

Volume 4, No. 1  
April, 2021

e-ISSN : 2685-1997  
p-ISSN : 2685-9068

# REAL in Nursing Journal (RNJ)

*Research of Education and Art Link in Nursing Journal*

<https://ojs.fdk.ac.id/index.php/Nursing/index>

## ***Effectiveness of Educational Programme on Knowledge Regarding Hepatitis-B Prevention Among African Undergraduate Students of Health Sciences***

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## ABSTRACT

**Background:** Hepatitis B is an inflammatory disease of the liver which is caused by Hepatitis B Virus. It is a global problem, with 66% of all the population living in areas where there are high levels of infections. Hepatitis B infection may be due to lapses in the sterilization of instruments as well as improper waste management. Knowledge regarding Hepatitis B and safety precautions is needed to minimize the health care setting's acquired infections among health personnel and students of health Science. The objectives of the study are: (a) To assess the knowledge regarding Hepatitis B prevention among African Students of Health Sciences (b) To evaluate the effectiveness of the structured teaching program regarding knowledge on prevention of hepatitis B among the students. **Methods:** A Quasi-experimental design was adopted and a sample of 50 African students were selected by non-probability purposive sampling technique. Data was collected by administering structured questionnaire before and after the implementation of structured teaching program. Data were analyzed using descriptive and inferential statistics and represented in tables and graphs. **Results:** In the present study 66% of respondents had inadequate knowledge regarding Hepatitis B prevention before the implementation of structured teaching Program. But after the implementation of structured teaching program, 14% had moderate score and remaining 86% had adequate knowledge. The findings of the study revealed that the mean Post-test knowledge score (26.06) of the students exposed to structured teaching program was higher than the mean Pretest knowledge score (15.74) which was tested to be significant at P- value of 0.001 levels, which indicates the structured teaching program was effective. **Conclusion:** The overall findings of the study showed that there was a significant improvement in the knowledge scores after the administration of structured teaching program. Hence it can be concluded that structured teaching program was effective in improving the knowledge of African students regarding hepatitis B prevention.

## Keywords:

Educational program,  
Effectiveness, Knowledge,  
Hepatitis B.

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## INTRODUCTION

Hepatitis is an inflammatory disease of the liver which is caused by the Hepatitis B virus (HBV). Hepatitis B is a global problem, with 66% of all the world population living in areas where

there are high levels of infection. There are more than 2 billion people Worldwide, having evidence of recent or past HBV infection and 350 million are chronic carriers (Centers for Disease Control and prevention, 2014). Hepatitis

B virus (HBV) is one of the most common viruses in the modern world and ranked by the WHO as one of the top ten killers. The virus is responsible for approximately 1.5 million deaths worldwide each year, two thirds of which are attributable to primary hepatic carcinoma following HBV infection. About 360 million people are chronically infected with HBV. These chronically infected persons are at higher risk of death from HBV-related liver cancer or cirrhosis by approximately 25% and over 4 million new acute clinical cases occur. HBV is preventable with a safe and effective vaccine, the first vaccine against cancer due to HBV infection (Mesfin, 2015).

The practice of modern medicine has “contributed” a lot in the increase of the cases and spreading the disease in the society. Hepatitis B infections are common due to lapses in the sterilization technique of instruments or due to the improper hospital waste management as 10 to 20% health care waste are regarded hazardous and it may create variety of health risk. Among the health care personnel, HBV is transmitted by skin prick with infected, contaminated needles and syringes or through accidental inoculation of minute quantities of blood during surgical and dental procedures (Sandesh et al., 2006).

Knowledge regarding HBV and safety precautions is needed to minimize the health care settings acquired infections among health personnel. Health care personnel should have complete knowledge of HBV infections, importance of vaccinations and practice of simple hygienic measures apart from that of specific protective measures (Chandra, et al., 2003). Hepatitis B virus infection is a well-known

occupational hazard of health care workers and they are considered to be at substantial risk for acquiring or transmitting the virus because of the occupational contact with blood, blood products and other body fluids. The occupational risk for HBV acquisition varies according to the work place in the health care setting and time of exposure to the agent (Kohn, 2003). Health Science students including African students, being part of the health care delivery system are exposed to the same, if not greater, magnitude of risk than the qualified health care workers when they come in contact with patients and contaminated instruments.

From their first year of training, most students undergoing training for the health sciences programs such as Nursing, MBBS, Dental and Pharmacy including African students whom are believed to have more challenges in the clinical areas ranging from communication to adaptation to the new environment, are in their respective colleges placed in the operation theatres, wards and clinics for practical and clinical experience. Their clinical practice training involve basic nursing care, wounds care, taking of blood, administration of injections, and childbirth, whilst the theoretical content of the course includes measures to control infections, infectious diseases and preventive measures and management. Previous studies have shown that many students of health sciences especially African students are not adequately informed and protected against HBV despite the training and availability of the HBV vaccine, and occupational exposures to HBV infections are happening (Singh, & Jain, 2011).

According to Samuel S.O (2009), In a study conducted to assess the health students'

knowledge, attitude and behavior towards hepatitis B infection in Southern Nigeria, 81% of the respondents heard of hepatitis B but only 37% mentioned some of the modes of infections correctly and 70% of them did not received HBV vaccine (Othman, Saleh, & Shabila, 2014). Therefore, knowledge regarding the Hepatitis B virus and safety precautions is needed to minimize the health care settings acquired infections among health sciences students in general. Considering these facts, it was decided to find out the level of awareness among African health science students who are at the highest risk of developing hepatitis B during their clinical postings.

## **METHODOLOGY**

### **Research Design and Instrument**

A Quasi-experimental design was adopted and a sample of 50 African students were selected by non-probability purposive sampling technique. Data was collected by administering structured questionnaire before and after the implementation of structured teaching program. Data were analyzed using descriptive and inferential statistics and represented in tables and graphs.

### **Setting**

This study was conducted in Davangere. The city of Davangere is located in the in the central Karnataka State of India. The National High way 4 and main railway line connected it to different cities. The city is also referred to as 'The Manchester of Karnataka' because of cotton mills located in the city. It has so many Educational institutions of higher learning including Medical Colleges. It has a reasonable population with reach in commercial activities.

### **Target Population and Sample**

In the present study the population consists of all African Undergraduate Students of health sciences Program in Davangere, Karnataka-India. The present study was conducted among 50 African students who are studying various undergraduate courses of health sciences in Davangere-India. Non-probability purposive sampling technique was used to select 50 African students as the sample for the present study with Inclusion criteria: (1) African students of health sciences, (2) Students willing to participate in the study, (3) Students available at the time of the study and Exclusion Criteria: (1) Students who are not willing to participate in the research, (2) Students who are not available at the time of the study.

### **Pilot Study**

The pilot study was conducted to find the feasibility of the study. Five (5) African students were selected using purposive random sampling technique. The subjects for the pilot study possessed the same characteristics as that of the sample for the final study, but were not included in the main study. Prior to the study permission was obtained from the concerned authority. The selected subjects were informed of the purpose of the study and consent was obtained.

### **Ethical Consideration**

The researcher had taken permission from the Hostels managers to conduct the research study. Permission was obtained from the Wardens of Bapuji International and MBA Hostels. Consent was taken from the subjects before data collection. The subjects were informed that the confidentiality of data will be maintained.

### Data Analysis

The data obtained was analyzed on the basis of the objective of the study using descriptive (frequency and percentages) and inferential statistics (t-test, chi-square). Inferential statistics which are based on laws of probability provide a means of drawing conclusion about the population from which data was obtained for the study.

### Limitation of the Study

The following points were beyond the control of the investigator.

- Study is limited only those who are willing to participate in the study.
- Study samples were small.
- There were time limitations to complete the study

## RESULTS

**Table 1: Distribution Of Student According To Socio-demographic Variables**

VARIABLE	FREQUENCY	PERCENTAGE
<b>AGE ( In years)</b>		
19-21	18	36
22-24	26	52
Above 25	6	12
<b>TOTAL</b>	<b>50</b>	<b>100</b>
<b>GENDER</b>		
MALE	38	76
FEMALE	12	24
<b>TOTAL</b>	<b>50</b>	<b>100</b>
<b>NATIONALITY</b>		
NIGERIA	46	92
SUDAN	3	6
KENYA	1	2
<b>TOTAL</b>	<b>50</b>	<b>100</b>

In the present study it is evident that, 18 (36%) of the students were in the Age group of 19-21 years, 26 (52%) were in the age group of 22-24 years and 6 (12%) were found to be above the age of 25 years . In the present study it was

found that among the 50 student, 38 (76%) were Males and 12 (24%) were Females (table-3). In the present study, it was observed that 46 (92%) were from Nigeria,3 (6%) from Sudan and 1(2%) from Kenya.

**Table 2: Distribution Of Respondents According to Programme of Study.**

Programme of study	Frequency	Percentage
MBBS	18	38
NURSING	6	12
PHARMACY	25	50
<b>TOTAL</b>	<b>50</b>	<b>100</b>
<b>YEAR OF STUDY</b>		
1 <sup>st</sup> year	10	20
2 <sup>nd</sup> year	9	18
3 <sup>rd</sup> year	30	60
4 <sup>th</sup> year	1	2
<b>Total</b>	<b>50</b>	<b>100</b>
<b>Vaccination status</b>		
Complete	30	60
Partial	15	30
Not Vaccinated	5	10
<b>Total</b>	<b>50</b>	<b>100</b>

With regard to the programme of their study, it can be seen in the present study that, 18 (36%) students were MBBS students, 7 (14%) were B,Sc. nursing students and the remaining 25 (50%) were B.Pharma students . The distribution of the respondents according to the year of study in the present study depicts that 10(20%) are 1<sup>st</sup>

years,9 (18) are 2<sup>nd</sup> years,30 (60%) are in their 3<sup>rd</sup> year and 1 (2%) is a final year student. 25(41.7%) .In the present study, out of 50 students, 30(60%) of them received Complete immunization, 15(30%) had partial immunization, 5 (10%) had no immunization

**Table 3: Area Wise Comparision of Pre-Test And Post-Test Knowledge Scores**

AREA	MAX. SCORE	PRE-TEST SCORE		POST-TEST SCORE	
		Mean	S.D	Mean	S.D
ANAT. &PHYSIO	8	6.02	1.15	7.16	1.12
GEN. KNOWLEGDE	11	6.24	1.69	9.86	1.11
MODE OF TRANSMISSION	4	1.9	0.71	3.6	0.65
MODE OF PREVENTION	6	2.38	1.2	5.44	0.69

In the present study it was observed that (table-3) in pre-test knowledge scores, the highest mean (6.02) was obtained in the area of anatomy and physiology and the lowest mean (1.9) was in the area of mode of prevention. In post test

knowledge scores, the highest mean (9.86) was obtained in the area of general knowledge on hepatitis B and the lowest mean 3.6 was in the area anatomy and physiology.

**Table 4: Overall Comparison of Mean, Standard Deviation and Mean % of Pre and Post Test Knowledge Scores.**

OVERALL KNOWLEDGE SCORES	MAX. SCORE	RANGE	MEDIAN	MEAN	S.D	MEAN %
PRE- TEST	29	10-17	13	15.74	4.75	54.26
POST-TEST	29	19-27	24	26.06	3.57	89.86

In the present study during the pre-test, the mean knowledge score of African students related to knowledge regarding hepatitis b prevention obtained was 15.74 with a standard deviation of 4.75 which has a mean percentage of 54.26%. The pre-test score ranges from 10-17 which has

a median score of 13 (table-4). During post-test, the mean knowledge score of the students was increased to 26.06 with a standard deviation of 3.75 which has a mean percentage of 89.86%. The post-test score ranges from 19-27 which has a median score of 24 (table-4).

**Table 5: Paired t-test Showing Significant Differences between Pre and Post Tests Scores of the Students**

Area of Knowledge	Pre-Test score		Post-Test score		t-Value	P-value	Inference
	Mean	SD	Mean	SD			
Anatomy and physiology of related organ	6.02	1.15	7.16	1.12	4.06	0.001	Highly Significant
General Knowledge on hepattis	6.24	1.69	9.86	1.11	6.12	0.001	Highly Significant
Mode of transmission of hepatitis B	1.9	0.71	3.6	0.65	6.08	0.001	Highly Significant
Prevention of hepatitis B	2.38	1.20	5.44	0.69	19.3	0.001	Highly Significant

The effectiveness of structured teaching programme on knowledge regarding knowledge on hepatitis B prevention is tested by assessing the significant difference in the pre and post test knowledge scores of the students using Paired 't' test. In the present study (table-14) it is evident that there is highly significant difference between the pre and post test knowledge scores in all the areas, i.e.; the mean pre-test knowledge score in the area of anatomy of related organ was 6.02, which has been increased to 7.16 during post-test. Similarly, the pretest score in the area of general knowledge on hepatitis was 6.24 which has been increased to 9.86 during the post-test. In the same way, the mean pre-test knowledge score in the area of mode of transmission of hepatitis B has been improved from 1.9 to 3.6

during post-test. The mean knowledge score in the area of hepatitis B showed an increase from pre-test score of 2.38 to 5.44 during the post test. In the present study (table-14), as the P value in all the areas are 0.001 which is greater than the table value at 0.05 level of significance. It is evident that, compared to pre-test knowledge scores, there is significant increase in the post-test knowledge scores in all the areas. Hence the null hypothesis (H1-0) related to no difference between pre-test and post-test overall mean scores is rejected and research hypothesis (H1-1) is accepted. Therefore it can be interpreted that the structured teaching programme was effective in improving the knowledge of African students of health sciences on knowledge regarding hepatitis B prevention.

**Table 6: Association Between The Knowledge Scores With Selected Variables**

Variable	Category	Overall score		Chi-square value	Inference
		Below median	Above median		
Age (yrs)	19-21	13	5	1.13	P=0.77 NS
	22-24	23	3		
	Above 25	4	2		
Gender	Male	28	10	3.68	P=0.06 NS
	Female	10	12		
Nationality	Nigeria	36	10	2.1	P=0.35 NS
	Sudan	1	1		
	Kenya	1	1		
Programme of study	MBBS	12	6	0.74	P<0.05 S
	Nursing	5	2		
	Pharmacy	2	4		
Year of study	1st	9	1	2.89	P<0.05 S
	2nd	7	2		
	3rd	21	8		



Variable	Category	Overall score		Chi-square value	Inference
		Below median	Above median		
	4th	1	1		
Place of residence	Hostel	35	10	3.26	P=0.06 NS
	Outside	3	2		
Source of information	Lectures	24	8	4.2	P=0.04 S
	Media	8	2		
	Family	6	2		
History of hepatitis	Yes	38	11	3.55	P=0.06 NS
	NO	1	1		
Immunization status	Complete	28	2	3.42	0.065 NS
	Partial	6	9		
	Not recieved	4	1		

In the present study, it was found that there is no significant association between age of the students and total pre-test knowledge scores ( $\chi^2$ : 1.13, df: 2, P value: 0.77). However, the results showed strong association between programme of study and the level of knowledge ( $\chi^2$  0.74 df 2). Also Level of study of the students is strongly associated with knowledge. Source of information also is associated with knowledge level ( $\chi^2$  4.2 df 2). Similarly the other demographic variables have no association with the total knowledge score of the students as they are found to be non significant at 0.05 level of significance (table-15).

## DISCUSSION

The findings in the present study reveals that the overall mean knowledge score was 75.25% in the aspect of Anatomy of related organ, with standard deviation of 1.15. In the aspect of general knowledge regarding hepatitis mean

score was 56.7% with standard deviation 1.69. The area of mode of transmission and prevention of hepatitis B the mean score was 47.5% and 39.7% with standard deviation 0.71 and 1.2 respectively.

The findings are supported by cross sectional study to assess the knowledge about hepatitis B among the medical, dental and nursing students of first year in Subharti University, India. A cross sectional study was used for 250 students. The research shows the majority (83.3%) heard about the existence of Hepatitis B but only 42% knew that virus is a cause. Awareness about mode of transmission was very poor (35.2%).

In the present study during the pre-test, the mean knowledge score of African students related to knowledge regarding hepatitis b prevention obtained was 15.74 with a standard deviation of 4.75 which has a mean percentage of 54.26%.

The pre-test score ranges from 10-17 which has a median score of 13 (table-4). During post-test, the mean knowledge score of the students was increased to 26.06 with a standard deviation of 3.75 which has a mean percentage of 89.86%. The post-test score ranges from 19-27 which has a median score of 24 (table-4).

The findings is supported by the cross sectional study conducted with aim of the assessment of knowledge of intern medical students in Punjabi Medical college. After impacting STP and the result revealed that 63.3% students had good knowledge, 26.7% students had excellent knowledge in post-test.

The calculated chi-square value revealed that age, gender, Nationality, Place of residence, Family history of hepatitis B, and immunization status were found to be not significant i.e.  $p > 0.05$ . However, Program of study  $X^2$  0.74  $P < 0.05$ , Year of study  $X^2$  2.89  $p < 0.05$  and source of health information  $X^2$  3.42  $P < 0.05$  were found to be significant for the study conducted.

The findings are consistence with findings of a research cross sectional research conducted to evaluate the effectiveness of structured teaching program among students of P.J Medical College which reveals that demographic variables were not significant except the year of th study of the students selected for the study.

## CONCLUSION

The main aim of the study was to assess the effectiveness of structured teaching program on knowledge regarding prevention of hepatitis B infection among African student of health science in Davengere. Information was given to the African students through a structured teaching

program which includes various aspects like, anatomy of the related organ, general information hepatitis, Mode of transmission of hepatitis B and prevention of hepatitis B. The following conclusions were drawn on the basis of findings of the study; the pre-test findings showed that knowledge of African students of health sciences regarding prevention of hepatitis b among African undergraduate student of health science was inadequate. The administration of structured teaching program helped the students to understand more hepatitis B. Most of the students were having adequate level of knowledge after the teaching program. The structured teaching program is proved to be very effective method of transforming information.

## ACKNOWLEDGEMENT

Thank you very much to all participants in this research.

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