Cybersex Addiction in Benin Schools (2023)

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Abstract

Introduction: The development of digital technology over the last few decades has facilitated access to websites and videos in the field of sexuality, eliminating many of the boundaries that were restrictive for some and protective for others. While this evolution has favored better information sharing, it has also precipitated the emergence of an entirely new phenomenon: cybersexuality. **Objective:** The aim of this study was to investigate addiction to cybersexuality in schools in the city of Parakou in 2023. **Methods:** Descriptive cross-sectional study conducted in general, technical and vocational secondary schools in Parakou, northern Benin, from December 2022 to September 2023. A self-administered questionnaire integrating the "short Internet sex Addiction Test" (s-IATsex) scale was used to assess cybersexuality. **Results:** A total of 482 students participated in the study. The prevalence of problematic use of cybersexuality in Parakou schools was 11.4% according to the s-IATsex (Short Internet sex Addiction Test) scale. The average age of the students was 16.99 ± 2.16 years, with extremes of 11 and 30 years. The majority were in secondary school (67.8%). Factors associated with addiction to cybersexuality were: place of residence (OR = 0.164; p = 0.017), external genitalia discharge

(OR = 5.37; p = 0.049), sexual partner (OR = 2.53; p = 0.010), access to pornographic sites (OR = 7.96; p < 0.001), anxiety (OR = 3.86; p = 0.001) and depression (OR = 2.75; p = 0.018). **Conclusion:** Approximately one pupil in 10 is addicted to cybersexuality at school in the town of Parakou/Parakou city, Benin. The multiple consequences of this addiction call for effective preventive actions aimed at vulnerable groups of pupils.

Keywords

Cybersex, Addiction, Students, Benin, 2023

1. Introduction

Cybersexuality is defined as the use of sexual material (visual, auditory or written) obtained from internet for sexual stimulation, arousal or satisfaction [1]. Looking for sensational things, people shift from simple usage to intense, repetitive and persistent practice of cybersexuality. Thus, usage becomes problematic. Addiction to cybersex is the dependence on a variety of digital practices such as watching pornographic or erotic material, taking part in sexual chats, participating in or watching webcam sex practices, searching online for partners for offline sex, or seeking information or advice about sexuality [2]. A distinction is made between two forms of cybersex addiction, according to which addiction occurs: passive cybersex addiction and active cybersex addiction [3].

Several prevalence studies have been carried out on this subject, particularly in school and student environments. One of these studies reported a prevalence of 4.2% in Germany [4]. The risk of addiction varies in different studies: 8.7% in Tunisia [5]; 10.3% in the USA [6].

Teenagers and young people are more exposed to these practices, which can have harmful consequences on various areas of their lives. On the somatic level, sexually transmitted infections favored by the multiplication of offline sexual partners and risk-taking, as well as sexual dysfunction and libido disorders, have been reported [2] [7]. At school, the impact of cybersex addiction can be a memory impairment with concentration difficulties, leading to a reduction of the academic performance. In the social sphere, isolation, relational difficulties with a multiplicity of sexual partners, and the precocity and frequency of sexual intercourse have all been reported; on the other hand, the desire to reproduce what is viewed leads to rape, dating violence and risk-taking [4]. On the psychiatric one, disorders such as depression, anxiety, substance abuse and suicide attempts are all mentioned. Then, the act of masturbation that often accompanies cybersexuality and which is perceived as a sin in the spiritual realm can generate guilty likely to become morbid. Many other adverse effects on family relationships have been also reported [8]. However, to date, no specific pharmacological therapy has been codified for the management of problematic cybersex use. But, serotonin reuptake inhibitors, anxiolytics and anti-androgens have been tried out [2]. Cogni-

tive-behavioural therapy remains the most recommended and by far the most widely used [2]. In France for instance, there are groups called Dépendants Affectifs et Sexuels Anonymes (D.A.S.A.). Nonetheless, the best treatment for this disease, which blights the youth ethic, is prevention [9].

In view of the many consequences of problematic use of cybersex addiction, a study of its prevalence and associated factors, especially in schools, would seem judicious in order to provide statistical data in the socio-cultural context of Benin. That's why this study, whose aim was to investigate the problematic use of cybersexuality in the school environment in the town of Parakou, was initiated in 2022-2023 as part of an end-of-training thesis in basic medical studies.

2. Methods

2.1. Population and Procedures

This study focused on public and private schools in the town of Parakou, in the north-east of Benin Republic. The study was a cross-sectional, descriptive, analytical study conducted from December 2022 to September 2023, with data collection from May 01 to July 01, 2023. The study population consisted of all students attending general, technical or vocational secondary schools in the city of Parakou for the 2022-2023 academic year. The sampling technique was a non-proportional stratified sampling combined with a simple random draw to include 482 students from secondary schools in the city of Parakou.

1st level: random selection of establishments

Initially, two strata were created. One was a list of all public schools, and the other was a list of private, technical schools in the commune of Parakou. The name of each school was written on a piece of paper, and a random selection of 5 schools per stratum was made. The list of schools surveyed was then transcribed onto paper.

2nd stage: class selection and choice of students surveyed

Once in a school, a numbered list of all classes was drawn up by module. A simple random draw was used to select one class per module. The next step was to select around ten students per class.

2.2. Measure

Data collection was done by a questionnaire collecting information on sociodemographic characteristics, background, biography, social survey, personality and sexual practices and behaviors. The dependent variable was the problematic use of cybersexuality which was assessed using the test proposed by Pawlikowski *et al.*: the s-IATsex scale. The HAD (Hospital Anxiety and Depression) scale [9] was used to screen for anxiety and depression among the respondents. A subjacent borderline personality was explored with the Borderline Personality Assessment Scale [10].

- **Short Internet sex Addiction Test (s-IATsex) [11]**

The short Internet sex Addiction Test (s-IATsex) is a questionnaire designed

by Brand, Pawlikowski *et al.* in 2013, modified and adapted to cybersex from the Internet Addiction Test scale by K. Young (1998), in which the terms "online" or "internet" have been replaced by "online sexual activities" and "internet sex sites". It is used to assess cybersex addiction. The scale comprises 12 items to be rated on a 5-point Likert scale, ranging from 1 (rarely) to 5 (always), and incorporates the following dimensions: loss of control, time devoted to the activity, craving and social problems linked to the activity. Initially in English, it was translated and validated in French in 2016 by Wéry *et al.* Scores range from 12 to 60. Psychometric qualities are satisfactory, with an alpha Cronbach = 0.87. The final score is obtained by summing the results on the Likert scale. A score above 30 is suggestive of an addiction to cybersexuality.

- **Hospital Anxiety and Depression (HAD) scale** [11]

The HAD scale is a screening instrument for anxiety and depressive disorders. It comprises 14 items rated from 0 to 3. Seven questions relate to anxiety (total A) and the other seven to depression (total D), giving two scores (maximum score for each = 21).

To screen for anxiety and depressive symptoms, the following interpretation can be proposed for each of the scores (A and D):

- 7 or less: no symptoms
- 8 to 10: doubtful symptomatology
- 11 and over: definite symptomatology.

- **Borderline personality assessment scale** [10]

The Personal Borderline Questionnaire (PBQ) is an instrument for assessing borderline personality. Adapted from DSM 5 criteria, it comprises 10 items rated from 1 to 2. The sum of response points gives a score, the interpretation of which has set a threshold score above 12 as being suggestive of Borderline personality.

2.3. Statistical Analysis

Data analysis was performed using SPSS version 25 software. To compare the difference between the study's dependent and independent variables, Pearson's Chi² test was used when the numbers were greater than five (05), and Fisher's exact test when one of the expected numbers was less than or equal to five (05). The association between the variables studied and the dependent variable was determined by the adjusted odds ratio (OR) and its 95% confidence interval (CI95%). The association between two variables was established for a p-value < 0.05 (5% significance level). The logistic regression model was also used to assess the influence of the various independent variables on the dependent variable.

3. Results

3.1. Prevalence of Cybersex Addiction

Among the 482 students who took part in the study, the prevalence of problematic use of cybersex in schools in Parakou was 11.4% according to the s-IATsex

(Short Internet sex Addiction Test) scale.

3.2. Socio-Demographic and Economic Characteristics of the Study Population

The average age of the students was 16.99 ± 2.16, with extremes of 11 and 30. The majority were in secondary school (67.8%), and 405 (84.0%) were financially dependent on their families.

Of the 55 students (11.4%) presenting a problematic use of online sexual practices, males dominated (65.45%). The 16 - 18 age group (56.4%) was more represented (Table 1).

Table 1. Distribution of students by socio-demographic and economic characteristics (Parakou, 2023).

	Sample (n = 482)	Addiction to cybersexuality	
		No (n = 427)	Yes (n = 55)
Age			
11 - 15 years	121 (25.1%)	114 (26.7%)	7 (12.7%)
16 - 18 years	258 (53.5%)	227 (53.2%)	31 (56.4%)
19 - 25 years	102 (21.2%)	85 (19.9%)	17 (30.9%)
>25 years	1 (00.2%)	1 (00.2%)	0 (00.0%)
Sex			
Man	245 (50.8%)	209 (48.9%)	36 (65.5%)
Woman	237 (49.2%)	218 (51.1%)	19 (34.5%)
Place of residence			
Urban	381 (79.0%)	328 (76.8%)	53 (96.4%)
Rural	101 (21.0%)	99 (23.2%)	2 (02.6%)
Lifestyle			
With family	327 (67.8%)	294 (68.9%)	33 (60.0%)
With single father	8 (01.7%)	7 (01.6%)	1 (01.8%)
With single mother	45 (09.3%)	40 (09.4%)	5 (09.1%)
Alone	15 (03.1%)	10 (02.3%)	5 (09.1%)
With aunt/uncle	46 (09.5%)	42 (09.8%)	4 (07.3%)
Other	41 (08.5%)	34 (08.0%)	7 (12.7%)
Existence of a source of income			
Yes	413 (85.7%)	362 (84.8%)	51 (92.7%)
No	69 (14.3%)	65 (15.2%)	4 (07.3%)
Family financial dependence			
Yes	405 (84.0%)	354 (82.9%)	51 (92.7%)
No	77 (16.0%)	73 (17.1%)	4 (07.3%)

3.3. Characteristics Relating to History and Previous Treatment

Of the subjects surveyed, 23 of them (41.8%) had a history of sexually transmitted infection. These conditions had various manifestations within the group: hot piss (gonorrhea) in 09 subjects (7.4%), scratching of the external genitalia in 22 subjects (18.0%), discharge from the external genitalia in 14 subjects (11.5%) and lesions of the external genitalia in 06 subjects (4.9%). Among male students, 40 ones (16.3%) suffered from sexual dysfunction or premature ejaculation. Then, the proportions of students regularly consuming alcohol, tobacco and drugs were 56.6%, 26.0% and 3.3% respectively in the study population. The use of any of these psychoactive substances was directly related to sexual activity for 05 (01.0%) respondents. It should be noted that 06 (1.2%) of these surveyed students had already answered in courts for an act related to cybersexuality.

Lastly, 27 (5.6%) of the students surveyed were taking conventional or traditional medical treatment for a problem related to sexuality; thus, the use of certain ointments and medicines (called "bazouka") as bitter cola and/or ginger was mentioned.

Of those with a cybersex addiction, 49 of them (88.8%) had developed a sexually transmitted infection, while 14 (38.9%) males suffered from sexual dysfunction or premature ejaculation. Consumption of alcohol, tobacco and drugs accounted for 65.5%, 56.3% and 14.5% respectively. In connection with cybersexuality, 01 (1.8%) of the students had legal problems. Finally, 03 students (5.5%) in the same group were taking conventional or traditional medical treatment for their sexuality (Table 2).

3.4. Biography

Among those with a cybersex addiction, 65.5% had parents with married status. More than seven out of ten (74.5%) had never discussed sexuality with their parents. Almost all of the students (96.4%) had gone through puberty, and 58.2% had sexual partners and experience of sexual intercourse (Table 3).

3.5. Passive Cybersexuality: Pornography

In the sample, more than one in four (36.7%) regularly or almost always visited web sites producing pornographic videos. The videos were used for sexual stimulation by 13.9% of students, while 13.3% watched them for masturbatory purposes. Similarly, one in ten (10.2%) were subscribers or members of various pornographic social networking groups, and 50.7% said that they had an irresistible urge to view pornographic material to stimulate their libido.

Among students with a cybersex addiction, more than eight out of ten (81.8%) regularly or almost regularly visited web sites producing pornographic videos. While 30.9% used these videos for sexual stimulation, 30.7% of cybersex addicts watched these videos for masturbatory purposes (Figure 1).

The information given by the results of this survey on the different types of videos reveals that those who prefer heterosexual videos (126 subjects or 72%) of young

adults (106 subjects or 60.57%) were the most numerous. A subject in this survey is likely to have one or more preferences with regard to these videos (Figure 2).

Table 2. Distribution of students surveyed according to their antecedents and previous treatments (Parakou, 2023).

	Sample (n = 482)	Addiction to cybersexuality	
		No (n = 427)	Yes (n = 55)
History of sexually transmitted infections			
Yes	119 (24.7%)	96 (22.5%)	23 (41.8%)
No	363 (75.31%)	331 (77.5%)	32 (58.2%)
Type of sexually transmitted infection			
Hot piss	9 (07.4%)	4 (00.9%)	5 (18.5%)
Sex scraping	22 (18.0%)	15 (03.5%)	7 (25.9%)
Sex discharge	14 (11.5%)	4 (00.9%)	10 (03.7%)
Sex lesion		4 (00.9%)	2 (07.4%)
Sexual dysfunction/Premature ejaculation			
Yes	34 (07.1%)	22 (05.2%)	12 (21.8%)
No	448 (92.9%)	405 (94.8%)	43 (78.2%)
Alcohol consumption			
Yes	273 (56.6%)	237 (55.5%)	36 (65.5%)
No	209 (43.4%)	190 (44.5%)	19 (34.5%)
Tobacco consumption			
Yes	25 (26%)	16 (3.7%)	9 (56.3%)
No	71 (74%)	64 (15%)	7 (43.7%)
Use of other psychoactive substances			
Yes	16 (3.3%)	8 (1.9%)	8 (14.5%)
No	466 (96.7%)	419 (98.1%)	47 (85.5%)
Existence of a relationship between substance use and sexuality			
Yes	5 (1%)	4 (0.9%)	1 (1.8%)
No	477 (99%)	442 (103.5%)	35 (63.6%)
Judicial history related to cybersexuality			
Yes	6 (1.2%)	4 (0.9%)	2 (3.6%)
No	476 (98.8%)	423 (99.1%)	53 (96.4%)
Conventional or traditional treatment related to sexuality			
Yes	27 (5.6%)	24 (5.6%)	3 (5.5%)
No	455 (94.4%)	403 (94.4%)	52 (94.5%)

Table 3. Distribution of respondents by biography (Parakou, 2023).

	Sample (n = 482)	Addiction to cybersexuality	
		No (n = 427)	Yes (n = 53)
Living parents			
Yes	462 (95.9%)	409 (95.8%)	53 (96.4%)
No	20 (4.1%)	18 (4.2%)	2 (3.6%)
Parents' marital status			
Married	369 (76.6%)	333 (78.0%)	36 (65.5%)
Separated	18 (03.7%)	16 (03.7%)	2 (3.6%)
Divorced	43 (08.9%)	35 (08.2%)	8 (14.5%)
Remarried	8 (01.7%)	8 (01.9%)	0 (00.0%)
Widowed	44 (09.1%)	35 (08.2%)	9 (16.4%)
Marital status of respondent			
Single	320 (66.4%)	288 (67.4%)	32 (58.18%)
In couple	162 (33.6%)	139 (32.6%)	23 (41.82%)
Nature of relationship with parents			
Good	421 (87.3%)	381 (89.2%)	40 (72.1%)
Conflictual	25 (05.2%)	15 (03.5%)	10 (18.2%)
Lax	9 (01.9%)	8 (01.9%)	1 (01.8%)
Overprotective	27 (05.6%)	23 (05.4%)	4 (07.3%)
Sexuality discussed with parents			
Yes	193 (40%)	179 (41.9%)	14 (25.5%)
No	289 (60%)	248 (58.1%)	41 (74.5%)
Neglected by parents			
Yes	74 (15.4%)	60 (14.1%)	14 (25.5%)
No	408 (84.6%)	367 (85.9%)	41 (74.5%)
Puberty			
Yes	408 (84.6%)	355 (83.1%)	53 (96.4%)
No	74 (15.4%)	72 (16.9%)	2 (03.6%)
Existence of a sexual partner			
Yes	176 (36.5%)	144 (33.7%)	32 (58.2%)
No	306 (63.5%)	283 (66.3%)	23 (41.8%)
1st sexual experience			
Yes	152 (31.5%)	120 (28.1%)	32 (58.2%)
No	330 (68.5%)	307 (71.9%)	23 (41.8%)

Continued

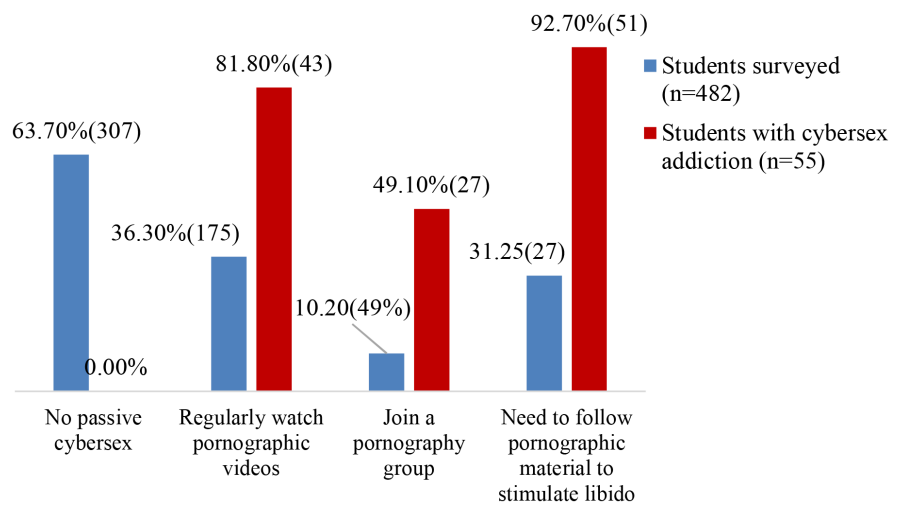| Experience of non-consensual sex			
Yes	29 (06.0%)	19 (04.4%)	10 (18.2%)
No	453 (94.0%)	408 (95.6%)	45 (81.8%)
Nature of relationship with partner			
Bad	22 (4.6%)	16 (03.7%)	6 (10.9%)
Good	134 (27.8%)	106 (24.8%)	28 (50.9%)
No partner	326 (67.6%)	305 (71.4%)	21 (38.2%)

Figure 1. Distribution of respondents according to characteristics related to passive cybersexuality (Parakou, 2023).
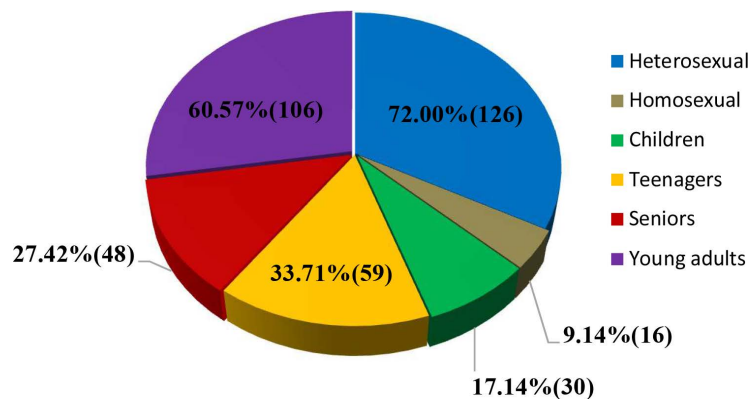
Figure 2. Distribution of students surveyed by type of video (Parakou, 2023).

Active cybersexuality
- Sexting (Figure 3)

Overall, 30.7% of students surveyed have received nude photos from strangers (18.9%), friends (7.9%) and boy/girlfriends (7.5%). At the same time, 8.9% of students sent their nude photos to boyfriends (5.2%) and girlfriends (3.1%). Once they had received the nude photos, only 1.2% of students were able to
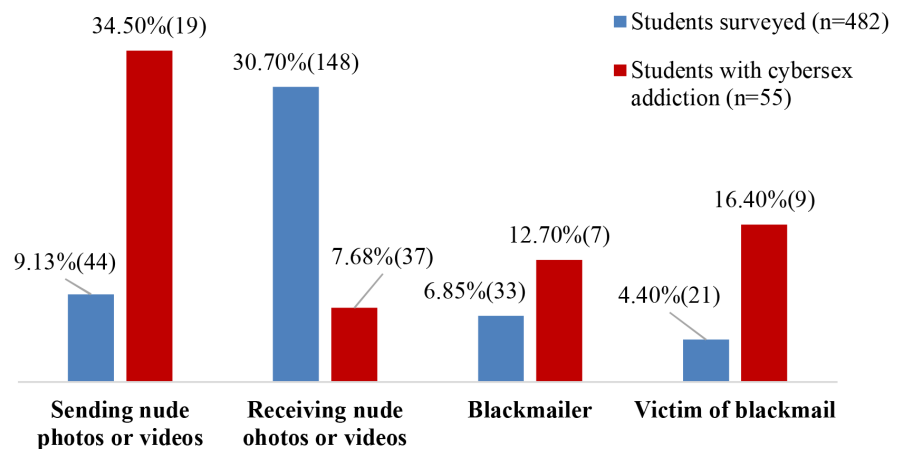
Figure 3. Distribution of students surveyed by sexting-related characteristics (Parakou, 2023).

discuss the subject with an older person, while 3.8% forwarded them or showed them to close friends. The images sent are often the object of a ruse; 6.6% of sexting students were able to use the photos received to blackmail their owners, respectively because the relationship was over (5.4%), out of jealousy (2.3%) and others to upset the person concerned or under pressure from friends.

Among students who send their intimate photos to others, 4.4% have been victims of blackmail and 2.3% have been victims of sextortion; the intimate content of messages sent has been transferred without their consent to others or published on social networks. 7.4% of these students expressed regret having sent intimate photos online to others. For the rest, it's a way to live a normal love relationship.

Among students with a problematic use of cybersex, 67.3% have received nude photos or videos and 34.5% have sent them. Of these, 12.7% had blackmailed the photo senders, and 16.4% had been blackmailed because of the photos they had sent.

- Dédipix, skin parties and dating sites

Nearly three out of ten (28.2%) of the students surveyed were aware of dédipix, and 5% of them practiced it. Skin parties, on the other hand, were known from 35.1% of the students surveyed and practiced by 21.2%. They were involved in the camaraderie of drinking establishments (11.2%), various drugs (weed, cocaine) and other substances such as sildenafil. In fact, 30.5% of students were aware of sexual or dating websites. 15.1% had accounts with pseudonyms, and 14.5% had relationships on these sites. It emerges that 4.3% of students had been able to have physical sexual relations with people initially known on a dating site.

In the group of students with an addiction to cybersexuality, 63.6% knew about dedipix, and 16.4% of them practiced it. Similarly, 61.8% of students with a cybersex addiction were aware of skin parties, and 41.8% practiced them regularly. While 70.9% are aware of online dating sites, 38.2% have created accounts

on these sites, and 32.7% are involved in online sexual relationships. It should be noted that 23.6% of students with a cybersex addiction have had physical sexual relations with people they have met on dating sites (Table 4).

3.6. Characteristics Relating to the Personality and Psychic Disorders Involved

In the present study, borderline personality was present in 56.4% of people with problematic cybersex use. More than half (55.6%) had difficulty concentrating, and around six out of ten (58.2%) had low self-esteem. Eighteen people (32.7%)

Table 4. Distribution of students surveyed according to characteristics related to Dédipix, Skin parties and online sexual and/or romantic encounters (Parakou, 2023).

	Sample (N = 482)	Addiction to cybersexuality	
		No (n = 427)	Yes (n = 55)
Knowledge of Dédipix			
Yes	136 (28.2%)	101 (23.7%)	35 (63.6%)
No	346 (71.8%)	326 (76.3%)	20 (36.4%)
Practical experience of Dédipix			
Yes	24 (5.0%)	15 (3.5%)	09 (16.4%)
No	458 (95.0%)	412 (96.5%)	46 (83.6%)
Skin party experience			
Yes	169 (35.1%)	135 (31.6%)	34 (61.8%)
No	313 (64.9%)	292 (68.4%)	21 (38.2%)
Skin party practice			
Yes	102 (21.2%)	79 (18.5%)	23 (41.8%)
No	380 (78.8%)	348 (81.5%)	32 (58.2%)
Knowledge of sex and/or love websites			
Yes	147 (30.5%)	108 (25.3%)	39 (70.9%)
No	339 (69.5%)	323 (75.6%)	16 (29.1%)
Account on a dating site			
Yes	73 (15.1%)	52 (12.2%)	21 (38.2%)
No	409 (94.9%)	375 (87.8%)	34 (61.8%)
Sexual/love relationship on a dating site			
Yes	70 (14.5%)	52 (12.2%)	18 (32.7%)
No	412 (95.5%)	375 (87.8%)	37 (67.3%)
Physical sexual relationship with partner met on a website			
Yes	20 (4.3%)	07 (1.6%)	13 (23.6%)
No	443 (95.7%)	401 (93.9%)	42 (76.4%)

had failed at school, 16 people (29.1%) had anxiety and 6 people (10.9%) had depression (Table 5).

Statistical relationships in bivariate analysis

In bivariate analysis, several factors showed a statistically significant association with problematic use of cybersex use. These included the following variables: gender (p = 0.021), age (p = 0.038), erectile dysfunction or presence of premature ejaculation (p < 0.001), external genital discharge (p < 0.001), history of anxiety (p = 0.001), history of depression (p = 0.010), tobacco use (p = 0.003), use of cannabis and other drugs (p < 0.001), nature of relationship with parents (p < 0.001), parental abandonment (p = 0.027), discussions of sexuality with parents (p = 0.019), puberty (p = 0.010), experience of first sexual intercourse (p < 0.001), the nature of the relationship with the partner (p < 0.001), frequent stimulation of the libido with pornographic images/videos (p < 0.001), consensual sexual intercourse (p < 0.001), access to dating sites (p < 0.001), access to pornographic websites (p < 0.001), exchange of sexual photos or videos (p < 0.001), Borderline personality (p = 0.012), membership of a pornographic publishing group (p < 0.001), sexual violence (p < 0.001), difficulty concentrating (p < 0.001), difficulty having pleasure around oneself (p < 0.001), low self-esteem (p < 0.001), satisfaction with physical sex (p < 0.001), academic failure (p < 0.001), anxiety (p < 0.001) and depression (p < 0.001) (Table 6).

Multivariate analysis of factors associated with addiction to cybersexuality

In multivariate analysis, a significant association was found between addiction to cybersexuality and the following variables: place of residence (OR = 0.164; p = 0.017), external genitalia discharge (OR = 5.37; p = 0.049), having a sexual partner (OR = 2.53; p = 0.010), access to pornographic sites (OR = 7.96; p < 0.001), anxiety (OR = 3.86; p = 0.001) and depression (OR = 2.75; p = 0.018) (Table 7).

4. Discussion

Study limitations

In order to achieve the objectives, set out in this work, a descriptive cross-sectional study with analytical aims was carried out. It identified students in secondary schools in the town of Parakou who use cybersex and those with problematic use of cybersex, calculated their prevalence, described their socio-demographic characteristics and the repercussions of problematic use of cybersex. It also provided primary data and a comprehensive database on problematic use of cybersex. The results obtained are valid and can be the subject of etiological hypotheses that could lead to an analytical study to identify the factors associated with problematic use of cybersexuality, in order to undertake corrective actions.

Non-proportional stratified sampling combined with simple random sampling was the sampling technique adopted in this study. The statistical unit was any student matching our inclusion criteria. The sampling frame consisted of the list of 13 public and 20 private secondary schools and technical and vocational

Table 5. Distribution of respondents according to social survey data (Parakou, 2023).

	Sample (N = 482)	Addiction to cybersexuality	
		No (n = 427)	Yes (n = 55)
Borderline personality			
Yes	196 (40.7%)	165 (38.6%)	31 (56.4%)
No	286 (59.3%)	262 (61.4%)	24 (43.6%)
Member of a pornographic publishing group			
Yes	49 (10.2%)	26 (6.1%)	23 (41.8%)
No	433 (89.8%)	401 (93.9%)	32 (58.2%)
Frequent stimulation of libido with pornographic images/videos			
Yes	163 (33.8%)	120 (28.1%)	43 (78.2%)
No	319 (66.2%)	307 (71.9%)	12 (21.8%)
Sexual violence			
Yes	36 (7.5%)	23 (5.4%)	13 (25.5%)
No	420 (87.1%)	382 (89.5%)	38 (74.5%)
Difficulty concentrating			
Yes	83 (17.2%)	53 (12.4%)	30 (55.6%)
No	369 (76.6%)	345 (80.8%)	24 (44.4%)
Difficulty having fun around others			
Yes	78 (16.2%)	56 (13.1%)	22 (40%)
No	404 (83.8%)	371 (86.9%)	33 (60%)
Low self-esteem			
Yes	140 (29%)	108 (25.3%)	32 (58.2%)
No	342 (71%)	319 (74.7%)	23 (41.8%)
Satisfaction with physical sexual intercourse			
Yes	86 (17.8%)	62 (17%)	24 (47.1%)
No	329 (68.3%)	302 (83%)	27 (52.9%)
School failure			
Yes	52 (10.8%)	42 (9.8%)	18 (32.7%)
No	430 (89.2%)	385 (90.2%)	45 (81.8%)
Anxiety			
Certain	57 (11.8%)	41 (9.6%)	16 (29.1%)
Doubtful	139 (28.8%)	115 (26.9%)	24 (43.6%)
Absent	286 (59.3%)	271 (63.5%)	15 (27.3%)
Depression			
Definite	13 (2.7%)	7 (1.6%)	6 (10.9%)
Doubtful	55 (11.4%)	38 (8.9%)	17 (30.9%)
Absent	414 (85.9%)	382 (89.5%)	32 (58.2%)

Table 6. Presentation of variables with a statistically significant association in bivariate analysis with addiction to cybersexuality among students surveyed (Parakou, 2023).

	Addiction to cybersexuality			p value
	Yes	No	Chi-square	
Gender				
Female	19 (3.9%)	218 (45.2%)		
Male	36 (7.5%)	209 (43.4%)	5.313	0.021
Age				
11 - 15 years	7 (1.45%)	114 (23.65%)		
16 - 18 years	31 (6.43%)	227 (47.1%)	6.526	
19 - 25 years	17 (3.53%)	86 (17.84%)		0.038
Erectile dysfunction or premature ejaculation				
Yes	14 (2.9%)	26 (5.4%)		
No	41 (8.5%)	401 (83.2%)	24.011	<0.001
External genital discharge				
Yes	10 (8.2%)	4 (3.3%)		
No	17 (13.9%)	91 (74.6%)	23.302	<0.001
History of anxiety				
Yes	21 (4.4%)	78 (16.2%)		
No	34 (7%)	349 (72.4%)	11.84	0.001
History of depression				
Yes	24 (5%)	115 (23.9%)		
No	31 (6.4%)	312 (64.7%)	6.625	0.01
Tobacco use				
Yes	9 (9.4%)	16 (16.7%)		
No	7 (7.3%)	64 (66.7%)	9.097	0.003
Use of cannabis and other psychoactive substances				
Yes	8 (1.7%)	8 (1.7%)		
No	47 (9.8%)	419 (86.9%)	24.379	<0.001
Nature of relationship with parents				
Good	40 (8.3%)	381 (79%)		
Overprotective	4 (0.8%)	23 (4.8%)		
Conflictual	10 (2.1%)	15 (3.1%)	22.043	<0.001
Lax	1 (0.2%)	8 (1.7%)		
Parental abandonment				
Yes	14 (2.9%)	60 (12.4%)	4.875	0.027

Continued

	No	41 (8.5%)	367 (76.1%)		
Discuss sexuality with parents					
	Yes	14 (2.9%)	179 (37.1%)	5.502	0.019
	No	41 (8.5%)	248 (51.5%)		
Puberty					
	Yes	53 (11%)	355 (73.7%)	6.558	0.01
	No	2 (0.4%)	72 (14.9%)		
Existence of a sexual partner					
	Yes	32 (6.6%)	144 (29.9%)	12.573	<0.001
	No	23 (4.8%)	283 (58.7%)		
Nature of relationship with partner					
	No partner	21 (4.4%)	305 (63.3%)		
	Good	28 (5.8%)	106 (21,9%)	25.364	<0.001
	Bad	6 (1.2%)	16 (3.3%)		
Frequent stimulation of libido with pornographic images/videos					
	Yes	43 (8.9%)	120 (24.9%)	54.597	<0.001
	No	12 (2.5%)	307 (63.7%)		
Experience of 1st sexual intercourse					
	Yes	32 (6.6%)	120 (24.9%)	20.417	<0.001
	No	23 (4.8%)	307 (63.7%)		
Experience of non-consensual sex					
	Yes	10 (2.1%)	19 (3.9%)	16.249	<0.001
	No	45 (9.3%)	408 (84.6%)		
Access to dating sites					
	Yes	12 (2.5%)	20 (4.2%)	22.518	<0.001
	No	43 (9.5%)	400 (84.2%)		
Access to pornographic sites					
	Yes	25 (5.3%)	23 (4.8%)	85.563	<0.001
	No	30 (6.3%)	397 (83.6%)		
Exchange of photos or videos of a sexual nature					
	Yes	43 (8.9%)	218 (45.2%)	14.442	<0.001
	No	12 (2.5%)	209 (43.4%)		
Borderline personality					
	Yes	31 (6.4%)	165 (34.2%)	6.342	0.012
	No	24 (5%)	262 (54.4%)		

Continued

Membership of a pornographic publishing group				
Yes	23 (4.8%)	26 (5.4%)	68.108	<0.001
No	32 (6.6%)	401 (83.2%)		
Sexual violence				
Yes	13 (2.9%)	23 (5%)		<0.001
No	38 (8.3%)	382 (83.8%)	24.449	
Difficulty concentrating				
Yes	30 (6.6%)	53 (11.7%)		<0.001
No	24 (5.3%)	345 (76.3%)	56.59	
Difficulty having fun around others				
Yes	22 (4.6%)	56 (11.6%)		<0.001
No	33 (6.8%)	371 (77%)	25.965	
Low self-esteem				
Yes	32 (6.6%)	108 (22.4%)		<0.001
No	23 (4.8%)	319 (66.2%)	25.573	
Satisfaction with physical sexual intercourse				
Yes	24 (5%)	62 (12.9%)		<0.001
No	27 (5.6%)	302 (62.7%)	28.454	
School failure				
Yes	18 (3.7%)	19 (3.9%)		<0.001
No	34 (7.1%)	368 (76.3%)	55.059	
Anxiety				
Certain	16 (3.3%)	41 (8.5%)		<0.001
Doubtful	24 (5%)	115 (23.9%)	31.121	
Depression				
Definite	6 (1.2%)	7 (1.5%)		<0.001
Doubtful	17 (3.5%)	38 (7.9%)	41.759	

training establishments in the city of Parakou. A random selection of 10 schools (5 public and 5 private) was made. The minimum number of students to be surveyed was estimated at 300 in all establishments. In the end, this study covered 482 secondary school pupils. This made it possible to take into account a wide range of respondents during the study period. The methodology used was therefore reliable. To carry out the study, permission to collect data in the schools was obtained from the departmental directorate of secondary education, technical and vocational training in Borgou and Alibori, from the departmental directorate of health in Borgou and from the parents of the pupils surveyed.

Table 7. Associated Factors with addiction to cybersexuality in multivariate analysis (Parakou, 2023).

| | Addiction to cybersexuality | | | IC95% | p |
	Yes	No	OR		
Place of residence					
Urban	328 (68.0%)	53 (11.0%)	1		
Rural	99 (20.5%)	2 (00.4%)	0.164	0.03 - 0.72	0.017
External genital discharge					
Yes	10 (4.4%)	4 (3.3%)	5.371	1.00 - 28.65	0.049
No	17 (13.9%)	91 (74.6%)	1		
Existence of a sexual partner					
Yes	32 (6.6%)	179 (37.1%)	2.534	1.25 - 5.12	0.010
No	23 (4.8%)	248 (51.5%)	1		
Access to pornographic sites					
Yes	135 (28.0%)	23 (4.8%)	7.968	3.21 - 19.76	< 0.001
No	30 (6.2%)	397 (82.4%)	1		
Anxiety					
Definite	16 (3.31%)	41 (8.5%)	3.863	1.74 - 8.54	0.001
Doubtful	24 (4.98%)	115 (23.88%)	1		
Absent	15 (3.11%)	271 (56.22%)			
Depression					
Definite	6 (1.24%)	7 (1.45%)	2.753	1.19 - 6.36	0.018
Doubtful	17 (3.52%)	38 (7.88%)	1		
Absent	32 (6.64)	382 (79.25)			

The data was collected via a digital questionnaire on smartphones. The questionnaire is individual and is addressed to eligible subjects, containing a variety of information including the evaluation items of the short Internet Addiction sex Test (s-IATsex). It was designed by Brand, Pawlikowski *et al.* in 2013, modified and adapted to cybersex from K. Young's (1998) IAT scale, in which the terms "online" or "internet" were replaced by "online sexual activities" and "internet sex sites". Initially in English, it was translated into French and validated in 2016 by Wéry *et al.* Respondents were assured of the confidentiality of the information gathered. This may lead to a relative reliability of the results.

Given the sensitivity of the subject, and the susceptibility of sexuality issues to socio-cultural context, no study can be free from the risk of bias. In the present study, there are still biases linked to the source of the information, which could minimize or exaggerate certain aspects of the statements. Shyness and social desirability could also be a source of bias. However, this in no way alters the quality

4.1. Prevalence of Cybersex Addiction

Of the 482 targets surveyed, 55 showed problematic use of cybersex. This represents a calculated prevalence of 11.4%.

Several other authors have reported a similar prevalence. These include Vipin K *et al.* [12] in India in 2022, who found a prevalence of 11% in a population of medical students, R. Ballester *et al.* [13] (10.8%) in a population of Spanish teenagers in 2015, Giordano *et al.* [6] who found a prevalence of 10.3% in a population of schoolchildren in the USA in 2017, and V. Cordonnier *et al.* [14] (10%) in the French population in 2006.

Moreover, the prevalence found in the present study is higher than what has been reported by I. Baati in 2020 in Tunisia (8.7%) [15]. Beutel *et al.* [16] in Germany in 2017 also reported a lower prevalence than the one in the present study (4.2%). The different types of questionnaires, the study population and the difference in sample size could account for these observed differences. Indeed, the Beutel *et al.* study was carried out in the general population and involved 2,522 people, a much larger sample size than the present study, which was carried out in schools.

In addition, several other authors have reported higher prevalences. Ross *et al.* [17] in 2012 among youth groups in Sweden found 18% problematic cybersex users, and Satyanaraya *et al.* [18] in India in 2021 reported that 22% of local university students had problematic cybersex use.

4.2. Socio-Demographic Characteristics

Age

The average age of the students surveyed in was 16.99 ± 2.16 years. This result is quite close to the one of Rafael Ballester [13] in Spain in 2015 (14.76 ± 0.97) as well as Alexa *et al.* one [19] in 2019 (15.42 years).

The age extremes of the students surveyed in this study are 11 to 30 years. They were 14 to 97 years old in the study by Manfred E. Beutel *et al.* [16] in Germany in 2017, and at least 18 years old in India in the study by Satyanaraya *et al.* in 2021 [18]. This difference can be explained by the absence of an age limit in our study. Under our skies, puberty is becoming increasingly precocious, which only serves to arouse interest in sexuality at an early age, due to its genesis in great curiosity. As the question of sexuality is taboo in our country, the youngest try to talk about it among themselves in small groups, and then rely on the Internet to get to the bottom of it, all the more so as no importance is attached to parental control over connection tools under our skies. As a result, teenagers and young people are the most exposed to the problematic use of cybersexuality, and special attention should be paid to them, especially as we recognize that young people are the driving force behind development, and need to be educated, informed and empowered before any technological adventure.

Gender

In the present study, male gender predominated (65.45%) among students with problematic cybersex use. This result concurs with that of Ballester *et al.* [13] 2015 in Spain, who also found a male predominance of 48.8%. A. Wéry *et al.* [7] 2014 in Canada, evoked a predominance of the disorder in two-thirds of men. The same is true with Kumar *et al.* [12] 2022 in India, who reported a male predominance of 68%. A similarly high prevalence of addiction to cybersexuality was reported by Satyanaraya *et al.* [18] 2021 in India and by Beutel *et al.* [16] 2017 in Germany.

Living environment

The present study reported a higher proportion of cybersex addiction in urban than in rural areas (53 (96.36%) of those with cybersex addiction). Similar findings were revealed by Weinstein *et al.* [20] 2015 in Germany, who found a proportion of 83.5%. Satyanarayana *et al.* [18] 2021 in India reported that only 10% of the students with addiction in their study lived in rural areas. The study by Cooper *et al.* [21] 2004 in the United States follows the same dynamic, stating that 64% of people with problematic cybersex use lived in urban areas.

Level of study

Problem use of cybersexuality was observed more at graduate level than at undergraduate level. This could mean that sexual cyberaddiction is more prevalent at higher levels of education. Cordonnier *et al.* in their study of a general population in France found that more than half of respondents presenting a problematic use of cybersexuality (61%) were in higher education [14]. Without specifying the values, other studies have followed this line of thought; for example, Giordano *et al.* in the USA (2017) and Ballester *et al.* [13] in Spain (2015) found after their studies that problematic use of cybersexuality was higher among students with a higher level of schooling. The study carried out by Rousseau *et al.* in Normandy in 2018 in a population of adolescents aged 15 to 17 found a high level of cybersexuality use among students in advanced classes. Indeed, adolescence is a period of metamorphosis, hormonal cascade and growing curiosity about questions of sexuality. The degree of curiosity seems to evolve with age, maturity and the vagueness that surrounds certain subjects of interest such as sexuality.

4.3. Biography

Marital status

The results of the present study reported 32 (58.18%) students with a problematic use of cybersexuality, not involved in a romantic relationship. Other authors have reported similar results. Beutel *et al.* [16] in 2017 in Germany found a proportion of 56.1% of single people addicted to cybersex. Weinstein *et al.* [20] 2015 found 57.7%. On the other hand, Cooper *et al.* [21] in 2004 in their study in the USA found that almost 60% of subjects with problematic cybersex use were in a committed romantic relationship, and more than half were married. This

difference could be explained by the limited age range imposed by their study, taking into account only adults (18 - 70 years) on the one hand, and on the other, by the targeting of the present study by remaining strictly within the school environment.

Sexuality discussed with parents

The study revealed that 60% of students had never discussed sexuality with their parents. Of these, 74.5% had developed an addiction to cybersexuality. Tchoukou *et al.* [22] in 2022, in their study of sexual addiction in the general population of Parakou, found that 47.9% of young people did not discuss sexuality with their parents, and 48.6% were sex addicts. This result once again confirms the toxicity of the mysterious meaning reserved for sexuality. If we don't talk about it, or if we don't shed light on students' darker side, they'll be more likely to explore it themselves on the Internet.

Number of sexual partners

This study shows that targets in a romantic or sexual relationship had an average of 1.79 sexual partners. This is higher than the average of 1.27 sexual partners reported by Satyanara *et al.* [18] in India. This could be explained by the size of the sample considered. This sample had a strictly superior size of 853 participants.

Consumption of psychoactive substances

The number of students using alcohol in the present study sample was 56.63%. Among problematic cybersex users, 65.45% of students were regular drinkers. Simon Marmet *et al.* in Switzerland in 2018 dug deeper and reported that 18.6% of respondents in their study had problematic alcohol consumption. This result would suggest that, beyond the simple consumption of alcohol revealed by this study, problematic users of cybersexuality could also be dealing with problematic consumption [23].

They were respectively 05.18% and 03.31% of targets addicted to cybersexuality to use tobacco and cannabis and other drugs. In the same study in Switzerland in 2018, Marmet *et al.* found that 11.1% of those with an addiction to cybersexuality had a problematic use of cannabis [23].

Pires *et al.* in Portugal in 2019, found in their study conducted in a detoxification center that 78% of psychoactive substance users had a problematic use of cybersexuality [24]. They added that cocaine and other drug users were more addicted to cybersex than alcohol users. In the current study, 50% (8/16) of targets using cannabis or other drugs had a problematic use of cybersexuality.

Factors associated with addiction to cybersexuality in multivariate analysis
Sexual partners

A significant association between having a sexual partner and addiction to cybersexuality was found in this study (p = 0.010). It multiplied the risk of problematic use of cybersexuality by 2.534. The same finding was made by Ballester *et al.* [13] (p = 0.012) and Beutel *et al.* [16] (p < 0.001).

Connection to pornographic sites

Connection to pornographic websites is significantly linked to problematic

use of cybersexuality, as revealed by this study (p < 0.001). This risk factor has been reported in numerous studies. These include Ross *et al.* [17] (p = 0.001) and Ballester *et al.* [13] (p < 0.001). Rousseau *et al.* [25] found in their study that it was a factor multiplying by 4.19 the risk of problematic use of cybersexuality.

In the present study, external genital discharge (OR = 5.37; p = 0.049), and depression (OR = 2.75; p = 0.018) were significantly associated with addiction to cybersexuality. Several authors did not find the same results.

According to Ballester *et al.* [13], male gender, sexual orientation and certain offline sexual relationships are risk factors for addiction to cybersexuality. This explains why the factors vary from one environment to another, depending on the study population.

Anxiety

Anxiety was another factor that this study found to be significantly related to addiction to cybersexuality (OR = 3.863; p < 0.001). Indeed, subjects with anxiety had a high risk of problematic use of cybersexuality. This is a point shared by other authors. Beutel *et al.* [16] found a similar result in their study. But it's not possible to state definitively whether this anxiety is either a consequence or a cause of addiction to cybersexuality.

Prevalence of sexting, dédipix, skin parties and dating sites

The practice of sexting in the present study was summarized by a proportion of 08.90% of students having sent their nude photos and/or videos to an interlocutor on the Internet, and by 30.70% having received similar messages. Marion R *et al.* [25] in France in 2018 also found a higher number of receivers than senders. Above the proportions of the present study, they reported that 62.7% were receivers and 22.1% senders. This difference could be explained by their study's larger sample size (1208) than the one of the present study. Following the same logic, Kim *et al.* and Gonzalez *et al.* found in Canada and Spain respectively: sending 14.4% and receiving 27%, then sending 24% and receiving 58% [19] [26].

Dedipix, skin parties and dating sites are not discussed very much, but they account for 5%, 21.2% and 15.1% of cybersex practices respectively in this study.

5. Conclusion

Considered a taboo, sensitive subject that requires at least seven tongue-twisters before it can be discussed by informed subjects, sexuality is increasingly accessible from school age. Not talking about it means not providing reliable sources of information to young people who, by the accessibility, anonymity and adaptability of the Internet, are quenching their thirst for curiosity on the subject. With a taste for the sensational behind the screens, self-control becomes difficult, leading to problematic use of the Internet in the field of sexuality (cybersexuality). The latter is of ever-increasing interest, given the recurrence of sextortion, suicides and rapes that are increasingly being recorded.

Conflicts of Interest

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

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