



# A Study to Assess the Knowledge Regarding Prevention of Blood Borne Infections among Students of Selected Nursing Institution at Mangaluru

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## Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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## ABSTRACT

**Background of the Study:** Blood borne pathogens are microorganisms such as viruses or bacteria that are carried in blood. A blood borne disease that can be spread through contamination by blood and other body fluids. In health care setting, blood born pathogen transmission usually occurs by Percutaneous exposure to the workers mostly happens when they are handling infected patients. The aim of our study was to assess the knowledge regarding prevention of blood borne infection among students of selected nursing institution at Mangaluru.

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**Materials and Methods:** A descriptive study was conducted among 104 undergraduate students. Subject was selected using purposive sampling techniques. The information was collected using a demographic Proforma and a self-administered questionnaire. The overall knowledge on prevention of blood born infection was graded as adequate, good, and inadequate.

**Results:** The overall knowledge score was majority (64.4%) had average, 33.7% had good and minority (1.9%) had good knowledge regarding blood born infection and its prevention. In this study there was significant ( $P < 0.05$ ) association between knowledge score with age, gender whereas there is no significant association between knowledge score with year of study, previous knowledge on standard precautions and source of information.

**Conclusion:** The present study concludes that the nursing students have a fair knowledge regarding the cause of blood born infections. Competent knowledge is needed to prevent the spread of blood born infections. Successful prevention strategies of blood born infections require a high level of awareness of the infected individual as well as a detailed knowledge among healthcare professionals and society.

*Keywords: Blood born infection; knowledge; prevention; students; undergraduate.*

## 1. INTRODUCTION

The transmission of blood born infections is the considerable risk factor prevails in health care sector. Contact with blood, saliva, body fluids and semen mainly leads to the spread of this infection one to another. Touching with patient's blood or body fluids leads to different types of blood borne infections like Hepatitis C, Hepatitis B and Human Immunodeficiency Virus. In health care setting blood born pathogen transmission usually occurs by Percutaneous exposure to the workers mostly happens when they are handling infected patients [1].

According to a German study, the risk of blood-borne infections is due to transmission via needle stick injuries, and more specifically, incorrect handling of infected items. The spread of blood borne illnesses such as HIV, HCV, and HBV among health care providers is a big concern due to a lack of sterilisation and personal protective gear. The pillar stone for reducing the incidence of contaminated sharp objects is experience [2].

Blood borne infections are commonly transmitted through blood and other her body fluids such as semen and vaginal secretion [3-7]. Nurses are the large working force and considered as the backbone of health care sector. Nurses has higher level of incidence that exposed to different infection during carrying out their nursing care in hospitals as well as in communities. There for it is necessary to acquire knowledge and practice it effectively [8]. Exposure to blood borne pathogens causes a serious risk of infections Among The health care workers, the transmission of at least 20 different pathogens by needle stick and sharp injuries has been reported in the world. Despite improved methods of

preventing exposure [3]. In 1996 United States centres for disease control and prevention proposed guidelines for reducing the risk of transmission of blood borne diseases and other pathogens in hospital settings. Avoidance of direct contacts with patient and air borne particles and majorly requires hand washing and sterilizations were the proposals [4].

A study conducted in UK stated that 1.8 lakh people are chronically affected with hepatitis, majority is not aware that they are infected. Such condition increases the risk factor for health care professionals. They have mentioned the increased viral load of hospital waste and the problems face while handling it. Stated the chance of getting blood infections event othesocietyalso [6]. Needle and needle stick injuries are the prominent source of blood born infections. Experience and carelessness in handling of needle leads to the injuries. A study conducted in south India depicts that around 34.8% of health care workers in different category are getting injury with needle in hospital setting, 37.4% nurses are also got injured .Most (55.1%) of the participants aware about post exposure prophylaxis but only 3% taken the treatment . Use of protective device, especially gloves is lowest (46.3%) among the nurses in comparison with other health professionals [9].

A study conducted in north India to know the utilization of hepatitis vaccine reveals that only 40% of the health care workers received full dose of hepatitis vaccine, 40% is not vaccinated and remaining received only one or two doses [6]. The investigator observed that health care workers especially staff nurses are lacking the knowledge regarding blood born infection and its preventive measures, this stimulate the researcher to assess the knowledge regarding

prevention of blood borne infections among students of selected nursing institution at Mangaluru.

## 2. MATERIALS AND METHODS

The research design adopted for the present study was descriptive research design. The study was carried out in a professional college at Karnataka, India. The data was collected after concerned authority gave ethical (YEC2/411) approval. Sample consists of 104 undergraduate students who were selected by purposive sampling techniques, based on inclusion criteria. Undergraduate students studying in the first year, second year, third year and fourth year were selected as study participants. The present study refers to Successful prevention strategies of blood born infections require a high level of awareness of the infected individual as well as a detailed knowledge among students.

### 2.1 Tools and Techniques

A structured knowledge questionnaire on the prevention of blood borne illnesses was utilised to determine knowledge among specified demographic characteristics based on the study's objectives. Blue print was prepared on the basis of specific areas in the content they are clinical manifestation and diagnosis 16.66%, pathology 12.53%, vaccination 16.66%, needle stick 8.33%, hand washing 16.66%, waste management 8.33%, and PPE 20.83%. Total number of questions was 24. In order to obtain validity of the data collection tool, the draft of the problem statement, objective, demographic Performa, and knowledge questionnaire are submitted to 5 experts along with letter seeking suggestion of experts to validate the tool, acceptance form or tool validation and criteria checklist for tool validation. The baseline Performa was used to assess the characteristics of undergraduate students. It had 5 items which include age, gender, and year of study, previous knowledge, and source of information. The knowledge questionnaire consists of 24 items. There was 100% agreement for 10 items, 80% agreement for 7 items and 60% agreement for 7 items. The modifications as per suggestions were made in the items with the advice of subject guide and total number of items were 24 in the finalized tool.

The scoring was done by tallying the right responses and assigning a score based on the overall score. The maximum score that could be achieved was 24. The total score is used to

determine the grade. A score of less than 50% is regarded average, 51 to 75 percent is considered good, and 75 percent or more is considered excellent knowledge. Data collection was done after obtaining ethical clearance from the institutional ethics committee. Prior permission from the concerned authority was obtained to conduct the study. Subjects were asked to participate in the study after self introduction by the investigators. The subjects were informed about the purpose of the study and their consent was attained. The participants were assured about the confidentiality of their information. The data were analyzed in terms of the objectives of the study using both descriptive and inferential statistics.

### 2.2 Data Analysis

The data entry and analysis was performed using statistical package for social science software package version 23. chi-square test was used to find out the association of socio demographic variables with knowledge score regarding prevention of blood born infections and  $p < 0.05$  was taken as statistically significant association.

## 3. RESULT

The baseline characteristics of study population showed that Majority (57.7%) the sample were in age group of 19-21 years, followed by 17-19 years (26%) and 16.3% belongs to the age group of 21-23 years, Most (76.9%) sample were females and 23.1% sample were males. Demographic characteristics of the sample described in the terms of age, gender, year of study, previous knowledge, source of information. The findings are presented in Fig. and Table. The section deals with frequency of subjects in each demographic variable along with the percentage.

Fig. 1 shows that majority (64.4%) had average, 33.7% had good and 1.9% had good knowledge regarding blood born infection and its prevention. Table 1 revealed that subjects were with the mean  $11.52 \pm 2.86$ , the mean percentage of 48 reveals that subjects were with average knowledge regarding prevention of blood born infection. The median 12 indicate that most of the valued were concentrated at the midpoint which indicated that most of the subjects quote average in the test. The most of the participants had very good knowledge to identify and manage the standard precautions and prevention of blood

borne infections. Data presented in the Table 2 depicts that there is significant association with age and gender with selected demographic

variable with 0.05 level of significance where as their no significant associated found in other variables.

#### 4. KNOWLEDGE GRADING

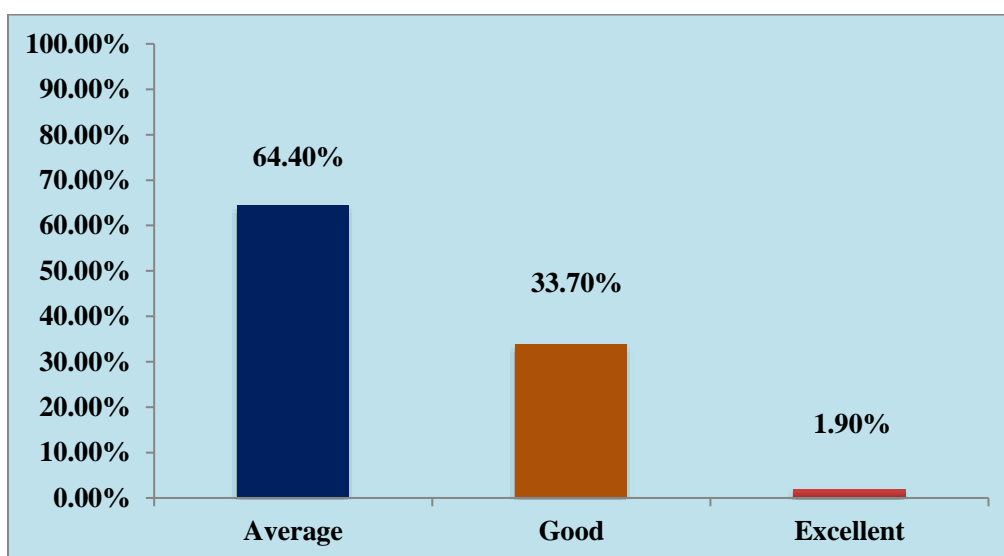


Fig. 1. Bar diagram showing overall grading of knowledge score

Table 1. Mean, median, mean% and standard deviation of overall knowledge score N=104

Description	Mean	Mean%	SD	Median
Overall knowledge score	11.52	48	2.86	12

Table 2. Association between knowledge of undergraduate students regarding blood born infection and its prevention with selected demographic Proforma N=104

SL No	Demographic variable	Median (≤12)	Median (>12)	X <sup>2</sup>	Df	P-value	Inference
<b>1</b>	<b>Age in years</b>						
	17-19	20	7	9.06	4	0.04	Sig
	19-21	32	28				
	21-23	15	2				
<b>2</b>	<b>Gender</b>			6.69	2	0.03	Sig
	Male	20	4				
	Female	47	33				
<b>3</b>	<b>Year of study</b>			9.43	6	0.15	NS
	1 <sup>st</sup> year	20	6				
	2 <sup>nd</sup> year	14	12				
	3 <sup>rd</sup> year	13	13				
	4 <sup>th</sup> year	20	6				
<b>4</b>	<b>Previous knowledge on standard precautions</b>			0.26	2	0.87	NS
	Yes	60	33				
	No	7	4				
<b>5</b>	<b>Source of information</b>			9.37	8	0.31	NS
	Curriculum	36	27				
	Seminar	6	1				
	Books	17	4				
	Online sources	8	4				

## 5. DISCUSSION

The finding of the study which was conducted among 104 graduated students of 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> year Bsc nursing showed that majority (57.7%) in the age between 19-21 years, most (76.9%) of subject were females. 89.4% had previous knowledge on prevention of blood born infections, most (61.5%) acquired knowledge through curriculum. A supporting study which was conducted in Malaysia by Hamid MZ *et al* reveals that most (87.1%) had previous knowledge on prevention of blood born infection [10].

Findings of the present study show that majority (64.4%) of the students had average, 33.7% had good knowledge regarding blood borne infection and its prevention. The mean knowledge score was  $11.52 \pm 2.86$  and the mean percentage of overall level of knowledge was 48. The results were supported a study which carried out in Bengalkot by Khale et al. [11] reveals that Majority (66%) had average and 34% had good knowledge regarding universal precautions. Another study conducted among the health care workers of university hospital in Jamaica by Vaz et al. [12] reported that 64% were aware about universal precautions.

The present study reveals that there is a significant association ( $P=0.05$ ) between knowledge scores of students regarding prevention of blood born infection with age, gender where as there is no association found between overall knowledge score with year of study ( $p=0.15$ ), previous knowledge on standard precaution ( $p=0.87$ ) and source of information ( $p=0.31$ ).

A supporting study was conducted by Rang et al. [13] reveals that there is a significant ( $p=0.00$ ) association between knowledge score regarding hepatitis B with age. Another study conducted by Mesfin et al. [14] reported that there is a significant association between Knowledge of hepatitis prevention with gender ( $p=0.02$ ). A study conducted by Ujwala A Chopade et al. [15] shows that there is no significant ( $P=0.17$ ) association with knowledge on needle stick injuries, use of mass media which gives the information regarding safety measures dose not had association ( $p=0.42$ ) with level of knowledge.

The study was limited to a single nursing college, and knowledge was obtained solely through

responses to a predefined questionnaire; no additional effort was made to verify the practise.

## 6. CONCLUSION

Blood borne infections are viruses that are carried in the blood, specifically hepatitis B, hepatitis C, and human immunodeficiency virus (HIV). Successful prevention strategies of blood born infections require a high level of awareness of the infected individual as well as a detailed knowledge among healthcare professionals and society. This is why it is important to have at least a basic awareness of prevention of blood born infections. The present study concludes that the nursing students have a fair knowledge regarding the cause of blood born infections. Competent knowledge is needed to prevent the spread of blood born infections.

## CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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