



A Retrospective Study on the Prevalence and Health Worker's Perspective on Hepatitis B virus Infection in Ngora District, Eastern Uganda

Ssegawa Lawrence¹, Kasuka Iga Arafat¹, Angeyo Grace Samantha¹, Mudebo Emmanuel¹, Nakhabela Moses¹, Linda Kyomuhendo Jovia¹, Nabongho Aaron Kenneth¹, Ahimbisibwe Joseph¹, Ibilat Gorret², Rebecca Nekaka¹ and Iramiot Jacob Stanley^{3*}

¹Department of Community and Public Health, Faculty of Health Sciences, Busitema University, P.O. Box1460, Mbale, Uganda.

²Ngora Fredda CARR Hospital, P.O.Box5, Ngora, Uganda.

³Department of Microbiology and Immunology, Faculty of Health Sciences, Busitema University, P.O. Box1460, Mbale, Uganda.

Authors' contributions

This work was carried out in collaboration between all authors. Authors SL, KIA, AGS, ME, NM, LKJ, NAK and AJ participated in the planning of the study, data entry and drafting of manuscript. Authors IG and RN reviewed the manuscript and author IJS participated in the planning of the study, drafting and critical review of the manuscript. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/MRJI/2018/42575

Editor(s):

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Complete Peer review History: <http://www.sciencedomain.org/review-history/25350>

Original Research Article

Received 19th April 2018

Accepted 25th June 2018

Published 30th June 2018

ABSTRACT

Background: Hepatitis B virus infection is a global health problem and it is estimated that one-third of the world population has been infected with HBV with serological evidence of past or present infection. It is estimated that over 400 million people are chronically infected with Hepatitis B globally. Currently, its prevalence among the Ugandans is about 10% (3.5 million people). The aim of this study was to determine the prevalence and Health workers' perspective on Hepatitis B in Ngora District, Eastern Uganda.

*Corresponding author: E-mail: eramios@gmail.com, jiramiot@gmail.com;

Methods: The study involved mixed methods. A retrospective study was used to determine the prevalence of Hepatitis B in Ngora district where laboratory records were reviewed. A questionnaire was administered to the research participants to assess their knowledge and attitude on Hepatitis B. Consecutive sampling technique was used for selection where every health workers on duty who consented to participate took part in the study. Questionnaires were administered to the participants and analysis was done by use of SPSS.

Results: The overall prevalence of hepatitis B in Ngora was 7.5% (3939/52603). Majority of the Health Workers had low knowledge on the cause, signs and symptoms, transmission, risk factors, complications and management of hepatitis B. Majority of the health workers had a positive attitude towards hepatitis B as expressed by their willingness to participate in screening, caring for the patients and participation in vaccination

Conclusion: Whereas the prevalence of Hepatitis B in Ngora district was lower than the national average, it was high compared to the prevalence in the eastern region. Health workers' Knowledge on Hepatitis B in Ngora district was low and this may have contributed to the high prevalence of Hepatitis B in Ngora district.

Recommendation: We recommend training of all the health workers in Ngora District in form of short courses on continuous medical education (CMEs) on Hepatitis B to bridge knowledge gap.

Keywords: Hepatitis B; Ngora; knowledge; attitude; practice; health care workers.

1. BACKGROUND

Hepatitis B virus (HBV) is a liver infection which is associated with inflammation of liver and in many cases causes permanent damage of liver tissue. Hepatitis B virus is a small circular DNA virus belonging to the family Hepadnaviridae [1]. Five hepatitis viruses have been recognized and have been named as hepatitis A, B, C, D and E [2].

Hepatitis B virus (HBV) infection is a global health problem and it is estimated that one-third of the world population has been infected with HBV with serological evidence of past or present infection with HBV [3]. Though hepatitis B has no clinical cure, the WHO set an ambitious target to eliminate the disease by 2030 [4].

Based on the prevalence of Hepatitis B surface antigen (HBsAg), countries are classified as having high (where >8% of the population is HBsAg positive), intermediate (2–7%) or low (< 2%) (HBV) endemicity. Areas of high endemicity include Sub-Saharan Africa, South-East Asia, China most of Pacific Islands, the Amazon basin and parts of the Middle-East. The areas of intermediate endemicity (2–7%) include South Asia, Eastern and Southern Europe, Russia and Central and South America. On the other hand, the areas with low endemicity (< 2%) include United States, Western Europe and Australia [5].

Sub-Saharan Africa, where between 5-10%, (65million) people of the adult population is

chronically infected including Uganda, has been grouped among countries with High endemicity, the sheer enormity of the population of the region accounts for a large chunk of the entire pool of HBV carriers of the world. Hepatitis is ten times deadlier than HIV and Uganda is one of the countries with the highest prevalence. About 3.5 million Ugandan (10%) are living with chronic hepatitis B infection. Highest rates of Infection are in Karamoja region (23.9%), Northern Uganda 20%, West Nile 18.5% and Western region 10% [6].

The aim of this study was to determine the prevalence and Health workers' perspective on Hepatitis B in Ngora District.

2. MATERIALS AND METHODS

2.1 Study Design

The study involved mixed methods. A retrospective study was used to determine the prevalence of Hepatitis B in Ngora district where laboratory records were reviewed. A questionnaire was then administered to the research participants to assess their knowledge and attitude on Hepatitis B.

2.2 Study Site and Study Population

The two-center study was carried out at Ngora Freda Carr Hospital, a Private Not For Profit (PNFP) under Uganda Protestant Medical Bureau (UPMB), and Ngora Health Center IV

located in Ngora district which is 13 km from Kumi town 50 Km to the north of Mbale town along the Mbale – Soroti Highway (Map. 1). Ngora district is predominantly inhabited by Iteso subsistence farmers. The study population comprises of the health workers in Ngora Freda Carr hospital, Ngora Health Center IV and Final year Nursing student at Ngora School of Nursing and midwifery in Ngora district as part of the practising health workers in Ngora Freda Carr Hospital.

The Uganda health system is organized in a hierarchical manner according to the population they serve. National Referral Hospitals (30,000,000 population), Regional Referral Hospitals (2,000,000 population), District Health Services (District level, 500,000 population), Referral Facility - General Hospital (District level- 500,000 population) or Health Centre IV (Country level- 100,000 population), Health Sub-District level (70,000 population), Health Centre III - (sub-country level- 20,000 population), Health Centre II - (Parish Level -

5,000 population) and Health Centre I -(Village health Team - 1,000 population) [7].

2.3 Sampling Techniques

A consecutive sampling technique was used, and all the respondents had equal opportunities of being included in the study. All health workers in Freda Carr hospital, Ngora Health Center IV and Final year Nursing students at Ngora School of Midwifery who consented.

2.4 Data Collection Methods and Tools

A questionnaire with open and closed-ended questions was used to collect data from participants. Estimation of the prevalence of Hepatitis B was done retrospectively by review of data from January to December 2016 which was entered in excel and prevalence was estimated. Health Workers' Perspective was assessed by both quantitative and qualitative methods of using questionnaires availed to the respondents randomly at their places of work.



Map. 1. Map of Uganda showing Ngora District

2.5 Ethical Considerations

Approval letter was obtained from the research and ethics committee of Busitema University Faculty of Health Sciences. Permission to conduct the study was obtained from the District Health Officer, in-charge Ngora Freda Carr Hospital and Ngora HC IV. Informed consent from the study participants was sought.

3. RESULTS

The study population had 91 participants. The age group of 21-30 had the highest number of the respondents with 51% (47/91) and the age group >50 having the lowest percentage of 5.5% (5/91) respectively. Most of the health workers that participated in the study were single with 64% (58/91) and the least being those that are divorced at 1% (1/91). Majority of the study participants were final year Nursing Students,

44% (40/91) and the least (1%) were Nursing Officers. Most of the study participants had heard about Hepatitis B during Continuous Medical Education and the only a few got information through television (Table 1). There was good hepatitis B vaccination coverage and most of the study participants had completed their vaccination schedule 83.5 % (76/91).

3.1 Prevalence of Hepatitis B in Ngora District

Ngora Sub-county had the highest prevalence of 54% (2134/3939) and Mukura Sub-County had the least prevalence of 13%(663/3939). The average prevalence of hepatitis B in Ngora district was 7.5% (3939/52603). Overall number of those tested was 52603 and those found Hepatitis B positive were 3939 giving approximately 7.5% prevalence following the calculation.

Table 1. Social Demographic characteristics of the study participants (N =91)

Demographic characteristic	Categories	Number, n (%)
Age	15-20	21(23)
	21-30	47(51)
	31-49	18(20)
	50+	5(6)
Marital Status	Single	58(64)
	Married	32(35)
	Divorced	1(1)
	Widowed	0(0)
Participants' level of qualification	Nursing and midwifery students	40(43)
	Certificate	20(22)
	Diploma	24(26)
	Degree	7(8)
Participants' cadre	Doctor	5(5.5)
	Clinical officer	4(4.5)
	Nursing officer	1(1)
	Registered nurse	9(10)
	Enrolled nurse	12(13)
	Midwife	3(3)
	Nursing and midwifery	40(44)
	Student	
	Health assistants	4(4)
	Laboratory technician	11(12)
Theatre Assistant	2(2)	
Sources of Information on Hepatitis B	Source	Number
	Radio	26(29)
	Television	9(10)
	Workshop	16(18)
	School	35(38)
	Charts	19(21)
	CMES	42(46)
Vaccination Status	Complete	76(84)
	Incomplete	15(16)

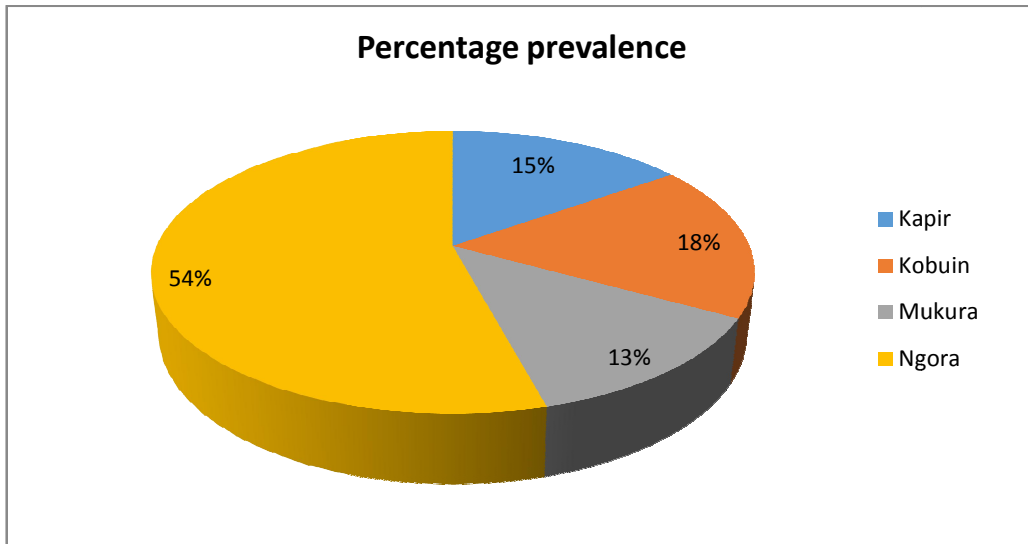


Fig. 1. A pie chart showing prevalence of hepatitis B by Sub-County

Generally, there was low knowledge on Hepatitis B in Ngora district among respondents as per assessment depending on the cause, signs and

symptoms, transmission, risk factors, complications and management as per the above findings.

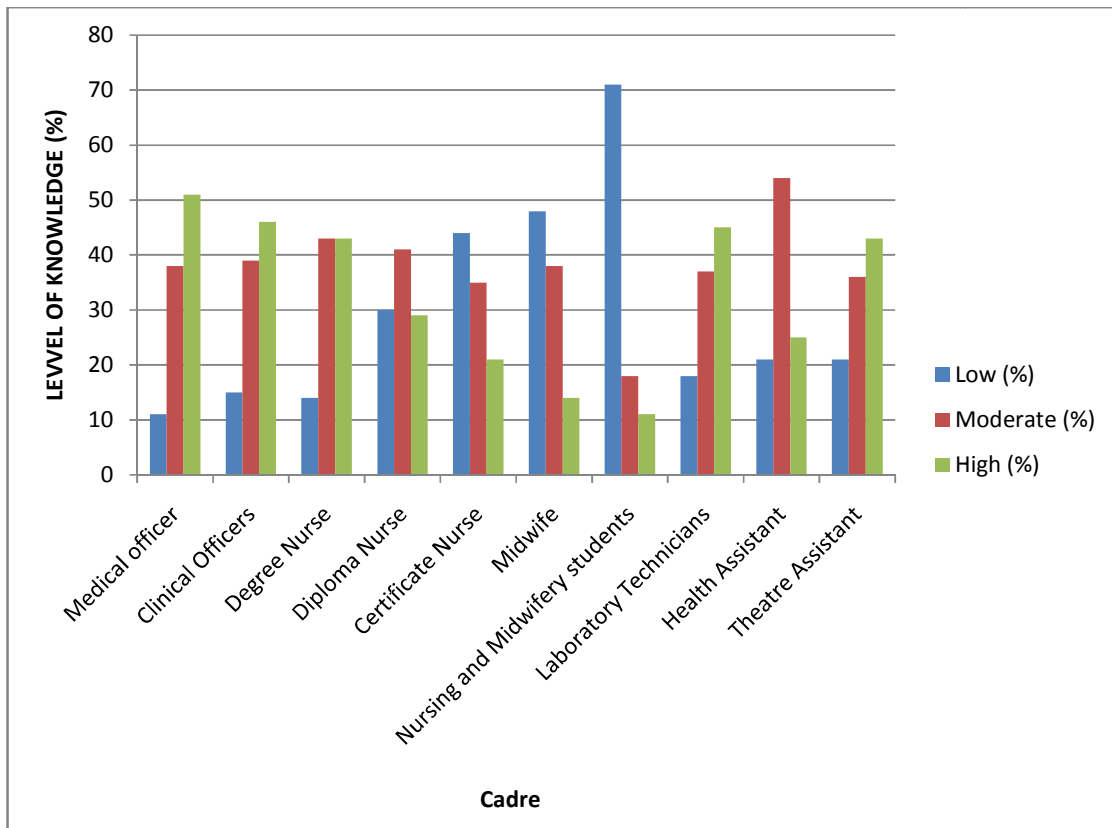


Fig. 2. Showing level of knowledge of respondents according to Cadre

Table 2. Responses of knowledge on Hepatitis B

Questions	Total correct answers, n (%)	Correct answers n, (%)									
		MO	CO	DeN	DiN	CN	M	S	LT	HA	TH
8. What causes HBV?	36(40)	2(40)	0(0)	1(100)	3(33)	2(22)	2(67)	20(48)	5(45)	1(25)	0(0)
9. What are the signs and symptoms of HBV?	11(12)	1(20)	1(25)	1(100)	1(11)	1(11)	1(33)	2(5)	2(18)	1(25)	0(0)
10. How is HBV transmitted?	39(43)	4(80)	4(100)	0(0)	5(56)	3(33)	0(0)	10(24)	9(36)	2(50)	2(100)
11. How is HBV Prevented?	38(42)	4(80)	3(75)	0(0)	2(22)	2(22)	2(67)	12(29)	7(64)	4(100)	2(100)
12. Is HBV curable?	52(57)	3(60)	0(0)	1(100)	3(33)	5(42)	3(100)	29(73)	6(55)	0(0)	1(50)
13. How is HBV treated?	36(40)	3(60)	2(50)	1(100)	5(56)	6(50)	2(67)	4(10)	11(100)	1(25)	1(50)
14. What are the complications of HBV?	42(46)	5(100)	4(100)	0(0)	6(67)	3(25)	2(67)	11(28)	7(64)	4(100)	0(0)
15. Which of the following are risk factors of HBV?	39(43)	4(80)	4(100)	1(100)	4(44)	3(25)	0(0)	11(28)	8(73)	3(75)	1(50)

HBV=Hepatitis B Virus, MO=Medical officer, CO=Clinical officer, DeN=Degree Nurse, DiN= Diploma Nurse, EN = Enrolled Nurse, M = Midwife, S= Students, LT= Laboratory Technician, HA= Health Assistant, TH= Theatre Assistant.

Table 3. Comparison of positive attitude (Yes response) between different cadres towards HBV

Questions	Total Yes response, n (%)	Yes responses n, (%)									
		MO	CO	DeN	DiN	CN	M	S	LT	HA	TA
16. Would you freely participate in HBV screening?	84(92)	5(100)	4(100)	1(100)	8(89)	9(100)	2(67)	39(93)	9(82)	4(100)	2(100)
17. Would you opt to care for a patient with HBV?	81(89)	4(80)	3(75)	1(100)	9(100)	9(100)	3(100)	36(86)	9(82)	4(100)	2(100)
20. Have you ever been vaccinated for HBV?	83(91)	4(80)	4(100)	1(100)	8(89)	7(78)	2(67)	39(93)	11(100)	4(100)	2(100)

HBV=Hepatitis B Virus, MO=Medical officer, CO=Clinical officer, DeN=Degree Nurse, DiN= Diploma Nurse, EN = Enrolled Nurse, M = Midwife, S= Students, LT= Laboratory Technician, HA= Health Assistant, TH= Theatre Assistant.

Form this study, knowledge was assessed by giving scores on a scale of 0-1. A score of one (1) was awarded to the correct answer and zero (0) to the wrong answer. The conclusive results were graded on a scale of 0-5 to come up with the measure of knowledge. Scores ≤ 1 were considered as low, 2-3 as moderate and >3 as High Knowledge. The percentages represent the totals for each cadre as per the cause, signs and symptoms, transmission, risk factors, complications and management.

Generally, there was low knowledge of Hepatitis B in Ngora district among respondents as per assessment depending on the cause, signs and symptoms, transmission, risk factors, complications and management (Fig. 2). Fig. 2 shows a clear trend in the increase of knowledge with the level of education and the reverse is true.

Majority of the respondents had a positive attitude towards hepatitis B as expressed by the above findings.

In Fig. 3 most of the respondents had a positive attitude towards hepatitis B as expressed by their willingness to participate in screening, caring for the patients and participation in vaccination. Over 92.3% (84/91) would freely participate in Hepatitis B screening and only 7.7% (7/91) would not. Almost all the respondents 89% (81/91) would care for a patient with hepatitis B while 11% (10/91) would not care for a patient with hepatitis B. This shows a positive attitude towards Hepatitis B. Using our own analysis Attitude was assessed by giving 2 to 1 to positive and 0 to negative attitude. The scale classified attitude as positive with score >6 and negative ≤ 6 . Over all the respondents had a positive attitude towards HBV.

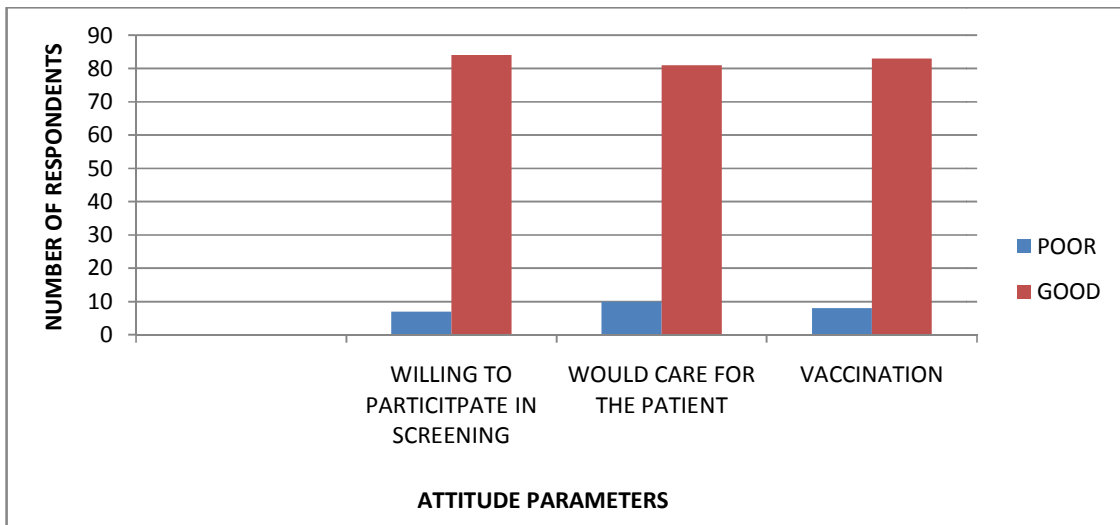


Fig. 3. Showing attitude of respondents towards Hepatitis B

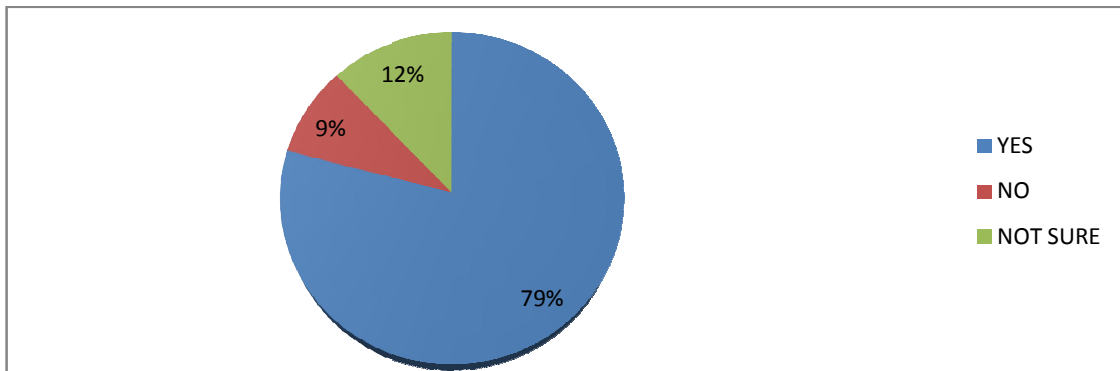


Fig. 4. A pie chart showing respondents' perspective on whether hepatitis B needs urgent attention

Most of the respondents 79% (72/91) thought hepatitis B needed urgent attention while only 8% (8/91) thought hepatitis B didn't need urgent attention.

4. DISCUSSION

4.1 Prevalence of Hepatitis B in Ngora District

This study found that, the prevalence of HBV was at 7.5% (3939/52603) in Ngora district (Fig. 2). This prevalence is from the four sub counties that make up the district, namely; Ngora, Kapiro, Kobuin, and Mukura sub-counties. Ngora Sub county had the highest prevalence of 54% (2134/3939), Mukura Sub-County had the least prevalence of 12.78% (503/3939). Ngora Sub county had the highest prevalence of hepatitis than the sub-counties, this is probably because Ngora sub county is a town setting where more sexual activity is expected than the rest of the sub countries that are predominantly rural. The prevalence in Ngora sub county was also higher than the national prevalence at 10% according to the World Health Organization [8].

The prevalence of Hepatitis B in Ngora District is higher than Eastern Uganda prevalence at 7.1%, slightly low than the national prevalence at 10% however this was in line with the WHO study that revealed the prevalence > 8% of the same population [8] and it was in line with 7.6% in Nigeria [9] and higher than Zambia at 6.5% HBsAg and Kenya at 6.1% [10]. Data was also within the prevalence range in Asia which revealed 5-10% prevalence of HBV infection [11].

In another study similar to our findings found out that the ethnic groups that traditionally reside in the northern and eastern regions of Uganda were more affected, particularly the Karamojong, Acholi and Langi tribes, as found previously, although ethnicity and residence appeared nonetheless to be independent risk factors [12]. Early sexual debut is more predominant in the eastern and east-central regions and cultural practices such as traditional tattooing or skin cutting have been observed particularly among women in the eastern, east-central, Northeastern and northwestern regions. However, in the presence of other prominent risk factors, they were unable to demonstrate the independent contribution of traditional practices to the high prevalence of HBV infection in those areas. This study also found that HBV infection occurs more frequently in rural areas and risk rises with

poverty and lack of education, as do other forms of ill health. Socio-economic conditions among the poor and less educated, especially in the rural areas, may contribute to HBV exposure. By the age of 15-19 years, 40% of youth in Uganda have already been exposed to the hepatitis B virus, confirming that HBV infection occurs primarily in childhood. Poverty-related factors such as overcrowding (typical in camps for internally displaced persons in northern Uganda and in kraals of northeastern Uganda) and close contact among children could contribute to higher risk among the rural poor [12].

4.2 Health Workers' Perspective on Hepatitis B in Ngora District

4.2.1 Social-Demographic characteristics and their association in regard to the health workers' perspective on Hepatitis B in Ngora District

The age group of 21-30 had the highest number of the respondents with 51% (47/91) and the age group >50 having the lowest percentage of 5.5% (5/91) respectively (Table 1). However, though differences were noted across the age, occupation and working experience with respect to attitude and knowledge scores no significant association was found between them. Most of the respondents were finalist of Nursing and Midwifery at Ngora nursing school who are in the age bracket of 21-30 years. This study is compared to the study done in Malawi by Jasintha where most of the health workers were nursing students at 37% compared to the 22% who were other health care professionals [13]. Respondents at university level of education (Degree and Diploma) were more likely to have a satisfactory level of knowledge than those who are certificate holders. This finding is similar to those reported in other studies [14-17] in Malaysia, Nigeria, Ethiopia and Cameroon.

4.3 Knowledge of Health Workers on Hepatitis B

Generally, there was low knowledge on Hepatitis B in Ngora district among health workers as per assessment depending on the cause, signs and symptoms, transmission, risk factors, complications and management. The medical officers were more knowledgeable about hepatitis B, than other groups of participants, followed by Clinical Officers, and Theatre assistants with the lowest level of knowledge exhibited as evidenced by Fig. 3. These findings

agree with studies elsewhere in Nigeria and Cameroon that revealed lack of depth in knowledge of health workers beyond ordinary awareness [18,19].

Most of the health workers had tested for Hepatitis B, 91% (83/91) and only 9% (8/91) had not tested. This massive participation is mostly attributed to the massive Hepatitis B testing in Ngora district for the year 2016 to 2017 where health workers were given priority in testing. In Morocco a similar study to evaluate knowledge and perception of hepatitis B, including prevention, among health care workers (HCWs) and to estimate sero-prevalence of hepatitis B and vaccine coverage revealed that all health workers participated across the country [20].

In another study Epidemiological data for Hepatitis B in Africa contrary to our findings carried out in Tanzania to assess Knowledge of Hepatitis B Transmission Risks Among Health Workers where 114 participants (mean age 33 years, 67% female) were involved, 91% were unaware of their HBV status and 89% indicated they had never received an HBV vaccine, with lack of vaccine awareness being the most common reason (34%) [21].

4.4 Attitude of Health Workers on Hepatitis B

Derived from Fig. 3 Majority of the health workers in our study, 89% (81/91) would care for a patient with hepatitis B. Our findings were contrary to the one carried out in Japan regarding personal attitudes, where 41% and 18% of nurses agreed or somewhat agreed that they would be reluctant to care for a hypothetical patient infected with HBV, respectively [22].

Overall, most of the health workers 79.12% (Fig. 4) agreed that hepatitis B needed urgent attention in Ngora district. These findings are in lining with our prevalence data findings of 7.5% slightly below the national prevalence of 10% according to the Uganda Ministry of Health 2015. Therefore, there is need for urgent attention in terms of interventions to control the spread of Hepatitis B before it shots up above the national prevalence.

5. CONCLUSION

Prevalence of HBV infection was high in Ngora district hence a need for an urgent intervention to curb the HBV transmission. It was recommended

that surveillance protocols should be put in place to curb the spread of HBV transmission. This would allow ultimate policy making on routine screening for HBV among all people in Ngora District.

Majority of the Health Workers had low knowledge as per assessment depending on the cause, signs and symptoms, transmission, risk factors, complications and management. This gap needs to be bridged as it may greatly contribute to the high prevalence of hepatitis B in the district because the community will not be able to clearly know how to report hepatitis B cases to the health workers hence shooting up the prevalence. This calls for a need to do an in-depth training of the health workers on Hepatitis B to bridge this gap.

6. RECOMMENDATIONS

The attitude of health workers on Hepatitis B was positive as expressed by their willingness to participate in screening, caring for the patients and participation in vaccination. This is a strength that can be capitalized on to combat the high prevalence of Hepatitis B in Ngora district.

7. LIMITATIONS

This study was limited by the number of health workers as we did not interview all the district health workers due to limited funds and only interviewed those at Ngora Freda Carr Hospital, Ngora Health Centre IV and Final year Nursing and Midwifery students. However, the findings of this study have adequately shed light into the problem of hepatitis B infection and the Health Workers' Perspective on Hepatitis B in Ngora district.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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