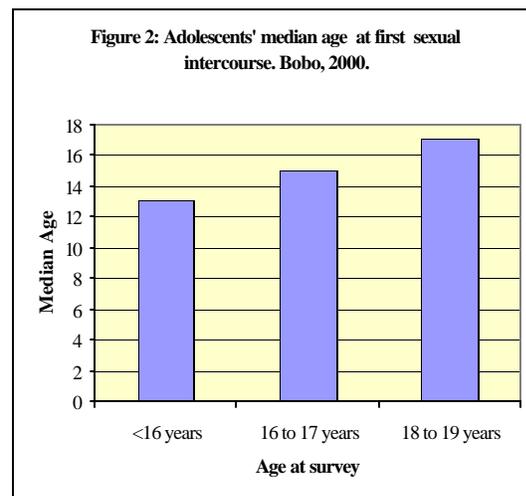
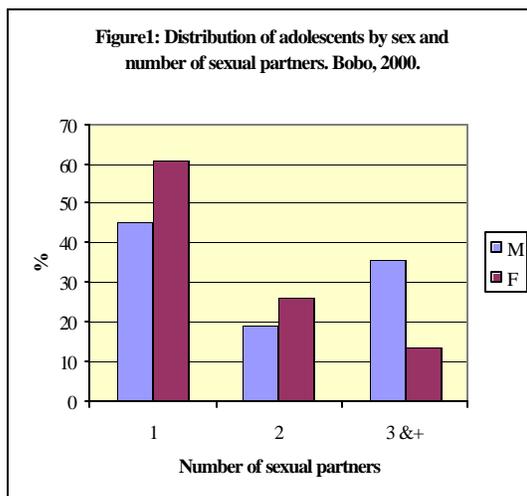
Nonetheless, research findings showing that the HIV infection in Sub-Saharan Africa is essentially by sexual transmission, it is useful to take a look on the sexual activity. The Bobo-Dioulasso data show that almost one out of three adolescents (30.6% has already experienced sex. The rate is a bit higher for females (33.5%) than for males (26.9%). Among the adolescents who never had a marital life, one

out of four (25.0%), had had sex experience. The rate is almost the same for both males (24.6%) and females (25.4%).

Among the adolescents who have sex experience, most of females (95.4%) got it with older men while most of males (68.5%) got it with younger ladies. This pattern seems to reflect the view of the all adolescents sample. Indeed, for 82.7% of all male adolescents, the ideal first sex partner should be younger while it is the reverse for female adolescents (the ideal first partner should be older).

For both male and female adolescents, love and curiosity seem to be the reasons mostly mentioned which have led to the first sex experience. For female adolescents, the promises of marriage are also an important reason (the third one) to drive the first sex experience.

A bit more than half of sexually active adolescents declare only one partner in their life. The others had more than one partner; male adolescents seem to have had more partners than females (figure 1). Furthermore the median age at first sex experience seems to become younger over time. While the adolescent aged from 18 to 19 declare their first sex experience at 17, the younger adolescents with sex experience seem to have had their first experience earlier (figure 2). However, it must be kept in mind that bias isn't impossible because the older adolescents (versus the younger) may have forgotten the exact age at their first sexual intercourse.



Sexual intercourse protection

Among the sexually active adolescents (254 people), almost three out of five (57.5%) didn't use condom at their first sexual intercourse (60.3% for females and 53.1% for males). These proportions

correspond roughly to the proportion of those who didn't know any contraceptive method by the time of their first sex experience. The rate of those who didn't use condom at their last sexual intercourse is also high (59.4%, including 67.9% for females and 45.9% for males). Less than half (41.5%) of the single and sexually active adolescents have used systematically condom (33.3% for females versus 52.5% for males).

Results of the multivaried analysis

In order to highlight the important factors which influence the condom use at the first sex experience, the potential explanatory variables are taken into account simultaneously in a same logistic model. The table 1 below gives the distribution of the adolescents for each category of the principal explanatory variables I considered.

Table 1 : Proportion of the sexually active adolescents for each category of the principal explanatory variables considered. Bobo-Dioulasso 2000.

Variable	Category	Proportion		
		M+F	M	F
Age				
	< 16 years	11.4	14.3	9.6
	16 - 17	35.1	36.7	34.0
	18 - 19 CR	53.5	49.0	56.4
Gender	Male	38.6	--	--
	Female CR	61.4	--	--
School attendance	Never attend school	24.0	12.2	31.4
	Attends (ed) school CR	76.0	87.8	68.6
Place of birth	Bobo-Dioulasso CR	52.4	56.1	50.0
	Elsewhere	47.6	43.9	50.0
Ethnic group	Mossi	27.2	28.6	26.3
	Bobo	18.9	16.3	20.5
	Others CR	53.9	55.1	53.2
Religion	Muslim CR	70.1	67.3	71.8
	Non muslim	29.9	32.7	28.2
Marital status	Ever had marital life	20.5	5.1	30.1
	Never had marital life CR	79.5	94.9	69.9
Knowledge of contraceptive method at first sex experience	Know	34.7	45.2	30.5
	Don't know CR	65.3	54.8	69.5
Knowledge of precautions to avoid HIV/AIDS	Know CR	92.1	96.9	89.0
	Don't know	7.9	3.1	11.0
Number of observations		254	98	156

CR= category of reference

The analysis of the probability to use condom at the first sex experience, using the logit model gives coefficients corresponding to the dichotomous variables associated to the different categories of each variable of the model. STATA performs a statistical test for the estimated parameters. For a variable with n categories, $n-1$ coefficients are computed which are compared to zero, corresponding to the

coefficient of the reference category. A value of the coefficient greater than zero means more chances while a value less than zero means less chances compared to the reference category.

In order to facilitate the results reading, the coefficients were transformed into odds ratios as shown on table 2.

Table 2 : Odds ratios for condom use by the adolescents at the first sex experience. Bobo-Dioulasso 2000.

Variable	Category	Odds Ratios		
		Male	Female	M + F
Age	< 16 years	0.62	0.85	0.66
	16 - 17	0.37 *	0.79	0.66
Gender	Males	---	---	0.72
Place of birth	Outside Bobo-Dsso	1.58	1.14	1.20
School attendance	Never attend school	1.00	0.85	0.92
Ethnic group	Mossi	5.83 ***	0.95	1.47
	Bobo	4.41 *	0.78	1.05
Religion	Non muslim	3.53 **	1.41 *	1.72 **
Marital status	Ever had marital life	0.54	0.12 ***	0.11 ***
FP knowledge	Know	10.53 ***	1.60 ***	2.51 ***
Knowledge of precautions to avoid HIV/AIDS	Know	---	0.87	1.13
Reference		1.00	1.00	1.00
Number of observations		95	156	254
Number of condom users		41	56	97
Log of vraisemblance		-42.41	-79.34	-130.71

N.B. : The omitted categories are : age 18-19, female, born in Bobo-Dsso, ever attended school, other ethnic groups, muslim, never had marital life, knew at least one contraceptive method by the first sex experience, knows at least one precaution to avoid HIV infection.

*: 10% confidence; **: 5% confidence; ***: 1% confidence

The results of the multivaried analysis show a significant condom under-use by the Muslim adolescents (versus the non Muslim) at their first sex experience. The non Muslim adolescents have for example almost three times and half chances to use condom at their first sex experience compared to their Muslim counterparts. However, the most important result seems to be the adolescents prior knowledge of contraceptive methods by the time of first sex experience. The fact that adolescents knew contraceptives methods prior to their first sex experience has hugely contributed to the condom use at the first sexual intercourse.

Discussion

The goal of the study was to analyse the level of the seroprevalence in relation with the Bobo-Dioulasso adolescents (males and females) sexual behaviors.

The results show a low rate of seroprevalence for adolescents taken altogether (1.97%). However, more females are infected than males. Indeed, among the six infected adolescents, only one is male while the five others are females. It remains surprising that five of the six infected adolescents declare they had never had sex. If these statements are true, it would be useful to investigate other ways of HIV transmission (different from the sexual one) in Bobo-Dioulasso. It is also possible that the adolescents didn't tell the truth because they felt uncomfortable to let know that they were already sexually active at this age. Anyway, there is no clue through this survey to verify if what the adolescents have said is true or not. In the context of HIV, it would be useful to set up such procedure because the results we got here are ambiguous in term of program development; the way of transmission determines the type of intervention to be designed.

Besides the uncertainty of the statements of those HIV positive adolescents, the results are not without worries when analysing the behaviors of sexually active adolescents and particularly those of female adolescents. Generally, the latter have and seem to prefer having sex with older men. For almost all sexually active female adolescents in Bobo-Dioulasso (95%), they have had their experience with older male partners. These results are consistent with those found by Zanou and colleagues (1999) in Ivory Coast, showing that 89% of the female adolescents have their first sex experience with older men. The study done by Aou and Ju (2000) in Port Harcourt (Nigeria) also shows that three out of four (74.2%) sexually active female adolescents have as partners, older worker men. According to the authors, the girls' sexual activity in Port Harcourt would be motivated by money.

The data from Bobo-Dioulasso indicate also that the median age at first sex tends to become younger. This result is consistent with the remark made by Okonofua, stating that the age at first sex became lower everywhere in Africa for female and male adolescents whereas there are more and more adolescents with multiple partners (Okonofua, 2000). The rejuvenation of the age at first sex may add some worries if we consider the study done by Kabiga and colleagues (2000), showing higher HIV risk among female adolescents who have had their first sex experience before 16 years of age.

Usually, the male partners of female adolescents probably have already a longer experience of sex and therefore have been longer exposed to HIV risk of infection. At the same time, the condom use is highly limited. Less than half of the Bobo-Dioulasso sexually active adolescents have systematically used condom.

We however noticed that a significant rate of adolescents who knew contraceptive methods by the time of their first sex experience have used condom. This result is in favor of earlier interventions

related to reproductive health education for adolescents in school and outside school as well in a country like Burkina Faso where half of the adolescents at school age don't get chance to attend school.

A lot of debates on contraceptive methods use by adolescents are still under way. Efficient methods use may contribute to lower the rate of unwanted pregnancies which consequences are induced abortions and high maternal mortality. Concerning particularly the condom, its additional advantage is to protect against STIs/HIV/AIDS.

There are some arguments against the policy of making the contraceptive methods available everywhere at any time. According to these arguments, such a policy may encourage promiscuity and therefore may scale up the level of STIs. Thus, the traditional societies in Africa and specially the religious groups are sometimes reluctant to the idea of width availability of contraceptive methods (Aou and Ju, 2000).

It is useful to remind that all KAP surveys (Knowledge, Attitudes and Practices) conducted during the past years in Africa, indicate that HIV/AIDS is today well known by the populations. But the behaviors remain stationary or evolve more slowly than knowledge. Because the most important way of HIV transmission in Africa is sexual transmission, some actors who are involved in the fight against HIV still recommend abstinence until marriage and then faith inside marriage. If any alternative should not be put aside, it important to ask ourselves how many people are able to remain virgin until their first marriage. Is this African social norm which was highly valuable in some communities still up to date? If not, isn't it desirable to renew the discourse on this issue in order to give more chances of success to the fight against the HIV epidemic?

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ANNEXES

Annex 1 : Distribution of the surveyed adolescent population by the principal socio-demographic characteristics. Bobo-Dioulasso, 2000.

Variable		Number			Proportion		
		M	F	M+F	M	F	M+F
Age	13	44	43	87	12.1	9.2	10.5
	14	39	86	125	10.7	18.5	15.1
	15	63	63	126	17.3	13.5	15.2
	16	64	79	143	17.6	17.0	17.2
	17	56	62	118	15.4	13.3	14.2
	18	48	81	129	13.2	17.4	15.5
	19	50	52	102	13.7	11.2	12.3
	Total	364	466	830	100.0	100.0	100.0
Place of birth	Bobo	241	257	498	66.2	55.2	60.0
	Other city	31	76	107	8.5	16.3	17.9
	Other rural area	48	70	118	13.2	15.0	14.2
	Elsewhere	44	63	107	12.1	13.5	12.9
	Total	364	466	830	100.0	100.0	100.0
Religion	Muslims	246	335	581	67.6	71.9	70.0
	Christians	118	126	244	32.4	27.0	29.4
	Others	0	5	5	0.0	1.1	0.6
	Total	364	466	830	100.0	100.0	100.0
School attendance	Yes	331	345	676	90.9	74.0	81.4
	No	33	121	154	9.1	26.0	18.6
	Total	364	466	830	100.0	100.0	100.0
Level reached by those who attended school	Primary	145	177	322	48.8	51.3	47.6
	1st 4 years Second.	149	125	274	45.0	36.2	40.5
	5 years Second. &+	13	18	31	3.9	5.2	4.6
	Others and ND	24	25	49	7.3	7.2	7.2
	Total	331	345	676	100.0	100.0	100.0
Current school attendance status for those attended school	No more	124	138	262	37.5	40.0	38.8
	At school	207	207	414	62.5	60.0	61.2
	Total	331	345	676	100.0	100.0	100.0
Marital status	Bachelor	270	312	582	74.2	67.0	70.1
	Ever marital life	94	154	248	25.8	33.0	29.9
	Total	364	466	830	100.0	100.0	100.0
Ethnic groups	Mossi	106	136	242	29.1	29.2	29.2
	Bobo	66	79	145	18.1	17.0	17.5
	Others	192	251	443	52.7	53.9	53.4
	Total	364	466	830	100.0	100.0	100.0

¹ The study has been funded by UNAIDS and implemented by the Centre Muraz (Bobo-Dioulasso) and UERD (University of Ouagadougou) under the umbrella of the National Committee of AIDS.

² The field work details are described in a report called “Rapport d’exécution de l’enquête de terrain (Baya et al., 2000).”

³ There are around sixty ethnic groups in the country.

⁴ This figure illustrates the gender disparities in schooling at the country level. At the beginning of the academic year 1999/2000, only one out of three children at school age (7-12 years) were attending school at the country level. This average hides important spatial disparities and particularly the persistence of girls under-schooling (the net rate was 27.7 % for girls versus 39.7% for boys) which increases at secondary and higher school levels.