Perceptions and practice of health care workers regarding hepatitis B vaccination, Bouaké, Côte d'Ivoire, 2016

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Abstract

Barriers to immunization are seen in both the general population and the health care workforce. We conducted this study to determine the perception of health workers on vaccination and the immunization of their patients. This cross-sectional descriptive analytical study was carried out among the medical staff in Bouaké, from 10 January to 07 March 2016. The data collected from the interviews were analyzed using Epi info 2000 software and SPSS 17.0. The Chi-2 test and logistic regression were performed and the significance threshold of the tests was 5%. The vaccination status of the 291 health care workers (HCWs) for the hepatitis B virus (HBV) was statistically related to their participation in the course in vaccination during their training (ORa = 1.69, 95% CI: 1.04-2.75 P<0.05) and the systematic verification of the vaccination status of the patient was statistically related to the vaccination status of the HCW (ORa = 4.33, 95% CI: 2.97-8.18, P<0.05). Promoting the vaccination among the population should be dependent on the promotion among HCWs.

Introduction

The risk of infection of health care workers (HCWs) by certain diseases is greater than for the general adult population.[1-4] HCWs could therefore serve as reservoirs and vectors in the transmission of diseases to their patients.[2] Some conditions, such as chickenpox, which may be benign for HCWs, may be severe for children and immunosuppressed individuals.[5] The vaccination of HCWs is a reliable way to prevent the nosocomial transmission of various infections.[6] However, multiple barriers to adherence to vaccination have been documented in HCWs.[7-10] Vaccination coverage rates for HCWs have often been low for the hepatitis B virus (HBV) and many other diseases.[11-13] In sub-Saharan Africa, studies on sero-prevalence for HBV infection among HCW have shown a chronic infection of HCWs ranging from 1.3% to 13%.[14-16] The hesitancy of the HCWs to mandatory vaccination is recurrent and controversial. It raises ethical questions regarding the limits of an institution's power over HCWs individual rights.[17-19] Some researchers believe the relationship between HCW and HBV-vaccinated patient is weakened if the HCWs themselves refuse vaccination,[18] and that being vaccinated would be part of the responsibility of the HCW as they are not only accountable for the protection of patients and colleagues, but responsible for the promotion of the vaccination to clients.[20-21] In Côte d'Ivoire, studies have been conducted on the vaccination status of HCWs,[22] their acceptance of vaccination, and their recommendation to patients during the epidemic period.[23] There has been an absence of research on the relationship between the vaccination status and perceptions of HCWs and their vaccine practices with their patients. This study was conducted to improve the vaccine practices of HCWs.

Materials and Methods

We carried out a cross-sectional descriptive analytical study, from 10 January to 07 March 2016, in the city of Bouaké in the medical services of public and private health facilities. Public facilities such as the University Hospital of Bouaké and ten urban health centres (UHC) were visited. For the private sector, there were seven private clinics and two charitable hospitals.

Bouaké is the second largest city in Côte d'Ivoire after Abidjan, the economic capital city of Côte d'Ivoire.[24] It is part of the health region of Gbèkê, whose regional capital is Bouake itself and has five health districts, three of which are in Bouaké.

The study population consisted of the medical staff (doctors, nurses and midwives) working in these health facilities. Our sample was exhaustive.

The data was collected from a structured anonymous questionnaire and individual face-to-face interviews with respondents. The variables studied included socio-demographic characteristics, training on vaccination and internship in offering vaccination services during their academic training, and knowledge of vaccine-preventable diseases, attitudes and practices regarding vaccination, and the verification of the HCW's HBV vaccine status. Vaccination against HBV was selected as the primary focus due to the risk of exposure of HCWs following the vaccination recommendation by the World Health Organization (WHO).[25,26] The data collected was analyzed using the software Epi info 2000 and SPSS 17.0. The Chi Square test allowed comparisons of proportions. Logistic regressions were conducted to identify the determinants that associate an HCW's tendency to systematically verify the HBV vaccination status of their patients with the HBV vaccination status of the HCWs themselves. The threshold of significance of the tests was 5%.

Results

Socio-professional characteristics

At the end of our survey, we interviewed 291 HCWs, 13.53% of whom were physicians, 58.76% were nurses and 23.71% were midwives. They had an average age of 33.62±5.149 years, with majority

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of participants falling between the ages of 30 to 39 (58.42%). 55.67% of participants were male. Most respondents came from public health settings (78.97%). 97.6% of participants reported having attended one or more courses on vaccination during their academic training. Over half also reported receiving training specifically in offering vaccination services (53.26%) during their internship (Table 1).

Attitudes, determinants and vaccination practices

HBV vaccination status of HCWs and reasons for incomplete vaccination

The HCWs reported being up-to-date with their immunization against HBV in 47.42% of cases. In a multivariate analysis, their vaccination status was statistically related to their participation in the vaccination courses (ORa = 1.69, 95% CI: 1.04-2.75, P<0.05) (Table 2). The reasons for non-vaccination were vaccine costs (18.30%), negligence (16.99%) and shortage of time (8.50%). Female HCWs (64.29%, P<0.01) and HCWs who did not follow a vaccination internship (75.00%, P<0.05) were highly represented among those who advocated the cost of vaccines as a reason for non-vaccination. More male HCWs (53.85%, P<0.01) than females HCWs cited negligence for non-vaccination (Table 3).

Systematic verification of the vaccination status of patients

HCWs reported systematically checking the vaccination status of patients in 24.74% of cases. This attitude was statistically related to the vaccine status of the HCW (ORa = 4.33, 95% CI: 2.97-8.18, P<0.05) (Table 4).

Discussion

In our study, the interviewees reported that they had received training courses in vaccination (90.67%), but only 34.97% of them did an internship in vaccinology (Table 1). Proposed reasons for these low numbers are that (i) the number of health science students may be higher than the capacity of vaccinations centres available for their training or that (ii) there is not enough time available for all the clinical services in their practical training. These gaps in the training of HCW could influence their knowledge and attitudes towards vaccination. In fact, 47.42% said they were up to date with their HBV vaccine and 24.74% claimed to systematically check the vaccination status of their patients. An evaluation of the vaccination status of doctors in one of the university hospitals in Abidjan, Côte d'Ivoire, showed a vaccination coverage of 35% for HBV (Table 1).[22] The self-reported vaccination status in our study may be inconsistent with the reality or even overvalued.[27]

Table 1. Socio-demographic characteristics of health care workers, Bouaké, Côte d'Ivoire, 2016.

	n	%
Age		
Mean-standard deviation - Extremes	33.62-5.149 - 20 and 50	
20-29 yrs	55	18.90
30-39 yrs	170	58.42
40-50 yrs	43	14.78
Not precised	23	7.90
Sex		
Male	162	55.67
Female	129	44.33
Vaccinology courses	284	97.60
Vaccinology internship	134	53.26
Health settings		
Public	213	73.20
Private Clinics	78	26.80
Occupation		
Physicians	51	13.53
Nurses	171	58.76
Midwives	69	23.71

Table 2. Determinants of health care workers' hepatitis vaccination status, Bouaké, Côte d'Ivoire, 2016.

	Is your hepatitis vaccine up-to-date?									
	Yes		No		OR_b	95% CI	P	OR_a	95% CI	P
	n	%	n	%						
Age ranges (n=268)										
20-29	31	56.36	24	43.64	Ref					
30-39	73	42.94	97	57.06	0.58	0.32-1.08	>0.05			
40-50	24	55.81	19	44.19	0.98	0.44-2.18	>0.05			
Sex (n=291)										
Female	68	52.71	61	47.29	1.47	0.92-2.33	>0.05			
Male	70	43.21	92	56.79	Ref					
Vaccinology courses (n=291)										
Yes	133	46.83	151	53.17	0.35	0.057-1.85	>0.05			
No	5	71.43	2	28.57	Ref					
Vaccinology intership (n=289)										
Yes	75	55.97	59	44.03	1.91	1.19-3.05	<0.01	1.69	1.04-2.75	<0.05
No	62	40.00	93	60.00	Ref					
Type of health facilities (n=285)										
Public	108	50.70	105	49.30	1.47	0.85-2.55	>0.05			
Private Clinics	28	41.18	40	58.82	Ref					
Occupation (n=291)										
Physicians	32	62.75	19	37.25	2.37	1.25-4.52	<0.01	0.57	0.30-1.09	>0.05
Midwives	35	50.72	34	49.28	1.45	0.83-2.54	>0.05			
Nurses	71	41.52	100	58.48	Ref					

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The absence of a statistically significant link between participation in vaccination courses and vaccination status (P>0.05) (Table 2), participation in vaccination courses and verification of the vaccine status of the patient (P>0.05) (Table 4) meant that only the vaccination courses were not sufficient to develop invested interest in systematic patient vaccination verification. On the other hand, participation in vaccination courses seemed to contribute to improved vaccination *buy in* for the HCWs themselves, who had an up-to-date vaccinations (ORa = 1.69, 95% CI: 1.04-2, 75 P<0.*05*) (Table 2). The practical training would allow them to better understand the importance of vaccination or would establish an opportunity for free vaccines for them.

HCWs who had not undergone vaccinology training and who were not up to date with their vaccination mainly indicated that the cost of the vaccine was the main reason to be negligent (75.00%, P<0.05) (Table 3). Separately, the majority of the participants who had completed an internship in vaccinology but were not up to date on their vaccinations themselves, expressed that lack of time was the determining factor (61.54%, P<0.05) (Table 3). Studies on vaccination among the medical personnel are numerous for influenza and HBV. In the review of Hollmeyer *et al*., fear for adverse reactions of the flu vaccine was the main reason for non-acceptance of the vaccination.[7] The vaccine intention of Ivorian HCWs during the AH1N1 influenza pandemic was 80% and the reasons for this decision were fear for the disease or even contracting the disease.[23] Labor pressure (39.8%), negligence (38.8%), vaccine cost (20.9%) were also found to be a barrier to HBV vaccination among HCWs in Pakistan.[10]

While participation in a vaccinology internship appears to be a free vaccine opportunity for HCWs, it would certainly be an asset for achieving immunization coverage among HCWs. Our study shows that participating in vaccinology courses did not predispose HCWs to systematically check-

Table 3. Determinants of the reasons of health care workers' hepatitis non-vaccination, Bouaké, Côte d'Ivoire, 2016.

	High cost of vaccines		Negligence		Lack of time		P
	n	%	n	%	n	%	
Sex (n=67)							<0.01
Female	18	64.29	12	46.15	1	7.69	
Male	10	35.71	14	53.85	12	92.31	
Age range (n=62)						-	
20-29	9	33.34	3	12.50	0	0.00	
30-39	17	62.96	17	70.83	11	84.62	
40-50	1	3.70	4	16.67	2	15.38	
Occupation (n=68)						-	
Physician	1	3.57	5	19.23	5	38.46	
Nurse	12	42.86	15	57.69	7	53.85	
Midwife	15	53.57	6	23.08	1	7.69	
Vaccination course (n=67)							-
Yes	28	100.00	25	96.15	13	100,00	
No	0	0.00	1	3.85	0	0.00	
Internship (n=67)							<0.05
Yes	7	25.00	13	50.00	8	61.54	
No	21	75.00	13	50.00	5	38.46	
Type of health facilities (n=64)						-	
Public	15	60.00	23	88.46	13	100.00	
Private	10	40.00	3	11.54	0	0.00	

Table 4. Determinants of patients' vaccine status verification, Bouaké, Côte d'Ivoire, 2016.

	Do you systematically check the vaccine status of your patients?						P	OR_a	95% CI	P
	Yes		No		OR_b	95% CI				
	n	%	n	%						
Age ranges (n=268)										
20-29	12	21.82	43	78.18	Ref					
30-39	47	27.65	123	72.35	1.37	0.66-2.82	>0.05			
40-50	8	18.60	35	81.40	0.82	0.30-2.23	>0.05			
Sex (n=291)										
Female	35	27.13	94	72.87	1.26	0.74-2.15	>0.05			
Male	37	22.84	125	77.16	Ref					
Vaccination course (n=291)										
Yes	72	25.35	212	74.65	–1	–1 - –1	>0.05			
No	0	0.00	7	100.00	Ref					
Vaccinology internship (n=289)										
Yes	24	17.91	110	82.09	0.52	0.29-0.90	<0.05	1.62	0.90-2.91	>0.05
No	46	29.68	109	70.32	Ref					
Type of health facilities (n=281)										
Public	59	27.70	154	72.30	1.79	0,89-5.58	>0.05			
Private Clinics	12	17.65	56	82.35	Ref					
Occupation (n=272)										
Physician	24	47.05	27	52.95	4.44	2.23-8.84	<0.01	0.93	0.41-2.11	>0.05
Midwife	21	35.60	38	64.40	2.76	1.41-5.42	<0.01	1.63	0.87-3.01	>0.05
Nurses	27	16.67	135	83.33	Ref					
Up-to-date hepatitis vaccination (n=291)										
Yes	16	11.59	122	88.41	0.23	0.12-0.42	<0.05	4.33	2.97-8.18	<0.05
No	56	36.60	97	63.40						

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ing the vaccination status of patients (P>0.05) (Table 4). In our context, this paradoxical attitude confirms our apprehensions about vaccinology courses during students in health sciences training. Since the vaccinology course takes place only in the immunization services in the presence of clients who come on their own accord to seek vaccination or in mother-child scenarios where there is a preference to vaccinate, the vaccinology course in these situations would distance the trainee from the reality of routine consultations that take place in all medical services where the immunization status of patients should also be systematically checked. In view of this observation, vaccinology courses should be extended to include hospital services where the notions of routine checking of the immunization status and the immunization awareness would be applied. Our study also showed that only up-to-date HCWs were more likely to routinely check the immunization status of their patients (ORa = 4.33, 95% CI: 2.97-8.18, P<0.05) (Table 4). This association between the personal vaccination habits of the HCW and the vaccination practices of the patient had already been documented.[9,28,29] This would indicate a simple extension of the patient's awareness of the importance of vaccination and not the fulfilment of a medical duty. Agents with a good perception of the goods made from the vaccination have a good practice for themselves and for their patients. Verification of the patient's immunization status or even awareness of immunization should not appear to be an act of altruism of the HCW towards the patient but rather a professional obligation.[20]

Limitations of the study

In our study, we did not obtain the vaccination evidence from the surveyed HCWs; their self-affirmed vaccination status could therefore be overestimated. For this reason, we did not introduce knowledge assessment variables on immunization, taking into consideration the complexities of generating knowledge variables for all vaccine-preventable diseases and related vaccine. Furthermore, the lack of specification of HCW specialties and HCW practice services could lead to bias in determining factors related to the attitudes of vaccination practice in our study. Moreover, the introduction of new variables such as courses and courses in vaccinology could supplement these omitted variables.

Conclusions

Our study provides evidence emphasizing the importance of vaccination of HCWs, not only for the prevention of their own infection and the prevention of nosocomial transmission in the workplace, but for its contribution to community-based disease prevention, since they are also members of the community.

It also highlights the failure to promote immunization among patients. These differences lie in the basic training, which should be improved. In our study, vaccination seems not to be important for HCWs who expressed that lack of time or negligence were reasons to not have their HBV vaccine up to date. Regarding the risk of infection due to their work, concerns should be raised to make HCW vaccination compulsory and requiring consistent verification of patients' vaccination status.

Ethical considerations

We have protected the confidentiality of the information provided by the health care workers staff. Moreover, the respondents' participation was free and obtained after informed consent and verbal agreement. There was no pressure whatsoever to force the various occupational categories of health to participate in the study. Prior authorization from the Regional Director of Health of the Gbèkè was obtained prior to the investigation.

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