

# Knowledge and Vaccination Coverage against Hepatitis B Virus (HBV) in Brazzaville Universities

Jile Florient Mimiessé<sup>1,2</sup>, Mauria Gilga Ibohi<sup>1,2</sup>, Josph Bovane Molami<sup>2</sup>,  
Clausina Mikolélé Ahoui Apendi<sup>1,2</sup>, Christ Massamba<sup>1,2</sup>, Ngala Akoa Itoua-Ngaporo<sup>1,2</sup>,  
Marlyse Ngalessami<sup>2</sup>, Arnaud Mongo Onkouo<sup>1,2</sup>, Céline Sandra Adoua<sup>2</sup>, Hostaud Atipo Ibara<sup>2</sup>,  
Rody Stéphane Ngami<sup>1,2</sup>, Péres Motoula Latou<sup>1,2</sup>, Deby Gassaye<sup>1,2</sup>, Blaise Irénée Atipo Ibara<sup>1,2</sup>

<sup>1</sup>Faculty of Health Sciences, Marien Ngouabi University, Brazzaville, Congo

<sup>2</sup>Gastroenterology and Internal Medicine Department, Brazzaville University Hospital, Brazzaville, Congo

Email: roseedenmimiessé@gmail.com

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## Abstract

**Objective:** To evaluate knowledge and vaccination coverage against HBV in a university environment in Brazzaville. **Materials and Methods:** This was a cross-sectional study conducted over six months in the institutions of the University Marien Ngouabi and private higher education institutions of Brazzaville. The variables studied were socio-demographic characteristics, HBV knowledge, HBV screening, and vaccination coverage. **Results:** 825 students participated in the study, with a participation rate of 96.2%. Male subjects accounted for 39% (n = 322) and females 61% (n = 503), with a sex ratio of 0.64. The average age was 22.6 years ± 2.9, with extremes ranging from 17 to 49 years old. Knowledge about the existence of HBV was 58.8% (n = 485) versus 41.2% (n = 340). This knowledge was statistically significant among students attending public institutions compared to those attending private institutions (P = 0.003). The statement on vaccination was very low, at 3.8% (N = 32). The main reasons for the lack of vaccination were ignorance and neglect. **Conclusion:** Our work shows not only a low level of knowledge about HBV but also a low rate of vaccination coverage for students in Brazzaville.

## Keywords

Viral Hepatitis B, Knowledge, Immunization Coverage, Students, Brazzaville

## 1. Introduction

Viral hepatitis B is a major public health problem worldwide. It is responsible for

chronic viral hepatitis, which can progress to complications such as cirrhosis and hepatocellular carcinoma (HCC) [1].

The Congo is located in an area of high endemicity [2] [3]. Although there are no national data on the general population, hospital studies and studies of at-risk populations report HBsAg carriage rates between 5% and 15% [4] [5].

The main modes of transmission are vertical transmission (mother/child), blood transfusion, intravenous drug use, sexual transmission, and, to a lesser extent, percutaneous transmission [6] [7]. Young people, including students, are also at risk.

In addition to lifestyle and dietary hygiene measures, the fight against viral hepatitis B involves vaccination.

Since 2006, on the recommendation of the World Health Organization (WHO), vaccination against the hepatitis B virus has been part of the Expanded Programme on Immunisation (EPI) in the Congo, and the only beneficiaries are children under one year old. Vaccination of adolescents and adults is not part of this programme. It is a matter of individual initiative. Good knowledge of HBV would contribute to greater acceptability of the vaccine and a more responsible attitude towards this disease [8].

On the assumption that students are at risk, we proposed to carry out this study, the aim of which was to assess knowledge and HBV vaccination coverage in universities in Brazzaville.

## 2. Materials and Methods

This was a cross-sectional study from 1 April 2015 to 30 September 2015, a period of six months. Data were collected in nine of the 11 institutions of the Université Marien Ngouabi (UMNG), namely: the Faculty of Letters and Humanities (FLSH), the Faculty of Economics (FSE), the Faculty of Science and Technology (FST), the Faculty of Law (FD), the Faculty of Health Sciences (FSSA), the Ecole Normale Supérieure (ENS), the Ecole Nationale Polytechnique (ENSP), the Ecole Nationale Supérieure d'Agronomie et de Foresterie (ENSAF), and the Institut Supérieur de Gestion (ISG), as well as private institutions such as: Université Libre du Congo (ULC), Université Internationale de Brazzaville (UIB), Institut Supérieur de Commerce (ISCOM), and Haute Ecole Léonard De Vinci (HELDV). Students present and consenting on the day of the survey were included. Non-consenting students were not included.

Sampling was performed by the simple random method among students who consented to the study.

Before each survey, we informed the students about the study and its objectives using an information sheet prepared specifically for the study. Once we had obtained their written consent, we used an individual, anonymous questionnaire to collect the data, taking into account the objectives. The interviews were individual and confidential, with each student filling in the survey form in an empty room. The variables studied were socio-demographic characteristics (age, sex, school attended),

knowledge of HBV: existence of HBV, source of information, mode of transmission, means of prevention, possible complications, HBV screening, and HBV vaccination. Data were entered and processed using Epi-data version 3 software, and analyzed using STATA public health software (version 12, Texas, USA). The Pearson Chi-square test was used to compare proportions. The tests were statistically significant when the P-value was less than 0.05.

### 3. Results

During the 6 months of the study, the general population consisted of 858 students. We included 825, for a participation rate of 96.2%. Males accounted for 39% (n = 322) and females 61% (n = 503), with a sex ratio of 0.64. The mean age was  $22.6 \pm 2.9$  years, with extremes ranging from 17 to 49 years. Of the 825 students included, 711 (86.1%) had never been tested for HBV, compared with 114 (13.9%) who claimed to have been tested.

In our study, 58.8% (n = 485) were aware of the existence of HBV, compared with 41.2% (n = 340). Their sources of information were mainly school (49.5%) and the media (43.7%). Knowledge of HBV was significantly higher among students attending public schools than among those attending private schools (P = 0.003). See **Table 1**.

**Table 1.** Distribution of students by institution attended and knowledge of the existence of HBV.

School attended	Effectif on 825	Knowledge of the existence of HBV		P-value
		Yes (%) n = 485	No (%) n = 340	
<b>Université Marien NGOUABI</b>				
FST	120	80 (66.7)	40 (33.3)	
FLSH	53	9 (17.0)	44 (83.0)	
FSE	107	50 (46.7)	57 (53.3)	
FD	36	14 (38.9)	22 (61.1)	
FSSA	107	100 (93.5)	7 (6.5)	0.003
ENS	47	22 (46.8)	25 (53.2)	
ENSP	66	36 (54.5)	30 (45.5)	
ENSAF	72	40 (55.6)	32 (44.4)	
ISG	86	49 (57.0)	37 (43.0)	
<b>Private institutions</b>				
ULC	55	24 (43.6)	31 (56.4)	
UIB	46	40 (87.0)	6 (13.0)	
ISCOM	20	14 (70.0)	6 (30.0)	
HELV	10	7 (70.0)	3 (30.0)	

In our study, 51.9% (n = 252/485) of students did not know the modes of HBV transmission. On the other hand, 26.4% (n = 128) were most aware of the blood-borne route of VHB contamination, followed by the sexual route and the vertical route in 16.3% (n = 79) and 5.4% (n = 26), respectively. Sixty-six percent (n = 320) of the students were unaware of the complications associated with HBV. However, chronic viral hepatitis B, cirrhosis, liver cancer, and death were known complications in 2% (N = 10), 14.4% (N = 70), 13.6% (N = 66), and 4% (N = 19), respectively. The most common means of preventing HBV infection were vaccination in 18.6% (N = 90), followed by condom use in 15.3% (N = 74), sexual abstinence in 4.3% (N = 21), blood safety in 1.9% (N = 9), and the use of sterile objects in 1.6% (N = 8). On the other hand, 58.3% (N = 283) were unaware of the various ways of preventing HBV.

With regard to vaccination status, of the 825 students who took part in the study, 96.2% (N = 793) stated that they had not been vaccinated against HBV and 3.8% (N = 32) had been vaccinated. **Table 2** shows the distribution of students according to vaccination status and knowledge of the existence of HBV. Of the 32 students who reported having received the VHB vaccine, 3.1% (N = 26) had received a full dose (3 doses), compared with 0.2% (N = 2) and 0.5% (N = 4), respectively, who had received incomplete doses (1 and 2 doses). The vaccine was financed by the parents in 56.2% (N = 12) of cases, by the students themselves in 31.3% (N = 10) of cases, and was free in 12.5% (N = 4) of cases. The reasons were ignorance in 41.78% (N = 371), negligence in 21.69% (N = 172), and lack of money in 31.53% (N = 250).

**Table 2.** Distribution of students according to vaccination status and knowledge of the existence of HBV.

Vaccination status	Effectif (%) n = 825	Knowledge of the existence of HBV		P-value
		No (%) n = 340	Yes (%) n = 485	
Non-vaccinated	793 (96.2)	340 (100)	453 (93.4)	<0.001
Vaccinated	32 (3.8)	0 (00)	32 (6.6)	
<b>Total</b>	<b>825</b>	<b>340 (100)</b>	<b>485 (100)</b>	

#### 4. Discussion

A clear predominance of females was observed in our series, with a sex ratio of 0.64. This female predominance may be explained by the fact that female students were more interested in the study, unlike male students, who were more reserved or even disinterested for fear of stigmatisation, even though confidentiality was guaranteed to all participants in our study. This result is similar to that found by Lohouès-Kouacou *et al.*, who also found a predominance of women. On the other hand, Bagny *et al.* in Togo found a male predominance [9] [10]. The mean age in our study was  $22.6 \pm 2.9$  years. Our results are similar to those of Lohouès-Kou-

acou and Bagny *et al.* in Cocody and Lomé, respectively [9] [10].

In our study, 58.8% of students were aware of the existence of HBV. School was the main source of information. This finding suggests that schools play an important role in HBV awareness. In fact, the school, in its role of dispensing knowledge and information to learners, can be a means of making knowledge of VHB available to as many students as possible. In similar studies in Côte d'Ivoire and Togo, the media were the main source of information in 45.9% and 91.9% of cases, respectively [9] [10]. In our study, more than half the students were unaware of the different modes of VHB transmission (51.9%). Our results are corroborated by those of Lohouès-Kouacou *et al.* in Cocody, who noted a rate of ignorance of 54.7%. In contrast, in the study by Bagny *et al.* in Togo, 55.5% of students were aware of the different modes of HBV transmission [9] [10]. In the study by Al Jabri *et al.* in the Sultanate of Oman, blood transmission was the most common mode of contamination in 70% of cases [11].

The existence of a vaccine as a means of prevention was known in only 18.6% of cases. This explains the low level of knowledge about the various aspects of this infection. In their study in the Sultanate of Oman, Al Jabri *et al.* found that 50% of students were aware of the existence of the vaccine as a means of preventing HBV [11].

In our study, 13.9% of students reported having been screened for VHB. This low rate is justified by the low level of knowledge about HBV. Our results are similar to those of Lohouès-Kouacou in Cocody [9].

Vaccination coverage among students was very low, with only 3.1% reporting having received the three doses of the HBV vaccine. Our results are comparable to those of Lohouès-Kouacou in Côte d'Ivoire, which found a vaccine coverage rate of 3.7% [9]. In Nigeria, on the other hand, vaccination coverage was 26% [11]. Vaccines were financed either by the students' parents or by the students themselves. This could be explained by the fact that adult vaccination is not compulsory in the Congo. These results are similar to those found by Lohouès-Kouacou in Côte d'Ivoire [9].

The main reasons found were ignorance of the existence of the vaccine, negligence, and lack of financial resources, which may explain the low vaccination coverage rate.

## 5. Conclusion

Our work shows not only a low level of knowledge about HBV but also a low rate of vaccination coverage among students in Brazzaville. Awareness-raising, mass screening, and vaccination against HBV therefore need to be promoted in universities.

## Conflicts of Interest

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

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