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Knowledge, attitude, and practice towards prevention of hepatitis B infection among healthcare workers in Nyagatare Hospital, Nyagatare District, Rwanda.

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Hepatitis, hepatitis B virus, Nyagatare, health workers.

ABSTRACT

Hepatitis B virus (HBV) infection is the most important public health problem worldwide. Health care workers (HCWS) are at risk of contracting the hepatitis B virus if prevention measures are inadequate. For this reason, the idea was born to study the knowledge, attitudes, and practices of health care workers regarding hepatitis B virus prevention, as well as the factors associated with health care workers' HBV prevention practices. The study was a cross-sectional study conducted in a public hospital in Nyagatare district in the Eastern Province of Rwanda. Stratified random sampling was used to select respondents and strata were calculated according to the number of HCWs from each ward. Questionnaires were used for the strata consisting of doctors, dentists, nurses, and laboratory staff at Nyagatare Hospital. The target population was 180, of which 124 were sampled according to the calculated shifts from the different health personnel departments. Data were presented in tables and figures where necessary. Mount Kenya University and Nyagatare Hospital had given their consent before the start of the study. The demographic characteristics showed that the majority of the respondents (40.3%) were in the age group of 21-30 years, (57.3%) were married, (48.4%) had work experience of 10-19 years, while the proportion of males and females was 50% each. The results of this study showed that 81.5% of the respondents

had good knowledge of HBV prevention, the majority of 81.5% had a positive attitude toward HBV prevention, and 60.5% of the respondents had adequate practice on HBV prevention. There was a statistically significant association between the level of knowledge and practice of HBV prevention ($p < 0.02$). Respondents with poor knowledge [OR =0.25;95%CI=0.095-0.671; PV=0.02] were more likely to have poor practices. There is no statistically significant association between respondents' attitudes and practices on HBV prevention 78.3% [OR =0.075;95%CI=0.77-1.79PV=0.24.] Most of the HCWS in Nyagatare hospital were aware of HBV infection. But a significant proportion of respondents did not have adequate practices despite their good knowledge and positive attitude towards HBV prevention. 63.5% do not report needlestick injuries and do not wash their hands before and after procedures. The study reveals a knowledge gap in post-exposure prophylaxis (PEP). Further workplace exposure prevention strategies, curricula on HBV infection, and PEP are needed.

INTRODUCTION

Globally, the hepatitis B virus (HBV) is a significant public health problem (WHO,2016). Hepatitis B has risen to the tenth leading cause of death worldwide and is an important infectious disease, especially in developing countries (Abaje et al.,2015). According to recent figures, the hepatitis B virus infects about 1/3 of people worldwide (WHO, 2015). Of these, about 360 million people are chronically infected and at high risk for emerging liver diseases such as cirrhosis and hepatocellular carcinoma (HCC) (Who, 2017). The incidence of chronic HBV infection varies widely around the world (0.5-20%) due to differences in age at infection and mode of transmission. In Southeast Asia and sub-Saharan Africa, the incidence of chronic HBV infection is very high (Liaw, 2010); health care workers are more susceptible to hepatitis B infection in health care settings (Muljono et al., 2018). The prevalence rate of HBV in healthcare workers is two to ten times higher than in the general population (Muljono et al., 2018). Transcutaneous or mucous contact with contaminated body secretions or blood, use of inadequately disinfected hospital equipment, or touching open skin are all factors for hepatitis B in healthcare workers (Coppola et al., 2016). The typical probability of Hbv infection following skin contact with contaminated blood is reported to be 6-30%, compared with only 0.3% for HIV infection (Beltrami et al., 2000). HBV incidence in Rwanda is estimated to range from 1.9% to 7%, according to the most recent figures compiled from a variety of studies (RBC, 2015).

The prevalence of HBV is increasing in LMICs, including Rwanda. However, HBV preventive measures are not practiced by HCWS. In most developing countries, KAP of HCWs regarding HBV infections is inadequate (Roien et al., 2021). For example, a study conducted in Rwanda found that 2.9% of HCWs were infected with HBV (Fredrick Kateera, et al., 2015). The prevalence of callous use of infected items, reuse of improperly disinfected hospital equipment, and all of these factors could lead to a high incidence of hepatitis B virus infection among healthcare providers in underdeveloped countries (Abdela et al., 2016).

Because they work in the same hospital system as health professionals, learners in the medical field are also at risk of acquiring hepatitis B virus infection. Infections with HBV can be prevented by taking standard precautions. The use of physical barriers such as gloves, proper cleaning of hospital equipment, appropriate waste disposal in hospitals, and vaccination are examples (Abdela et al., 2016). The Knowledge, Attitudes, and Practices Survey assesses knowledge, feelings, tendencies, or skills that are prevalent in a community on specific topics. The survey is a useful tool for public health policymaking because it considers the level of knowledge, attitudes, perceptions, and practices of the population at risk. Therefore, the aim of this study is to assess the knowledge, attitudes and practices of health workers on HBV prevention in Nyagatare Hospital.

RESEARCH METHODOLOGY

This study used a descriptive cross-sectional design with quantitative survey methods. The quantitative data were collected from health care workers because they are different groups of people who perform the same work and are exposed to the same risk of contamination. The study was conducted at Nyagatare Hospital in Nyagatare District, Rwanda. The study targeted health care workers, including physicians, dentists, laboratory staff, and nurses, who work at Nyagatare

Hospital and agreed to participate in the study; those who did not were excluded. There are 180 health care workers at Nyagatare Hospital. The sample size in this study was 124 participants. This was determined using Yamane's formula.

Study population and procedures

Nyagatare Hospital was selected as a case study among other district hospitals in Rwanda to fill the gaps in health workers' knowledge, attitudes, and practices regarding HBV. For quantitative data, stratified random sampling was used to select a total of 124 respondents from 180 staff members at Nyagatare Hospital. A random sample was drawn for each category so that all participants had an equal probability of participating in the study, as selection in each category was by choice.

For the study, the questionnaire was used as an instrument to collect primary data. This method of data collection was preferred for this study because it facilitates data collection from a large population and the cost of administration in terms of time and money is low. The questions were divided into four sections. The first section consisted of the personal data, divided into demographic and occupational characteristics. The second section addressed knowledge about HBV prevention, the third section addressed respondents' attitudes toward HBV prevention, and the fourth section addressed respondents' HBV prevention practices. The information was collected using a pre-tested semi-structured instrument. The structured questionnaire was written in English. The semi-structured questionnaire was distributed to all participants in the study by the researcher and the study assistant. The researcher's assistant was trained on how to use the questionnaire before it was distributed. The questionnaire was used to collect qualitative information on standard preventive measures.

Data analysis

The data were analyzed using SPSS statistical software for social sciences (SPSS). Descriptive analysis tools in SPSS were used to create tables and percentages that could be analyzed productively. The information obtained from the questionnaire was examined and structured according to the objectives of the study. The frequencies and proportions were used in descriptive analysis. The level of knowledge, attitude, and practices were determined by scoring. If participants answered 70% or more of the relevant questions correctly, they had good knowledge. If less than 70% of the knowledge questions were answered correctly, participants were classified as having poor knowledge. If participants answered 70% or more of the attitude questions correctly, they had a positive attitude. If respondents could answer less than 70% of the attitude questions correctly, they had a poor attitude. If respondents were able to answer 70% or more of the practice questions correctly, they were considered to have good practice. If respondents were unable to answer 70% of the practice questions correctly, this was considered poor practice. The association between the study variables was determined using Pearson's chi-square test and odds ratio (OR) with 95% confidence intervals (CI). A statistically significant P value of 0.05 was used.

Results

Socio-demographic characteristics of respondents

Table.1 shows the distribution of demographic characteristics of the respondents who participated in the study. The variables included in the demographic characteristics are Age, gender, marital status, profession, years as healthcare workers,

Table 1: Demographic characteristics of respondents

Variables	Frequency(N=124)	Percentage (%)
Age group		
21-30 year	50	40.3
31-40 year	32	25.8
41-50 year	28	22.6
More than 50	14	11.3
Gender		
Male	62	50.0
Female	62	50.0
Status		
Married	71	57.3
Single	40	32.3
Divorced	13	10.5
Profession		
Nurse	99	79.8
Doctor	12	9.7
laboratory Scientist	11	8.9
Dental	2	1.6
Years as HCW		
10-19 years	60	48.4
20-29 years	37	29.8
>30	27	21.8

Source: primary data

As indicated in above table.1, 124 participants were participated, thereby giving a response percentage of 100%. The highest percentage (40.3%) of the respondents were aged group of 21to30 years followed by those aged 31 to 40 years (25.8%) and the third group were those aged from 41to50years (22.6%). Aged group of more than 50 years were (11.3%) only. About gender (50%) were female and (50%) were male. About marital status majority were married (57.3%) followed by single (32.3%), Divorced were (10.5%) respectively. Out of a total of 124, (9.7%) were doctors, (79.8%) nurses, (8.9%) Laboratory Scientist and dental (1.6%). The majority was composed of nurses, representing about 79.8% of the total population. As per hospital

employment experience, (48.4%) had worked for 10-19 years, (29.8%) had worked for20-29years, (21.8%) had worked for >30 years.

Presentation of Findings

The results were presented using figures and tables. The results were presented based on the study objectives and factors related to health worker practices in the prevention of the hepatitis B virus.

Knowledge of healthcare workers toward HBV prevention

It was noted that 70% or more of the knowledge questions were answered correctly by the participants, which is considered knowledge about HBV prevention, and respondents answered less than 70% of the knowledge questions, which is considered less knowledge about HBV prevention. In this study, only 81.5 percent of those polled knew how to eliminate HBV, according to the results among the study's participants.

Table 2: Knowledge about HBV prevention

Variables	Frequency (N=124)	Percentage (%)
HBVcause liver cancer		
Yes	100	80.6
No	24	19.4
HBV carries can transmit infection		
Yes	109	87.9
No	15	12.1
Hepatitis B can be transmitted by incidental touch, such as hand shackling.		
Yes	67	54.0
No	57	46.0
HBVcan spread with open wounds/cut		
Yes	110	88.7
No	14	11.3
Hepatitis B can be spread by infected blood and bodily fluids.		
Yes	114	91.9
No	10	8.1
HBVcan be transmitted by unsterilized instruments		
Yes	113	91.1
No	11	8.9
HBVcan be transmitted by unsafe sex		
Yes	103	83.1
No	21	16.9
Vaccine can prevent HBV infection		

Yes	102	82.3
No	22	17.7
HBV can be diagnosed in lab		
Yes	87	70.2
No	37	29.8
HBV has PEP?		
Yes	49	39.5
No	75	60.5
Hepatitis B can be cured/treated?		
Yes	49	39.5
No	75	60.5

Source: Primary data

As shown in Table.2 above, most of the research respondents had adequate knowledge about hepatitis B. Out of 124 participants studied, 80.6% knew that hepatitis B causes liver cancer. Regarding mode of transmission, 87.9% of the respondents stated that HBV carriers can spread the virus, 88.7% stated that HBV can be spread via open wound, 54.0% said that hepatitis B can be spread via casual contact while 91.9% of the respondents mentioned that HBV can be spread via infected blood and body fluids. 91.1% and 83.1% of the respondents said that they use non-sterilised instruments and have unprotected sex respectively. In terms of knowledge about vaccination, 82.3% of the participants were found to be aware of the hepatitis B vaccine and that it protects against infection. 70.2% stated that HBV can be tested in the laboratory. In this study, only 39.5% of the study participants knew that postexposure prophylaxis is available for HBV and 39.5% indicated that the disease can be cured.

Overall knowledge of health workers about HBV prevention

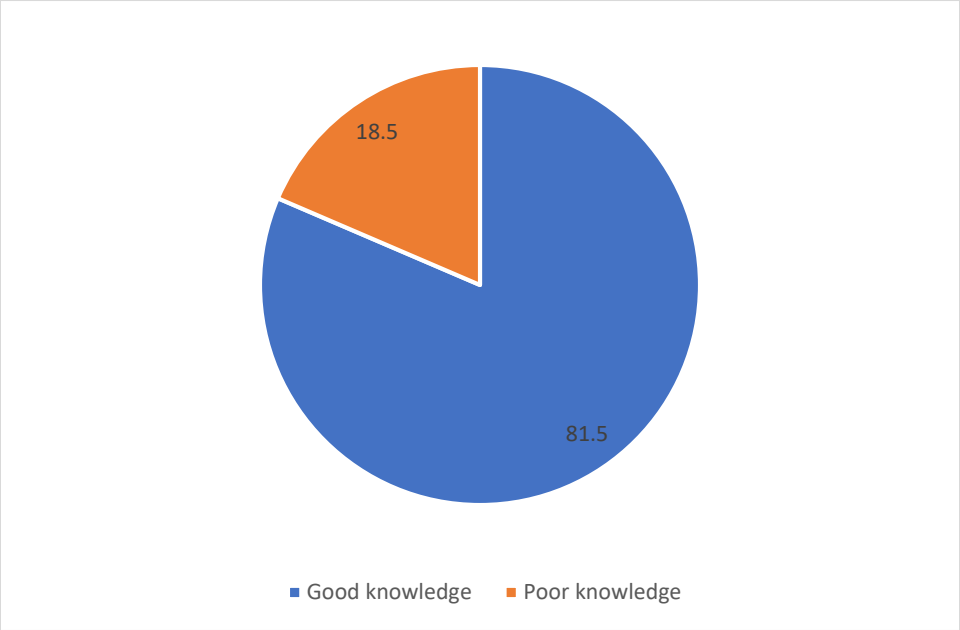

Figure 1: Overall knowledge of healthcare workers on HBV prevention

Source: Primary data

On the other hand, participants were able to answer 70% or more of the knowledge questions correctly, which was considered knowledge about HBV prevention, and respondents answered less than 70% of the knowledge questions, which was considered less knowledge about HBV prevention. The results presented in figure (4.1) shows that (81.5%) respondents have good knowledge of HBV prevention followed by (18.5%) respondents with poor knowledge.

The attitude of healthcare workers towards HBV prevention

Table.3 below shows the frequency and percentage of health workers' attitudes towards HBV prevention according to the second objective of this study. The analysis of this section was based on the responses of the participants who answered positively or negatively to the questions so that we could assess the good or poor attitude of the respondents.

Table .3 Healthcare worker's Attitudes towards hepatitis B virus prevention

Variables	Frequency(N=124)	Percentage (%)
I have no concern of being infected with HBV		

Agree	32	25.8
Disagree	46	37.1
Not sure	46	37.1
HBV vaccine is safe and effective		
Agree	71	57.3
Disagree	23	18.5
Not sure	30	24.2
It is a wasting of time to change glove throughout venepuncture and testing.		
Agree	19	15.3
Disagree	91	73.4
Not sure	14	11.3
I'm not sure I'd be confident caring for folks who have Hepatitis.		
Agree	23	18.5
Disagree	79	63.7
Not sure	22	17.7
HBV infection can be avoided by following the precautionary measures.		
Agree	58	46.8
Disagree	27	21.8
Not sure	39	31.5
Prior to receiving medical treatment, all individuals should be screened for Hepatitis.		
Agree	65	52.4
Disagree	35	28.2
Not sure	24	19.4

Source: Primary data

As shown in Table.3 above, most study participants had a positive attitude towards HBV prevention. Of the 124 participants interviewed, 25.8% agreed that they had no concerns about contracting HBV, while 37.1% disagreed and 37.1% were not sure. Regarding vaccination, 57.3% of participants indicated that HBV vaccine is safe and effective, 18.5% disagreed and 24.2% were not sure. Regarding protective measures, 15.3% agreed that it is wasting of time to change glove throughout venepuncture and testing, 73.4% disagreed and 11.3% were not sure. The statement was "I am not comfortable caring for people with HBV", 18.5% agreed, 63.7% disagreed and 17.7% were not sure. 46.8% of respondents agreed that control policies protect against infection with HBV in workers, 21.8% disagreed, and 31.5% were not sure. Only 52.4% of study participants agreed that prior to receiving medical treatment, all individuals should be screened for Hepatitis, 28.2% disagreed, and 19.4% were not sure.

Overall healthcare worker's attitude towards HBV prevention

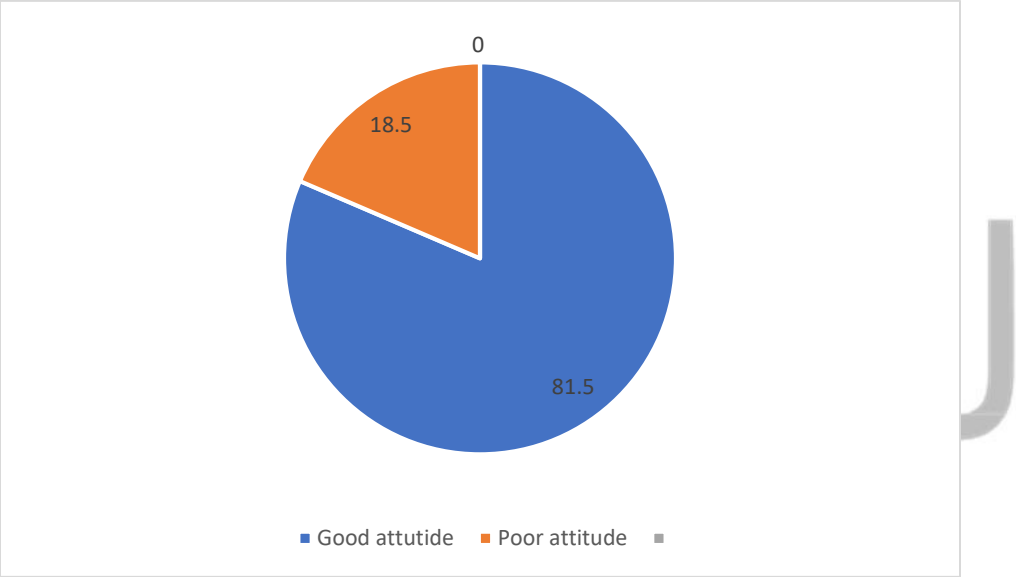

Figure 2: Overall healthcare worker's attitude towards HBV prevention

Source: Primary data

Overall public health attitudes towards HBV prevention were calculated by summing the percentage of each response. Positive attitude: when participants were able to correctly answer 70 percent or over of the attitude questions. When participants correctly answered less than 70% of the attitude items, they had a bad attitude. The results presented in the figure below show that overall, 81.5% of the respondents have a good attitude while 18.5% of the respondents have a poor attitude.

practice of healthcare workers towards HBV prevention

Below table.4, presents the frequencies of practice towards HBV prevention among health care workers in Nyagatare hospital.

Table.4. Healthcare worker's practice towards hepatitis B prevention

Variables	Frequency(N=124)	Percentage (%)
Have you everscreened for HBV		
Yes	109	87.9
No	15	12.1
have you got vaccine against HBV		
Yes	105	84.7
No	19	15.3
Do you use different gloves for every client when drawing blood?		
Yes	98	79.0
No	26	21.0
Ever had a NSI		
Yes	74	59.7
No	50	40.3
Use of waste management disposal		
Yes	97	78.2
No	27	21.8
Do you report for needle stick injury		
Yes	79	63.7
No	45	36.3
Wash your hand before and after procedure		
Yes	80	64.5
No	44	35.5
Your hospital hold protective materials against HVB?		
Yes	111	89.5
No	13	10.5
Do you have guidelines for HBV prevention		
Yes	104	83.9
No	20	16.1

Source: Primary data

Table.4, indicates that 87.9% of the participants have done HBV screening for prevention while 12.1% of the respondents have not done HBV screening. Only 84.7% of the respondents were vaccinated against HBV and 15.3% were not vaccinated against HBV. 79% of the respondents used different gloves for every client when drawing blood while 21% did not change gloves during blood collection. About 59.7% of the respondents had NSI while 40.3 did not and 63.7% of the respondents said that they would report it if they had NSI while 26.3 did not. In terms of waste disposal, 78.2% of the respondents indicated that they use waste disposal but 21.8% do not use it. Following the initial treatment, 64.5 percent of respondents cleansed their hands while 35.5% did not wash their hands. In this study, only 89.5% of the study participants answered that the hospital has protective materials against HBV, 10.5% of the participants said that the hospital does not have protective materials and 83.9% mentioned that the hospital has policy on HBV prevention, 16.1% said that the hospital does not have policy on HBV prevention.

Overall health care worker's practice on HBV prevention

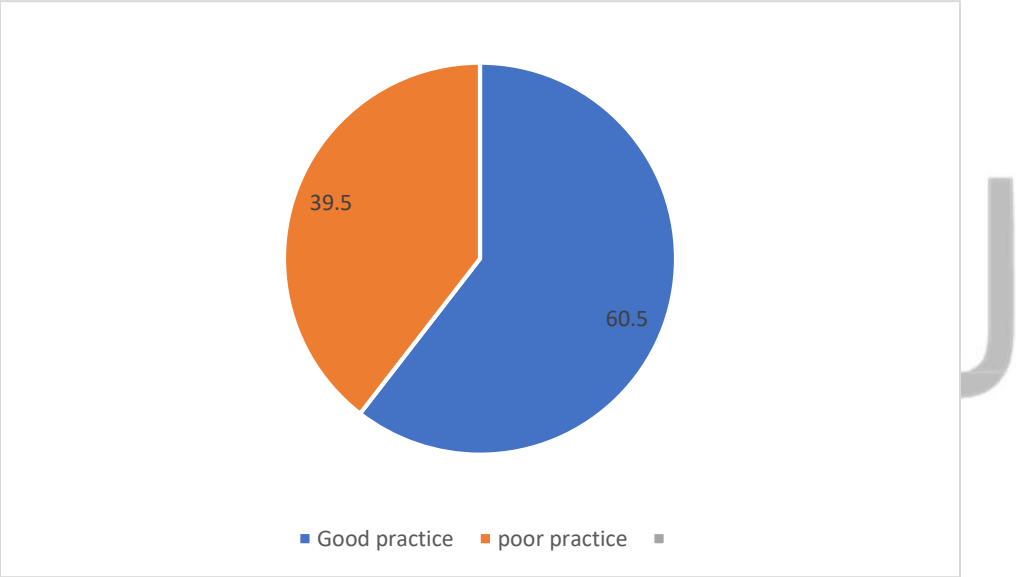

Figure 3: Overall healthcare workers' practice about HBV prevention

Source: Primary data

Figure.3 indicates that 60.5% of the participants had adequate practice while 39.5% had poor practice in HBV prevention. When the survey respondents were able to properly answer at least 70% of the practice questions, they were considered to have had good practice. When respondents failed to properly answer 70% of the practice questions, they were considered to have had enough practice, and when they answered less than 50% of the things correctly, they were considered to have had poor practice.

Factors associated with practice of healthcare workers towards hepatitis B virus prevention

The factors associated with practices of HCWs towards HBV prevention have been assessed through the association between dependent variables which is the practice level on prevention and independent variables such as demographic characteristic, knowledge level, and attitudes level towards HBV prevention among respondents. Bivariate analysis was carried out using the chi-square test. Multivariable logistic regression analysis was carried out to identify the associated factors. The details regarding the practices on HBV prevention among respondents by their demographic factors are given in table 4.

Table4. Bivariate analysis of factors associated with practices towards HBV prevention

Variables		Good practice		Poor practice		OR	95% CI		P value *
		n	%	n	%		Lower	Upper	
Age group	21-30 years	34	68.0	16	32.0	ref			
	31-40 years	15	46.9	17	53.1	.634	.202	1.994	0.44
	41-50years	14	50.0	14	50.0	1.560	.391	6.219	0.53
	More than 50	12	85.7	2	14.3	4.865	.869	27.227	0.07
Gender	Male	41	66.1	21	33.9	1.566	.634	3.869	0.33
	Female	34	54.8	28	45.2	ref			
Status	Married	37	52.1	34	47.9	ref			
	Single	27	67.5	13	32.5	1.661	.659	4.186	0.28
	Divorced	11	84.6	2	15.4	1.764	.416	7.475	0.44
Profession	Nurse	61	61.6	38	38.4	ref			
	Doctor	10	83.3	2	16.7	4.250	.726	24.868	0.11
	Labaratory Scientist	**2**	18.2	9	81.8	.655	.159	2.699	0.56
	Dental	2	100	0	0	.929	.025	33.877	0.97
Years as HCW	10-19 years	47	78.3	13	21.7	1.826	.444	7.503	0.40

	20-29 years	12	32.4	25	67.6	2.743	.692	10.873	0.15
	>30	16	59.3	11	40.7	ref			
	Good	56	55.4	45	44.6	ref			
Overall knowledge level	Poor	19	82.6	4	17.4	.241	.075	.771	**0.02**
	Good	57	56.4	44	43.6	ref			
Overall Attitute level	Poor	18	78.3	5	21.7	.075	.771	1.791	0.24

source: primary data

The relationship between demographic characteristics, attitude level of respondents and practice level is shown in table 4; Age, gender, status, profession, years as healthcare workers and attitude level were not significantly associated with practice level of HBV infection prevention.

The findings from bivariate analysis showed that knowledge variables were statistically significant associated with practice level of HCWS towards HBV prevention (P<0.02), (82.6%) [OR=0.241%;95%CI=0.075-0.771; P-V=**0.02**]. this revealed that those with poor knowledge were 0.24 more likely to have poor practices.

Discussion

One of the most important difficulties in medical centers is infection control. Therefore, the study was conducted to assess the knowledge, attitude and practice related to HBV prevention among health care workers in Nyagatare Hospital. In this study, it was found that the percentage of health workers who knew about HBV prevention was 81.5%.

This indicates that most of the health workers in Nyagatare Hospital have good knowledge of HBV prevention. This is a finding consistent with many similar and related studies. The majority of participants were married, had more than one year of work experience, and were between 21 and 30 years old. They were aware that contact with contaminated body fluids or blood and unsafe sexual interactions were independent predictors of HBV infection, similar to the studies in Ethiopia 84.5% (Desta et al., 2018) and Bahirdar City 84.5% (Kelemua & Gebeyaw, 2014)). This study is different from the studies conducted in Palestine (53.9%) and Iran Hospital (57%) (due to the difference in knowledge level); (Ayed, A.F, 2015), (Sarani et al., 2015) the difference may be due to socio-demographic differences, sample size and lack of training. Although it is lower than in a study conducted in Addis Ababa (Tenna et al., 2013) where there were differences in sample size.

The results of the study revealed that a lower proportion of HCWS knew that HBV was being treated (60.5%) and that postexposure prophylaxis was available (60.5%). This fact points to the need to improve PEP knowledge of HBV in this study area (Kuhar et al., 2018),

This is alarming and calls for greater awareness of bloodborne infections, including HBV infections. More workplace exposure prevention strategies should be implemented to reduce the risk of occupational exposure to HWCS in these occupations and improve the knowledge and practice of PEP in healthcare facilities

In the current study, participants' attitudes toward HBV prevention were positive: 81.5% of HCWS were aware that they were at risk of contracting HBV, and 67.6% believed that the HBV vaccine was effective and safe. This result is consistent with a report from Saudi Arabia among dentists (Al-Hazmi et al., 2015), which found the same. Our study found that most respondents engaged in malpractice despite their good knowledge and positive attitude toward HBV prevention. The risk practices of the study participants were high: 53.1% of them had no concerns about contracting HBV, and 53.8% said that all patients should be tested for HBV before treatment. This study suggests that educational programs on universal precautions for HBV prevention are needed to close the gap. Compared with reports from other countries, the proportion of those who had no concerns about contracting HBV was 53.1%, higher than the 31% reported from Ethiopia (Desta et al.,2018) and lower than the 55.7% who believed that all patients should be tested for HBV before seeking health care (Abdela et al.,2016).

Practice was the main focus of the data in this study, and all other factors were used to anticipate practice. One of the most important aspects of HBV prevention measures is the use of gloves when performing procedures on clients. Only 79 percent of respondents reported using gloves when working with patients. Although the results are consistent with those of other studies (Mehriban et al., 2015), Samuel and colleagues (2009) found a much higher rate of 92.6 percent. However, the glove-wearing behavior observed in this study was better than that observed in Nigeria (Mohammed et al., 2017). Only 63.7% reported needlestick injuries, which is less than the study from Afghanistan (Roien et al., 2021) where 80.07% reported needlestick injuries. 64.5% washed their hands before and after the procedure, which was much less than in the study from Khartoum, Sudan (Mursy et al., 2019), in which 82.5% reported ever having a needlestick injury (59.7%). This was less than the study from Kabul, Afghanistan (69.12%) (Roien R et al., 2021), which found that the majority of participants had poor practice in prevention measures for HBV infection (60.5%).

Bivariate analysis of factors associated with HWC practices for HBV prevention showed that participants with poor knowledge were 0.25 more likely to use poor practices for HBV prevention. This is consistent with the study of (Gebremeskel et al., 2020), 82.6% [OR =0.25;95%CI=0.095-0.671; PV=0.02] compared to those with good knowledge. There are some limitations in this study that might affect the results a little. We could not investigate the differences, reasons, and effects because this was a cross-sectional study. In addition, because the questionnaires were self-completed questions and the study was conducted in a single institution, there is a risk of information bias. This study would also most likely provide up-to-date information to help health care workers strengthen their prevention and control efforts.

conclusion

It can be concluded that most of the HCWS at Nyagatare Hospital knew about HBV infection. Despite their strong understanding and positive attitude towards HBV prevention, a large percentage of participants engaged in malpractice in HBV prevention. The study reveals knowledge gaps in PEP. Further strategies to prevent workplace exposure, and education programs about HBV infection, including PEP, are needed.

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Disclosure statement

Findings

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References

Abdela, A., Woldu, B., Haile, K., Mathewos, B., & Deressa, T. (2016). Assessment of knowledge, attitudes and practices toward prevention of hepatitis B virus infection among students of medicine and health sciences in Northwest Ethiopia. *BMC research notes*, *9*(1), 410. https://doi.org/10.1186/s13104-016-2216-y

Abeje, G., & Azage, M. (2015). Hepatitis B vaccine knowledge and vaccination status among health care workers of Bahir Dar City Administration, Northwest Ethiopia: a cross sectional study. *BMC infectious diseases*, *15*, 30. HYPERLINK https://doi.org/10.1186/s12879-015-0756-8.

Al-Hazmi A. H. (2015). Knowledge, attitudes and practice of dentists concerning the occupational risks of hepatitis B virus in Al Jouf Province, Saudi Arabia. *Nigerian journal of clinical practice*, *18*(2), 276–281. https://doi.org/10.4103/1119-3077.151067

Ayed, Ahmad & Fashafsheh, Imad & Eqtait, Faeda & Harazneh, Lubna. (2015). Knowledge and Practice of Nursing Staff towards Infection Control Measures in the Palestinian Hospitals. Journal of Education and Practice. 6.

Beltrami, E. M., Williams, I. T., Shapiro, C. N., & Chamberland, M. E. (2000). Risk and management of blood-borne infections in health care workers. *Clinical microbiology reviews*, *13*(3), 385–407. https://doi.org/10.1128/CMR.13.3.385

Coppola, N., De Pascalis, S., Onorato, L., Calò, F., Sagnelli, C., & Sagnelli, E. (2016). Hepatitis B virus and hepatitis C virus infection in healthcare workers. *World journal of hepatology*, *8*(5), 273–281. https://doi.org/10.4254/wjh.v8.i5.273

Desta, M., Ayenew, T., Sitotaw, N., Tegegne, N., Dires, M., & Getie, M. (2018). Knowledge, practice and associated factors of infection prevention among healthcare workers in Debre Markos referral hospital, Northwest Ethiopia. *BMC health services research*, *18*(1), 465. https://doi.org/10.1186/s12913-018-3277-5

Fredrick Kateera, T. D., Timothy D. w., Mutesa,L., Mutabazi,V., Musabeyesu,E.,Mukabatsinda,C., Bihizimana,P., Kyamanywa,P., Karenzi,B., Judy T. Orikiiriza, (2015). Hepatitis B and C seroprevalence among health care workers in a tertiary hospital in Rwanda. (pp. Volume 109, , Pages 203–208). Transactions of The Royal Society of Tropical Medicine and Hygiene.

Fufore, Mohammed & Cook, Penny & Kirfi, Abdullahi. (2017). Health Workers' Knowledge, Attitude and Practice towards Hepatitis B Infection in Northern Nigeria. International Journal of Caring Sciences. 9. 939 - 954.

Gebremeskel, T., Beshah, T., Tesfaye, M., Beletew, B., Mengesha, A., & Getie, A. (2020). Assessment of Knowledge and Practice on Hepatitis B Infection Prevention and Associated Factors among Health Science Students in Woldia University, Northeast Ethiopia. *Advances in preventive medicine*, *2020*, 9421964. https://doi.org/10.1155/2020/9421964

H Muljono, D., Wijayadi, T., & Sjahril, R. (2018). Hepatitis B Virus Infection among Health Care Workers in Indonesia. *Euroasian journal of hepato-gastroenterology*, *8*(1), 88–92. https://doi.org/10.5005/jp-journals-10018-1269

Kelemua,G., Gebeyaw,Tiruneh.(2014). Assessment of Knowledge, Attitude And Practice of Health Care Workers on Infection Prevention in Health Institution Bahir Dar City Administration. *Science Journal of Public Health*, Pages: 384-393.

Kelemua,G., Gebeyaw,Tiruneh.(2014). Assessment of Knowledge, Attitude And Practice of Health Care Workers on Infection Prevention in Health Institution Bahir Dar City Administration. *Science Journal of Public Health*, Pages: 384-393.

Kuhar, David T.;Henderson, David K.;Struble, Kimberly A.;Heneine, Walid;Thomas, Vasavi;Cheever, Laura W.;Gomaa, Ahmed;Panlilio, Adelisa L.(2018)Updated U.S. Public Health Service guidelines for the management of occupational exposures to HIV and recommendations for postexposure prophylaxis. Published Date : 9/25/2013 Update (May 23, 2018)URL : https://stacks.cdc.gov/view/cdc/20711

Mehriban, N., Ahsan, G., & Islam, T. (2015). Knowledge and preventive practices regarding Hepatitis B among nurses in some selected hospitals of Dhaka city, Bangladesh. *South East Asia Journal of Public Health*, *4*(1), 48–52. https://doi.org/10.3329/seajph.v4i1.21840

Mursy, S.Me.M., Mohamed, S.O.O. Knowledge, attitude, and practice towards Hepatitis B infection among nurses and midwives in two maternity hospitals in Khartoum, Sudan. *BMC Public Health* **19,** 1597 (2019). https://doi.org/10.1186/s12889-019-7982-8

Liaw, Y.-F., Brunetto, M. R., & Hadziyannis, S. (2010). The Natural History of Chronic HBV Infection and Geographical Differences. *Antiviral Therapy*, 25–33. https://doi.org/10.3851/IMP1621

Roien, R., Mousavi, S. H., Ozaki, A., Baqeri, S. A., Hosseini, S., Ahmad, S., & Shrestha, S. (2021). Assessment of Knowledge, Attitude, and Practice of Health-Care Workers Towards Hepatitis B Virus Prevention in Kabul, Afghanistan. *Journal of multidisciplinary healthcare*, *14*, 3177–3186. https://doi.org/10.2147/JMDH.S334438

Rwanda biomedical center. (2015). *report on hepatitis B virus in Rwanda.* kigali.

Samuel, Sunday & Aderibigbe, Sunday & Salami, Taofik & Babatunde, Oluwole. (2008). Health workers' knowledge, attitude, and behaviour towards Hepatitis B Infection in Northern Nigeria. Int J Med Sci. 1.

Sarani, H., Balouchi, A., Masinaeinezhad, N., & Ebrahimitabas, E. (2015). Knowledge, Attitude and Practice of Nurses about Standard Precautions for Hospital-Acquired Infection in Teaching Hospitals Affiliated to Zabol University of Medical Sciences (2014). *Global journal of health science*, *8*(3), 193–198. https://doi.org/10.5539/gjhs.v8n3p193

Tenna, A., Stenehjem, E. A., Margoles, L., Kacha, E., Blumberg, H. M., & Kempker, R. R. (2013). Infection control knowledge, attitudes, and practices among healthcare workers in Addis

Ababa, Ethiopia. *Infection control and hospital epidemiology*, *34*(12), 1289–1296. https://doi.org/10.1086/673979

World health organization. (2015). hepatitis b. *Geneva: http://www.whoheatitis B.htm*.

World health organization. (2017). *Global hepatitis.*

World Health Organization. (2016) *Hepatitis B.* Available at: www.who.int/topics/hepatitis/factsheets/en.