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Assessment of Knowledge, Attitudes, and Practices Regarding Hepatitis B among Students at Gaston Berger University of Saint-Louis in 2024

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Abstract

Introduction: Hepatitis B is a public health problem. This study aimed to investigate the knowledge, attitudes, and practices of students at Gaston Berger University of Saint-Louis regarding hepatitis B. **Methods:** A descriptive cross-sectional study was conducted in March 2024 within the university's social campus among a sample of 800 students. **Results:** The sex ratio favored men at 1.5, and the average age was 23.3 years with a standard deviation of 2.7 years. Among students, 26.6% had never heard of the term "hepatitis B", and 60% knew it was a liver disease. Young people and adolescents were identified as the most exposed population group by 52.3% of respondents. According to 53.7% of the sample, hepatitis B would be a curable disease. Furthermore, 95.0% of the surveyed individuals were not vaccinated against hepatitis B, and 36.3% were afraid of living with an infected person. While 63.0% had poor knowledge, 78.8% had negative attitudes, and poor practices were observed in 6.9% of participants. **Conclusion:** This study highlighted a lack of knowledge and concerning attitudes among students regarding hepatitis B. The results underscore the need to intensify information and awareness campaigns about this disease, as well as the importance of promoting vaccination and encouraging appropriate preventive practices among the student population.

Keywords

Hepatitis B, Knowledge, Attitudes, Practices, Students, Senegal

1. Introduction

According to the World Health Organization, more than 296 million people are

living with chronic hepatitis B. This disease, which is a public health problem, was responsible for 820,000 deaths in 2019 [1].

Thanks to the work of Philippe Maupas, an effective vaccine against hepatitis B exists [2]. However, it is noteworthy that there are 1.5 million new infections every year.

In Africa, with a high prevalence reaching up to 15% in certain regions [3]. Approximately 82 million people are chronic virus carriers, most unaware of their status [4]. The infection can progress to severe complications such as cirrhosis and liver cancer.

Despite the existence of an effective vaccine, significant efforts are still needed to improve vaccination coverage, screening, and management of infected individuals in Africa [5].

In Senegal, it is estimated that the prevalence rate is 11%, and 85% of the population has already been in contact with at least one serological marker of this virus [6].

The hepatitis B vaccine was only introduced into the expanded vaccination program in 2005, leaving a certain portion of the population not covered by systematic vaccination [7].

Although anyone who is not vaccinated can become infected, young people are particularly affected by this disease. Youth are strongly concerned about hepatitis B due to their high-risk behaviors, such as unprotected sexual intercourse, injecting drug use, and unprotected sexual practices. These behaviors increase their exposure to the hepatitis B virus, making them more vulnerable to infection. These young individuals are a development asset that needs investment to ensure their contributions to the emergence of nations [8].

Understanding the knowledge, attitudes, and practices of students regarding hepatitis B is crucial for developing effective prevention and control strategies. This study aims to investigate the level of awareness, perceived risk, and behavioral practices of students towards hepatitis B, ultimately informing targeted interventions to reduce the disease's spread and prevalence.

2. Study Method

2.1. Study Design

A cross-sectional study with descriptive and analytical aims was carried out in March 2024 among residents of Gaston Berger University in Saint-Louis.

2.2. Study Setting

Officially created on January 2, 1990, Gaston Berger University of Saint-Louis (UGB) is the second largest university in Senegal. It is located in the Saint-Louis region, in the northwest of Senegal. UGB is made up of an educational campus and a social campus. The first includes, in addition to an institute, 8 training and research units (UFR). The second is divided into two zones: campus 1 and campus 2, each comprising accommodation sites called villages (17 villages in total), catering sites and

leisure areas. The social campus also has a medico-social center. Although some students live outside the university, the majority reside in the social campus.

2.3. Inclusion Criteria

All students residing on the UGB social campus, possessing a valid student card or registration certificate for the current year, and present in their rooms on the day of data collection were included in this study.

2.4. Exclusion Criteria

However, students who refused to participate, presented a health condition that made it impossible to administer the questionnaire or were unavailable, or were minors whose guardians or parents did not consent to their participation were excluded.

While students had the option to accept the administration of the questionnaire and refuse the rapid screening test, any refusal to complete the questionnaire led to their exclusion from the study. The student had the option to accept the administration of the questionnaire and refuse the rapid screening test. However, any refusal to administer the questionnaire results in exclusion from the study.

2.5. Sampling

The sample size was calculated using the Schwartz formula ($N = \frac{Z_{\alpha}^{2}(p \cdot q)^{2}}{i^{2}}$) considering the following parameters: Reduced deviation (Z_{α}) = 1.96 for a risk of error of 5%, prevalence (p) assumed a priori: 50%, accuracy (i) = 5%.

The minimum sample size (n) was 385 students, rounded to 400 students. This size was multiplied by 2 to integrate the cluster effect used in the collection procedure to make 800 students.

A three-stage sampling plan was implemented. At the first stage, the survey was exhaustive and covered all 17 villages of the University. The second stage involved selecting the rooms to be surveyed. The number of rooms per village was determined based on the capacity of each village and the population breakdown by gender. Once this number was established, a list of randomized numbers was generated (using the "random between" function in MS Excel) for each village, and the rooms with the displayed numbers from the software constituted the sampling units.

In case of absence, the interviewer was responsible for returning to the same address until finding the occupants to proceed with the collection. When all occupants of a room refused to participate, the interviewer replaced the room by selecting the next available one.

The third stage of sampling involved selecting the students. Only one student was selected from each sampled room. If multiple residents met the inclusion criteria, one was randomly selected.

2.6. Data Collection Tools

The questionnaire consisted of four parts: one part on sociodemographic information,

and the remaining three parts focused successively on the students' knowledge, attitudes, and practices. This questionnaire was transcribed into XML format using the Open Data Kit (ODK) application and uploaded onto electronic tablets. This questionnaire, designed by the research team, was tested and validated during a preliminary phase before being used for data collection in the study. A team of trained interviewers was deployed in the field for data collection. The interviewers were tasked with explaining the study's context to potential respondents and obtaining their consent. Consenters received the tablets and proceeded to answer the questions: it was a self-administration of the questionnaire. After completion, the submitted data were instantly saved on the secure ONA server.

2.7. Data Analysis

The level of knowledge, attitude, and practice was evaluated as follows: For each correct answer, the participant received one point, and for each incorrect answer, zero points. The level of knowledge/attitude/practice was classified as "good knowledge/good attitude/good practice" if the respondent obtained at least 50% of correct answers and as "poor knowledge/poor attitude/poor practice" if the respondent obtained less than 50% of correct answers.

The collected data were extracted into an Excel file before being cleaned and analyzed using the R software. The description of the questionnaire variables involved determining the extremes accompanied by the median, as well as the means accompanied by the standard deviations. Additionally, it involved determining the relative and absolute frequencies for the qualitative variables.

2.8. Ethical Consideration

This study was authorized by the Research Ethics Committee of the University Works Center of Saint-Louis (CROUS) through authorization No. 0041 CROUS/CSA dated 14/02/2024.

Participants were informed of the study's framework and objective. They were informed that they had the right to refuse to participate in the study without any risk of repercussion.

Informed consent was obtained from each participant. This consent was formalized by the signing of a consent form.

The rapid diagnostic test was conducted in accordance with current guidelines for clinical research in humans.

The collected data is anonymous and can only be used by the research team members.

There was no financial interest in participating in this study.

3. Results

3.1. Sociodemographics

This study involved a sample of 800 students, among whom young men predominated, with a male-to-female sex ratio of 1.5, representing 60.8% (57.3% - 64.1%

95% CI) of all participants. On average, the age of the students was 23.3 years ± 2.7 years (23.08 - 23.26 95% CI). The youngest student included in the study was 17 years old, while the oldest had reached the age of 40. The observed median age was 23 years.

Regarding their fields of study, participants were mainly enrolled in the faculties of arts (27.8%), law (16.9%), and humanities (13.9%). Regarding their place of residence, 55.5% (52.0% - 58.9% 95% CI) lived in social campus 2. Academically, 74.1% of the participants were enrolled in the undergraduate program, while socially, 96.8% of them were single.

The geographical origin of the participants was diverse, with a predominance of regions such as Thiès (19.4%), Dakar (18.6%), and Ziguinchor (9.0%). Students from other countries accounted for 1.3% of the sample. A comprehensive summary of the results regarding the sociodemographic characteristics of the participants is presented in Table 1.

Table 1. Sociodemographic characteristics of participants (n = 800).

Variables	Absolute frequencies (n)	Relative frequencies (%)
Sex		
Male	486	60.8
Feminine	314	39.2
UFR		
LSH	222	27.8
SJP	135	16.9
CRAC	111	13.9
SEG	97	12.1
SAT	75	9.4
2S	63	7.9
SEFS	48	6
S2ATA	34	4.3
IPSL	15	1.9
Level		
Licence	593	74.1
Master	164	20.5
PhD	43	5.4
Marital status		
Single	774	96.8
Married	25	3.1
Divorced	1	0.1
Residence		
Campus 1	356	44.5
Campus 2	444	55.5

3.2. Knowledge of Students Regarding Hepatitis B

Among the respondents, 26.6% had never heard the term "hepatitis B". For those who had heard of it, the main source of information was discussions (21.6%). Although 42.2% of these respondents did not know the nature of the microbe responsible for the disease, 48.2 indicated that the pathogen would be a virus, and that it would be found respectively in saliva (49.7%), blood (38.5%), and semen (21.5%).

The liver was chosen by respondents (60.0%) as the organ of the body primarily affected by hepatitis B, and unprotected sex was considered by respondents (48.7%) as the main route of transmission of the disease.

Several symptoms were mentioned as signs of the disease. These were mainly abdominal pain (22.1%) and headaches (18.4%). According to respondents, sex workers (30.2%), followed by pregnant women (25.7%), would be the most at risk for hepatitis B. Regarding age groups, young people and adolescents were designated (52.3%) as the most at risk group for the disease, although 37.6% stated they did not know.

Regarding prevention, vaccination (55.5%), condom use (32.2%), and hygiene practices (27.9%) were the most cited methods.

According to 53.7% of respondents, hepatitis B would be a curable disease and also a fatal disease. However, 40.0% of respondents did not know if the disease was curable or fatal.

Overall, the level of knowledge was good in 37.0% of the participants.

All the results regarding the students' knowledge are presented in Table 2.

Table 2. Students' knowledge regarding hepatitis B.

	Absolute frequencies (n)	Relative frequencies (%)
Knowledge of the word "Hepatitis B"		
Yes	587	73.4
No	213	26.6
Source of information (n = 587)		
Talks	127	21.6
Teachings	121	20.6
Internet	100	17.0
Health personnel	87	14.8
Social networks	85	14.5
TV	49	8.3
Radio	12	2.0
Family	6	1.0
Nature of the microbe responsible (n = 587)		
Do not know	248	42.2
Virus	283	48.2
Bacterium	48	8.2
Parasite	8	1.4

Continued

Biological liquids (n = 587)		
Saliva	292	49.7
Blood	226	38.5
Sperm	126	21.5
Sweat	44	7.5
Breastmilk	25	4.3
Urine	18	3.1
Tears	6	1.0
Organ mainly concerned (n = 587)		
Liver	352	60.0
Do not know	177	30.2
Heart	32	5.5
Genitals	12	2.0
Lungs	11	1.9
Muscle	2	0.3
Eyes	1	0.2
Transmission routes (n = 587)		
Unprotected risky sex	286	48.7
Use of contaminated object by an infected person	175	29.8
From mother to child	122	20.8
Contaminated food	36	6.1
Air	25	4.3
Mosquito bite	14	2.4
Sun exposure	2	0.3
Symptoms (n = 587)		
Abdominal pain	130	22.1
Headache	108	18.4
Fatigue	101	17.2
Yellowing of the eyes	97	16.5
Dark urine	61	10.4
Joint pain	60	10.2
Shortness of breath	42	7.2
Cough	25	4.3
Clear urine	10	1.7
Goitre	1	0.2

Continued

People at risk (n = 587)		
Sex workers	177	30.2
Pregnant women	151	25.7
Injecting drug users	117	19.9
Health professionals	110	18.7
Food processors	24	4.1
Farmer	11	1.9
Retirees	7	1.2
Age group at risk (n = 587)		
Children	23	3.9
Youth and adolescents	307	52.3
The elderly	36	6.1
Do not know	221	37.6
Prevention (n = 587)		
Vaccination	326	55.5
Condom use	189	32.2
Hygiene practice	164	27.9
use of mosquito net	13	2.2
Curable (n = 587)		
Yes	315	53.7
No	37	6.3
Do not know	235	40.0
Deadly (n = 587)		
Yes	315	53.7
No	37	6.3
Do not know	235	40.0
Knowledge level (n = 587)		
Good knowledge	296	37.0
Bad knowledge	504	63.0

3.3. Attitudes and Practices of Students Regarding Hepatitis B

Only 5.0% of the sampled students were vaccinated against hepatitis B, while 91.5% had not received any dose of the vaccine. Respondents, at 36.3% and 30.0%, expressed fear about sharing a room and eating with a person infected with the hepatitis B virus, respectively. According to 95.6% of the participants, they would not take any action if they learned they were positive for hepatitis B, while 13.4% would undergo another test to confirm their status. Sharing sharp or cutting objects with others was observed in 21.5% of students. Meanwhile, 34.5% of students never insisted on using new blades at the hairdressers, and 42.9% never asked for objects to be cleaned and disinfected when getting their hair done. While 82.4%

of students reported not having a sexual partner, 2.3% had reported having more than three partners. Those with an active sex life and systematically using a condom represented 71.6% of the sample. They were 1.4% aware of their partners' serological status regarding hepatitis B.

Good attitudes were reported by 21.3% of respondents, while good practices were observed in 93.1% of participants.

Table 3 provides all the information regarding the attitudes and practices of students regarding hepatitis B.

Table 3. Attitudes and practices of students regarding hepatitis B.

	Absolute frequencies (n)	Relative frequencies (%)
Vaccination status		
No dose	732	91.5
dose	21	2.6
Two doses	7	0.9
Three doses	40	5.0
Feeling about sharing a room with an infected person		
Fear	290	36.3
Categorical refusal	33	4.1
Do not know	337	42.1
Total indifference	140	17.5
Feeling about eating from the same dish with an infected person		
Fear	240	30.0
Categorical refusal	139	17.4
Do not know	284	35.5
Total indifference	137	17.1
Attitude if you test positive		
Do nothing	765	95.6
Do not know	703	87.9
Do another test	107	13.4
Approach a health facility for follow-up	581	72.6
Depress	44	5.5
Share sharp objects		
Yes	172	21.5
No	628	78.5
Request a new blade from the hairdresser		
Yes	524	65.5
No	276	34.5

Continued

Require cleaning/disinfection of tools at the hairdresser/hairdresser		
Yes	457	57.1
No	343	42.9
Number of sexual partners		
None	659	82.4
One	83	10.4
Two	28	3.5
Three	12	1.5
More than three	18	2.3
systematic use of condoms (n = 141)		
Yes	101	71.6
No	40	28.4
Knowledge of the serological status of the partner(s)		
Yes	2	1.4
No	139	98.6
Presence of a tattoo on the body		
Yes	795	99.4
No	5	0.6
Presence of a piercing on the body		
Yes	47	5.9
No	753	94.1
Group consumption of shisha		
Yes	31	3.9
No	769	96.1
Alcohol consumption		
Yes	33	4.1
No	767	95.9
Tobacco consumption		
Yes	10	1.3
No	790	98.8
Contact sport practice		
Yes	350	43.8
No	450	56.3
Level of attitudes		
Good attitudes	170	21.3
Bad attitudes	630	78.8
Level of practices		
Good practices	745	93.1
Bad practices	55	6.9

4. Discussion

Among the participants, 587 (73.4%) had already heard of hepatitis B. Although this result is lower than the 91.4% recorded in a similar study conducted in Burkina Faso [9], it remains higher than the 70% reported by Bagny in Togo [10]. Furthermore, several studies have also shown that the rate of people who have heard of hepatitis B in universities is often higher than that of those who have never heard of it [11]-[14]. This observation can be explained by the fact that universities are places where knowledge on various subjects abounds and social interactions facilitate the sharing of information. Indeed, this study revealed that 42.2% of students obtained information about hepatitis B from discussions or lectures. However, in some earlier studies conducted in the West African sub-region, the media were the most cited sources of information by students [9]. The presence within the university of students who have never heard of this disease and the low level of knowledge demonstrate the need for information and awareness campaigns in the university environment.

Unprotected sexual intercourse was known as a risk factor for hepatitis B by 48.7% of the respondents. This result is significantly lower than the 80% found by Déguenevo and Aniaku in 2019 respectively in Senegal [12] and Ghana [15]. Their studies, which focused solely on medical students, help to understand the observed contrast. Mother-to-child transmission was known by 20.8% of the students. This rate is lower than those reported in Togo (27.5%) [10], Burkina Faso (43.0%) [9], and Ghana (80.0%) [15]. However, at the University of Cocody, no student was aware of maternal-fetal transmission [11]. The most mentioned signs of hepatitis B by students in several studies are fever, asthenia [9] [10], and jaundice [12] [15]-[17]. At UGB, students primarily cited abdominal pain and headaches. Asthenia was known by 17.2% and jaundice by 16.5% of respondents; however, no student mentioned jaundice.

The current state of evidence-based information attests that despite the existence of effective treatments for hepatitis B, it is not considered a curable disease [18] [19]. Indeed, the primary goal of treating chronic hepatitis B infection is to increase survival and improve the quality of life of patients by preventing disease progression to hepatic complications rather than the complete eradication of the virus [20]. The complete elimination of the hepatitis B virus remains a challenge for science. Nevertheless, infected and well-monitored individuals can have a quality of life equivalent to that of others. In our study, it was found that 53.0% of the students believe that hepatitis B is a curable disease, and 40.0% did not know whether it was curable or fatal. Another study found that 30% of students believed that hepatitis B was a curable disease [21].

The overall level of knowledge was deemed poor in 63.0% of the students. In Pakistan, only 30% of students had poor knowledge. This difference could be attributed to the fact that the study in Pakistan focused on biological science students [22]. These students, being familiar with virology and epidemic diseases, are more likely to have good knowledge of diseases. However, there are students with

good knowledge who could be relied upon to improve the overall level of knowledge and positively impact hepatitis B prevention. One exploitable avenue is the establishment of a peer-educator system within the university and the creation of an anti-hepatitis B association that could be run by students and supported by health authorities.

Only 5.0% of the students were vaccinated against hepatitis B. This poor situation is even more serious as 95.6% of the students stated they would do nothing if they tested positive. Furthermore, 36.3% of the students stated they would be afraid to live with an infected neighbor. Non-vaccination can have several reasons [23] [24]. Besides the poor level of knowledge and the fact that hepatitis B is a silent disease, many people are increasingly reluctant to general vaccination, especially since the COVID-19 pandemic episode [25].

Among sexually active students, 32.6% had at least two sexual partners, and 28.4% did not consistently use condoms during risky sexual intercourse. Also, 98.6% of them did not know the serological status of their partners. These results highlight the need to intensify programs for the awareness and prevention of sexually transmitted infections (STIs), including hepatitis B, by emphasizing the importance of regular and correct condom use, as well as the necessity of knowing one's own serological status and that of one's partners. Targeted interventions aimed at promoting safe sexual behaviors and encouraging regular STI screening are essential to protect students' sexual health and reduce the transmission of infections within this population.

This study revealed that the presence of tattoos or piercings on the body, as well as group consumption of shisha, was relatively low compared to observations in several studies. Although these practices are not widespread on the social campus of UGB, it is important to note their existence and emphasize these practices in awareness campaigns, as they are risk factors for hepatitis B [26] [27].

This work highlighted the coexistence of good practices and bad attitudes. Indeed, 93.1% of the students had good attitudes towards the disease, while 78.8% had bad attitudes towards it. If these results seem difficult to understand, they are not at all aberrant. Indeed, several reasons can explain why individuals have bad attitudes while their practices are good. Lack of knowledge about the disease leads a certain part of the population to stigmatize infected people, not get vaccinated, and not feel concerned about the disease; however, this same part of the population may adopt impeccable hygiene measures and systematically use condoms. This observation has been made in several public health and psychology research studies.

Contact sports such as martial arts, football, and other similar disciplines, can lead to an increased risk of hepatitis B transmission [28] [29]. This is primarily due to the direct contact between participants, which can result in injuries and, consequently, exposure to blood or other bodily fluids containing the hepatitis B virus. Besides the increased risk of skin lesions, cuts, or bleeding, which can facilitate virus transmission if one of the participants carries the hepatitis B virus, sharing sports equipment or potentially contaminated items (gloves, mittens, helmets,

mouthguards, etc.), can also contribute to the spread of the infection. It would be pertinent for disease communication to take these athletes into account so that they take appropriate precautionary measures to reduce the risk of hepatitis B transmission. This can include rigorous hygiene practices, such as hand washing, the use of personal protective equipment, and especially vaccination.

Despite the wealth and high quality of the results obtained in this study, it is important to emphasize that an analytical study would have allowed for a more definitive determination of the factors associated with the various items investigated. Conducting an analytical study could provide a more nuanced understanding of the relationships and potential causations between different variables, thereby enhancing the depth and rigor of the findings presented.

This study makes a significant contribution to the scientific literature by providing updated and contextualized data on the knowledge, attitudes, and practices (KAP) of university students regarding hepatitis B. It allows for the comparison of these data with those from other regional and international studies, thereby enriching the global knowledge base and facilitating the development of public health strategies tailored to local realities.

Study Limitations

A major limitation of this work is the lack of investigation into the factors associated with knowledge levels, attitudes, and practices. Such research could provide a better understanding of these elements and help organize more effective intervention strategies.

5. Conclusion

The level of knowledge was poor, as was the attitude. However, the observed practices were good. Despite some good mastery of information and the use of positive attitudes and practices, significant gaps remain in understanding the modes of transmission and the consequences of hepatitis B. These results highlight the critical need for awareness campaigns to address these knowledge gaps and to promote attitudes and practices more conducive to hepatitis B prevention. To further enhance these efforts, it is essential that the health authorities responsible for combating hepatitis B collaborate closely with the University to organize annual awareness activities. Additionally, establishing a peer educator club would be highly beneficial. Finally, it would be relevant to measure the prevalence rate of hepatitis B within Gaston Berger University to gain a more comprehensive understanding of the distribution of this health issue within this specific population.

Conflicts of Interest

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

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