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Knowledge, attitude, and practice towards hepatitis B and C viruses among the population of Lubumbashi, Democratic Republic of Congo

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Abstract

Background

Hepatitis B (HBV) and C (HCV) infection remains significant public health problem worldwide. Unfortunately, the Democratic Republic of Congo is in an area of high endemicity, and its population remains poorly informed about these viral infections. Therefore, this study aims to determine Lubumbashi's knowledge, attitudes, and practices toward HBV and HCV.

Methods

We conducted a cross-sectional descriptive study from March to August 2022 in Lubumbashi. A total of 704 participants were enrolled. We targeted all people of both sexes and ages. The participants' Knowledge, Attitudes, and Practices (KAP) survey was assessed using online and printed or paper questionnaires. Data were analyzed using SPSS version 22 software.

Results

Of the 704 participants, 70.9% had poor knowledge of viral hepatitis B and C, whereas 28.6% had terrible attitudes towards these infections and preferred to consult traditional healers instead of going to the hospital. A minority of the participants (12.2%) had good practices, those as being screened regularly to exclude any possible infection and being willing to be vaccinated depending on the availability of the HBV vaccine. Most participants (69.2%) needed to be aware of drugs that could effectively treat these infections.

Conclusion

Knowledge and practice about HBV and HCV in the Congolese population living in Lubumbashi have proven wrong. Similarly, the attitudes of the people towards these infections were negative. Therefore, an extensive health education program should be given to increase the awareness of this part of the Congolese population about HBV and HCV infection to provide better care.

Keywords: Knowledge, attitudes, practices, Hepatitis, Lubumbashi. HCV, HBV.

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1. Introduction

Viral hepatitis is a global health problem. The complications of HBV and HCV have been the seventh leading cause of death worldwide. They are thought to be responsible for approximately 1.4 million deaths each year, of which 47% are attributable to the hepatitis B virus (HBV) and 48% to the hepatitis C virus (HCV) [1]. In 2015, the number of people with chronic HBV infection was 257 million. Considering the global distribution of the infection, the prevalence of hepatitis B is higher in sub-Saharan Africa and Asia, where between 5 and 10% of the adult population is affected [2].

The risk of contamination by the hepatitis B virus exists during any inoculation and contact between the mucous membranes and biological fluids [3]. Viral infection with HBV remains the significant infection transmitted by blood transfusion. This risk of HBV transmission by blood transfusion is mainly linked to blood donations that tested negative for HBV surface antigen but contained deficient levels of potentially infectious viral DNA. In addition, this transmission would be linked to donors carrying occult hepatitis B [4].

HCV, on the other hand, is mainly transmitted by blood; the most frequent modes of contamination are the use of injection drugs and, more generally, risky injections or treatments, in particular, the transfusion of blood or blood-derived products without appropriate prior screening. Worldwide, approximately 71 million people are chronic carriers of HCV. Around 400.000 people worldwide die of hepatitis C each year, primarily because of the consequences of cirrhosis or hepatocellular carcinoma [5]. Furthermore, HBV/HIV or HCV/HIV coinfections have been reported. Such coinfections could not only increase the risk of liver deterioration [6], but also HIV might significantly impair the integrity of the gastrointestinal tract leading to elevated levels of lipopolysaccharides [7].

Preventing accidental exposure to blood by vaccination against HBV and respecting standard precautions remain the best guarantees for preventing hepatitis B and C. Good knowledge and strict application of these precautionary measures prove essential and thus provide significant protection. Unfortunately, viral hepatitis and its consequences remain poorly known in Lubumbashi, a city southeast of the Democratic Republic of the Congo (DRC).

The main objective of this study was to describe the knowledge of the modes of transmission and prevention against hepatitis B and C, attitudes, and practices of the general population of Lubumbashi concerning viral hepatitis B and C infections.

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2. Materials and Methods

2.1. Setting, design, and period of study

This cross-sectional descriptive study took place from March to August 2022 in Lubumbashi, the capital of the province of Haut-Katanga, with a population of more than 2 million, according to some estimates [8].

2.2. Study population and sample size

We randomly included in this study all people of both sexes and ages living in Lubumbashi, giving their free and informed consent to participate. The sample size was determined using the single-population proportion formula based on the previous prevalence of participants with the correct knowledge and practice about HBV infection in Vietnam, estimated to be at 50% [9]. Therefore, the calculated minimum sample size was 369, but the adequate sample size in the frame of this study was 704 participants.

2.3. Tools and Data collection technique

To include educated and low-educated populations, sociodemographic characteristics (age, sex, education, profession, and marital status) and variables related to the parameters of the KAP (knowledge, attitudes, and practices) study such as the source of information, screening for HBV and HCV, accessibility to health services, availability of vaccines and sharing of needles and blades were collected using a pre-tested structured questionnaire printed on paper as well as electronically using the Software: SurveyMonkey® - SurveyMonkey.com.

2.4. Evaluated parameters.

- **Knowledge**

This was the information stored in the memory and evaluated according to what the participants in the study knew about viral hepatitis B and C and was considered good-informed. This participant correctly answered the knowledge-related questions with a score greater than or equal to 70%. The participant who scored less than 70% on knowledge-related questions was considered bad-informed [10].

- **Attitudes**

It was a complex interaction of beliefs, feelings, and values to respond to HBV and HCV infection. A participant who answered greater than or equal to 70% of the attitude-related questions to HBV and HCV was considered to have a positive attitude. Conversely, a participant

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who answered less than 70% of the attitude-related questions about HBV and HCV was supposed to have an unfavorable attitude [6].

- **Practices**

Practices are defined in this study as what the participants practice for the prevention and control of HBV and HCV. A participant who answered greater than or equal to 70% of the practice-related questions to HBV and HCV was considered to have a good practice. Conversely, a participant who answered less than 70% of the practice-related questions about HBV and HCV was considered a bad practice [10].

2.5. Data analysis

Data were entered and analyzed using SPSS-20 software. Categorical variables were measured as percentages, and continuous variables were expressed as mean ± standard deviation. Frequencies were used to summarize descriptive statistics.

Knowledge was assessed by questions focusing on the etiology, signs, symptoms, transmission, and management of HBV and HCV infections. Each response was scored as either "yes" or "no." The global knowledge assessment reported a maximum score of 12 (representing the value of completeness of knowledge). A threshold less than or equal to 70% was considered flawed, while a more significant than 70% was regarded as good knowledge about HBV and HCV. Individual knowledge scores were calculated and summed to give the total knowledge score.

Attitudes towards HBV and HCV infections were assessed by labeling each question with a positive attitude for a score of 1 or negative for a score of 0. A maximum score of 70% was assigned to an attitude conducive to protecting against infection with both viruses. The overall level of attitude was rated from 1 to 6. A rating greater than or equal to 3 was considered a positive attitude, and one less than 3 was a negative attitude.

HBV and HCV practices were assessed by asking four questions. Each correct answer scored 1; a wrong answer rated 0. The overall rating had a maximum score of 4. The scale ranks excellent practice with a score greater than two and bad practice with a score less than or equal to 2.

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2.6. Approval of the medical ethics committee

Free and informed consent was obtained for all participants in the study. This study received the approval of the medical ethics committee of the University of Lubumbashi under the number: UNILU/CEM/095/2017.

3. Results

3.1. Socio-demographic characteristics.

Seven hundred and four participants were included in this study. Nearly 50% of them were between 26 and 40 years old (45.6%), with the majority men (67.7%) compared to women (32.1%). Married people were the majority in this study (59.4%), and most participants had a higher level of education (54.5%). In addition, most participants had a liberal profession (52.7%) (Table 1).

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Table1. ***Socio-demographic characteristics of the studied population.***

Characteristics	Response	Frequency	Percentage (%)
Age (year)	18 - <25	193	27.4
	26 - <40	321	45.6
	41 - <55	119	16.9
	> 55	71	10.1
Gender	Male	478	67.9
	Female	226	32.1
Marital status	Single	286	40.6
	Married	418	59.4
	Divorced	0	0
Education level	Primary	37	5.3
	Secondary	283	40.2
	Superior	384	54.5
Professional occupation	Government employed	289	41.1
	Self-employed	371	52.7
	Unemployed	44	6.2

3.2. Knowledge about HBV and HCV.

Regarding the knowledge assessment, our survey shows that the level of knowledge could be higher for most participants (70.9%). More than three-quarters of the interviewees do not know that there is a vaccine against HBV (86.2%), and 6.4% of the participants are unaware that vertical transmission is considered one of the means of communication of viral hepatitis. Table 2 shows that over two-thirds of the participants do not know that viral hepatitis B and C affect the liver.

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Table 2. ***Knowledge of the hepatitis B and C virus in the population of Lubumbashi.***

Knowledge Items	Response	Frequency	Percentage (%)
Have you ever heard of a disease caused by the hepatitis B and C viruses?	Yes	223	31.7
	No	481	68.3
Can hepatitis B or C affect the liver?	Yes	219	31.1
	No	485	68.9
Can hepatitis B or C cause liver cancer?	Yes	191	27.1
	No	513	72.9
Are diarrhea, constipation, nausea, vomiting, and loss of appetite common symptoms of hepatitis B and C?	Yes	221	31.4
	No	483	68.6
Can hepatitis B or C affect all age groups?	Yes	214	30.4
	No	490	69.6
Are there patients with hepatitis B or C without symptoms?	Yes	188	26.7
	No	516	73.3
Can hepatitis B or C be transmitted through contaminated blood?	Yes	199	28.3
	No	505	71.7
Can hepatitis B or C be transmitted by razor blades or nail clippers?	Yes	115	16.3
	No	589	83.7
Can hepatitis B or C be transmitted through unprotected sex?	Yes	207	29.4
	No	497	70.6
Can hepatitis B or C be transmitted from mother to child?	Yes	166	23.6
	No	538	76.4
Is hepatitis B or C curable/ treatable?	Yes	217	30.8
	No	487	69.2
Is hepatitis B vaccination available?	Yes	97	13.8
	No	607	86.2

3.3. Attitudes towards HBV and HCV

Regarding the reported attitudes, we find that they were good overall (71.4%). Nevertheless, some participants (28.6%) had negative attitudes; some were afraid to be consulted for cases of hepatitis and preferred to see traditional healers (Table 3).

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Table 3. ***Attitude towards hepatitis B and C viruses in the population of Lubumbashi.***

Attitude items	Response	Frequency	Percentage (%)
Do you think you can get hepatitis B or C?	Yes	401	57.0
	No	303	43.0
How would you react if you discovered you have Hepatitis B or C?	Fear	37	5.3
	Sadness	282	40.0
	See the doctor	385	54.7
	Yes	5	0.7
Do you have symptoms of hepatitis B and C?	No	699	99.3
What will you do if you think you have symptoms of hepatitis B or C?	See the doctor	646	91.8
	See the traditional healer	49	7.0
	Nothing	9	1.2
In your opinion, what is the cost of diagnosing and treating hepatitis B or C?	Cheaper	0	0.0
	Free	0	0.0
	Expensive	65	9.2
	No idea	639	90.8
What should you worry about if you are diagnosed with hepatitis B or C?	Treatment cost	89	12.6
	Fear of transmitting the disease to family members	121	17.2
	Fear of death	389	55.3
	Fear of being rejected in society	89	12.6
	No worries	16	2.3

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3.4. Practices toward HBV and HCV

Table 4 shows the different practices observed among the participants about HBV and HCV. From the observation of this table, the rules were not favorable in managing viral hepatitis. About 12.5% of participants had presented good practices. On the other hand, 87.5% of the remaining participants needed better practices: no screening for HBV or HCV, no in-depth analyses in the event of a positive test, and no vaccination against HBV.

Table 4. ***Practices regarding hepatitis B and C viruses in Lubumbashi.***

Practice items	Response	Frequency	Percentage (%)
Have you ever been tested for hepatitis B and C viruses?	Yes	86	12.2
	No	618	87.8
Once tested for Hepatitis B or C, would you go to the hospital for further medical examinations and treatment?	Yes	402	57.1
	No	302	42.9
Have you ever been vaccinated against the hepatitis B virus?	Yes	7	1.0
	No	697	99.0
Do you avoid meeting patients with hepatitis B or C?	Yes	19	2.7
	No	685	97.3

3.5. Association of socio-demographic characteristics and average KAP scores

Among demographic variables, age, and gender were significantly associated with mean KAP scores ($p < 0.05$). Education level was significantly associated with attitude and practice ($p < 0.05$); moreover, professional occupation was only associated with practice ($p < 0.05$) (Table V). This study showed that 70.9% of participants had wrong knowledge, 28.6% had negative attitudes, and 87.5% had bad practices toward HBV and HCV infection (Table 5).

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Table 5. ***Association of demographic characteristics and mean KAP scores.***

Variables	N (704)	Knowledge (M ± SD)	*P-value*	Attitude (M ± SD)	*p-value*	Practice (M ± SD)	*p-value*
Age (year)							
18 - <25	193	3.9 ± 2.1	0.03	4.7 ± 2.5	0.00	3.1 ± 1.4	0.04
26 - <40	321	4.3 ± 2.7		4.2 ± 2.2		2.9 ± 1.7	
41 - <55	119	4.5 ± 2.3		5.1 ± 1.8		2.7 ± 2.1	
> 55	71	3.4 ± 2.1		4.1 ± 1.9		2,2 ± 1,6	
Gender							
Male	478	4.9 ± 2.3	0.00	5.3 ± 2.2	0.02	2.5 ± 1.7	0.01
Female	226	3.7 ± 2.5		5.0 ± 1.7		1.9 ± 1.5	
Marital status							
Single	286	3.9 ± 2.8	0.12	4.7 ± 15	0.21	2.1 ± 1.4	0.15
Married	418	4.2 ± 2.3		5.2 ± 1.3		2.3 ± 1.6	
Divorced	0	0		0		0	
Education level							
Primary	37	3.3 ± 1.6	0.09	4.9 ± 1.2	0.01	1.6 ± 1.1	0.00
Secondary	283	4.1 ± 2.7		5.6 ± 1,5		2.6 ± 1.7	
Superior	384	3.9 ± 1.7		5.8 ± 1.7		2.1 ± 1.3	
Professional occupation							
Government employed	289	3.7 ± 2.3	0.09	4.4 ± 2.1	0.06	2.1 ± 1.6	0.00
Self-employed	371	4.3 ± 2.1		4.7 ± 2.7		2.3 ± 1.2	
Unemployed	44	5.1 ± 1.7		5.5 ± 1.9		2.5 ± 1.7	

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Table 6. ***Total score of KAP toward HBV and HCV infection.***

KAP Parameter	Total number	Percentage (%)	KAP Parameter	Total number	Percentage (%)
Good knowledge	205	29.1	Bad knowledge	499	70.9
Positive attitudes	503	71.4	Negative attitudes	201	28.6
Good practices	88	12.5	Bad practices	616	87.5

4. Discussion

This study aimed to assess knowledge, attitudes, and practices toward HBV and HCV in the general population of Lubumbashi. The study's results showed low knowledge and methods towards HBV and HCV. This lack of knowledge could influence the population's attitudes toward managing these viral infections with HBV and HCV.

Our results showed that most participants were in the age range of 26-40 years (45.6%), of which were men (67.9%) and mostly married with a higher level of studies. These results corroborate those of previous studies, including that of Bénié et al. [3], who showed that 67.3% of participants were male. The more significant number of educated people could be justified because the structured-online questionnaire required a certain level to be open and complete. Dwiartama et al. [11] also found in their study on knowledge and practices regarding the prevention and screening of hepatitis B that men were more numerous (51%) than women. Still, it recorded a vast number of participants at the baccalaureate level.

The results of this study indicated that 70.9% of the participants needed more knowledge because many did not even know, for example, that the vaccine against HBV was on the Congolese market. They were unaware that viral hepatitis might be transmitted from mother to child. Our results agree with those found in another study conducted in Ethiopia by Gebrecherkos et al. [10] among pregnant women, where 73.4% of women had insufficient knowledge of HBV. However, the study population consisted solely of pregnant women, unlike our study, which included the general population. Moreover, in Bénié et al. [3] survey among health personnel, only 24.1% of the questioned participants had shown limited knowledge of

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the etiology and 12% of the transmission routes. Laraqui et al. [12] also ushered in their study on the evaluation of knowledge about hepatitis B and C in healthcare settings in Morocco that hepatitis was feared by 82% of caregivers; and that even the modes of transmission did not seem satisfactory for all staff, with an insufficient perception of the infectious risk. A study carried out among medical students in Vietnam found that the more the students were recruited, the more their knowledge was limited. However, the more these students were in the rising promotions, the more they had good knowledge [13]. This is one more reason that justifies the lack of understanding of our respondents, who, on the one hand, are not a large part of the nursing staff and, on the other hand, had, in part, limited levels of instruction.

Napon-Zongo et al. [14] study among students in the City of Bobo-Dioulasso also showed that hepatitis B was unknown to more than half of the students, and 94.9% had insufficient knowledge [14]. Therefore, we believe it would be essential for the Congolese population living in Lubumbashi to be effectively informed about all the etiologies of viral hepatitis B and C, the transmission routes, and the consequences of poor treatment. Furthermore, the Congolese Ministry of Health must fulfill its role through information, education, communication, and training on viral hepatitis to benefit the general population and healthcare personnel. However, a study in Eastern DRC among health care workers, South Kivu, Shindano et al. [15] showed that several participants knew the main routes of HBV and HCV transmission, their complications, and the existence of treatment. Still, the diagnosis and prevention tools needed to be more known.

Our study showed that most of the participants had positive attitudes. However, 28.6% of them had negative ones. They think it is unnecessary to see a doctor and that traditional healers are enough. This would be linked not only to habits in the rural Congolese population but also to the lack of money for a consultation at the hospital.

The results of our study also showed that 87.5% of the participants had terrible practices; they had never been tested for HBV or HCV because they were afraid of being informed that they were infected, and for this exact reason, they arranged themselves to treat all the symptoms that can be found in viral hepatitis. Napon-Zongo et al. [14] showed that only a minority of students had declared having had a screening test for HBV. Dwiartama et al. [11] revealed a negative effect by correlating the practice with the desire for screening and diagnosis in their study. This also indicates that it is not natural in each population to adopt a lifestyle of being screened

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regularly for viral and other diseases. Other studies have shown that practice toward hepatitis B and C viruses still needs to be improved. Shindano et al. [15] demonstrated that the correct prevention and prophylaxis measures still needed to be applied, even among caregivers frequently exposed to accidents of exposure to blood and its derivatives. Poor practice in preventing hepatitis B and C implies a lack of involvement in the fight against these infections [16]. Poor practices increase exposure to disease and the population's vulnerability to contracting and spreading disease.

5. Conclusion and recommendation

The overall knowledge of the participants needed to be improved. Their attitude and practice could have been improved. In this study, most people had little understanding of the transmission of hepatitis B and C viruses and the vaccine as a means of prevention against HBV. However, most participants had an overall positive attitude to consult the doctor in the event of health concerns related to hepatitis B and C. Screening for hepatitis B and C viruses remains a practice to be encouraged within the population of the city of Lubumbashi, where many people do not think about it and are not encouraged to do so once they are informed about the disease. The general population should receive an extensive health education campaign to raise awareness about viral hepatitis. Therefore, public health interventions are needed to improve mass screening practices for HBV and HCV.

List of abbreviations

DNA: Deoxyribonucleic acid

DRC: Democratic Republic of the Congo

HBV: Hepatitis B virus

HCV: Hepatitis C virus

HIV: Human immunodeficiency virus

KAP: Knowledge, Attitudes, and Practices

M: Mean

SD: standard deviation

Footnotes.

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Data availability

All the data obtained and analyzed are included in this manuscript.

Conflicts of interest

The authors declare that they have no competing interests.

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Authors' contributions

A.K., A.L., and B.K. designed and performed all the experiments. A.K., H.M., C.M., C.K., and C.K. wrote the manuscript in consultation with S.M., A.M., C.M., A.N., and A.L.

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