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Research Article

Factors Influencing Hospital Cleaners' Knowledge and Practices toward Hepatitis B prevention in Northern Province of Rwanda

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Abstract

This study aimed to assess factors influencing knowledge and practices of hospital cleaners towards hepatitis B prevention. This was a hospital-based cross-sectional study conducted in Northern Province of Rwanda. A pretested self-administered questionnaire was used to gather data from study participants. A total of 134 cleaners were recruited in the study. Data were entered using Kobo collect toolbox and exported to Microsoft Office excel for data cleaning and to be entered in SPSS version 21 for analysis. Descriptive and logistic regression analysis was done and the significance level was 5%. More than a half of respondents were female (51.5%), and had primary level of education (54.5%). Results showed that only 9.7% of respondents had a high level of knowledge about HBV and only 2.2% had good practices on HBV practices. The odds of having a high level of knowledge towards HBV prevention was 2.3 times (AOR=2.3, 95%CI: (1.1-27.3); p=0.045) among respondents with high school compared to those with no educational level. Respondents with work experience of 5-7 years were 1.5 times to have high level of knowledge towards HBV prevention than those with work experience of less than one year. Being aged between 20-30 years was associated with 2.5 times more likely to have good practices on HBV prevention than respondents aged less than 20 years. The odds of having good practice towards HBV were found to increase with work experience (AOR=2.3; 95%CI: (1.29-4.3); p=0.014). A considerable proportion of participants lacks the requisite knowledge of post-exposure treatment and prevention of HBV. Training programs on HBV infection, including PEP, are highly recommended.

Keywords:
Hepatitis B; HBV infection; Hospital cleaners; Northern Province of Rwanda

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Introduction

Hepatitis B is a viral infection from the Hepadnaviridae family of viruses that attacks the liver and can cause both acute and chronic disease [1]. The Hepatitis B Virus (HBV) is transmitted through infected blood products, unprotected sex, infected items such as needles, razor blades, dental or medical equipment, unscreened blood transfusions, or from mother to child at birth.

HBV affects more than 2 billion people around the world with recent data identifying 257 million people worldwide suffering from chronic viral Hepatitis B [3]. HBV can be prevented by vaccines that are available, safe and effective [4]. HBV prevalence for chronic infection amongst individuals born prior to accessibility of the Hep B vaccine is much higher [5].

Regardless of initiation of universal Hep B immunization and powerful anti hepatitis B viral treatments in the sub-Saharan Africa and Asia, these regions bear the greater part of the burden of chronic viral hepatitis B infection around the world with 6.2% and 6.1% of older people being infected respectively. In the Eastern Mediterranean Region, South-East Asia and the European Region, 3.3%, 2.0% and 1.6% of people are infected with only 0.7% of general population infected in the America's Region [6].

The essential primary transmission of Hep B disease is that might be spread by utilizing direct contact with blood or its body liquids [7]. It can incorporate work-related exposure to human blood and body secretions, unprotected sexual intercourse activity. It is well known that health-care workers including hospital cleaners are at elevated danger for being infected with Hep B, mostly outstanding to infection transmission via blood contacting mucosa [8].

Acceptable knowledge and reasonable practices of hospital personnel are needed to reduce the spread of HBV disease. A study conducted in Northern Vietnam, Hang-Pham *et al.*[9] found that healthcare professionals working at health facilities offering primary and tertiary health services that around 30.2 percent had incorrectly accepted that Hep B might be spread over food eating/or sharing by an infected client with hep B and in regards to 38.8% was not sure if the hep B vaccine is safe.

In African Countries like Tanzania, Debes *et al.*[10] discovered that hospital workers have a low level of knowledge of Hep B serostatus and immunization status where 91% of healthcare personnel were uninformed about their Hep B status and revealed that around 89% had never received an HBV vaccine; this is often similar with the study conducted in Sudan by Mursy and Mohamed [11] where the greater part of the midwifery and Nursing staff didn't finish immunization calendar for HBV.

A Nigeria study "on knowledge and utilization of hepatitis B infection preventive measures and influencing factors among health care workers" shows that self-revealed practice for Hep B precautionary measures was poor along with the majority of 62.4% of the study participants [12]. In Nigeria, another additional study directed by Abiodun *et al.*[13] demonstrated that knowledge of cleaners on prevention of Hep B infection was low at 65.2 % and 28.1% of the participants had ever had screening while none of them had been immunized for hepatitis B. Unlike other health care providers, cleaners are typically less well trained, no formal or little trainings, and lack of needed trainings related to infection prevention in the hospital settings may increase the risk to be infected [14].

In Rwanda, the prevalence of HBV for general population is unknown, therefore, prevalence rate of HBV is intermediate by global standards in different populations of Rwanda, however it might be thought of low prevalence for the region as proved by Umutesi *et al.*[15], have given approximations of Hep B prevalence along with numerous Rwandan populations living with HIV is 4.3%, which is extremely comparable with results from research done by Makuza *et al.*[16] evidenced that prevalence rate among screened Rwandans is 3.9%. In Rwanda, the general population epidemiology of HBV infection is not well known.

Health care workers including hospital cleaners are at greater risk of infection with Hep B compared to the general population [17], due to increased risk of contracting blood-borne pathogens from their frequent occupational exposure to blood and body fluids [18] and inappropriate utilization of individual protective measures [19,20].

However, in Rwanda hospital cleaners are recruited by private companies, not trained on infection control guidelines before starting the employment and cleaners are not considered in general hospital capacity building plan, and their vaccination status is unknown. The absence of awareness on HBV prevention measures, prophylaxis for post-exposition procedures, lack of trainings and safe protective equipment increase the risk of being infected [2]. Acceptable knowledge and reasonable practices of hospital cleaners are needed to reduce the prevalence of disease. Knowledge is necessary for preventing hepatitis B spread between individuals. Therefore, this study investigated the factors influencing hospital cleaner's knowledge and practices concerning prevention of HBV.

Methods

Study Design

This study was a descriptive cross-sectional survey and used a quantitative method. This study utilized a standardized self-administered questionnaire to assess hospital cleaner's knowledge and practices about HBV infection prevention in three selected rural district hospitals, northern Rwanda province. Purposive sampling was used to select the hospitals; all three selected hospitals are located in rural area.

This study was done in three rural District Hospitals located in northern province of Rwanda. Those hospitals were Byumba Hospital located in Gicumbi District, Rutongo Hospital located in Rulindo District and Nemba Hospital located in Gakenke District.

Study Population

The target population was hospital cleaners aged above 18 years old who worked daily in all clinical units and involved in waste management as well as in sterilization and laundry process in the study site. This study was targeting a total population of 134 hospital cleaners from Byumba, Rutongo and Nemba District hospitals.

Sample Size and Sampling Procedure

This study was a quantitative cross sectional study, targeting a small population, Census method was used and the entire study population was considered in the study. The study recruited all subjects from all research sites because the study population at each hospital was small (less than 50); all study participants were enrolled in the study. Hence the sample size was 57 cleaners for Byumba hospital, 34 cleaners for Rutongo and 43 cleaners in Nemba hospital.

The researcher used telephone calls to call cleaners scheduled for night shifts, and the collection of data took place separately for five consecutive days at each study site to create fair opportunities for study participation.

Before handing out questionnaires to study participants, the study goals and objectives were clarified. Additionally, cleaners participated in the study voluntarily. Thus, a self-administered questionnaire was distributed to all study participants with a will to participate and met the inclusion criteria. A week prior to the actual data collection, the questionnaire was pre-tested. Findings of the pre-test were used to modify and clarify the collection tool before the actual data collection. Data collection took place at each hospital where study participants work.

Data Management

After data collection, data were entered using KoBo Collect Toolbox and exported to Microsoft Office Excel for data cleaning and to SPSS for analysis and retained by the investigator in locked folder. The data was entered and verified twice to guarantee the reliability and data analysis was performed twice to reject any differences. The investigator also retained all used survey forms in a locked cabinet.

Data Analysis and Ethical Consideration

Data analysis was done by the Statistical Package for the Social Sciences (SPSS). Descriptive analysis was done and level of knowledge and practice was determined based on the mean value of questions asked and bivariate and multivariate regression for analysis of relation between dependent and independent variables. P-Value < 0.05 was taken as significant. Factors influencing cleaner's knowledge and practices for Hepatitis B prevention were analysed through multivariate regression. Factors were reported using odds ratio and 95% confidence interval.

In this study, the proposal was approved by Mount Kenya University Rwanda and before the data collection process, ethical clearance was obtained from the Mount Kenya University and hospitals was guaranteed the data collection permit . In addition, after the institutional review panel of each of the three district hospitals, the researcher was given permission to collect data at each district hospital. Respondents received detailed information and description of the study then they signed the consent form before their participation as it was a voluntary participation. As presented in Table 1, Byumba DH is highly represented in this study with 42.5%, followed respectively by Nemba DH (32.1%) and Rutongo DH (25.4%). More than a half of respondents were female (51.5%) and males were 48.5%. A big part of respondents was aged between 20-30 years (64.9%), 59.0% were still unmarried, 54.5% had primary level of education. According to their work experience, 41.8% had less than 1 year of experience (3 months-1 year) and 39.6% had an experience between 2-4 years.

Results

Socio-Demographic Characteristics of the Respondents

This part represents the respondent's workplace, age group, marital status, gender, level of education, and working experience.

Findings in Table 2 show that 67.2% had heard about HBV. As reported by the respondents, the main sources of information were doctors (33.6%), nurses & midwives (23.9%), radio/TV shows and website (20.9%). More than a half (61.9%) knew that HBV is treatable, 32.8% did not know if somebody exposed to the HBV immediately develops an acute hepatitis versus 26.1% were aware about HBV development after being exposed to it, 59% knew that HBV mainly affects the liver and 47.0% knew that HBV is more contagious than HIV.

A total of 24 questions related to the knowledge of HBV prevention were assessed using SPSS assessment score. For a right answer, the rating was 3 marks and zero for the rest. A knowledge total score was determined by adding up the scores on all 24 questions for each respondent. Findings in Table 3 demonstrate that 9.7% of respondents had a high level of knowledge about HBV, 45.5% of them had a medium knowledge, while 44.8% had a low knowledge about HBV. The mean knowledge score for all respondents was 38.4 out of a possible 72 marks to score (SD = 9.8). The minimum score was 24 marks and the maximum score was 72 marks.

Table 1. Socio-demographic characteristics of the respondents

Variables	Items	Frequency (n=134)	Percent (%)
Workplace	Byumba District Hospital	57	42.5
	Nemba District Hospital	43	32.1
	Rutongo District Hospital	34	25.4
Gender	Male	65	48.5
	Female	69	51.5
Age group	Below 20 years	10	7.5
	20-30 years	87	64.9
	31-40 years	26	19.4
	Over 40 years	11	8.2
Marital status	Single/Unmarried	79	59.0
	Married	43	32.1
	Widowed/separated	12	8.9
Level of education	No formal education	3	2.2
	Primary school	73	54.5
	High school	52	38.8
	University	6	4.5
Work experience	3 months – 1 year	56	41.8
	2-4 years	53	39.6
	5-7 years	14	10.4
	Over 7 years	11	8.2

Practices of hospital cleaners concerning Hepatitis B prevention. The researcher wanted to determine the hospital cleaners' practices towards Hepatitis B prevention. The key findings are presented in Table 4.

Findings on respondents' practices on HBV prevention as presented in Table 4 revealed that 75.4% have not been diagnosed with HBV, 63.4% were immunized against HBV, 51.5% were screened for HBV, 90.3% received treatment care after testing positive for HBV, 58.2% have received any training session on HBV, 58.2% have reported in case of needlestick injuries while 38.8% confirmed that they have received at least 3 doses of HBV vaccine while 28.4% said they did not get any dose of HBV vaccine.

The practices' section encompassed ten (10) questions related to HBV prevention and were marked for each respondent. If a respondent provided a correct answer, he/she was given a score of 3 points. If he/she provided a false answer, he/she was marked by zero. Each respondent's overall practices score was calculated by adding the values from each of the ten HBV prevention questions. The total score was 30 points. Hence, only 2.2% of respondents presented good practices (scored more than 21 out of 30 points), 69.4% of them had fair practices (scored between 15 and 21 points out of 30 points) and 28.4% presented poor practice on HBV practices (scored less than 15 points out of 30 points). The average

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Table 2. General understanding of hospital cleaners on Hep B infection

Variables	Frequency (n=134)	Percent (%)
Have you ever heard about Hep. B Virus?		
Yes	90	67.2
No	44	32.8
Source of information		
Newspapers and magazines	17	12.7
Nurses and midwives	32	23.9
Doctors	45	33.6
Family/Colleagues/Neighbours	7	5.2
Radio/TV shows and website	28	20.9
Brochures and Posters	5	3.7
Is Hep. B treatable or curable?		
Yes	83	61.9
No	18	13.4
Don't know	33	24.6
Does somebody exposed to HBV immediately develop acute hepatitis?		
Yes	35	26.1
No	55	41.0
Don't know	44	32.8
Does HBV mainly affect the liver?		
Yes	79	59.0
No	17	12.7
Don't know	38	28.4
Is Hep. B more contagious than HIV?		
Yes	63	47.0
No	27	20.1
Don't know	44	32.8

practice score for all respondents was 16.2 out of 30 (SD = 2.45). The minimum scorer got 11 out of 30 points and the maximum scorer scored 21 out of 30 points (Table 5).

Table 3. Level of knowledge towards Hepatitis B virus prevention

Level	Frequency (n=134)	Percent (%)
High knowledge (Score: >50.4)	13	9.7
Medium knowledge (Score: 36 – 50.4)	61	45.5
Low knowledge (Score < 36)	60	44.8
Minimum score: 24.0	Mean: 38.4	
Maximum score: 72.0	Standard Deviation (SD): 9.8	

Table 4. Respondents' answers on practices related to HBV prevention

Variables	Frequency (n=134)	Percent (%)
Have ever diagnosed Hep. B virus		
Yes	29	21.6
No	101	75.4
Don't remember	4	3.0
Have immunized		
Yes	85	63.4
No	44	32.8
Don't remember	5	3.7
Have screened about Hep. B virus		
Yes	69	51.5
No	61	45.5
Don't remember	4	3.0
Have received treatment care after being tested positive for Hep. B virus		
Yes	121	90.3
No	11	8.2
Don't remember	2	1.5
Have attended training sessions on Hep. B virus		
Yes	53	39.5
No	78	58.2
Don't remember	3	2.3
Reporting in case of needlestick injuries		
All the time	78	58.2

Table 4 (continued)

Variables	Frequency (n=134)	Percent (%)
Occasionally	14	10.4
Never	32	23.9
Not sure	10	7.5
Number of vaccine doses received		
Zero dose	38	28.4
Single dose	25	18.7
Two doses	16	11.9
Three doses	52	38.8
Don't remember	3	2.2

Table 5. Distribution of Hepatitis B virus practices amongst respondents

Level	Frequency (n=134)	Percent (%)
Good practice (Score: >21)	3	2.2
Fair practice (Score: 15-21)	93	69.4
Poor practice (Score < 15)	38	28.4
Minimum score: 11.0	Mean: 16.2	
Maximum score: 21.0	SD: 2.45	

Factors Influencing Hospital Cleaners' Knowledge toward Hepatitis B Prevention

In the bivariate analysis, findings in Table 6 revealed that marital status (p=0.018), level of education (p=0.04) and work experience (p=0.039) were significantly associated with the level of knowledge towards HBV prevention. Multivariate logistic regression analysis identified that the odds of having a high level of knowledge towards HBV prevention were 2.3 times greater (AOR=2.3, 95%CI: (1.1-27.3); p=0.045) among respondents with high school education compared to those with no educational level. Respondents with work experience of 5-7 years were 1.5 times more likely (AOR=1.5; 95%CI: (1.16-9.8); p=0.034) to have a high level of knowledge towards HBV prevention than those with work experience of less than one year.

Table 6. Factors influencing hospital cleaners' knowledge toward Hepatitis B prevention

Variables	Item	Knowledge on HBV prevention			$\chi 2$	p-value	COR	AOR	p-value
		High	Medium	Low			(95% CI)	(95% CI)	
Workplace	Byumba	8(14.0)	23(40.4)	26(45.6)	3.4	0.48	-	-	-
	Nemba	4(9.3)	21(48.8)	18(41.9)			-	-	-
	Rutongo	1(2.9)	17(50.0)	16(47.1)			-	-	
Gender	Male	7(10.8)	32(49.2)	26(40.0)	1.1	0.55	-	-	-

Table 6 (continued)

Variables	Item	Knowledge on HBV prevention			χ2	p-value	COR	AOR	p-value
		High	Medium	Low			(95% CI)	(95% CI)	
	Female	6(8.7)	29(42.0)	34(49.3)			-	-	-
Age group	<20years	2(20.0)	4(40.0)	4(40.0)	3.57	0.733	-	-	-
	20-30 years	7(8.0)	40(46.0)	40(46.0)			-	-	-
	31-40 years	2(7.7)	11(42.3)	13(50.0)			-	-	-
	> 40 years	2(18.2)	6(54.5)	3(27.3)			-	-	-
Marital status	Single	4(5.1)	33(41.8)	42(53.2)	11.9	0.018	Ref.	Ref.	
	Married	6(14.0)	20(46.5)	17(39.5)			0.3(0.08-1.2)	0.5(0.2-1.2)	0.15
	Widowed	3(25.0)	8(66.7)	1(8.3)			0.1(0.03-0.8)	0.8(0.1-1.6)	0.18
Level of education	No educat.	1(33.3)	1(33.3)	1(33.3)			Ref.	Ref.	-
	Primary	7(9.6)	38(52.1)	28(38.4)	15.5	0.04	4.7(0.3-58.8)	1.2(0.1-14.3)	0.861
	High sch.	4(7.7)	20(38.5)	28(53.8)			6.0(0.4-81.4)	2.3(1.1-27.3)	0.045
	University	1(16.7)	2(33.3)	3(50.0)			2.5(0.1-62.6)	2.0(0.1-35.8)	0.638
Work experience	<1 year	4(7.1)	24(42.9)	28(50.0)	43.5	0.039	Ref.	Ref.	
	2-4 years	6(11.3)	23(43.4)	24(45.3)			0.6(0.16-2.2)	0.8(0.3-1.7)	0.622
	5-7 years	1(7.1)	8(57.1)	5(35.7)			1.0(0.10-9.7)	1.5(1.16-9.8)	0.034
	Over 7years	2(18.2)	6(54.5)	3(27.3)			0.3(0.05-2.1)	0.3(0.09-1.5)	0.178
Introduction to Hospital HBV Prevention policy	Yes	5(7.0)	29(40.8)	37(52.1)	3.64	0.162	-	-	-
	No	8(12.7)	32(50.8)	23(36.5)			-	-	-
Orientation on hospital IPC policies	Yes	6(7.9)	28(36.8)	42(55.3)	7.81	0.02	Ref.	Ref.	
	No	7(12.1)	33(56.9)	18(31.0)			1.18(0.3-4.4)	0.6(0.1-1.9)	0.042
Trainings on use of PPEs	Yes	5(5.4)	43(46.2)	45(48.4)	6.78	0.034	Ref.	Ref.	
	No	8(19.5)	18(43.9)	15(36.6)			0.24(0.6-0.8)	0.2(0.07-0.7)	0.017

Findings presented in table 6 revealed that the orientation on hospital IPC policies (AOR=0.6; 95%CI: (0.19-1.96); p=0.042) and trainings on use of PPEs (AOR=0.2; 95%CI: (0.07-0.76); p=0.017) are less likely to influence the hospital cleaners' knowledge in this study.

Based on the results in Table 7 the respondents' age group (p=0.029), level of education (p=0.007) and work experience (p=0.04) were associated with good practices towards HBV prevention. The multivariate logistic regression analysis showed that those aged between 20-30 years were 2.5 times

more likely (AOR=2.5; 95%CI: (1.33-3.50); p=0.02) to have good practices on HBV prevention than respondents aged less than 20 years. Respondents with a high school education were also 2.7 times more likely (AOR=2.7; 95%CI: (2.4-5.61); p=0.019) to have good practices on HBV prevention than those with no level of education. The odds of having good practice towards HBV also increased with work experience (AOR=2.3; 95%CI: (1.29-4.3); p=0.014).

Table 7. Factors influencing hospital cleaners' practices toward Hepatitis B prevention

Variables	Items	Practice on HBV prevention			χ2	p-value	COR	AOR	p-value
		Good	Fair	Poor			(95% CI)	(95%CI)	
Workplace (DH)	Byumba	2(3.5)	48(84.2)	7(12.3)	3.19	0.78	-	-	-
	Nemba	1(3.7)	26(59.1)	16(37.2)			-	-	-
	Rutongo	1(2.9)	18(52.9)	15(44.1)			-	-	-
Gender	Male	5(7.7)	37(56.9)	23(35.4)	5.44	0.06	-	-	-
	Female	3(4.3)	51(73.9)	15(21.7)			-	-	-
Age group	<20years	1(10.0)	7(70.0)	2(20.0)	25.11	0.029	Ref.	Ref.	
	20-30 years	2(2.3)	62(71.3)	23(26.4)			1.4(1.28-7.2)	2.5(1.33-3.5)	0.02
	31-40 years	1(3.8)	15(57.7)	10(38.5)			2.5(0.4-14.2)	0.6(1.9-2.01)	0.99
	> 40 years	2(18.2)	6(54.5)	3(27.3)			1.5(0.1-11.5)	0.2(0.02-2.4)	0.94
Marital status	Single	2(2.5)	50(63.3)	27(34.2)	3.75	0.44	-	-	-
	Married	1(2.3)	33(76.7)	9(20.9)			-	-	-
	Widowed	1(8.3)	9(75.0)	2(16.7)			-	-	-
Level of education	No educat.	1(16.6)	2(66.8)	1(16.6)	14.2	0.007	Ref.	Ref.	
	Primary	2(2.7)	52(71.2)	19(26.0)			2.3(1.4-4.3)	1.9(1.1-3.7)	0.073
	High sch.	1(1.9)	35(67.3)	16(30.8)			1.3(0.6-2.92)	2.7(2.4-5.61)-	0.019
	University	1(16.7)	2(33.3)	3(50.0)			3.0(0.5-16.1)	4.5(1.2-8.7)	1
Work experience	<1 year	1(1.8)	42(75.0)	13(23.2)	34.26	0.04	Ref.	Ref.	-
	2-4 years	2(3.8)	32(60.4)	19(35.8)			1.8(0.8-4.26)	2.3(1.29-4.3)	0.014
	5-7 years	2(14.3)	8(57.1)	4(28.6)			1.3(0.3-4.92)	1.7(0.8-3.4)	0.79
	>7 years	1(9.1)	8(72.7)	2(18.2)			0.7(0.1-3.83)	0.9(0.4-2.6)	1.00
Introduction to Hospital HBV Prevention policy	Yes	3(4.2)	36(50.7)	32(45.1)	25.1	<0.001	Ref.	Ref.	-
	No	1(1.6)	56(88.9)	6(9.5)			0.35(0.1-1.8)	0.24(0.04-1.3)	0.99
Orientation on Hospital IPC policies	Yes	1(1.2)	39(51.3)	36(47.4)	31.3	<0.001	Ref.	Ref.	-

Table 7 (continued)

Variables	Items	Practice on HBV prevention			χ2	p-value	COR	AOR	p-value
		Good	Fair	Poor			(95% CI)	(95%CI)	
	No	2(3.4)	54(93.1)	2(3.4)			0.37(0.2-5.1)	0.37(0.33-4.2)	0.42
Trainings on use of PPEs	Yes	1(1.1)	58(62.3)	34(36.6)	15.5	<0.001	Ref.		
	No	3(7.3)	34(82.9)	4(9.8)			0.8(0.2-1.1)	0.6(0.4-1.85)	0.99

Discussion

The knowledge and practices of hospital cleaners from three district hospitals in Northern Province of Rwanda (Byumba, Rutongo and Nemba) in relation to HBV prevention were investigated in this study. The results of the study showed that only 9.7% of respondents had a high level of knowledge about HBV, 45.5% of them had medium knowledge, while 44.8% had low knowledge about HBV prevention. The research findings are consistent with what was found in research of nursing and midwifery staff in 2 maternity hospitals in Khartoum, Sudan, where 58.2 percent of participants had an average knowledge level on HBV [21]. However, a study conducted in Northwest Ethiopia showed that overall knowledge of HBV prevention, and modes of transmission was high (86.2 %) [22].

Additionally, research conducted in North Vietnam showed a significant lack of knowledge regarding Hepatitis B testing and interpretation of results, symptoms of chronic hepatitis B infection, its treatment and monitoring of patients with chronic hepatitis B infection. The median knowledge scores regarding chronic hepatitis B infection treatment, and monitoring were low amongst the eight HBV knowledge categories [23]. This was similar to prior Cameroon research which showed that participants had a strong understanding of HBV infection [24]. But, at Haramaya University, Ethiopia, it was higher than the 56.2% knowledge level [25], 59 % from Iraq [26] and 14.5 % from Lao [27].

The study's findings revealed that knowledge about HBV prevention is strongly linked to level of education (AOR=2.3, 95%CI: (1.1-27.3); p=0.045) and working experience (AOR=1.5; 95%CI: (1.16-9.8); p=0.034). The results of this study are in line with a research done in Sudan's White Nile state, which showed that the level of HBV knowledge among HCWs was significantly linked to the level of education [28].

On one hand, our study results were in line with results of a study done in Khartoum where they found that there was no significant association between age, occupation, marital status; but on the other hand, our findings were in contrast with findings revealed in their study where Sanaa et al. showed that there was no statistically significant relationship between knowledge, attitude, educational level, practice, and working experience concerning HBV [21].

The findings from this study revealed that only 2.2% of respondents presented good practices, 69.4% of them had fair practices and 28.4% presented poor practice on HBV practices. A study in Pakistan conducted among the safe population of Quetta, found that 96.9% of respondents never went to Hep B screening and 86.8 per cent registered as negatively immunized against Hep B [29]. This has been supported by a study conducted by Ul Haq et al. [30] found that 66.9% of patients were within the spectrum of inadequate practice, while 33.1% demonstrated good preventive practice with respect to Hep B. Most of 98.2% of patients have not been certainly screened with hep B before getting the infection.

The result from this study showed that being aged between 20-30 years was associated with 2.5 times (AOR=2.5; 95%CI: (1.33-3.50); p=0.02) more likely to have good practices on HBV prevention than respondents aged less than 20 years. Respondents with high school were 2.7 times (AOR=2.7; 95%CI: (2.4-5.61); p=0.019) more likely to have good practices on HBV prevention than those with no level of education. The odds of having good practice towards HBV were found to increase with work experience (AOR=2.3; 95%CI: (1.29-4.3); p=0.014). In line with this finding, a study conducted by Ahmad et al.

[31] shows that gender, age, marital status, education level, and vaccination status were significantly associated with safer practices towards hepatitis B.

Conclusion

Some of the cleaners in the Byumba, Nemba and Rutongo district hospitals in Rwanda are aware of HBV infection. However, many of the participants lacked the requisite knowledge for prevention and management of post-exposure with HBV. The results for this study found a low coverage rate for vaccination and a high prevalence of needle stick injuries. Additional occupational exposure protection strategies, HBV infection training plans, and raising vaccination coverage to all cleaners are all needed.

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Competing Interests

The authors have declared that no competing interests exist.

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