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The effectiveness of education intervention program for improving knowledge, attitude and practice related to hepatitis-B infection among non-medical and non-veterinary undergraduate university student in northern Nigeria, a randomized control community trial.

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Abstract:
Background: *The endemicity of Hepatitis B virus (HBV) infection is leveling off in sub-Saharan Africa; it remains at an unacceptable high level (≥8%, to <2%) with global prevalence of 3·61%. The present study assessed the effectiveness of a peer-led HBV prevention education intervention in Usman Danfodiyo University Sokoto, Nigerian on youth's HBV-related knowledge, attitude, and practices.*
Methods: *In a peer-led single blind randomized controlled community trial conducted between April and December 2015. 390 students were selected and randomized into the intervention and control arms, each arm with 195 respondents; five out of 12 faculties were selected using multi-staged random sampling.Four surveys were conducted (baseline, immediately, three and six months using self-administered questionnaire.Analysis of data were conducted using SPSS version 22.*
Results: *The overall response rate during the four survey were 100%, 99.4%, 98.9% and 98.4%for intervention group and 100%, 100%, 99.4%, and 98.9% for the control arm respectively. Hepatitis B-related knowledge, attitude, and practices of the respondents were statistically significant between the intervention and the control arms at immediately, three and six month's follow-upassessment with no statistical significant differnce at baseline assessment (knowledge 14.3%, 66.95%, & 62.7%, HBV-related attitude 23.56%, 40.68%, & 46.12% and HBV-related preventive practices 26.14%, 36.53%, & 11.9%). Conclusions: The present study has shown an evident for its effectiveness on HBV-related knowledge, attitude and preventive practice among the undergraduate non-medical and non-veterinary university students of Usman Danfodiyo University Sokoto Nigeria.*

Keywords: *Youth, Peer-led, Knowledge, Attitude, and Practice.*
Trial Registration: *Clinical Trials reference number PACTR20151000129O321.*
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I. Introduction:

Hepatitis B Virus (HBV) infection continue to be one of the major public health issue worldwide,[(1)] even though there areavailable, potent antiretroviral treatment and an effective vaccine for every age category. About four hundred million people are living with the HBV in the world. [(2)] This infection is believed to be responsible for three-quarter of all cases of primary cancer and more than half cases of liver cirrhosis. [(2)] Viral hepatitis B is one of the leading cause of death worldwide with significance increase in the disease burden from 378 million chronic cases in 2009 to 500 million chronic cases in 2011 globally [15]. The burden of the disease is more endemic in East Asia and sub-Saharan Africa in which up to ten percent of adults living in the region is chronically infected[1.] It caused epidemics in many parts of Africa and Asia. Hepatitis B virus (HBV) infection is endemic in China and various parts of Asia [3]. Studies conducted in the past suggested thatprevalence of HBV in sub-Saharan African general population ranges within 10 – 20% [(20)]. Most recent estimates indicate that about 350 million people infected with HBV have developed a severe chronic HBV infection [(17)]. Nigeria has been identified as one of the countries that are endemic for the infection with an infected population of 18 million people even though, the major circumstance that leads to HBV infection among this population has not been

fully elucidated[18]. Estimated prevalence rates of about 12% of Nigerians are reported as chronic carriers although studies among different population have reported a varying prevalence rate [19].

Hepatitis B transmission results commonly due to exposure to infectious blood or body fluids containing blood. Possible means of transmission include re-use of contaminated needles and syringes, unprotected sexual contact, mother to child during childbirth and through blood transfusions [9,10].

Due to the negative perceptions of the public about HBV, there was petite or no intervention measures put in place by the government in matters regarding child vaccination, screening of blood donors, screening of youth and adolescent, and awareness of the mode of its transmission [13]. As a result of that, the virus continues to spread silently and unnoticed through young people, in the hospitals during blood transfusion, and from mothers to their newborn child through placental transfer.

Lack of awareness of the risk of HBV and its consequences are recognized as a major deterrent to immunization among HBV high-risk groups [9]. Prevention is the only safeguard against the epidemic of viral hepatitis-B. Knowing facts and having proper knowledge, attitudes, and practice are critical to prevent the spread of viral hepatitis infections.

The present study is aimed at developing, implement and evaluates the effectiveness of university-based educational intervention program on knowledge, attitude and practice related to hepatitis-B virus among Undergraduate Students of Usman Danfodiyo University Sokoto in Northern Nigeria.

II. Methods:

2.1. Study design and participants: The design was a single bind parallel randomized control community trial. Three hundred and ninety students from ten departments in Usman Danfodiyo University Sokoto Nigeria begun this research and three hundred and eighty-five subject completed the study. The age of the participants of both genders ranged between 17 and 24 years old.

2.2. Inclusion and exclusion criteria: The researcher selected the participants with the help of four research assistants who co-operated with the study. The criteria to be included in the study were students of Usman DanfodiyoUniversitySokoto, age less than 25 years and only Nigerian students willing to complete the six-months planned follow-up assessment. The criteria to be excluded from participation in the study includephysically challenged students, students with a mental problem, students away from school for industrial training and final year students.

2.3. Randomization: The people who would be participating in the present study must fulfill all the criteria were number coded before the random assignment to intervention group and control group. For ensuring concealment of subject allocation, codes were sent to independent biostatistician who allocated the participants to intervention group and control group (randomization). The randomization single blinded for the participants using a computer-generated randomization list using SPSS as described [16].

2.4. Procedure: Peer-led education intervention program delivery to intervention group. Intervention group: Educational module on Hepatitis B prevention, care and management were delivered via lectures, pictures show, video play, and drama by 4 Peer-led facilitators and were monitored by the researcher. 4 Peer-led facilitators were recruited from final year medical students by their intellectuality that was accessedthrough their head of department (2 Male and 2 Females). The delivery last for 6 hours per day, for two days (total of 12 hours) during the first weekend of the month of enrollment. There were two sessions for the program delivery 3 hours after each session with 30 minutes break time interval. Two facilitators managed the class for the first session, and the other two facilitators lead the subsequent class. Three months after the program, another booster session was delivered for another 6 hours, by the peer-led facilitators using the same module, to enable discuss problems encountered in real life situation and help direct individuals with particular need for screening or need to vaccinated referred to nearby health centres as suggested by Fang et al., (1998). Subjects were assessed on the outcome measures at baseline, immediately post-intervention, three months post intervention, and six months follow-up assessment by the researcher.

2.5. Control group: The control group received two sessions of lectures delivered by two staff from nearby secondary school specialist in physical and health education on the importance of physical activity in improving health using a standard WHO manual. The lectures were given at the same time as in the intervention group which last for 12 hours. Subjects were assessed on the outcome measures at baseline, immediately post assessment, three months and six months follow-up assessment by the researcher.

2.6. Outcome measures: The outcome measures include increased in sound knowledge, increased in a positive attitude and increased in good practice of the respondents regarding hepatitis B related to HBV infection (Table 6).

2.7. Data Collection: All participants received information about the research and gave their written informed consent before participation. Data was collected using a set of the validated and pre-tested questionnaire at four different times. The first data collected at baseline before the introduction of the module, second data collected at immediately post intervention, third data collected at three months post intervention and the

fourth final data collected at six months post intervention. The end point was knowledge, attitude and practice related to hepatitis-B. The validated questionnaire comprising of six sections A, B, C, D, E, and F that covers socio-demographic variables, respondents history of hepatitis B, respondents sources of information on hepatitis B infection, hepatitis B-related knowledge, hepatitis B-related preventive attitude, and preventive practice respectively. The questionnaires were administered at baseline, immediately, three months, and six months post-intervention. All participants who filled and returned the consent form were required to complete the questionnaire in the venue where the program took place. The questionnaire was approximately filled within 30 minutes. The same set of questionnaire was distributed to the control group. The questionnaire was administered in the English language as Nigeria uses the English language as the language of instruction.To ensure that respondents do not provide untruthful responses and social desirability, honesty were emphasized to the participants and all the questionnaires were anonymous, the only means used in identifying the participants was through their matriculation numbers.The questionnaires were pilot tested witha convenient 20 samples of students who were not part of the study. The questionnaires were also validated by a panel of expert specialists on hepatitis B prevention. Reliability tests for knowledge, attitude and practice gave Cronbach's alpha values of 0 .835, 0 .779 and 0.792 respectively.

2.8. Data management analysis: All analyzes were conducted using SPSS version 22.0. Skewness, kurtosis, tests were used to analyze the normality of the data distribution. The data collected were doubled entered into SPSS version 22 by the researcher and two research assistants into the different separate database. Skewness, kurtosis tests were used to analyze the normality of the data distribution. Categorical variables were all described using frequencies and proportions. The quantitative variables were subjectedto a testfor normality and found normally distributed, thus summarized using mean and standard deviation. Chi-square was used for testing the group equivalence between the intervention and the group control variable at baseline for all categorical variables and t-test was used for all continuous variables. The outcome variables were assessed for violation of assumptions of ANOVA including normality test, sphericity test, and test of homogeneity of variance, and correlation matrix computed. The primary tool used for the data analysis was two-way repeated measures analysis of variance. The interaction between group and gender was examined by the use of two-way mixed design ANOVA.

The co-indicators used in defining youths in this study were all person of 17 and 24 years of ages. Knowledge, attitude, and practice of the respondents were classified as sound or not sound knowledge, positive or negative attitude, good or poor practices based on the criteria that, low sound knowledge score represents a low summated score on the knowledge related to hepatitis-B scale which is represented by a range of 0 to 10; negative attitude scores it represents a low summated score on the attitude related to hepatitis-B scale which ranges from 0 to 10 marks; poor practice scores it represents a low summated score in the practice related to hepatitis-B scale which ranges from 0 to 5 marks.Similarly, sound knowledge scores it represent a high summated score of the knowledge related to hepatitis-B scale which is represented by a range from 10 to 19 marks; positive attitude scores it represents a high summated score of the attitude related to hepatitis-B scale which is represented by a range from 10 to 19 marks and good practice score it represents a high summated score of the practice related to hepatitis-B scale which is represented by a range from 6 to 9 marks.[31]

2.9. Sample size: The sample size calculation was done using the formula for randomized control trial study.[34] $n_1 = [Z\alpha\sqrt{pq}(1+1/k) + Z\beta\sqrt{p_1q_1 + p_2q_2}/k]^2 / \Delta^2$

The largest sample size was obtained for the outcome variable of knowledge towards HBV prevention, taking into account 30% for attrition the final sample size used was 390.Evaluation of the trial relevance: The criteria suggested by Cohen's were taken into consideration for the analysis of the effect size values; the criteria indicated that values below 0.2 are considered to have no effect. Values between 0.2 and 0.5 are termed to have a small effect, those between 0.5 and 0.8 a medium effect and all values above 0.8 are considered to have a huge effect.

Ethical approval: This study was approved by the Ethics and Research Committee ofUniversity Putra Malaysia and Usman Danfodiyo University Sokoto Human Research Ethics Committees. All participants gave written informed consent; anonymity and confidentiality were also preserved at all times.

III. Results:

A total of three hundred and ninety students were recruited into the study among the undergraduate students after fulfilling the eligibility criteria and filled the informed consent. Data was collected at baseline with 100% compliance rate to both the intervention group and the control group. The response rate immediately post intervention was 194 (99.4%) of the intervention arm and 195 (100%) for the control arm. At 3-month follow-up assessments response rate for the intervention arm was 193 (98.9%) and 194 (99.4%) for the control

arms. At 6-months follow-up assessment, the response rate was 192 (98.4%), and 193 (98.9%) participants in the intervention and the control arms respectively (Figure 1).Of the 390 respondents, 257 (66%) were male and 133 (34%) female. Most 168 (43%) respondents were between the ages of 22 to 24 years. The largest tribe among the respondents were Hausas tribe consisting in total 193 (49%). The majority were not married 380 (97%). Three hundred and two (77.66%) were all Muslim while 88 (22.34) were Christian. Most respondents; 308 (79) were from urban areas, and most of the respondents 271 (69.61%) were at year three in the university. None civil servants (not employed) made up 362 (92.98%) of the respondents but 28 (7.02%) were employed. Most of the respondents 213 (55.32%) had about HBV from the internet (Table 1).

The frequencies of respondents' responses to knowledge, attitude and practices statements at baseline presented in Table 2, 3 & 4. Overall 124 (31.7%) and 266 (68.3%) of respondents had sound knowledge and not sound knowledge on HBV transmission and prevention at baseline respectively. One hundred and eighty respondents (46.2%) had a positive attitude towards HBV while two hundred and ten respondents (53.8%) had negative attitudes towards HBV. Similarly, 190 (48.8%) and 200 (51.2%) of the respondents had a good practice and poor practices on HBV transmission and prevention respectively at baseline. No significant statistical difference was seenin knowledge, attitudes, and practices among the intervention group and the control group at baseline (Table 5).

The effectiveness of the intervention on sound hepatitis-B knowledge, positive attitude and good practices of the study respondents were assessed using One Way ANOVA for group comparison at baseline, immediately post-intervention, three months and six months post intervention. Mixed design ANOVA was used to look at the effects of gender, place of birth, group, time and group time interaction on the hepatitis-B knowledge scores. Change in sound hepatitis-B knowledge, attitude and practice following intervention between the intervention and the control arm indicated that, there is statistically significant change at all the three levels (immediately, three months and six months) (Table 6).

IV. Discussions:

Viral hepatitis caused by HBV is endemic in many counties worldwide and is a major health concern as it causes devastating life-threatening acute hepatitis [14] and chronic liver diseases such as cirrhosis and hepatocellular carcinoma. Hepatitis B virus (HBV) infection is a very source of mortality and morbidity. Numerous social activities of youths, which are not perceived as risky, put them at risk of contracting the infection. This study, however, showed HBV knowledge rate at baseline, attitude rate at baseline and practice rate at baseline to be (31.7%),46.2% and 48.8% respectively. This supports other study with similar findings conducted in Saudiya who reported 54.00% sound knowledge of the respondents although the study was centred to high school students.[32] Similar findings were reported in Saudi with 48.8% sound knowledge of the respondents, but all the study participants were from national guard personnel.[33] For the attitude scores at baseline, similar findings were reported among reported 45.3% positive attitude though the study was conducted among the general population in Saudi and for the practice scores at baseline (36%), similar findings were reported.In order to prevent the many future complications of hepatitis among the economically productive and future leaders of tomorrow in our society, there is an urgent need to carry out sustained awareness and improvement in the knowledge of risk factors and preventive measures against hepatitis among this high-risk category of students. This is important in a situation like this when social risk factors that are prevalent among them are not regarded by them as important. The university health centre may have roles to play including routine screening for hepatitis for all newly admitted students, and administering vaccinations to all eligible students, especially medical and science students who may come in contact with blood samples and other fluids during their school's practical laboratory work.

Effect of intervention on hepatitis-B-related knowledge: Understanding the route of transmission is important for knowing how to prevent transmission. The most notable routes of HBV transmission include unprotected practices, blood transfusion, vertical transmission during birth from an infected mother to her newborn child, unprotected sexual practices, sharing of items that may lead to the exchange of body fluids (razor, injecting needles or syringes, nail files, toothbrush), and use of unsterile medical equipment's especially during surgical procedures.[25] The present study showed that there was 71.9% significance increase in sound HBV knowledge among respondents in the intervention arm at immediately post intervention. This increase was sustained at three months post-interventionfollow-up, but there was decrease when compared with the immediatepost-intervention 62.5%. However, greater improvement was observed at six months follow-up 71.9%. The increase in the sound knowledge at six-monthfollow-up may be attributed to the effect of the additional booster dose delivered to the participant immediately after the three months follow-up assessment. There was significance changes observed in the control group at immediately post intervention with 50.3%, similarly, there was significance changes observed at three-monthpost-intervention in the control group with 11.9% increase, but no significance changes was seen at six months follow-up 2.8% increase. The increase in

the knowledge of the respondents in the control group could be due to cross contamination between the intervention group and the control group since the program is conducted in the same town even though the delivery of the program were conducted at different campuses. The increase in the sound knowledge of HBV was sustainable throughout the study duration period following the intervention. The present study is uniquein existing studies by focussing on undergraduate non-medical and non-veterinary students because all the studies ever read focused on medical students and medical personnel and provided a booster session. This result showed a similar result with other studies in the U.S. who reported (40-70% in studies among average adults.[22, 23, 27, & 29] As noted by Ma et al., the poor knowledge of sexual transmission of HBV may be attributed to the cultural barriers that inhibit the communication of sexuality-related matters between patients and health professionals.[23] Approximately one-third of participants was not aware of the severity of hepatitis B infection as a cause of liver cancer at the baseline, similar to other studies conducted among Vietnamese populations but lower than in other studies among Chinese.[22, 24, 25, 27]Also, the lack of information could also result in hepatitis B exposure during contacts based upon a perception that healthy looking people could not be infected. Research in the HIV/AIDS field has suggested that condom use is strongly predicted by the knowledge that a healthy person could have HIV infection.[28] The present results are also in line with the findings from studies reported in India but the study was centered on medical students. [21]The present study showed that there was 54.2% significance increase in positive HBV attitude among respondents in the intervention arm at immediately post intervention. This increase was sustained at three months post-intervention follow-up and six months follow-up. The sustained increase in the positive attitude at six-monthfollow-up may be attributed to the effect of the additional booster dose delivered to the participants immediately after the three months follow-up assessment. There was significance change observed in the control group at immediately post intervention with 53.4%; there was no significance change observed at three-monthpost-intervention in the control group with 3.6% increase. Likewise, no significance change was seen at six months follow-up7.3% increase. The increase in the positive attitude of the respondents in the control group at immediately post intervention could be due to cross contamination between the intervention group and the control group since the program was conducted in the same town even though the delivery of the program were conducted at different campuses. The increase in the positive attitude of HBV was sustainable throughout the study duration period following the intervention in the intervention group. The present study showed that there was 51.0% significance increase in good HBV practice among respondents in the intervention arm at immediately post intervention. This increase was sustained to three months post-interventionfollow-up, but there was decrease when compared with the immediatepost-intervention36.9%. However, the maximum improvement was observed at six months follow-up 51%. The increase in the good practice at six-monthfollow-up may be attributed to the effect of the additional booster dose delivered to the participants immediately after the three months follow-up assessment. There was significance changes observed in the control group at immediately post intervention with 23.8%, similarly, there was significance changes observed at six-monthpost-intervention in the control group with 39.4% increase, but no significance change was seen at three months follow-up0.5% increase. The increase in the good practice of the respondents in the control group could be due to cross contamination between the intervention group and the control group since the program was conducted in the same town even though the delivery of the program were conducted at different campuses. The increase in the good practice of HBV was sustainable throughout the study duration period following the intervention.

V. Conclusion:

In conclusion, the level at which HBV is spreading among the youth is quite alarming and required urgent attention to the hearing of policy makers. The major risk factors for HBV transmission among youth include inadequate or poor knowledge, poor attitude and lack of adequate lifestyle preventive practice skills to prevent them from contracting HBV infection. The majority of University students require asound knowledge of HBV, and also, they show unfavorable attitude to HBV prevention with poor lifestyle practice that contributes to the spread of the infection within the youth and the larger society. Youth is more vulnerable to different forms of risk behavioral activities in every community. Preventive intervention strategies targeted at this population would help to reduce their susceptibility to HBV infection and would enhance their life expectancy. The effect of the intervention should have a long lasting on young people. HBV preventive behavior which includes sustained sound HBV knowledge, adequate positive HBV attitude and favorable HBV practice to enhance them with good practice skills to prevent them from HBV infection. The present study has shown an evident for its effectiveness on HBV knowledge, attitude and practice among the undergraduate non-medical and non-veterinary university students of Usman Danfodiyo University Sokoto Nigeria. Even though the study has shown a level of sustainability on the outcome measures, there is a need for longer time to considerhaving a better behavior change.

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Figure 1. Study Consort flow chart:

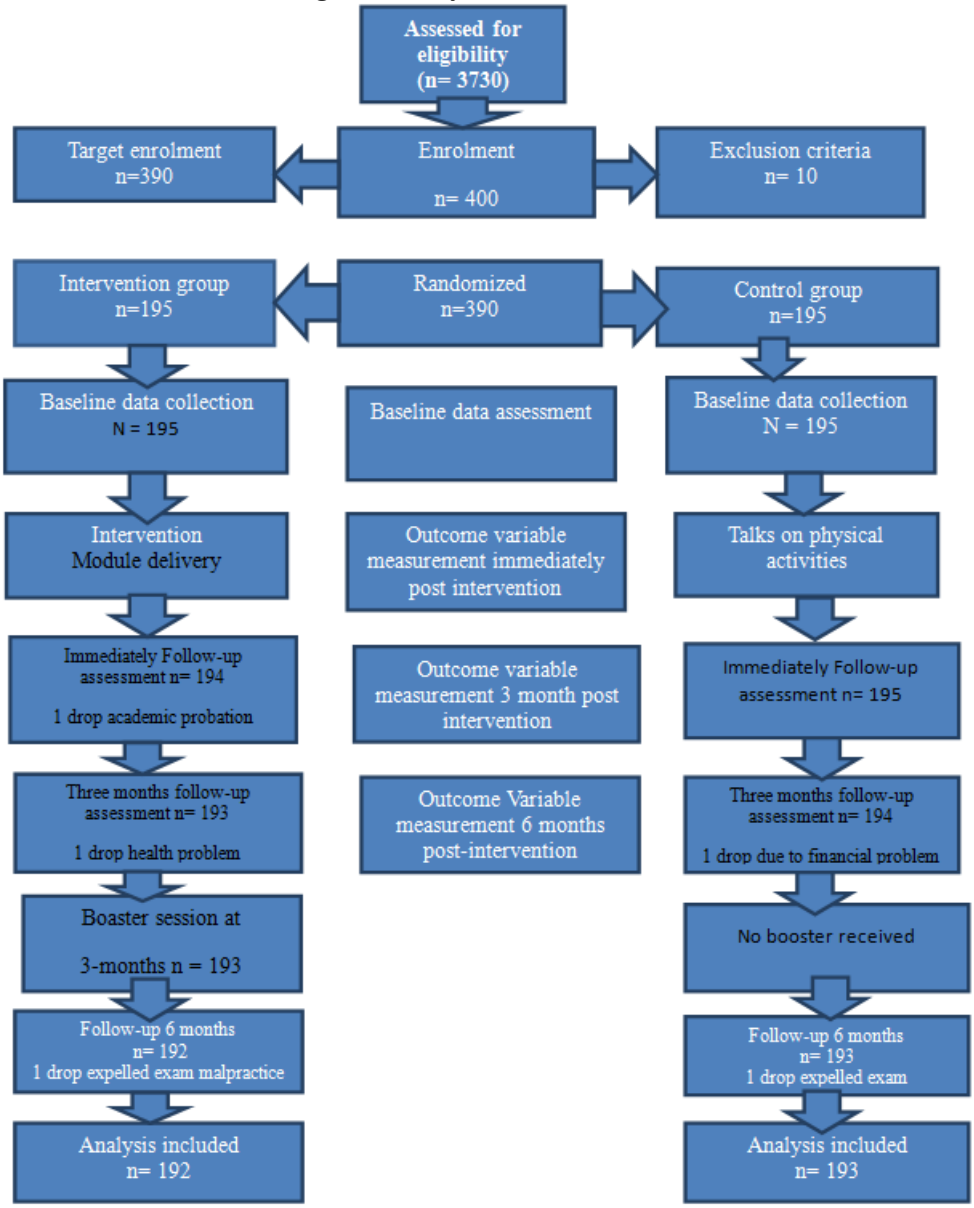

Table 1. Socio-demographic characteristics of respondents on HBV by groups.

Variables	Frequency, n (%)		p-value
	Intervention group	Control group	
Age group (years)			
16-18	51(26.0)	50(25.9)	0.95 3
19-21	59(30.2)	62 (31.6)	
22-24	85(43.8)	83(42.5)	
Ethnicity			
Hausa	97 (49.5)	97 (49.7)	1.000
Yoruba	70(35.9)	70 (35.8)	
Ibo	22(11.5)	22 (11.4)	
Others	6(3.1)	6 (3.1)	

Gender			
Male	127 (65.1)	131 (66.8)	0.719
Female	68 (34.9)	64 (33.2)	
Place of Birth			
Rural	37 (18.8)	44 (22.8)	0.328
Urban	158 (81.3)	151 (77.2)	
Religion			
Islam	151 (77.6)	152(77.7)	0.978
Christian	44 (22.4)	43 (22.3)	
Marital status			
Married	5 (2.6)	3(1.6)	0.470
Non-married	190 (97.4)	192 ((8.4)	
Year in University			
Year three	135 (69.3)	136 (69.9)	0..237
Year two	41 (20.8)	37 (19.2)	
Year one	19 (9.9)	22 (10.89)	

p-value calculated using Chi-square test (X2) for categorized variables, One way ANOVA (*F*) used to calculate thep-value for age as a continuous variable, *significant at $p < 0.05$.

Table 2. Baseline knowledge of HBV transmission and prevention responses for the intervention and the control group

Variable	Intervention group n=195		Control group n=195	
	Yes (%)	No (%)	Yes (%)	No (%)
Does a virus cause hepatitis B?	70 (35.89)	125 (64.11)	58 (29.7)	137 (70.3)
Does hepatitis B primarily affect the liver?	77 (39.48)	118 (60.5)	82 (42.05)	113(57.95)
Can hepatitis B cause cancer?	58 (29.7)	137 (70.3)	70 (35.89)	125(64.11)
Can hepatitis B affect any age group?	79 (40.51)	116(59.49)	77 (39.48)	118 (60.5)
Does contaminated blood transmit hepatitis B?	82 (42.05)	113 (57.95)	77 (39.48)	118 (60.5)
Can unsterilized syringes transmit hepatitis B?	95 (48.71)	100 (51.29)	86 (44.10)	109(55.90)
Can used blades of barbers transmit hepatitis B?	105 (53.84)	90 (46.16)	107 (54.8)	88 (45.2)
Does shared toothbrush transmit hepatitis B?	96 (49.43)	99 (50.57)	95 (48.71)	100(51.29)
Is hepatitis B transmitted by tattooing, ear and nose piercing?	110 (56.41)	85 (43.59)	82 (42.05)	113 (57.95)
Can polluted water or food transmit hepatitis B?	82 (42.05)	113 (57.95)	106 (54.35)	89 (45.65)
Is there an available vaccine for hepatitis B?	107 (54.8)	88 (45.2)	102 (52.30)	93 (47.70)
Does infectious hepatitis have types?	105 (53.84)	90 (46.16)	110 (56.41)	85 (43.59)
Do you know the most dangerous type of hepatitis?	98 (50.25)	97 (49.75)	102 (52.30)	93 (47.70)
Can hepatitis B be transmitted from a mother to her baby during pregnancy?	86 (44.10)	109(55.90)	96 (49.43)	99 (50.57)
Is there a cure for hepatitis B?	82 (42.05)	113(57.95)	86 (44.10)	109(55.90)
Can hepatitis B transmitted through sex?	96 (49.43)	99 (50.57)	95 (48.71)	100(51.29)
Can a person be protected by taking antibiotics for not contracting hepatitis B?	106 (54.35)	89 (45.65)	102(52.30)	93 (47.70)
Is specific diet required for the treatment of Hepatitis B?	102 (52.30)	93 (47.70)	96 (49.43)	99 (50.57)
Can Hepatitis B be self-cured by the body?	110 (56.41)	85 (43.59)	105(53.84)	90 (46.16)

Table 3a. The baseline attitude responses regarding HBV among the intervention group

Statement	Strongly agree (%	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Hepatitis B is an important health problem in Nigeria	0 (0.0)	68 (34.87)	96 (49.23)	27 (13.84)	4 (2.05)
Have you ever thought of going in for hepatitis B screening?	2 (1.03)	52 (26.78)	106 (54.59)	35 (18.00)	0 (0)
Have you thought of being vaccinated against hepatitis B?	0 (0)	56 (28.8)	97 (49.9)	40 (20.5)	2 (1.03
Infection with infectious hepatitis B can affect the ability of the person to visit his or her friends or for traveling?	0 (0)	68 (34.87)	96 (49.24)	27 (14.84)	4 (2.05)
If I know my friend has hepatitis B,I will be afraid of catching the infection, and I will not visit him or her	44 (22.56)	40 (20.5)	78 (40.00)	31 (15.91)	2 (1.03)
If you visit a hepatitis B patient, will you sit close to him or her?	43 (22.05)	80 (41.00)	58 (29.78)	10 (5.12)	4 (2.05)
Will you kiss him or her?	22 (11.28)	44 (22.56)	89 (45.66)	40 (20.5)	0 (0)

Can you use his or her cup of water?	17 (8.71)	49 (25.12)	81 (41.53)	42 (21.53)	6 (3.07)
Should an infected person with hepatitis B be isolated away from the people to prevent their infection?	13 (6.7)	72 (36.92)	70 (35.91)	21 (10.76)	19 (9.7)
Will you ask for screening against hepatitis B of blood before transfusion?	0 (0)	56 (28.73)	98 (50.25)	40 (20.5)	1(0.52)
Will you like to get vaccinated for hepatitis B free of charge?	15 (7.69)	67 (34.35)	96 (49.23)	13 (7.18)	4 (2.05)
If you are found positive for hepatitis B, would you like to have further investigations or treatment?	2 (1.03)	52 (26.67)	106 (54.35)	35 (17.95)	0 (0)
Do you think you can get Hepatitis B?	0 (0)	56 (28.73)	98 (50.25)	40 (20.5)	1 (0.52)
I will be confused when diagnosed with hepatitis B infection.	4 (2.05)	28 (14.35)	96 (49.25)	67 (34.35)	0 (0)
I will consult my Doctor if found hepatitis B positive	2 (1.03)	32 (16.42)	77 (39.49)	40 (20.5)	44 (22.56)
I will report myself to the nearest health facility if suspected with hepatitis B symptoms	4 (2.05)	9 (4.61)	57 (29.69)	82 (42.05)	43 (22.05)
I will report myself to the nearest health facility whenconfirming with hepatitis B infection immediately	0 (0)	41 (21.02)	88 (45.13)	44 (22.56)	22 (11.29)
Do you think diagnosis and treatment of Hepatitis B are expensive?	16 (8.20)	49 (25.13)	81 (41.54)	44 (22.56)	5 (2.57)
I will be worried if am diagnosed with Hepatitis B	13 (6.67)	70 (35.90)	67 (34.36)	23 (11.79)	22 (11.28)

Table 3b. The baseline attitude responses regarding HBV among control group

Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Hepatitis B is an important health problem in Nigeria	0 (0)	56 (28.73)	98(50.2)	40 (20.5)	1 (0.52)
Have you ever thought of going in for hepatitis B screening?	15 (7.69)	67 (34.35)	96 (49.23)	13 (7.18)	4(2.05)
Have you thought of being vaccinated against hepatitis B?	0 (0)	56 (28.8)	97 (49.9)	40 (20.5)	2(1.03
Infection with infectious hepatitis B can affect the ability of the person to visit his or her friends or for traveling?	0(0)	68 (34.87)	96 (49.24)	27 (14.84)	4(2.05)
If I know my friend has hepatitis B,I will be afraid of catching the infection, and I will not visit him or her	0(0)	56 (28.73)	98(50.2)	40 (20.5)	1(0.52)
If you visit a hepatitis B patient, will you sit close to him or her?	15(7.69)	67 (34.35)	96(49.2)	13 (7.18)	4(2.05)
Will you kiss him or her?	2(1.03)	52 (26.67)	10(54.35)	35(17.95)	0(0)
Can you use his or her cup of water?	2(1.03)	32 (16.42)	77(39.49)	40 (20.5)	44(22.56)
Should an infected person with hepatitis B be isolated away from the people to prevent their infection?	0(0)	56 (28.73)	98(50.25)	40 (20.5)	1(0.52)
Will you ask for screening against hepatitis B of blood before transfusion?	4(2.05)	28 (14.35)	96(49.25)	67 (34.35)	0(0)
Will you like to get vaccinated for hepatitis B free of charge?	2(1.03)	32 (16.42)	77(39.49)	40 (20.5)	44(22.56)
If you are found positive for hepatitis B, would you like to have further investigations or treatment?	4(2.05)	9(4.61)	57(29.69)	82 (42.05)	43(22.05)
Do you think you can get Hepatitis B?	0(0)	56 (28.73)	98(50.25)	40 (20.5)	1(0.52)
I will be confused when diagnosed with hepatitis B infection.	4(2.05)	28 (14.35)	96(49.25)	67 (34.35)	0(0)
I will consult my Doctor if found hepatitis B positive	2(1.03)	32 (16.42)	77(39.49)	40 (20.5)	44(22.56)
I will report myself to the nearest health facility if suspected with hepatitis B symptoms	4(2.05)	9(4.61)	57(29.69)	82 (42.05)	43(22.05)
I will report myself to the nearest health facility whenconfirming with hepatitis B infection immediately	2(1.03)	52 (26.78)	106(54.59)	35 (18.00)	0(0)
Do you think diagnosis and treatment of Hepatitis B are expensive?	0(0)	56 (28.8)	97 (49.9)	40 (20.5)	2(1.03
I will be worried if am diagnosed with Hepatitis B	0(0)	68 (34.87)	96(49.24)	27 (14.84)	4(2.05)

Table 4. Baseline HBV practice responses between the intervention group and the control group.

Statement	Intervention group n=195		Control group n=195	
	Yes (%)	No (%)	Yes (%)	No (%)
I have been tested for hepatitis-B	107(54.87)	88(45.13)	110(56.41)	85 (45.59)
I have been vaccinated for hepatitis-B	145(74.35)	50(25.65)	133(68.20)	62(31.80)
Have you asked for medical staff to use new syringes when required for you?	165(84.62)	30(15.48)	157 (80.51)	38 (19.49)
I always avoid using commercial barbers.	30(15.48)	165(84.62)	38(19.48)	157(80.62)

I always used mypersonal blades for shavings and cutting of nails.	110 (56.41)	85 (45.59)	107 (54.87)	88 (45.13)
I always asked for a screening of blood before transfusion.	107 (54.87)	88 (45.13)	133 (68.20)	62(31.80)
I go for further test if diagnosed with hepatitis-B	81(41.53)	114(58.77)	161 (41.3)	229 (58.7)
I always avoid sharing eaten tools with hepatitis-B patients.	133 (68.20)	62(31.80)	145(74.35)	50 (25.65)
I always attend health education program related to hepatitis-B	85 (45.59)	110(56.41)	80(41.02)	115 (58.93)

Table 5. Knowledge (sound or not sound), attitude (positive or negative) and practice (good or poor) among the intervention group and the control group.

Variables	Frequency, n=390 (%)		Test	p-value
	Intervention group	Control group		
Sound knowledge				
No	140(71.9)	126(64.8)	X^2	0.134
Yes	55(28.1)	69(35.2)		
Attitude				
Positive	89(45.8)	91(46.6)		0.875
Negative	106(54.2)	104(53.4)	X^2	
Practice				
Good	95(49.0)	95(48.7)	X^2	0.960
Poor	100(51.0)	100(51.3)		

Chi square test (X^2), Significant at $p < 0.05$.

Table 6. Change in sound knowledge, positive attitude and good practice following intervention between the intervention and the control group

	Frequency n (%)			
Knowledge Sound	**IG (Immediately)**	**CG (Immediately)**	**Change (%)**	**p-value**
Yes	192(98.9)	165(84.6)	14.3	0.001
No	2(1.1)	30(14.5)		
Knowledge Sound	**IG (3-months)**	**CG (3-months)**		
Yes	174(90.15)	45(23.19)	66.95	0.001
No	18(9.85)	149(76.81)		
Knowledge Sound	**IG (6-months)**	**CG (6-months)**		
Yes	192(100)	72(37.3)	62.7	0.001
No	0(0)	121(62.7)		
Attitude	**IG (Immediately)**	**CG (Immediately)**		
Positive attitude	182(93.81)	137(70.25)	23.56	0.001
Negative attitude	12(6.19)	58(29.75)		
Attitude	**IG (3-months)**	**CG(3-months)**		
Positive attitude	178(92.22)	100(51.54)	40.68	0.001
Negative attitude	15(7.78)	94(48.46)		
Attitude	**IC(6-months)**	**CG(6-months)**		
Positive attitude	192(100)	104(53.88)	46.12	0.001
Negative attitude	0(0)	89(46.12)		
Practice	**IG (Immediately)**	**CG (Immediately)**		
Good practice	190(97.93)	140(71.79)	26.14	0.001
Poor practice	4(2.7)	55(28.21)		
Practice	**IG (3-months)**	**CG (3-months)**		
Good practice	165(85.49)	95(48.96)	36.53	0.001
Poor practice	27(14.51)	99(51.4)		
Practice	**IG (6-months)**	**CG (6-months)**		
Good practice	192(100)	170(88.1)	11.9	0.001
Poor practice	0(0)	23(11.9)		

p-value was calculated using One-Way ANOVA Test *significant at <0.05 IG=Intervention group, CG=Control group.

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