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Influence of Information and Communication Technologies on the sexual behaviours of secondary schools pupils in Abidjan and in Dabou (Côte d'Ivoire)

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Abstract

Context and object of the study

Information and Communication Technologies (ICTs) are booming in developing countries. We initiated this study whose objective was to analyze the influence of ICTs on the sexual behaviors of adolescents.

Methods

We carried out a cross-sectional study with a descriptive focus survey over a period of two months among 1898 pupils of the year nine to the final year of high school. The sample was obtained after selection of 18 schools in Abidjan and Dabou by a stratified random sampling method.

Results

About 83% of the respondents had a mobile phone and 62.6% had access to the Internet. There was a significant relationship between mobile phone possession, Internet access and age at first intercourse ($p < 0.05$). The internet access was statistically associated with the recourse to the casual partners ($p < 0.05$). Finally, the pornography via mobile phone seemed to influence age at first intercourse and casual partnership.

Conclusion

This survey showed that ICTs had a negative influence on sexual behavior. So, it seems important to implement an effective strategy to promote the sexual health of adolescents.

Keywords: Information and Communication Technologies-Sexual Behaviors-Adolescents-Côte d'Ivoire.

Introduction

The Information and Communication Technologies (ICTs) include techniques used in the processing and transmission of information. The modes of communication have been radically transformed by modern technology, especially the Internet, resulting in a transformation of social ties [1]. These ICTs are booming in developing countries and are playing an increasingly important role in the fields of information, communication, education and leisure [2, 3]. In Africa, the number of adolescents possessing a mobile phone and having an access to the Internet is growing [2, 4]. Several countries in Africa, South America and Asia view these ICTs as an opportunity for reproductive health [3, 5, 6]. The sexuality is still a taboo subject in Africa, therefore its learning by adolescents is mainly done by friends, television and other ICTs [7, 8].

These ICTs could pose a threat in Africa by increasing access to an overabundance of messages, images and films of a sexual nature, most often degrading and showing a sexuality that is not "safe" [1, 9-11]. Indeed, one of the objectives of a large part of Internet users via mobile phone or computer is to consume pornographic material and to meet sexual partners [12]. Despite the improvement in the use of condoms in several African countries such as Côte d'Ivoire and Senegal, adolescents sexuality often still results in early sexual intercourse [4, 13] and in promiscuous behavior [4, 14]. Surveys led for the greater part in industrialized countries highlighted a correlation between the access to the pornography and the sexual risk behaviors [15, 16].

A survey led in Abidjan, Côte d'Ivoire showed that the access to pornographic images had a negative influence on pupils' sexual behaviors^[8]. Would not the ICTs by exposing adolescents to pornographic material, dating sites and unsafe sexuality promote sexual risk behaviors?

In Côte d'Ivoire, adolescents constitute a population at risk for Sexually Transmitted Infections and HIV/AIDS^[7,13,17]. Despite a good knowledge of the condom and the transmission of HIV/AIDS, they continue to have risk behaviors^[7, 13, 17]. The promiscuous behavior, for example, was found in 33% of young men aged from 15 to 24 years old^[13]. However, very few surveys exist on the links between these sexual risk behaviors and modern ICTs. It is in this context that we decided to carry out this survey whose objective was to analyze the influence of ICT on the sexual behavior of adolescents in schools.

Methods

Type and duration of the survey

This was a cross-sectional study with a descriptive focus which took place from 25 November 2013 to 23 January 2014.

Framework of the survey

Our survey took place in 2 Regional Department of Education (RDE) located in urban and peri-urban areas:

- The RDE of Abidjan 3 which included 179 schools located in the commune of Yopougon-Songon, for a total number of 92 512 pupils from year seven to the final year of high school-The RDE of Dabou, which included 29 schools located in the cities of Dabou, Jacquerville and Grand-Lahou, for a total number of 24,044 pupils from year seven to the final year of high school.

Study population

The study population consisted of pupils of all ages and genders from year nine to the final year of the high school, regularly enrolled in the selected schools and having agreed to submit to the questionnaire.

Sampling

We used a stratified sampling method proportional to the size of RDE. For that purpose, we randomly selected the schools stratified on 3 levels (public, private, confessional) in each of the 2 RDEs.

This drawing allowed us to obtain a sample of 18 schools (6 public, 8 private and 4 confessional) among which 10 in Abidjan 3 and 8 in Dabou. Then, at the level of each school, a simple random draw was carried out at several levels of grades (year nine, year ten, Fifth form, junior year and final year of high school) in order to identify a classroom in each level that is 5 classrooms in each 18 schools. All pupils in the selected classroom were enrolled. The number of pupils retained amounted to 1,898 pupils, including 1,219 in Abidjan 3 and 679 in Dabou. The refusal rate was estimated at 0.5%.

Data collection

Before carrying out the survey, a pre-test was conducted in two secondary schools outside the selection field in order to validate the questionnaire. The data collection was

conducted by two investigators, using an anonymous self-administered questionnaire. The questions were mainly closed-ended questions and concerned socio-demographic characteristics (age, gender, educational level, religion and living environment), the ICTs (access to the Internet, possession of a mobile phone, access to pornography, Parental control) and the sexual behaviors (sexual activity, age at first intercourse, early sexual intercourse, occasional partners, condom use). Concerning the sexual behaviors, we selected as variables the practices and behaviors at risk commonly described in the literature in Sub-Saharan Africa and in Côte d'Ivoire^[7, 13, 14]:

- Age at first sexual intercourse: age at which an adolescent had his first penetrating sexual intercourse. The sexual intercourse was considered early for adolescents under 15 years of age.

- Occasional partners: adolescent who has had sexual intercourse in the last 12 months with a non-regular partner.

- Use of condoms: adolescent who reported having used a condom systematically during its sexual intercourse.

Data processing and analysis

The data was entered and processed using the Epi Info and Stata software. To test the existence of statistical links between the different variables under study, we used the Chi-square test with a significance level of 5%.

Ethical Considerations

The survey started after obtaining the authorization of the different Regional Directors of the Department of Education and the heads of the school visited. The information was collected in full respect of confidentiality after informed knowledge and consent of the pupils and parents. An educator was present during the survey in each school.

Results

Socio-demographic characteristics

The adolescents, of whom 48.7% were male, had an average age of 16.1 ± 2.4 years with extremes ranging from 10 to 25 years. They were mostly Christian, in fourth year of high school and lived with their parents.

Information and Communication Technologies

A total of 1577 pupils (83%) had a mobile phone. The possession of the mobile phone by the pupils was almost identical in Dabou (83.5%) and in Abidjan (82.9%). In addition, 62.5% of respondents with a mobile phone said they were not subject to parental control. The use of the telephone was mainly done at home but 45.2% also used it at school. Our survey found that 62.6% of respondents had access to the Internet (at home, at school, in an Internet cafe or on their mobile phone). The majority of pupils (79.1%) had already had access to the pornography once at least. Most of them (65.6%) had access to the pornography through mobile phones. Among the adolescents surveyed, there was a significant association between possession of a mobile phone and age at first intercourse ($p < 0.05$). Moreover, the access to the Internet appeared to influence age at first intercourse ($p < 0.05$) (Table 1).

Table 1: Relationship between age at first intercourse, access to the Internet and possession of a mobile phone

Age at first sexual intercourse	Internet Access			p	Possession of mobile phone			p
	Yes	No	Total		Yes	No	Total	
7-10 years	49	21	70	0,018	60	10	70	0,013
11-14 years	324	124	448		398	50	448	
15 years more	323	183	506		473	33	506	
Total	696	328	1024		931	93	1024	

Sexual behaviors

More than half of respondents (53.9%) were sexually active with an average age at first intercourse at 14.2 ± 1.9 . Among the pupils sexually active, 72.1% had learned sexual acts through ICTs, in particular by the mobile phones in 31.4% of cases. The access to internet seemed to favor the fact of having occasional partners ($p < 0.05$). However, the possession of a mobile phone was not significantly related to casual partners (Table 2). The Access to pornography via mobile phones was significantly associated with age at first intercourse and use of casual partners ($p < 0.05$) (Table 3). The rate of condom use was 15.3%. The possession of a mobile phone and the access to the Internet did not influence condom use among respondents.

Table 2: Relationship between casual partners, possession of a mobile phone and Internet

Casual partners	Possession of mobile phone		p
	Yes	No	
Yes	637	72	0,339
No	289	26	
Casual partners	Internet access		p
	Yes	No	
Yes	504	205	0,001
No	190	125	

Table 3: Relationship between age at first intercourse, casual partners and pornography access channel

Age at first sexual Intercourse	Channel of access to the pornography				p
	Television/Video	Internet	Mobile	Total	
7-10 years	12	11	47	70	0,04
11-14 years	114	43	291	448	
15 years and more	98	43	365	506	
Total	224	97	703	1024	
Casual Partners	Channel of access to the pornography				p
	Television/Video	Internet	Mobile	Total	
Yes	138	68	503	709	0,02
No	86	29	200	315	
Total	224	97	703	1024	

Discussion

The present survey allowed to analyze the influence of modern ICTs (Internet and mobile phone) on the sexual behavior of adolescents in schools. In the two regional directorates where the survey was conducted, almost 83% of the students had a mobile phone. The use of the mobile phone in Africa has increased in a considerable way passing from 54 million users in 2003 to 350 million in 2008 [18]. The mobile phone possession and the access to the Internet were significantly associated with early sexual intercourse, found in 50.6% of adolescents (Table II). This rate was 19% among young women aged from 15 to 24 compared to 15% among young men in a survey carried out in Côte d'Ivoire in 2010 [13]. Several surveys have shown that early sexual intercourse is associated with an increase in sexual partners, increasing exposure to the risk of Sexually Transmitted Infections [13,19]. The recourse of casual partners was statistically related to the Internet access (Table III). This risk behavior also exposes adolescents to Sexually Transmitted Infections. A survey conducted in 2008 in West Africa found that the Côte d'Ivoire had the highest proportion of new HIV/AIDS infections associated with occasional partners [17]. Despite a marked increase in condom use in several African countries, including the Côte d'Ivoire, the promotion of regular condom use remains a topical issue in African developing countries [4,13]. One of the characteristics of ICTs is to make immediately accessible by image pornographic material. N'Dri [8]

highlighted in a survey carried out in Abidjan among pupils that the access to pornographic images was statistically associated with being sexually active, early sexual intercourse and promiscuous behavior. Our results are similar because the access to the pornography was statistically associated with early sexual intercourse and the recourse of casual partners (Table IV). The Pornography through ICTs is often a means of learning about sexuality for adolescents in Africa [10]. However, the messages conveyed are rarely in favor of safe sex [9,10]. A sexuality education involving teachers, health authorities and parents could help adolescents to engage in safe sexual behavior and build a gender identity of their own. The lack of involvement of parents in adolescent sex education in Africa remains a major concern [7,10,19]. In Côte d'Ivoire, Doudou [7] suggests that parents be made aware of the need for parent-child dialogue on sexual matters. The use of the Internet is often beneficial because it provides the adolescent with an opening to the world with fast access to information [18]. The Internet is becoming a tool for health education [5,6]. Indeed, the infatuation of adolescents for these ICTs has made it possible to implement prevention projects using telephone messages or the Internet [3,5,6]. Most of these projects were aimed at reducing the incidence of STI/HIV/AIDS and unwanted pregnancy among adolescents [3,5,6]. Nevertheless, it should not be overshadowed that its abuse could constitute a danger for adolescents. They constitute a vulnerable population

often ignoring the dangers of the Internet ^[12]. The protection mechanisms against Internet-related risks remain insufficient as mentioned by Kadri ^[12] in a survey carried out in Morocco.

The present survey has limits. Indeed, the results cannot be extrapolated to the entire pupils population because it has been carried out only in urban and semi-urban areas which obscure the rural environment. In addition, several other factors that may influence adolescent sexuality have not been taken into account. A multivariate analysis would have allowed to strengthen our results. However, it is the first survey that takes into account semi-urban areas and is interested in modern technologies, "Internet" and "Mobile telephony". Furthermore, it also highlights the persistence of sexual risk behavior among adolescents. Other more thorough survey should be carried out.

Conclusion

In response to rapid technological developments and growing exposure of adolescents, it was appropriate to investigate the influence of new technologies on their sexual behavior. This survey showed the negative influence of ICTs on adolescent sexual behavior. In view of these results, it seems appropriate to implement an effective strategy to promote the sexual health of adolescents. These strategies should involve the pupils themselves on the dangers of the Internet, parents on the importance of ICTs control and dialogue and health authorities on the need for an appropriate health policy. Although not a priority in Côte d'Ivoire, there is a need to focus on the negative consequences that ICTs could have in developing countries that are already confronted with Internet scams.

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