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Hepatitis B Virus Infection among Students in Iganga High School Iganga District -Eastern Uganda

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ABSTRACT

The World Health Organization (WHO) estimates that up to two billion people in the world have been infected with Hepatitis B Virus (HBV); about 350 million people live with chronic HBV infection, and about 600,000 people die from HBV- related liver disease or HCV each year. The Infection is highly endemic in Uganda with a national prevalence estimate of 10%. To the best of my knowledge, there is no data regarding the knowledge, attitude, and influence of socio-economic status on hepatitis B infection in secondary school settings in Uganda. This study aimed at assessing HBV infection knowledge, HBV vaccination attitude, and the influence of socioeconomic status on HBV vaccination among students of Iganga high school Iganga District Eastern Uganda. This study used a cross-sectional design that recruited a total of 247 secondary school students from Iganga High School randomly. The main method that was employed in selecting a sample from the population was a simple random sampling technique. Questionnaires were the main tools used for data collection and collected data was analyzed using STATA software version 14.0. Logistic regression analysis was carried out to determine the socioeconomic factors influencing the immunization status of Iganga High school students. The mean age of the study participants was 15.9 years with a standard deviation of 2.3 years from the mean. The minimum age was 12 years whereas the maximum age was 25 years. The mean knowledge score was 5.2 with a standard deviation of 2.4 from the mean, the majority of the study participants 70.04% (173/247) had a low level of knowledge on HBV infection and 29.96% (74/247) had a high level of knowledge. The majority of the study participants 68.98% (169/245) had an unfavorable attitude towards HBV vaccination meanwhile 31.02% (76/245) had a favorable attitude. The age group of 12–14 years versus the age group of 15–17 years (cOR3.07, 95%CI 1.67 – 5.62, P<0.001). Having an extra job (cOR2.81, 95%CI 1.06 – 7.45, P=0.037) and having heard about HBV (cOR2.04, 95%CI 1.07 – 3.90, P=0.029) were the socio-economic factors influencing the hepatitis B vaccination status of study participants. There was a low level of knowledge of Hepatitis B infection and an unfavorable attitude towards Hepatitis B vaccination among students of Iganga High School. The study indicates that the age of the students; having an extra job and hearing about HBV were the socio-economic factors influencing HBV vaccination among students in Iganga high school.

Keywords: HBV infection, Liver disease**,** HBV vaccination, Students, Immunization status.

INTRODUCTION

Hepatitis B is a liver infection caused by the hepatitis B virus (HBV) that can lead to both acute and chronic liver disease. In most cases, an acute HBV infection may have nonspecific symptoms; less frequent, as in the case of fulminant hepatitis, the infection can have fatal consequences unless liver transplantation is carried out urgently. Early identification of infected persons with the help of blood tests can break the ongoing transmission and lead to necessary treatment with antiviral medication [1]-[3]. It is also important to enable the identification and vaccination

of those who share a household with the infected person and sexual partners that might have become infected. To avoid transmission there are a few measures that HBV-positive individuals can take. For example, they should notify sexual partners and the people they share their household with to test themselves for HBV and inform them of the need for vaccination. An HBV-infected person can delay and/or prevent liver disease by limiting their alcohol consumption and by regularly seeking disease monitoring. Using alcohol in combination with HBV infection has been shown to increase the risk of hepatotoxicity [4]-[6]. The HBV vaccine was introduced in 1982 in the U.S. [7]. In 2002 infant HBV vaccination was introduced in Uganda [8]. In 2015 a universal vaccination program was introduced in the whole country, to prevent mother-to-child transmission of HBV. The birth dose is given and when the birth-dose of hepatitis B vaccine is given within the first 24 hours of birth, it prevents 80-90% of the virus transmission between mother and child [9]. The HBV vaccine gives healthy infants, children, and adults a protective concentration of anti-HBs in 90-100% of the cases if following the vaccination schedule properly. The vaccine is typically given in a three-dose series. It is known that the protection is long-lasting, at least 10-15 years if the vaccination schedule is followed correctly [10], [11]. Despite the fact that since 1982 there is a vaccine against HBV that gives 90-100% protection against infection, more than 2 billion people worldwide are estimated to have had hepatitis B virus and there are in the world today more than 350 million people living with chronic hepatitis B. The consequence of this is an estimated 500,000- 700 000 HBV-related deaths every year around the world, where the cause is primary liver cirrhosis or liver cancer [12]. The high rate of liver-related diseases and death has increased dependence on herbal medications, especially among residents of rural communities in the management of liver disorders. Traditional medicine is an old global practice that aids the maintenance of health if adequately utilized [13]. Consequently, there have been numerous reports of herbs with liver-protective and liver disease-preventive potentials. Some of these herbs are *Pterocarpus santalinoides* [14], *Moringa oleifera* [15], *Datura stramonium* [16], and *Chromolaena odorata* [17]. The chemical components in these herbs are responsible for their various pharmacological effects [18], [19].

Hepatitis B virus is transmitted differently between geographic regions and countries depending on how endemic the HBV is there. In regions where the endemicity is low, it is more common that the virus is transmitted through horizontal routes such as injecting drug use, high-risk sexual behavior, and receiving blood products. When in regions with high endemicity, for example in Uganda, HBV is primarily spread by vertical transmission early in childhood or perinatally, from mother to child at birth [20].

The World Health Organization (WHO) estimates that up to two billion people in the world have been infected with HBV; about 350 million people live with chronic HBV infection, and about 600,000 people die from HBV- related liver disease or HCV each year [21]. The disease has a long history in Uganda especially Northern Uganda with the highest percentage of HBV infection. In spite of the efforts made by authorities to raise knowledge about HBV and attitude towards HB vaccination, little progress is reported. There is insufficient of data from Uganda on knowledge about HBV infection, attitudes towards HBV vaccination and the influence of socio-economic status on hepatitis B virus vaccination among secondary school students. To that end, the current study sought to assess the knowledge about HBV infection; attitude towards HBV vaccination and the influence of socio-economic status on hepatitis B virus vaccination among Iganga High School Students in Iganga District Eastern Uganda.

METHODOLOGY

Study Design

A descriptive cross-sectional was adopted in this study which was carried out in inyanga high school to assess the knowledge about HBV infection, the attitude of the students towards HBV vaccination and the influence of social economic status on HBV immunization status. Quantitative methods of data collection were employed to gather data to describe the variables of study participants and to establish associations between the independent variables and dependent variables. The cross-sectional survey research design was used because the method gathers data from a relatively large number of different categories of respondents at a particular time with the exposure and outcome being measured at the same time hence it's cheaper in addition to being time-saving.

Area of Study

This study was carried out in Iganga high school found in Iganga municipal council, Iganga district in Eastern Uganda. The district is bordered by the following districts: Kaliro to the North, Namutumba to the northeast, Bugiri to the East, Mayuge to the south, Jinja to the Southwest and Luuka to the West.

Study Population

The study population was students of Iganga high school in Iganga district, eastern Uganda

Target Population.

The study targeted students of Iganga high school who met the inclusion criteria.

Sampling Technique.

The methods/techniques selected for the study were based on probability sampling. The main method that was employed in selecting a sample from the population was a simple random sampling technique.

Simple Random Sampling

With this method, the researcher identified the study population and chose the sample size, small pieces of paper written on participant or non-participant were folded and mixed up then put in a box from which each participant was asked to select and not return it back. Only those who picked papers written on participants were then asked to fill out a brief questionnaire. The aim of the simple random sample sampling was to reduce the potential for human bias in the selection of cases to be included in the sample. Each of the students at Iganga High School had equal chances of participating in the study.

Sample Size Determination

The following formula was used for determining study sample size in cross-sectional surveys in order to calculate the sample size for the study (Charan& Biswas [22])

$$n = \frac{Z^2\, p(1-p)}{d^2}$$

Where: n is the sample size.

Z is the standard normal deviate or variant (at 5% type 1 error and p<0.05, Z is 1.96)

P is the expected proportion of characteristics being measured in the target population based on previous studies (For this study, it is estimated at 81.1% or 0.811) (Demsiss *et al.* [23]).

d is the absolute error or level of statistical significance (For this study set at 0.05)

Thus by using this formula,

$$n = \frac{1.96^2\ 0.811(1-0.811)}{0.05^2}$$

$n = 247$

Selection criteria.

Inclusion criteria

- All students of Iganga high school who were present in school at the time of data collection.
- All students who consented
- Mentally healthy students.

Exclusion criteria

i. Mentally ill students.
ii. Those who never consented.
iii. Students who were very sick and admitted in hospital.
iv. Students who were absent at school at the time of data collection.

Study Procedure

The researcher used a closed structured questionnaire to assess knowledge about HBV infection, to determine the attitude towards HBV vaccination and influence of socio-economic status on hepatitis B virus vaccination among students of Iganga high school in Iganga district, eastern Uganda. The questionnaires were given to eligible

students, introduced objectives and obtained oral consent from them. Participants given time to consider whether to participate in the study or not to do so. Two research assistants were chosen to help the respondents in case of any inquiry.

Data Collection Instruments

A data collection instrument is a tool that is used in data collection such as a questionnaire. This provided a guide to the researcher to collect adequate data that helped him answer the research questions to achieve the study objectives.

Questionnaires

The researcher used questionnaires as the main data collection tool. A questionnaire is a written form of questions that are systematically arranged to enable the researcher come up with clear findings that can answer the research questions. The researcher used questionnaires because they are easy to administer, inexpensive and offer anonymity. A questionnaire is the best instrument because it gives the respondents time to fill them without being intimidated by the researcher's presence.

Validity of Instruments

Before the instruments were administered for data collection, they were first to be examined by colleagues taking a similar program as the researcher's. They were then scrutinized by the supervisor to ensure that the terms used in the questionnaire and interview were precisely defined and properly understood. Content Validity Index was calculated basing on judgment by at least two knowledgeable people (Judges). The result got was 0.7 which was an indication that the instrument was valid for use.

Pretesting of Data Collection tool

The data collection tool was tested among secondary school students on 5% of the study population in one of the neighboring schools two weeks prior to the start of data collection. A few changes in the wordings and questions were done where needed.

Data Analysis

All data collected was reviewed at two levels prior to data entry into the research database and upon entry prior to analysis. The data collection and entry process was planned in such a way that all data collection sheets completed in a day were reviewed and entered on the same day. Data was entered using Epidata Version 3.1 and was analyzed using STATA 14.0, the information was summarized in the form of graphs, pie charts, narrations and tables to give descriptive statistics as per the theme of the study in one way or another. The level of knowledge and attitude towards hepatitis B infection and vaccination was analyzed in terms of frequency and percentage with a 95% confidence interval and information was summarized in form of tables, pie charts and narrations. The socio-economic factors associated with hepatitis B vaccination was assessed using logistic regression. Both bivariate and multivariate logistic regression analysis was carried out. The variables in the final multivariate model were significant when $p \leq 0.05$. The measure of association was reported as odds ratios (ORs) with corresponding 95% CI and p-value.

Quality Assurance and Quality Control

Pre- test was conducted on 5% of the sample. Based on the pre-test, modification was made on the questionnaire. Data compilation system and data completeness were checked and strictly controlled by the principal investigator and the supervisor. Double data entering and random checking was done to ensure the validity of the study. The issue of confidentiality and privacy was given more emphasis during the data collection time.

Ethical Considerations

The study was conducted after approval by the Research Ethics Committee of Kampala International University. Approval was also sought from the administration of Iganga High School and head teacher of the school where the research was conducted.

Privacy and Confidentiality.

Respondents' names were not included anywhere in the Data that was collected and; they were instead referred to using codes.

RESULTS

Socio- economic Characteristics of the Study Participants

Table 1 presents the socio-economic characteristics of the study participants. It can be observed from the table that majority of the study participants 42.11% (104/247) were in the age group of 15 – 17 years, belonged to male gender 50.61% (125/247) and were in senior one class 29.55% (73/247). The study was dominated by Catholics 52.63% (130/247) who never had either a boyfriend or girlfriend 60.73% (150/247), had extra jobs 91.09 (225/247) and had spent 1 – 7 years in Iganga district 77.33% (191/247). Results of the study revealed that most of the study participants were living with parents/family 82.59% (204/247), had ever heard about Hepatitis B 80.16% (198/247) and had received Hepatitis B vaccination 50.81% (125/247).

Table 1; Shows demographic characteristics of the respondents

Category	Options	Frequency(N)	percentage (%)
Age in years	12 - 14 Years	81	32.79
	15 - 17 Years	104	42.11
	18 - 20 Years	56	22.67
	21 Years or above	06	02.43
	Total	**247**	**100.00**
Gender	Male	125	50.61
	Female	122	49.39
	Total	**278**	**100.00**
Class	S.1	73	29.55
	S.2	31	12.55
	S.3	30	12.15
	S.4	48	19.43
	S.5	27	10.93
	S.6	38	15.38
	Total	**247**	**100.00**
Religion	No religion	40	16.19
	Muslim	05	02.02
	Catholic	130	52.63
	Protestant	69	27.94
	Others	03	01.21
	Total	**247**	**100.00**
Has a boyfriend/Girl friend	No	150	60.73
	Yes	97	39.27
	Total	**247**	**100.00**
Has an Extra Job	Yes	225	91.09
	No	22	08.91
	Total	**247**	**100.00**
Duration spent in Iganga	1 -7 Years	191	77.33
	8 – 14 Years	47	19.03
	15 Years and Above	09	03.64
	Total	**247**	**100.00**
Care taker	Parents/Family	204	82.59
	Friends	27	10.93
	By Myself	11	04.45
	Others	05	02.02
	Total	**247**	**100.00**
Ever Heard about Hepatitis B	Yes	198	80.16
	No	49	19.84
	Total	**247**	**100.00**
Ever received Hepatitis B vaccine	Yes	125	50.81
	No	121	49.19
	Total	**247**	**100.00**

The summary descriptive statistics for the continuous variable of age of the study participants are presented in table 2. There were 247 observations for the variable of

age. The mean age of the study participants was 15.9 years with a standard deviation of 2.3 years from the mean. The minimum age was 12 years whereas the maximum age was 25 years. The data on age of the study participants had a variance of 5.4 with a positive skewness of 0.7 and a lepto kurtosis of 3.8.

Table 2: Shows the descriptive statistics of participants age

Variable	Mean	Std Dev	Minimum	Maximum	Variance	Skewness	Kurtosis
Age	15.9	2.3	12	25	5.4	0.7	3.8

The Knowledge Level of Students of Iganga High School about HBV Infection

Frequency distribution according to the questions used to assess Knowledge

The researcher used 12 questions to assess the knowledge of Iganga secondary School students on Hepatitis B virus infection and the responses are presented in table 3 below. Majority of study participants 46.15% were able to correctly answer that HBV infection is not hereditary. On the other hand, majority of respondents 41.30% incorrectly answered that people get HBV infection through the air. When asked where people can get HBV infection from sexual relationships, majority of the study participants 39.27% wrongly said no. After being asked whether people get HBV through during birth, majority 41.70% said no but that was not the correct response. Regarding whether people can get HBV by sharing spoons or bowls for food, the majority of 39.68% of the study participants correctly answered by saying yes. The highest proportion 54.25% correctly answered that people cannot get HBV by eating food prepared by an infected person. When asked whether people get HBV by eating food that has been pre-chewed by an infected person, majority of 44.94% of the study participants said yes. More than half of the study participants 54.25% correctly answered that people get HBV by sharing a toothbrush with an infected person. Half of the study participants 50.61 wrongly answered that people get HBV by holding hands with an infected person. On the other hand, 65.59% correctly responded that HBV has signs and symptoms meanwhile 48.58% answered that HBV infection can cause liver cancer then finally 69.64% answered that people infected with HBV but they look and feel healthy can spread hepatitis B.

Table 3; Shows Questions used to assess knowledge and the responses

Variable	Frequency	Percentage %)
People get HBV from genes (heredity)		
Yes	36	14.57
No*	114	46.15
Don't Know	97	39.27
People get HBV through the air (coughing or staying in the same room)		
No*	74	29.96
Yes	102	41.30
Don't Know	71	28.74
People get HBV from sexual relationships		
Yes*	83	33.60
No	97	39.27
Don't Know	67	27.13
People get HBV during birth		
Yes*	56	22.67
No	103	41.70
Don't Know	88	35.63
People get HBV by sharing spoons or bowls for food		
Yes	82	33.20
No *	98	39.68
Don't Know	67	27.13
People get HBV by eating food prepared by an infected person		
Yes	45	18.22
No*	134	54.25
Don't Know	68	27.53
People get HBV by eating food that has been pre chewed by an infected person		
Yes*	111	44.94
No	61	24.70
Don't Know	75	30.36
People get HBV by sharing a toothbrush with an infected person		
Yes*	134	54.25
No	50	20.24
Don't Know	63	25.51
People get HBV by holding hands with an infected person		
Yes	125	50.61
No*	66	26.72
Don't Know	56	22.67
HBV has signs or symptom		
Yes*	162	65.59
No	40	16.19
Don't Know	45	18.22
HBV cause liver cancer		
Yes*	120	48.58
No	41	16.60
Don't Know	86	34.82
People infected with HBV but they look and feel healthy can spread hepatitis B		
Yes*	172	69.64
No	30	12.15
Don't Know	45	18.22

*** Correct Response**

Summary Statistics for Knowledge Score of the study participants

For every question answered correctly, the study participant was awarded 1 mark and 0 mark for a question answered wrongly. The summary statistics of the knowledge scores of the study participants are presented in table 4 below. The total score if the participant got all the questions correct is supposed to be 12. There were 247 observations; the mean score was 5.2 with a standard deviation of 2.4 from the mean. The minimum score of knowledge was 0 while the maximum knowledge score was 11 with a variance of 5.9 and a negative skewness of -0.3 meanwhile there was a platy kurtosis of 2.6.

Table 4; Shows the Summary of total Knowledge scores

Observations	Mean	Std Dev	Minimum	Maximum	Variance	Skewness	Kurtosis
247	5.2	2.4	0	11	5.9	-0.3	2.6

Grading of Knowledge Score of the study participants

Participants who had knowledge sore of 6 and below were considered to be having low level of knowledge meanwhile study participants who had knowledge score of 7 and above were considered to be having high level of knowledge. As presented in table 5 below, majority of the study participants 70.04% (173/247) had low level of knowledge on HBV infection, meanwhile 29.96% (74/247) had low level of knowledge.

Table 5; Shows knowledge level of the study participants

Level of Knowledge	Frequency	Percentage	95% CI
Low	173	70.04	64.29 – 75.79
High	74	29.96	24.21 – 35.71

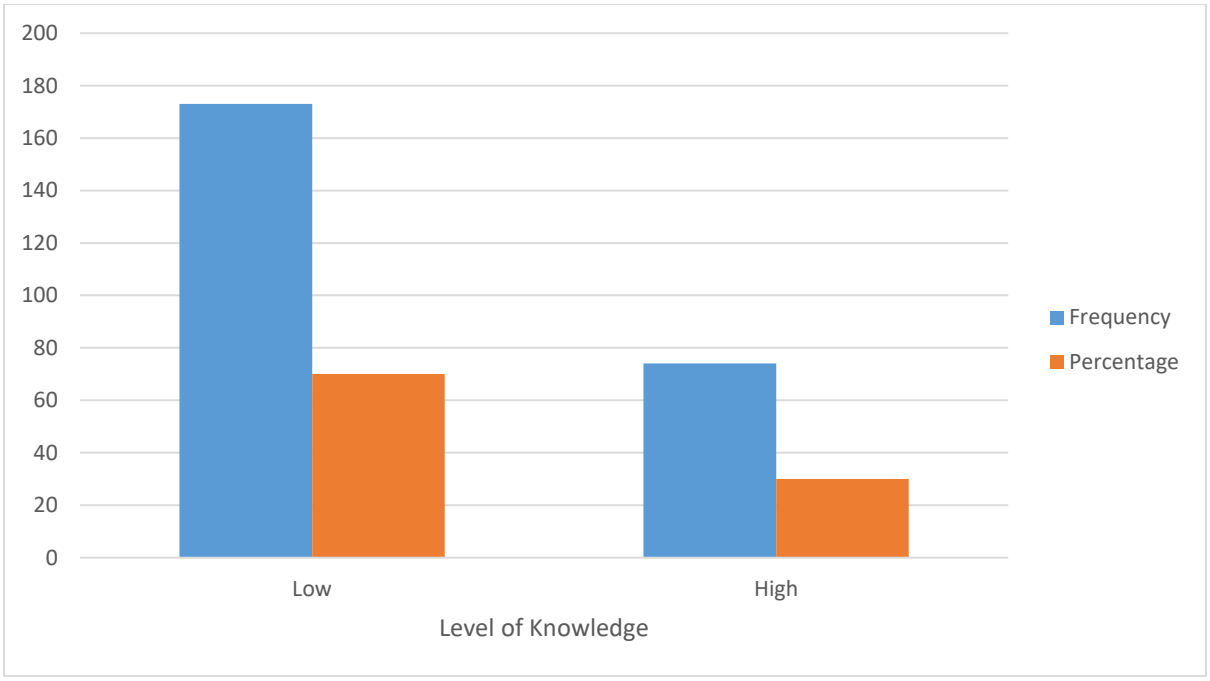

Figure 1; Knowledge level of the study participants

Gender-Specific Level of Knowledge of the study participants

Table 6 below shows the gender-specific level of knowledge among the study participants. It can be observed that majority of the participants 32.79% who had high level of knowledge were female participants at 95% CI of 24.34% - 41.24% meanwhile 27.20% of the participants who had high level of knowledge were male participants with 95% CI 19.29% - 35.11%. However, the difference in the level of knowledge among the male and female participants is not significant as the P value was found to be 0.338 with a chi square value of 0.92.

Table 6; Gender-Specific Level of Knowledge of the study participants

Gender of the study participants	Total	Level Of Knowledge		Square	P Value
		Low Count, % (95% CI)	High Count, % (95% CI)		
Male	125	91 72.80% (64.89 – 80.71)	34 27.20% (19.29 – 35.11)	0.92	0.338
Female	122	82 67.21% (58.76 – 75.66)	40 32.79% (24.34 – 41.24)		

P Value is significant at 0.05 level, CI = Confidence Interval

Age-Specific Level of Knowledge of the study participants

Table 7 below shows the age-specific level of knowledge among the sampled study participants. Results revealed that majority (38.46%) of study participants who had high level of knowledge were from the age group of 15 - 17 years at 95% CI of 28.95 – 47.97 meanwhile majority of the study participants (100%%) who had low level of knowledge about hepatitis B infection were from the age group of 21 years and above. Furthermore, the difference in the level of knowledge across the different age groups of participants was significant with a P value of 0.016 and a chi-square value of 10.30.

Table 7; Ager-Specific Level of Knowledge of the study participants

Age of the Children in Months	Total	ɾel Of Knowledge		ı	alue
				Square	
		Low Count, % (95% CI)	High Count, % (95% CI)		
12 – 14years	81	65 80.25% (71.39 – 89.11)	16 19.75% (10.89 – 28.61)		
15 – 17years	104	64 61.54% (52.03 – 71.05)	40 38.46% (28.95 – 47.97)		
18 – 20 years	56	38 67.86 (55.24 – 80.48)	18 32.14% (19.52 – 44.76)	10.30	0.016
21 years and above	06	06 100% (-----)	00 00.00% (-----)		

P Value is significant at 0.05 level, CI = Confidence Interval

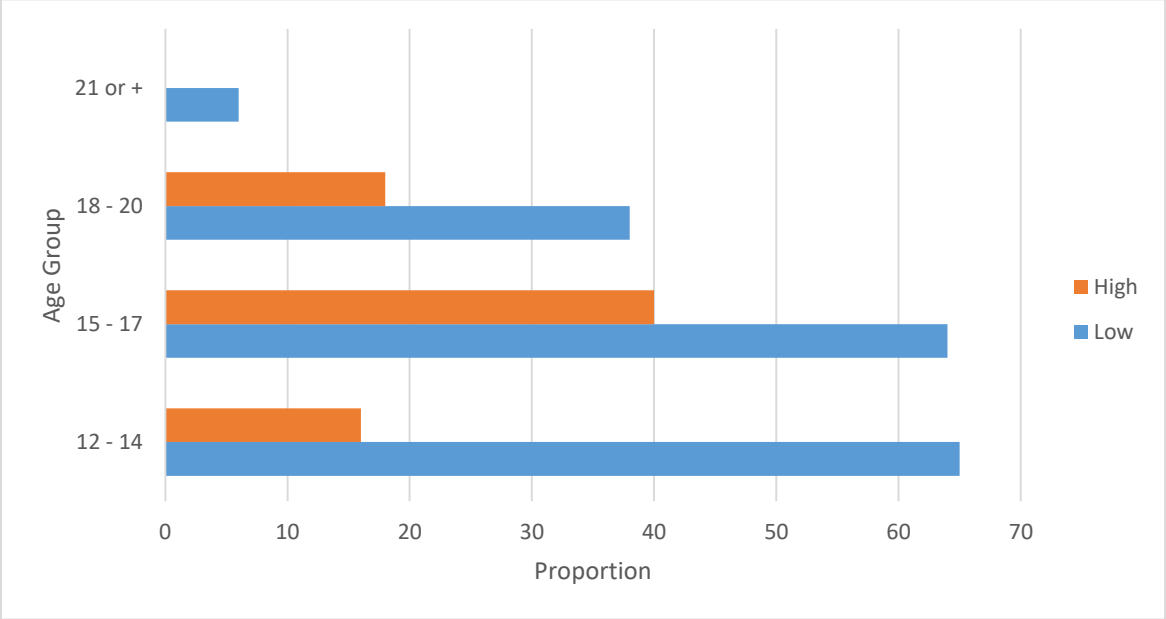

Figure 2; Ager-Specific Level of Knowledge of the study participants

The Attitude of Students of Iganga High School towards HBV Vaccination

Scores of Items Used to Assess Attitude of Study Participants

As presented in table 8 below, 8 items were used to assess the attitude of study participants towards Hepatitis B infection. Results revealed that majority study participants (74.90%) agreed that healthy people need vaccination, similarly 75.30% of the study participants said they needed vaccinations at their age in order to stay safe from hepatitis virus infection. Regarding only children less than 2 years old needing to be vaccinated, 42.51% of study participants disagreed to the statement. On the other hand, 78.14% of the students agreed that they knew the place where one can get hepatitis B immunizations. On the statement that vaccinations can be free or low-cost through certain programs, 72.47% of the students agreed meanwhile 72.36% of the study participants were willing to receive Hepatitis B vaccinations with 58.54% knowing how often they are supposed to be vaccinated against hepatitis B Virus whereas 58.54% agreed that if a person

fully vaccinated gets in contact with an infected person in anyway can be infected.

Table 8; Shows items used to assess the attitudes

Variable	Frequency	Percentage %)
Healthy people need vaccination		
Agree*	185	74.90
Disagree	28	11.34
Neutral	34	13.77
You need a vaccination at your age		
Agree*	186	75.30
Disagree	21	08.50
Neutral	40	16.19
Only children less than 2 years old need to be vaccinated		
Agree	98	39.68
Disagree*	105	42.51
Neutral	44	17.81
I Know the place where one can get hepatitis B immunizations		
Agree*	193	78.14
Disagree	23	09.31
Neutral	31	12.55
Vaccinations can be free or low-cost through certain programs		
Agree*	179	72.47
Disagree	26	10.53
Neutral	42	17.00
I think I will receive hepatitis B vaccinations		
Agree*	178	72.36
Disagree	29	11..79
Neutral	39	15.85
I know how often I am supposed to be vaccinated against hepatitis B Virus		
Agree*	144	58.54
Disagree	41	16.67
Neutral	61	24.80
If a person fully vaccinated gets in contact with an infected person in anyway can be infected		
Agree	144	58.54
Disagree*	41	16.67
Neutral	61	24.80

Summary Statistics for Attitudinal Scores

For every statement with a good attitude, the study participant was awarded 1 score and 0 score for a statement with a poor attitude. The summary statistics of the attitude scores of the study participants are presented in table 9 below. The total score if the participant got 1 score in all items is supposed to be 8. There were 245 observations; the mean score was 5.2 with a standard deviation of 2.1 from the mean. The minimum score of attitude was 0 while the maximum attitude score was 8 with a variance of 4.3 and a negative skewness of 0.7 and a platy kurtosis of 2.8.

Table 9; Summary of attitude scores

Observations	Mean	Std Dev	Minimum	Maximum	Variance	Skewness	Kurtosis
245	5.2	2.1	0	8	4.3	-0.7	2.8

Grading for the Attitudinal Scores

Participants who had attitude sore of 4 and below were considered to be having unfavorable attitude meanwhile study participants who had attitude score of 5 and above were considered to be having favorable attitude. As presented in table 10 below, majority of the study participants

68.98% (169/245) had unfavorable attitude towards HBV infection meanwhile 31.02% (76/245) had a favorable attitude.

Table 10; Shows the grading of attitude scores

Grading of Attitude	Frequency	Percentage	95% CI
Unfavorable	76	31.02	25.19 – 36.86
Favorable	169	68.98	63.15 – 74.81

The Influence of Social Economic Status of Iganga High School Students on HBV Vaccination

Table 11 shows the results of bivariate logistic regression run to identify the influence of socio-economic status of Iganga High School students on H BV vaccination. Variables with P value less than 0.05 were considered to influence HBV vaccination among the students. Results of the analysis showed that age of the students, having an extra job and ever hearing about HBV had statistical influence on HBV vaccination.

Students who were in the age group of 12 – 14 years were 3.07 times more likely to be vaccinated compared to students who were in the age group of 15 – 17 years (cOR3.07, 95%CI 1.67 – 5.62, P<0.001). Study participants who had an extra job were 2.81 times more likely to be vaccinated against HBV than their counterparts who had no extra job (cOR2.81, 95%CI 1.06 – 7.45, P=0.037). On the other hand, study participants who had ever heard about HBV were 2.04 times more likely to be vaccinated against HBV than those who had never heard about HBV (cOR2.04, 95%CI 1.07 – 3.90, P=0.029).

Table 11; Results of Logistics regression to show The Influence of Social Economic Status of Iganga High School Students on HBV Vaccination

Variable	Category	cinated		cOR	95% CI	P VALUE
		NO=125 n (%)	YES=121 n (%)			
Age in years	12 - 14 Years	29 (35.80)	52 (64.20)	3.07	1.67 – 5.62	<0.001*
	15 - 17 Years	65 (63.11)	38 (36.89)	Reference		
	18 - 20 Years	31 (55.36)	25 (44.64)	1.38	0.71 – 2.68	0.341
	21 Years or above	00 (00.00)	06 (100.00)	Omitted		
Gender	Male	62 (50.00)	62 (50.00)	Reference		
	Female	63 (51.64)	59 (48.36)	0.94	0.57 – 1.54	0.797
Class	S.1	32 (43.84)	41 (56.16)	Reference		
	S.2	15 (48.39)	16 (51.61)	0.83	0.35 – 1.93	0.670
	S.3	17 (58.62)	12 (41.38)	0.55	0.23 – 1.32	0.180
	S.4	29 (60.42)	19 (39.58)	0.51	0.24 – 1.07	0.076
	S.5	14 (51.85)	13 (48.15)	0.72	0.30 – 1.76	0.476
	S.6	18 (47.37)	20 (52.63)	0.87	0.39 – 1.90	0.723
Religion	No religion	19 (47.50)	21 (52.50)	Reference		
	Muslim	04 (80.00)	01 (20.00)	0.23	0.02 – 2.21	0.201
	Catholic	68 (52.71)	61 (47.29)	0.81	0.40 – 1.65	0.565
	Protestant	32 (46.38)	37 (53.62)	1.05	0.48 – 2.28	0.910
	Others	02 (66.67)	01 (33.33)	0.45	0.04 – 5.40	0.531
Has a boy/Girl friend	No	75 (50.00)	75 (50.00)	Reference		
	Yes	50 (52.08)	46 (47.92)	0.92	0.55 – 1.54	0.750
Has an Extra Job	Yes	109 (48.66)	115 (51.34)	2.81	1.06 – 7.45	0.037*
	No	16 (72.73)	06 (27.27)	Reference		
Duration spent in Iganga	1 -7 Years	94 (49.47)	96 (50.53)	Reference		
	8 – 14 years	24 (51.06)	23 (48.94)	0.94	0.50 – 1.78	0.845
	15 years and above	07 (77.78)	02 (22.22)	0.28	0.06 – 1.38	0.118
Care taker	Parents/family	102 (50.00)	102 (50.00)	Reference		
	Friends	17 (65.38)	09 (34.62)	0.53	0.23 – 1.24	0.114
	By myself	03 (27.27)	08 (72.73)	2.67	0.69 – 10.34	0.156
	Others	03 (60.00)	02 (40.00)	0.67	0.11 – 4.07	0.661
Ever Heard about HBV	Yes	107 (54.31)	90 (45.69)	2.04	1.07 – 3.90	0.029*
	No	18 (36.73)	31 (63.27)	Reference		

cOR= Crude odds ratio. CI= Confidence interval. The P-Value is Significant at a 0.05 level

DISCUSSION

The Knowledge Level of Students of Iganga High School about HBV Infection

The study revealed that the mean score was 5.2 with a standard deviation of 2.4 from the mean. The majority of the study participants 70.04% (173/247) had a low level of knowledge on HBV infection; meanwhile, 29.96% (74/247) had a good level of knowledge. The result of the present study is in line with the findings of a study by Vu *et al.* [24] in Australia which revealed a low level of knowledge among the study participants. Similarly, the result of the present study is in line with the result of a study done in Senegal which revealed that of the 284 students, 27% had a good level of knowledge [25]. The result of the study is in agreement with the findings from a study done in Malaysia which showed a low level of knowledge among the study participants much as the previous study was done within the community [26]. Conversely, the results of the present study are lower than the results of a cross-sectional study conducted in Kuwait which revealed that knowledge about the hepatitis B virus, vaccine and routes of transmission of HBV was relatively high [27]. The difference in the study findings could have risen due to the variation in the set of questions used to assess knowledge. The findings of the present study were low compared to what was found in a study done among health science students in North Eastern Ethiopia which showed that 81.1% of the study participants had adequate knowledge of hepatitis B infection with the mean knowledge score of the study participants being 13.4(SD+1.6) [23]. The discrepancy in the study findings could have been raised due to the fact that the study participants in the present study were secondary school students meanwhile the study participants in the previous study were health science students. The results of the current study were in disagreement with the results of a study done in Ethiopia which showed that approximately three-fourths (73.1%) of the participants had good knowledge of HBV [28]. The reason for the disagreement in the study findings is that the above study was done among healthcare workers meanwhile the present study was done among secondary school students. There is a discrepancy between the findings of the present study when compared with the results of a study done by Abeje and Azage [29], which revealed that the mean knowledge score of the respondents about hepatitis B infection was 7.6 with a standard deviation of 1.27. Similarly, Almualm *et al.* [30]-[37] found that more than half (66.5%) had good knowledge about the modes of transmission of HBV infection; this is in disagreement with the finding of the present study. The reason for disagreement in the study findings could be because of the difference in the study settings.

The study by Taylor *et al.* [31] showed that 81% of the 715 participants had heard of hepatitis B and the knowledge of the infection was generally good, with about three-quarters knowing the different ways of transmission. This result is in disagreement with the findings of the present study perhaps because the previous study was done among adults in the general population whereas the present study was done among students in a secondary school. Lee *et al.* [32] carried out a study in the U.S. among Vietnamese Americans and found high levels of knowledge about HBV infection. The results of the above study were not in line with the findings of the present study, this could be because of the variation in the cut points used to demarcate between a high level of knowledge and a low level of knowledge.

The Attitude of Students of Iganga High School towards HBV Vaccination

The second objective of the present study was to determine the attitude of the study participants toward Hepatitis B vaccination. Results of data analysis revealed that the mean score was 5.2 with a standard deviation of 2.1 from the mean. The majority of the study participants 68.98% (169/245) had an unfavorable

attitude towards HBV infection meanwhile 31.02% (76/245) had a favorable attitude. The finding of the present study is in agreement with the result of a study done in Senegal which revealed that the majority of the participants had a negative attitude toward HBV vaccination [25]. The agreement in study findings could be because both studies were conducted in African countries. The result of the current study is low compared to the results from an Indian base study which showed that 86.5% had a positive attitude that HBV vaccination is safe and effective [33]. Based on premises that the previous study was conducted from Asia and the present study was conducted in Africa that can explain the disagreement in the study findings. The finding from the present study is low compared to the findings from a study conducted by Mariam and Al-Mousa [27] which revealed that most of the respondents had a positive attitude towards HBV vaccination with around 14% having a negative attitude toward HBV vaccination because they are worried of its adverse effects [27]. The discrepancy in the study findings could be because the above study was conducted among dentists whereas the present study was conducted among secondary school students. The results of an Ethiopian-based study revealed that the majority (94%) of HCPs believe that it is necessary for them to receive a hepatitis B vaccine. This finding is higher than the result of the present study [28]. The difference in the study findings could have come about because the previous study was conducted among health care professionals whereas the present study was done among secondary school students. The result of the present study is lower than what was found in a study done in Kaduna state, Nigeria which revealed that 72.4% (246/340) had some level of risk perception while 27.6% (94/340) had no risk perception for HBV [34]. The difference in the study findings could have risen due to the variation in the nature of study participants and the study settings.

The Influence of Social Economic Status of Iganga High School Students on HBV Vaccination

The present study showed that age of the students, having an extra job and hearing about HBV had statistical influence on HBV vaccination. Age: Students who were in the age group of 12 – 14 years were 3.07 times more likely to be vaccinated compared to students who were in the age group of 15 – 17 years (cOR3.07, 95%CI 1.67 – 5.62, P<0.001). This finding is in line with the result of a study among health science students in Ethiopia [23], [38]. Younger students may easily accept being vaccinated because they still don't hold a lot of myths and false beliefs as compared to older students. Furthermore, the younger students are not so occupied with academic roles therefore they have plenty of time to go and get vaccinations meanwhile the older students are in the candidate classes and perhaps Advances level of education, as such they give priority to academics making them to have little time to go for vaccination. Having an extra job: Study participants who had an extra job were 2.81 times more likely to be vaccinated against HBV than their counterparts who had no extra job (cOR2.81, 95%CI 1.06 – 7.45, P=0.037). This finding is in agreement with what was found in a study conducted by Ayalew *et al.* [28] much as the study was done among health professionals whereas the present study was done among students. The results of the present study is also in line with the findings of a study done in Accra which showed that the odds of having worked for 16 years or more among those who had been vaccinated against hepatitis B was 3.8 times higher compared to those who had not vaccinated [35]. Students who have extra jobs have perhaps interacted with people who have higher level of education than their or people who are more than them. Therefore, they got motivated to go for vaccinations. Hearing about Hepatitis B: Study participants who had ever heard about HBV were 2.04 times more likely to be vaccinated against HBV than those who had never heard about HBV (cOR2.04, 95%CI 1.07 – 3.90, P=0.029). The result of the present study is in agreement

with the result of a study done in Bangladesh [36], [39]-[45]. Hearing about the virus is the first step in knowing about its existence and hence the need to get vaccinated against it. That explains the reason why in the present study those who had heard about the hepatitis B virus were vaccinated more than those who had not heard about it.

CONCLUSION

Findings from the study suggest that there was a low level of knowledge of Hepatitis B infection and an unfavorable attitude towards Hepatitis B vaccination among students of Iganga High School. The study indicates that age of the students; having an extra job and hearing about HBV were the socio-economic factors influencing HBV vaccination among students in Iganga high school. Therefore, is recommended that the government of Uganda through the Ministry of Health should intensively sensitize the students about the Hepatitis B virus and the need to get vaccinated as well as the dangers of failing to get vaccinated.

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