

Coverage, Knowledge, Attitudes and Practices of Medical Student towards Hepatitis B Vaccine at University of Kordofan, Sudan

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Abstract— Background: Hepatitis B virus (HBV) is the most contagious blood borne pathogen and causes significant morbidity and mortality worldwide. The risk of occupational exposure to HBV among medical students is a major concern, especially medical trainees, many authorities recommend vaccination. However, significant number of them doesn't receive HBV immunization, and remains at an increased risk to the infection. **Objective:** The aim of this study to determine the Coverage, Knowledge, Attitudes and Practices of medical student towards Hepatitis B vaccine at University of Kordofan, Sudan. **Methods:** Facility based cross sectional study was done. The study was comprised of 325 students selected from 4 departments in faculty of medicine and health sciences. The sample was divided over the departments following a process of stratified sampling combined with systematic sampling and simple random sample with probability proportional to size to distribute the sample over the selected class where selection was at random in each stage. A structured pre coded and close-ended questionnaire was used to collect data from study groups. The data was analyzed by (SPSS) software, version 16 for windows. Chi-square was used to verify possible association between different factors. Values were considered to be statistically significant when the p-value obtained was less than 0.05. Also Microsoft Excel 2007 software was used to convert data from tables to figures. **Results:** the study show that among study group 325 students 302 (92.9%) have knowledge about HBV and 23 (7.1%) don't know. About 270(83.1%) have knowledge about HB vaccine and 55(4.4%) don't know. only about 82(25.2%) of students are vaccinated and 234(74.8%) are not vaccinated. The main reasons for non vaccination are lack of vaccine (25.9%), costly (19.8%), not aware about importance of HB vaccine(14.4%). **Conclusion:** This study conclude that the knowledge about HB vaccine is good. In spite of this good knowledge, there is alarming vaccination rate.

Keywords— Coverage, Hepatitis B, vaccine, medical student, University of Kordofan.

I. INTRODUCTION

Viral hepatitis is a major public health problem affecting several hundred million people worldwide. It causes considerable morbidity and mortality from both acute infection and chronic sequelae including chronic hepatitis, cirrhosis, and hepatocellular carcinoma (HCC). The hepatitis B virus (HBV) was discovered in 1966 and it infected over 350 million people worldwide⁽¹⁾

Diseases caused by the hepatitis B virus (HBV) have a worldwide distribution. It is estimated that >2 billion people worldwide have been infected with HBV. Of these, approximately 360 million individuals are chronically infected and at risk of serious illness and death, mainly from liver cirrhosis and hepatocellular carcinoma (HCC). Mathematical modeling for the year 2000 estimated the number of deaths from HBV-related diseases at about 600 0000 each year worldwide⁽²⁾

Hepatitis virus infections are the most common cause of liver disease Worldwide. Sudan is classified among the countries with high hepatitis B virus seroprevalence. Exposure to the virus varied from 47%–78%, with a hepatitis B surface antigen prevalence ranging from 6.8% in central Sudan to 26% in southern Sudan. Studies pointed to infection in early childhood in southern Sudan while there was a trend of increasing infection rate with increasing age in northern Sudan. Hepatitis B virus was the commonest cause of chronic liver disease and hepatocellular carcinoma and was the second commonest cause of acute liver failure in the Sudan⁽³⁾

HBV is a hardy virus and can withstand extreme of temperature and humidity. Needle stick injury is common and can transmit the virus; this indicates that only very small amount of blood necessary. Transmission rate is as high as 30% in those who are not immune but rare in those who have been immunized.

Medical student, particularly, medicine, dentist, nursing and laboratory fields are at a higher risk of contracting HBV infection not only via minor skin cuts and accidental needle punctures but also via un protected sex. Since obligatory vaccination program for medical and paramedical students at university of kordofan can prevent HBV infection ongoing vaccination program have been successful in many countries in decreasing the prevalence of HBV disease.

The present study was carried out to observe the knowledge, attitude, and practice of medical student towards hepatitis B vaccination and find out if they know the importance of hepatitis B vaccine and if they not vaccinated to elicit the reason for in vaccination.

II. MATERIALS AND METHODS

Study design: Descriptive cross sectional study was done to study the knowledge of student about hepatitis B and HB vaccine and their attitude toward HB vaccine.

Study Area:

Faculty of Medicine and Health Sciences at University of Kordofan which situated at El-Obeid is the capital of North Kordofan State, founded in 1991 involve of five parts medicine, medical laboratory, nursing, dental medicine and public health.

The student of the faculty of medicine and health science estimated by 2093 person. There are 1040 medicine, 450 medical laboratory, 431 nursing, 172 dental medicine and 305 public health.

Study Population:

Students at University of Kordofan Faculty of Medicine and Health Sciences.

Study Variables:

Class, age, sex, department, knowledge about HB disease and vaccine, vaccination status, number of dose taken ,and reasons of non vaccinated.

Inclusion Criteria:

Student at University of Kordofan those study in Faculty of Medicine and Health Sciences.

Exclusion Criteria:

Public health department and other Faculties at University of Kordofan.

Sample size:

The sample size was determined using computerized statistical package from open Epi . using the following equation:

$$n = [DEFF * Np(1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p*(1-p)]$$

(Annex 1)

Accordingly a sample of 325 students was obtained.

Sampling Technique:

Faculty of medicine and health care was divided into four quarters (Clusters). The different types of departments (medicine, medical lablatory, nursing and dentist) were considered as strata where (boys and girls) was selected from each quarter of faculty of medicine and health care following a process of simple random sample using the table of random numbers, so the total number of departments selected was 4 departments.

The sample was divided over the departments following a process of stratified sampling combined with systematic sampling with probability proportional to size to distribute the sample over the selected department where selection was at random in each stage.

After determination of sample size required from each department sample size was distributed over classes following a process of stratified sampling and within the class we used systematic and simple random sampling as shown below:

Data Collection Methods and Tools:

In this study a structured pre coded and close-ended questionnaire was used to collect data on demographic information, knowledge, attitude, practices, and behavior regarding HB and HB vaccine.

Data Processing & Analysis:

After taking samples and filling the questionnaires and cleaning, data was analyzed using Statistical Package for Social Sciences (SPSS) version (16). Frequency distribution was used to show the distribution of hepatitis B vaccine among study group in relation to characteristics of age, sex ,class and department . Chi-square was used to verify possible association between different factors. Values were considered to be statistically significant when the p-value obtained was less than 0.05. Also Microsoft Excel 2007 software was used to convert data from tables to figures.

Pre testing:

Pre-test was done to insure the understandability and acceptability of the questionnaire by the respondents.

Ethical Consideration:

Ethical permission for the study was obtained prior to collect data, by contacting and receiving approval from students at university of kordofan faculty of medicine.

Participants were assured of the confidentiality of their responses and provided informed verbal consent

Implication Of The Study Result On Health:

Assisted of ministry of health to conduct evidence based intervention .

III. THE RESULT

The total number of students included in this study is 325, from which 37.8% are male and 62.2% are female. The study group was selected from six level (classes) in the faculty, the high number was selected from class one 85(26.2%). In this study 49.5% of students selected from medicine, while 21.5% from medical laboratory, 20.6% from nursing and 8.3% dentist. (Table 1).

TABLE 1. basic information about study group:

Sex	Frequency	(%)
Male	123	37.8%
Female	202	62.2%
Classes		
Class 1	85	26.2%
Class 2	83	25.5%
Class 3	51	15.7%
Class 4	75	23.1%
Class 5	14	4.3%
Class 6	19	5.2%
Department		
Medicine	161	49.5%
Medical Laboratory	70	21.5%
Nursing	67	20.6%
Dentistry	27	8.3%
Age		
17-20	206	63.4%
21-25	113	34.8%
26-30	6	1.8%

The current study revealed that 92.9% of students have knowledge about hepatitis B, while 7.1% have not. Also 76% of them know the correct method of transmission of hepatitis B. regarding the knowledge of study group towards hepatitis B vaccine about 83.1% them have knowledge about the vaccine. (Table 2).

TABLE 2. Knowledge of study group towards hepatitis B and its vaccine.

Knowledge :	Frequency	(%)
About HBV		
Know	302	92.9%
Don't Know	23	7.1%
About Mode of transmission		
Mosquito	11	3.4%
Contaminated food	41	12.6%
Contaminated body fluid	247	76%
Others	4	1.2%
Don't Know	22	6.8%
About HB vaccine		
Know	270	83.1%
Don't Know	55	4.4%

Table 3 showed that high percent (74.8%) of study group were not vaccinated against hepatitis B, and only 7.7 % of those vaccinated were take three doses of vaccine.

TABLE 3: Vaccination status and doses taken by student.

Vaccination status	Frequency	%
Vaccinated	82	25.2%
Non Vaccinated	243	74.8%
Number of dose taken by student		
One	43	13.2%
Two	14	4.3%
Three	25	7.7%
Reasons of non-vaccination of student		
Unimportant	10	3.1%
Lack of vaccine	63	25.9%
Not at risk to disease	12	4.9%
Not aware about importance	35	14.4%
Costly	48	19.8%
Others	22	9.1%
Don't hear about vaccine	52	21.3%

TABLE 4. Shows the association between sex of students and Number of dose taken by students in university of kordofan-faculty of medicine and health sciences:

Number of dose taken by student	Sex of student		Total
	male	female	
one	8	35	43
two	5	9	14
three	10	15	25
not vaccinated	100	143	243
Total	123	202	325

The study revealed that female more compliance to vaccination than male ($X^2 = 7.973^a$, $df = 3$, $PV = 0.047$)

The study found that there is a relationship between, HBV vaccination coverage and department of students in which reflect that vaccination coverage was being higher among medical students (12.9%) vs 7.7% among nursing and 3.7% among medical laboratory and 9% among dentist students ($X^2 = 10.528a$, $df = 3$, $PV = 0.015$)

TABLE 5. Shows the association between vaccination status and department of student in university of kordofan-faculty of medicine and health science - El-Obied 2018

Department of student	Vaccination status		Total
	vaccinated	Non vaccinated	
medicine	42	119	161
Medical laboratory	12	58	70
nursing	25	42	67
dentistry	3	24	27
Total	82	243	325

IV. DISCUSSION

This is the first, cross-sectional, multi-centered study in faculty of medicine and health sciences, University of Kordofan, El-Obied, Sudan investigating HBV vaccination coverage, attitudes of students towards HBV vaccine, and reasons associated with not being vaccinated. Consequently, it would be possible to determine the next step in regards to the need for vaccination.

Sudan has established the universal vaccination program against HBV for infants since 2005. The students who participated in this study were born before introduction of vaccine. Therefore, all the students should have received the vaccine.

This study show that about 92.2 % of student have knowledge about HB , this finding consider high as compared with 53.5% have knowledge about HB in similar study conducted in saudia Arabia.(15) While about, 83.3% of interns showed a good level of knowledge regarding hepatitis B infection in other similar study. (17)

The present study revealed that about 76% have good knowledge about mode of transmission of HB and this finding is considered low as compared with 90% of study group have knowledge about mode of transmission in similar study in India .(18)

The knowledge of student about causative agent is about 84%,this finding is considered low as compared with 98.5% of study group have knowledge about mode of transmission in similar study in Nigeria.(20)

This study revealed that about 83.1% have good knowledge about HBV, this considered very high in compare with only 14% have good knowledge of HBV in similar study conducted in Iraq.(23) While this finding in consistence with similar study in Nigeria which found that about 88.4% have a good knowledge about HBV.(20)

Regarding vaccination status only 25.2% from students are had received at least one dose and this considered very low compared with 87% of the respondents espoused vaccination as a measure for the prevention of hepatitis B vaccine in similar study conducted in India .(18)

this study show that only about 7.7% of student have receive three dose of the HB vaccine and this considered very low compared with 67% of student had received full vaccination course of 3vaccines against Hepatitis B in similar study in India.(20) While this finding in consistence with similar study in India which found that only 8.7% students had already completed three doses.(19)

The main cause for non vaccination is that about 25.9% lack of hepatitis B vaccine

The study found that there is a relationship between, HBV vaccination coverage and department of students in which reflect that vaccination coverage was being higher among medical students (12.9%) vs 7.7% among nursing and 3.7% among medical laboratory and 9% among dentist students ($p < 0.01$). the same relationship was found in similar study which revealed that vaccination coverage of students was being higher among medical students (88.1%, vs. 81.4% among nursing and 80.1% among paramedical students; ($p < 0.001$).⁽¹³⁾

The study found that there is a relationship between, number of doses of HBV vaccine taken by students and their sex in which reflect that full vaccination was higher among female medical students (4.6%) compared with male 3.1% ($p < 0.04$). this relationship was in contrast with similar study which revealed that male was fully vaccinated than female ; ($p < 0.001$).⁽²²⁾

V. CONCLUSION

This study revealed that the Knowledge about HBV among medical and paramedical students at university of kordofan is relatively high. The knowledge about HB vaccine is also good. In spite of this high knowledge, there is alarming vaccination rate. The reasons of non vaccination are lack of vaccine, costly, lack of knowledge about HB vaccine importance.

Annex (1)

Sample Size for Frequency in a Population

Population size(for finite population correction factor or fpc)(N):	2094
Hypothesized % frequency of outcome factor in the population (p):	50% +/- 5
Confidence limits as % of 100(absolute +/- %)(d):	5%
Design effect (for cluster surveys-DEFF):	1

Sample Size(n) for Various Confidence Levels

Confidence	Level (%)	Sample Size
95%		325
80%		153
90%		240
97%		385
99%		505
99.9%		714
99.99%		879

Equation

$$\text{Sample size } n = \frac{[DEFF * Np(1-p)]}{[(d^2/Z^2)_{1-\alpha/2} * (N-1) + p * (1-p)]}$$

Results from OpenEpi, Version 3, open source calculator—SSPropor

Print from the browser with ctrl-P or select text to copy and paste to other programs.

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