Awareness Level of Hepatitis B and C among Undergraduate Students of Abubakar Tafawa Balewa University (Atbu), Bauchi

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Abstract: Liver is one of the integral organs in human body. Hepatitis B and C are ranked high amongst killer diseases in the world and Nigeria is said to have large number of people unknowingly living with these viruses. One of the outstanding factors is the poor knowledge of hepatitis B and C amongst the general population including students. This study aimed at assessing knowledge of undergraduate students of ATBU, Bauchi regarding viral hepatitis B and C. This was a questionnaire-based study conducted among students in ATBU, Bauchi using pre-tested self-administered questionnaire. A total of 387 students were enlisted in the study. The tools used for data analysis were frequency distribution, Chi-square tests and odd ratio. Statistical package for social science (SPSS) version 25, R and Microsoft excel 2016 were used for data analysis. A p-value of less than 0.05 was considered statistically significant. It was observed that 86.8% ATBU students have good knowledge of viral Hepatitis B and C sadly, 51 students representing 13.2% have never heard about viral hepatitis. It was also discovered that their knowledge about hepatitis B and C do not depend on the demographic variables, considered in the study. 54.5% students did not know their hepatitis B and C status. 69.8% students have inadequate knowledge about the modes of spreads of viral hepatitis B and C. Findings from this study revealed that ATBU students demonstrated high level of awareness of HBV and HCV infections. Thus, 54.5% participants did not know their status. Students who are well informed about hepatitis B and C were 2 times more likely to know their hepatitis B and C status compared to those with poor or no knowledge. And that, majority of ATBU students have inadequate knowledge about modes of spread of the viruses hence, an urgent need for action.

Key Words: Awareness, Knowledge, Hepatitis B virus, Hepatitis C Virus, ATBU

I. INTRODUCTION

Generally speaking, Hepatitis is characterized by the inflammation of the liver. A group of viruses called the hepatitis viruses (A, B, C, D and E). Out of these viruses, hepatitis B virus (HBV) and hepatitis C virus (HCV) are major causes of acute and chronic liver disease which are termed as serious Public health problem and are accounted for major cause of morbidity and mortality worldwide [1]. It has been estimated that 2 billion people are infected with HBV including those with chronic conditions and about 200 million people are infected with HCV worldwide [2,3]. The burden of chronic HBV and HCV remains disproportionately high in low- and middle-income countries (LMICs), particularly in Asia and Africa with Nigeria inclusive [1]. Nigeria is one of the countries with the highest burden of viral hepatitis with a prevalence of 8.1% of Hepatitis B and 1.2% of Hepatitis C, implying that over 20 million persons are living with chronic hepatitis B and C respectively [4,5]. Nigeria is one of the countries that need a push to support and accelerate efforts towards elimination of viral hepatitis. In Nigeria, Knowledge of viral hepatitis remains limited amongst the general public although it is a leading infectious cause of death and claims the lives of many Nigerians each year [6]. As a consequence, most of Nigerians estimated to be living with viral hepatitis do not know that they are infected, placing them at greater risk for severe, even fatal, complications from the disease and increasing the likelihood that they will spread the virus to others. Hepatitis B virus is majorly transmitted through infected blood or other body fluids such as mother- to- child transmission, sexual transmission, unsafe injections, and blood transfusions[7]. On the other hand, HCV is commonly transmitted through unsafe injection practices, inadequate sterilization of medical equipment, and unscreened blood and blood products[8]. [2] pointed out the need to examine other modes of spread of the viruses in order to draw public attention and improve global health.

Nowadays, not only the most popular type of ear piercing and nose piercing, lip, tongue, nipple, and genital piercings are all getting popular throughout the world and across all-ages [9-12]. However, the potential health risk of this beauty behavior has been gradually noticed by the public but far more than enough. When piercing, instruments can be contaminated by infected blood or body fluids from other subjects and hence, if these instruments are not properly sterilized, another source of transmission for HBV and HCV can be created. There are studies supporting the hypothesis with the conclusion body piercing can be an independent risk factor for transmitting hepatitis B and C virus [13,14]. Some studies, however, argue that the correlation between body piercing and HBV and HCV

are not significant, [15,16] some even obtain an outcome indicating body piercing is a protective factor [17].

Earlier studies have reported conflictions regarding knowledge on the modes of spread of HBV and HCV among students. For example, [18] reported relevant knowledge on the modes of spread of viral hepatitis among undergraduate students in Pakistan where majority of the students correctly mentioned contaminated needles/syringes, blood transfusion, used blades, tattooing and ear/nose piercing. In Nigeria, [19] elucidated the need to consider tattooing and piecing as risk factors among students. The findings in Karachi Pakistan by [3] showed that most students (57.2%, 62.6% and 57.4%) did not recognize (reuse of syringes, blood transfusions, and sexual contact) as possible modes of spread of HBV .Similarly, Most students (61.8%, 71.4%, 55.6% and 55.2%) did not also recognize (reuse of syringes, use of intravenous drugs of addiction, sexual contact and blood transfusions) as possible modes of transmission of HCV. The survey further concluded that there was a prominent lack of awareness regarding the risk factors for HBV and HCV infection among the student community of nonmedical universities in Karachi and hence, suggested an immediate need to conduct nationwide awareness programs of HBV and HCV transmission.

In the light of the above, this study aimed at investigating the level of knowledge exhibited by undergraduate students of Abubakar Tafawa Balewa University (ATBU), Bauchi-Nigeria towards Hepatitis B and C.

II. METHODOLOGY

Research Design

A questionnaire-based study was conducted amongst undergraduate students of Abubakar Tafawa Balewa University, Bauchi. Random selection of respondents across all the seven (7) faculties of the institution was based on stratified random sampling. Prior permission was dully obtained from head of Department, Mathematical sciences. Confidentiality of identity of students were insured and a verbal consent was obtained prior to filling the questionnaire. The questionnaires were pretested for validity and reliability. The tools used for data analysis were frequency distribution (for descriptive statistics), crosstabulations/chi-sqaure tests and odd ratio to explore associations between variables. Statistical package for social science (SPSS) version 25, R (version 3.1.2) and Microsoft excel (2016) were used for data analysis. A p-value of less than 0.05 was considered statistically significant.

Population of the Study

The study included undergraduate students of Abubakar Tafawa Balewa University, Bauchi with an estimated population of over 12,229.

Sample Size Determination

A sample size of 370 students was estimated using Krejcie and Morgan [20] table of sample size determination. However, for error responses, the researcher added 17 to the sample size hence, 387 is been considered as a sample size for this study.

III. DATA ANALYSIS

The Chi-Square statistic is most commonly used to evaluate Tests of Independence when using a cross tabulation (also known as a bivariate table). Cross tabulation presents the distributions of two categorical variables simultaneously, with the intersections of the categories of the variables. The Test of Independence assesses whether an association exists between the two variables by comparing the observed pattern of responses in the cells to the pattern that would be expected if the variables were truly independent of each other.

Chi-Square statistic is given by:

$$X^2 = \sum_{i=1}^{n}\left[\frac{(f_o - f_e)^2}{f_e}\right]$$

Where f_o = the observed frequency

f_e = the expected frequency

The expected frequency for a cell is given by $= \frac{(\text{ROW TOTAL})(\text{COLUMN TOTAL})}{\text{GRAND TOTAL}}$

Table 1. Demographic Variables

Variables	Categories	No. Of Participants	Percentage(%)
Gender	Male	290	74.9%
	Female	97	25.1%
Age Categories	15-19	58	15.0%
	20-24	195	50.4%
	25-29	105	27.1%
	30-34	26	6.7%
	35+	3	0.8%
Marital Status	Married	44	11.4%
	Single	343	88.6%
Level	100L	125	32.3%
	200L	60	15.5%
	300L	109	28.2%
	500L	93	24.0%
Faculty	Science	93	24.0%
	Engineering	66	17.1%
	Environmental	83	21.4%
	Agriculture	21	5.4%
	Education	63	16.3%
	Management	59	15.2%
	Medical Science	2	0.5%

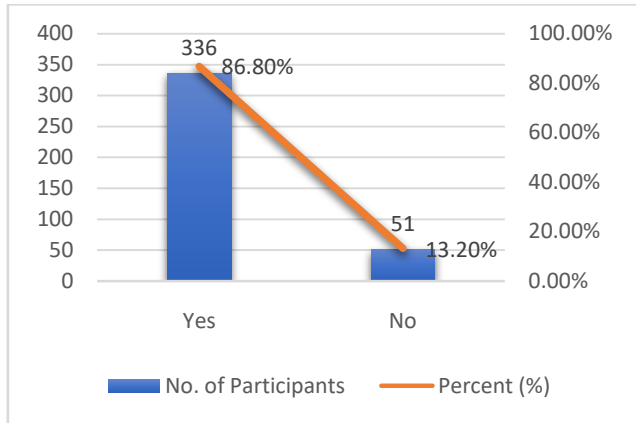Fig. 1. Level of Hepattis B and C awareness among ATBU Students

Fig. 2 Line graph showing Hepatitis B and C Status among ATBU Students
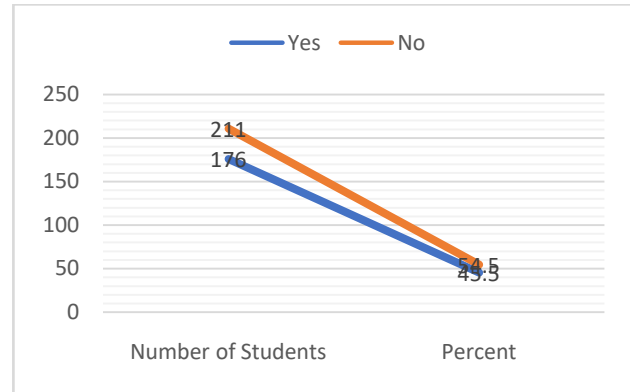

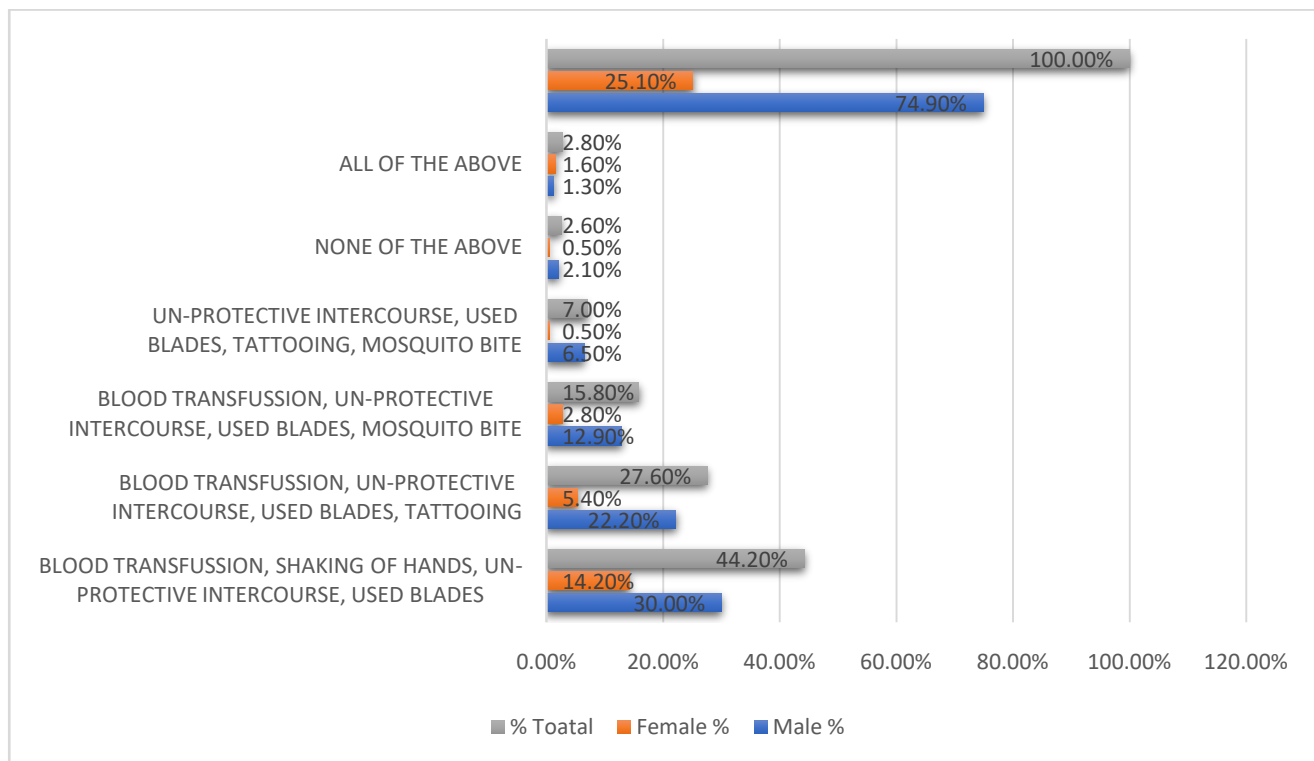Figure 3. Knowledge about Modes of Spread of viral hepatitis B and C among students (%)

Table 2. Hepatitis B and C Status of Partcicipants

| Characterstics | | HEPATITIS B AND C STATUS | | | | | |
		YES	NO	TOTAL	χ^2	ODD RATIO	P-VALUE
Gender	Male	127(32.8)	163(42.1)	290	1.07	0.76	0.30
	Female	49(12.7)	48(12.4)	97			
Age (Years)	15-19	31(8.0)	27(7)	58	5.01		0.29
	20-24	86(22.2)	109(28.2)	195			
	25-29	42(10.9)	63(16.3)	105			
	30-34	15(3.9)	11(2.8)	26			
	35+	2(0.5)	1(0.3)	3			

Marital Status	Married	18(4.7)	26(6.7)	44	0.236	0.811	0.63
	Single	158(40.8)	185(47.8)	343			
Level	100L	58(15)	67(17.3)	125	0.857		0.836
	200L	30(7.8)	30(7.8)	60			
	300L	48(12.4)	61(15.8)	109			
	500L	40(10.3)	53(13.7)	93			
Faculty	Science	42(10.9)	51(13.2)	93	7.742		0.258
	Engineering	35(9)	31(8)	66			
	Environmental	41(10.6)	42(10.9)	83			
	Agriculture	5(1.3)	16(4.1)	21			
	Education	30(7.8)	33(8.5)	63			
	Management	22(5.7)	37(9.6)	59			
	Medical Science	1(0.3)	1(0.3)	2			
KNOWLEDGE ABOUT HEPATITIS B AND C	YES	162(41.9)	174(45)	336	6.884	2.455	0.0087
	NO	14(3.6)	37(9.6)				

IV. RESULTS DESCRIPTION

A total of 387 ATBU students participated in the study out of which, 290(74.9%) were male while 97(25.1%) were female. 15% of the students were in the age range of 15-19 years, 50.4% were between age 20-24 years, 27.1% were between age 25-29 years, 6.7% were between the ages of 30-34 while the remaining 0.8% were 35 years and above as shown in Table 1. Also, 88.6% were single while 11.4% were married. 125 students were sampled from 100 Level, 60 from 200Level, 109 from 300Level, 400Level students were not captured as a result of one-year mandatory Students Industrial Work Experience Scheme (SIWES) while a total of 93 students representing 24% were 500 Level students respectively. Table 1 also shows the distribution of students based on faculties: 93(24%) were sampled from faculty of science, 66(17.1%) from Engineering, 83(21.4%) from Environmental, 21(5.4%) from Agriculture, 63(16.3%) from Education, 59(15.2%) from management and 2(0.5%) from Medical sciences. Results of Hepatitis B and C awareness among students from figure 1. shows that 336(86.80%) ATBU students were fully aware of the existence of viral hepatitis B and C. Sadly, 51 students representing 13.20% were not aware of the fact that viral hepatitis B and C exist. Figure 2 also shows that despite the high level of awareness displayed about viral hepatitis B and C among ATBU students, 211(54.5%) still did not know their hepatitis B and C status, only 176(45.5%) knew their status as at the time of the survey. Figure 3 describes the percentages of students with knowledge on modes of spread of viral hepatitis B and C. Out of the 387 participants 69.80% were found to have inadequate knowledge of the mode of spread of the disease in which 50.70% were male while 19.1% were female. Some of these group mixed up the modes of spread while others asserted that all the enumerated options were correct. The percentage of students who mixed up both correct and wrong information about modes of spread of viral hepatitis B and C were 30% recorded among males and 14.20% recorded among females making a total percentage of 44.20%. All the 44.20% students believed that viral hepatitis B and C are spread through blood transfusion, shaking of hands, un-protected sexual intercourse and used blades (Figure 3). 15.8% of the participants also mixed up both correct and wrong information about modes of spread of viral hepatitis B and C. these set of participants correctly mentioned blood transfusion, un-protected sexual intercourse and used blades but incorrectly mixed them up with mosquito bites. In addition, 2.80% students believe that all the options provided such as hand shake, mosquito bites, un-protected sexual intercourse and tattooing were all correct (Figure 3). Only 27.60% students (22.2% males and 5.40 females) sampled had adequate knowledge that viral hepatitis B and C are spread through blood transfusion, un-protected sexual intercourse, used blades and tattooing (Figure 3). Sadly, 2.60% of both males and females (2.1%,0.50%) participants did not have knowledge on the modes of spread of viral hepatitis B and C (Figure 3). Table 2 shows the test of association between hepatitis B and C status and the demographic variables (Age, gender, level, faculties, marital status). It follows that all variables under consideration were not statistically significant as all the p-values were observed to be greater than 0.05. These imply that the ability of students to know their viral hepatitis B and C status does not depend on the demographic variables. Table 2 also shows the crosstabulation of students knowledge about viral hepatitis B and C in relation to knowing their viral hepatitis B and C status. The result was said to be statistically significant. This clearly showed association between the two dichotomous variables compared. Result from odd ratio disclosed that students who had adequate information (Knowledge) about viral hepatitis B and C are 2 times more likely to know their hepatitis B and C status than those who do not at all.

V. DISCUSSIONS

In this study, the knowledge regarding awareness of HBV and HCV infections and their modes of spread were sought. Responses of participants towards the knowledge of their hepatitis B and C statuses were described accordingly. The study also incorporated test of association between variables. This study revealed that majority of the students 86.8% were aware of viral hepatitis B and C infections. The major reasons could be attributed to the roles played by media, religious institutions and of course the institution itself. This agrees with the study carried out in Malaysia [21] and the one in Bulgaria by [22] and [23].

Awareness regarding knowledge on hepatitis B and C status remain the main preventive measure against HBV and HCV infections. In other for students to know their hepatitis B and C status, testing and diagnosis of the infections remain the ultimate way for access to both prevention and treatment services and is an essential component of an effective response to the hepatitis epidemic. Testing provides an opportunity to link people to interventions to reduce spread, through counselling on risk behaviours thus the WHO recommended that all adults should have routine access to and be offered HBV and HCV testing. This is a matter of concern since the prerequisite for HBV vaccination is knowing your status. In addition, screenings for HBV and HCV are mainly prescribed at hospitals for patients suspected to be reactive to Hepatitis B and blood donors [24]. In this study, low HBV and HCV status rate of 45.5% was observed, despite the high level of awareness on the infections. These could be attributed to the low testing rate and lack of making free screening for the infections in schools. These results are inconsistent with what was found among Saudi Arabia medical students [25] and among the USA population [26] but higher than what was reported among hospital workers in Nigeria [27]. In Syria, only 16% of medical students knew their HBV and HCV status [27].

Having unprotected sex has been known to be the commonest route of transmission of HBV and HCV among adult population [1]. In this study, majority of the respondents (69.80%) were found to have inadequate knowledge on the modes of spread of the disease. 44.20% students believed that viral hepatitis B and C are spread through blood transfusion, shaking of hands, un-protected sexual intercourse and used blades (Figure 3). 15.8% of the participants also mixed up both correct and wrong information about modes of spread of viral hepatitis B and C to include blood transfusion, un-protected sexual intercourse and used blades, mosquito bites. In addition, 2.80% students believe that hand shake, mosquito bites, un-protected sexual intercourse and tattooing were all correct modes of spread of the viruses. This clearly indicates that there exist knowledge gap regarding the mode of spread of viral hepatitis B and C infections. This study agrees with that of [3], who conducted a study among students in Pakistan where most students did not recognize reuse syringes, blood transfusion and unprotective sexual intercourse (57.2%,

62.6% and 57.4%) as modes of spread of viral hepatitis B and C. It also agrees with the study carried out among medical students in Nigeria by [28]. The current study however, disagrees with that of [18] who reported adequate knowledge in two groups (89.3% and 82.1%). Previous African studies also found inadequate knowledge of HBV and HCV among students. for example 21% and 23% were reported by [29] and [30] in Ethiopia and Ghana respectively.

This is certainly worrisome and can pose a serious hazard among students with their interactions with infected individuals knowingly or unknowingly. Their unawareness regarding the modes of spread of these infections may undoubtedly expose them to the infection and this could partly explain the reason why WHO still pronounced HBV and HCV endemic in countries like Nigeria.

It has been established that readiness to seek medical care could be potentiated by factors, particularly cues to instigate action such as awareness of disease presentation [31]. [32] reported that Tuberculosis patients without previous knowledge regarding the signs and symptoms of the disease were 5 times more likely to delay seeking medical diagnosis.

Knowledge and level of study, Age, gender, faculty and marital status were identified in this study as predictors for HBV and HCV status. Students with appreciable level of knowledge about the infections were 2 times more likely to know their hepatitis B and C status than those with poor knowledge. This could be attributed to the fact that students with good knowledge about Hepatitis B and Hepatitis C infections may be much informed on the health threats of the disease and the necessity to get tested to determine their status. The result is in agreement with that of [30] who stated that students with adequate knowledge about hepatitis B and C are 4 times more likely to know their viral hepatitis status.

This study reported no statistical association between demographic variables and hepatitis B and C status of students. The study agrees with the one carried out among dentists students in Brazil which observed that age group and marital status do not have a significant association with Hepatitis status [33].

However, the result contradicts with the study carried out among adolescents and young adults in Brazil and Putra which reported a significant association between age and hepatitis status [34] and [21].

VI. CONCLUSION

The findings of this study reports that participants demonstrated good knowledge of awareness of the viruses. On the other hand, 54.5% participants do not know their viral hepatitis B and C Status. All the demographic variables (Sex, Marital status, level, faculty and age) were not significantly associated with hepatitis B and C status. The study also concluded that Students with good level of awareness about hepatitis B and C were 2 times more likely to know their hepatitis B and C status than those with poor knowledge.

ATBU, Bauchi should therefore, provide free hepatitis B and C testing centers to students. This may with no doubt exponentially increase student's ability to know their hepatitis B and C status and take necessary actions.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest regarding the publication of this paper.

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