

Attitudes and Practices of Senegalese Dentists towards Hepatitis B

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Abstract

Introduction: Hepatitis B is an infectious viral disease that causes inflammation of the liver. It is transmitted through body secretions and fluids, including genital secretions, saliva and blood. The objective of this study was to assess the attitudes and practices of dental surgeons in the face infection of Hepatitis B. **Methods:** This was a descriptive, cross-sectional a sample of 171 dental surgeons. Probabilistic multi-stage, stratified, and systematic sampling was used. Using a questionnaire, we gathered variables related to the attitudes and practices of dentists with respect to Hep B. **Results:** Nearly 22% of dentists were not vaccinated against hepatitis B virus; Compliance with the use of gloves, glasses, professional clothing, and hygiene in dental offices was not systematic. Blood exposure accidents (BEA) were common, with nearly 13% suffering from needle stick injuries, 10% from eye splashes and about 6% from sharp instruments. The majority of the actions to be taken in the event of (BEA) were disinfection in the event of sticks or injuries (52.1%) and rinsing in the event of eye splashes (66.7%). **Conclusion:** Dentists should be educated and informed about the need for vaccination and hygiene, sterilization, and good behaviour in case of exposure to blood.

Keywords

Attitudes, Practices, Hepatitis B, Dentist, Senegal

1. Introduction

Hepatitis B is an infectious disease caused by hepatitis B virus (HBV) and causes

inflammation of the liver. It is transmitted by secretions and bodily fluids, including genital secretions, saliva and blood.

It is an affection that is a major public health problem and is the most serious form of viral hepatitis.

In 2014, over 240 million suffer from chronic (long-lasting) hepatic infection worldwide. More than 780,000 people die each year from acute or chronic hepatitis B effects [1].

The prevalence is very variable in different parts of the world. In East Asia, the Middle East and parts of South America, 8% - 15% of the population have detectable antigens (HBsAg). The prevalence of chronic portage HBsAg is 2% - 7% in Japan, South America, Eastern and southern Europe, parts of Central Asia and Alaska natives. In other countries, the percentage of chronically infected patients with HBV is less than 2% [2] [3].

In black Africa, prevalence often exceeds 15%. In Senegal, it is estimated that 85% of the population have at least one marker of the hepatitis B virus. After an acute infection, 20% become chronic carriers. 17% of the Senegalese population are chronic carriers [4]. Hepatitis B-related mortality has not been evaluated in Senegal, but it appears to be high.

Despite the magnitude of the problem and hepatitis B policies and programs, medical personnel and especially dentists are considered a high-risk group for HBV infection. The frequency of accidental exposure to blood, the ignorance of, or neglect to take appropriate measures after BEA, failure to comply with international standards of sterilization, disinfection or decontamination, as well as lack of information on the medical status of patients, are all factors risk exposure of both patient and dental surgeon to expose hepatitis B infection. Iserson *et al.* [5] found a global prevalence of HBV serological markers of 16% in general dentists. These markers were present in 8.7% of dental students and 29.6% of dentists in Greece [6]. Other studies have concluded that this prevalence among dentists was 77.4% in Italy [7]. In Senegal, this prevalence is not yet known and attitudes and practices in relation to hepatitis B are not yet assessed. The objective of this work is to assess the attitudes and practices of dentists in relation to hepatitis B.

2. Method

2.1. Framework and Type of Study

The study was conducted nationwide and concerned surgeons officially in service in a dental office in the country.

The investigation was done in collaboration with the College of Dentists and the Ministry of Health of Senegal (Division of Oral health). Senegal has 338 dental surgeons distributed in 260 dental structures recognized by the college and the Ministry of Health. In addition, there are cabinets installed in military establishments and other companies.

The only region in Dakar has more than 152 dental offices. The study was descriptive and transversal and focused on the Senegalese dentists.

2.2. Selection Criteria

To be retained in the study, participants had to meet the following criteria: they were they hold a doctoral degree in dental surgery, they had to be practicing or exercising dental surgery at the time of the investigation, they had to be registered for the College of Dentists (except for the military), and they had to agree to participate in the study.

2.3. Sample Size and Sampling

The determination of sample size was calculated using the Schwartz formula [8]:

$$n = (\mathcal{E}\alpha)^2 pq/I^2$$

which can be used in cross-sectional studies where \mathcal{E} = reduced deviation = 1.96; α = risk of error = 0.05; p = Proportion of dentists with no knowledge of hepatitis B. Failing to find a knowledge study, we estimated the prevalence to be 10%; q = The add-in = 90%; I = accuracy = 5%. These parameters resulted in size of 138 individuals. To guard against lost or damaged cards and improve the strength of our sample, we increased the size to 171.

A systematic and several-degree stratified probabilistic sampling according to Dakar and the other regions as well as by public, private and parapublic cabinets was carried out.

The first was to draw, seven primary units constituted by the regions for essentially material reasons. At the outset the capital city Dakar was the focus due to the large concentration of firms (almost two thirds of the firms in the country). The other six regions were randomly selected by lottery on a set of 13 regions. The regions concerned were of Thiès, Ziguinchor, Diourbel, Saint-Louis, Kaolack and Fatick.

Second, secondary units consisting of 33 public offices, 5 para-publics and 109 outside the Dakar region were also drawn to the lot. For the other regions, the survey enlisted all functional cabinets at the time of the investigation.

Finally, after drawing up lists of dental surgeons from both the Dakar region and other regions, statistical units (dentists) were selected according to a systematic random sampling with a step equal to 2 surveys.

The rule of proportionality was respected with regard to the distribution of dental surgeons according to whether they are public, parapublic or private in Dakar and other selected regions. In the end, 75 private dentists and 35 public and/or parapublic surgeons from the Dakar region, and 45 of the public and/or the parapublic and 16 of the private of the other regions were investigated.

2.4. Data Collection and Variables Studied

The questionnaires were directly administered to the dental surgeons selected for the survey. Previously, they had been provided with explanations of the objectives and importance of the public health survey. The survey was conducted from April to June 2014.

The survey form was pre-tested on ten students preparing their dental surgery thesis. This allowed us to observe the responses of the respondents to the survey, and to obtain estimates of the time devoted to the different sections. The difficulties and ambiguities encountered were corrected for the purpose of preparing the final investigation.

The information to be collected concerned the variables related to the attitudes and practices of dental surgeons in relation to hepatitis B. Attitudes and practices refer to the behaviour of the dentist to prevent viral infection in the dental environment (vaccination, protective equipment, sterilization processes etc...).

2.5. Ethical Considerations

The information contained in the survey did not identify the dentist who chose to agree to answer the questions. The answers were handled in complete confidentiality.

2.6. Data Analysis

The EPI info 3.4.3 software allowed us to enter and process the data. The results were expressed in terms of numbers and percentages with their confidence intervals for the qualitative and average variables followed by their standard deviations for the quantitative variables.

3. Results

See **Table 1** and **Table 2**.

4. Discussion

This study assessed the attitudes and practices of dentists in dental surgeries and in the face of hepatitis B risk. The results may be underestimated because of the potential existence of the bias of desirability that the respondents give the best answer that does not necessarily correspond to their actual practices. Nevertheless, the evaluation showed faulty practices in relation to their hygienic practices, protective devices, their vaccination status, and their conduct followed before a case of accident of exposure to blood.

4.1. Behaviour of Dental Surgeons at the Dentist's Office

Gloves should be worn as soon as there is a risk of contact with blood, or any other human fluid, as well as with the mucous membranes or the injured skin of the patient.

Gloves are therefore indispensable for the care at risk of stinging, manipulation of tubes, fingerprints or contaminated material. Similarly, when the caregiver's hands have lesions, gloves should be worn during care.

Almost 95% of dentists reported wearing gloves on a regular basis before any dental act (**Table 1**). The Nagao *et al.* study [9] in 2008 in Japan, covering oral

Table 1. Attitudes or behaviours of dentists at the dental office.

Variables	Modalities	Number	% [CI]
Do you use gloves for any dental act?	Never	0	0
	Often	9	5.3 [2.4 - 9.8]
	Regularly	162	94.7 [90.2 - 97.6]
Are you wearing a mask?	Never	2	1.2 [0.1 - 4.2]
	Often	21	12.3 [7.8 - 18.2]
	Regularly	148	86.5 [80.5 - 91.3]
Do you wear glasses when there is risk of splashing?	Never	20	11.7 [7.3 - 17.5]
	Often	41	24.0 [17.8 - 31.1]
	Regularly	110	64.3 [56.7 - 71.5]
Wash your hands before and after each patient?	Never	5	2.9 [1 - 6.7]
	Often	88	51.5 [43.7 - 59.2]
	Regularly	78	45.6 [38 - 53.4]
Do you change your blouse or smock at least once a day?	Never	57	33.3 [26.3 - 40.9]
	Often	86	50.3 [42.6 - 58]
	Regularly	28	16.4 [11.2 - 22.8]
Do you rinse and disinfect any prosthesis footprint?	Never	4	2.3 [0.6 - 5.9]
	Often	50	29.2 [22.5 - 36.7]
	Regularly	117	68.5 [60.9 - 75.3]
Do you throw the needles after use into a specific box?	Never	16	9.4 [5.5 - 14.8]
	Often	18	10.5 [6.4 - 16.2]
	Regularly	137	80.1 [73.2 - 85.7]
Do you disinfect the work surfaces after each patient?	Never	0	0
	Often	40	23.4 [17.3 - 30.5]
	Regularly	131	76.6 [69.5 - 82.7]
Do you disinfect the suction tube after each patient?	Never	22	12.9 [8.2 - 18.8]
	Often	29	17.0 [11.7 - 23.4]
	Regularly	120	70.1 [62.7 - 76.9]
Do you disinfect after each patient the lamp cuffs?	Never	12	7.0 [3.7 - 11.9]
	Often	94	55.0 [47.2 - 62.6]
	Regularly	65	38.0 [30.7 - 45.7]
Do you disinfect after each patient the cuspidor?	Never	1	0.6 [0 - 3.2]
	Often	26	15.2 [10.2 - 21.5]
	Regularly	144	84.2 [77.9 - 89.3]
Do you disinfect the X-ray machine after each patient?	Never	44	25.7 [19.4 - 33]
	Often	84	49.1 [41.4 - 56.9]
	Regularly	43	25.2 [18.8 - 32.3]
Do you rinse and sterilize by heat the instruments?	Never	0	0
	Often	12	7.0 [3.7 - 11.9]
	Regularly	159	93.0 [88.1 - 96.3]

care professionals, highlighted a proportion of 82.08% of professionals wearing gloves during care. This difference could be explained by the study population which was not only made up of dentists but also of hygienists and dental assistants. This would put the good behaviours that dentists may have in isolation.

Gloves should always be changed between patients or two activities. However, the wearing of gloves does not exempt from hand washing. More than half of our sample washed their hands before and after each patient (**Table 1**).

A blouse, mask and goggles must be worn in case of a risk of spraying or aerosolizing blood or other human fluids. In our sample, the mask wearing was regular (86.5%) and goggles were worn when there was a risk of splashing of more than 64%. The Barlean study [10] among Romanian dentists reported a percentage of 86.2% of dentists reporting wearing full equipment (gloves, masks, eyeglasses and coats) during care.

In the dental office, the precautions to be taken are simple. Hygiene rules are to dispose of disposable products (needles in a specific box) and disinfection, flushing of soiled surfaces and systematic sterilization of instruments. In our study, more than 23% disinfected work surfaces only irregularly; the same was the case with the fingerprints, the X-ray machine, the suction tubes with 29%, 25.7% and 12.9% respectively. The sterilization of the instruments by heat was regularly done in 93% of the cases (**Table 1**). In the Al-Omari study [11], it emerged that all dental practitioners stated that they changed the suction tubes between patients, 63% used autoclave for sterilization, and only 18% disinfected prints before sending them to dental labs. For waste, 31.8% had special containers for the disposal of needles and other sharp objects.

4.2. Vaccination Status of Dental Surgeons

The hepatitis B vaccine does not cure chronic carriers, but it is effective from 90% to 95% to prevent the onset of this condition. The anti-HBV vaccine is also the first vaccine against a sexually transmitted infection and can be considered the first cancer vaccine.

More than a fifth of the dentists interviewed (21.6%) were not vaccinated (**Table 2**). The study of Azodo in 2012 [12] revealed a higher percentage (31%) of dentists who were not vaccinated against HBV in the city of Benin in Nigeria, even though the latter evoked lack of opportunities and fear of side effects of the vaccine.

4.3. Frequency of Accidents of Exposure to Blood (BEA)

An accident exhibiting blood (BEA) is defined as any accidental contact with blood or a biological liquid contaminated with blood, following a cutaneous break-in (stick, cut, scratch...) or a projection on a mucous membrane (conjunctiva, mouth...) or on an injured skin (dermatosis, wound...). Surgeons remain the most exposed category of personnel in terms of BEA frequency.

These BEA were relatively common in dental surgeons in our sample because

Table 2. Vaccination status. Blood exposure accidents (BEA). And behaviour of dentists in the face of risk of contamination.

Variables	Modalities	Number	% [CI]
Statut vaccinal			
Are you vaccinated against hepatitis B?	Yes	134	78.4 [71.4 - 84.3]
	No	37	21.6 [15.7 - 28.6]
Blood exposure accidents			
Frequency of needle sticking during the last 3 months	0 time	138	80.7 [74 - 86.3]
	1 time	22	12.9 [8.2 - 18.8]
	2 times	8	4.7 [2 - 9]
	3 times and more	3	1.7 [0.1 - 7.4]
Frequency of splashing in the eyes during the last 3 months	0 time	75	43.9 [36.3 - 51.6]
	1 time	17	9.9 [5.9 - 15.4]
	2 times	27	15.8 [10.7 - 21.1]
	3 times and more	52	30.4 [15.8 - 57.4]
Frequency of injuries caused by sharp instruments during the last 3 months	0 time	153	89.5 [83.9 - 93.6]
	1 time	10	5.8 [2.8 - 10.5]
	2 times	4	2.3 [0.6 - 5.9]
	3 times and more	4	2.4 [0 - 3.2]
Action to be taken			
Your attitude in case of bites or injuries	Disinfection	89	52.1 [44.9 - 60.4]
	Rinsing	3	1.7 [0.4 - 5.1]
	Disinfection and rinsing	22	12.9 [8.3 - 19]
	Other	50	29.2 [22.8 - 37.1]
	Nothing	7	4.1 [1 - 6.8]
Your attitude in case of splashing in the eyes	Disinfection	11	6.4 [2.5 - 9.9]
	Rinsing	114	66.7 [59.8 - 74.5]
	Disinfection and rinsing	19	11.1 [6.9 - 17]
	Other	24	14 [9.3 - 20.4]
	Nothing	3	1.8 [0.4 - 5.1]

nearly 13% had at least once needle sticks, 10% of the splashes and 6% of the injuries caused by sharp instruments (**Table 2**). Azodo *et al.* en 2010 reported a frequency of 41% of blood exposure accidents occurring in a 12-month period on a population of auxiliary dentists in Nigeria [13]. The high proportion noted in this last study is probably due to their status as auxiliary dentists.

4.4. Measures to Be Followed in the Event of BEA

In spite of the context at risk, most often characterized by the ignorance of patients of their general state, the lack of protective devices and the frequency of

accidents of exposure to blood during oral care, the majority of dental surgeons (52.1%) stated that they had to conduct the disinfecting of the site in case of sticks or wounds. However, in the case of splashes, 2/3 of the sample selected rinsing only (**Table 2**).

In Iran, the work of Shaghaghian [14] reported that 43% of dentists believed that an immediate flushing of the exposed surface following a stick, injury, or splash had no effect on the prevention of hepatitis B. This result does not follow the trend we have found, and can be subject to many interpretations.

5. Conclusion

The attitudes and practices of the Senegalese dentists in the face of hepatitis B need to be improved for both patients and the practitioners themselves. It urges the organization of awareness-raising sessions on the need for vaccination and to build capacity on the observance of hygiene measures, protective equipment and devices, and the proper procedures to be taken in the event of accidents involving exposure to blood.

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