

A Descriptive Study to Assess the Knowledge regarding Occupational Blood Born Diseases and its Prevention among Staff Nurses Working in Medical and Surgical Area of Selected Hospitals

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Abstract: *Introduction:* Exposure of the blood-borne pathogens is serious risk to health care workers (HCWs). Safety of workers within work place is major concern in every field of practice. Occupational blood and body fluid exposure is major worldwide public health problem. Nurses are major health care provider in hospital and more potential to exposure with blood and body fluid. Occupation exposure to blood pathogen plays significant role in increasing risk of workers. *Objectives:* To assess knowledge regarding occupational blood born diseases and its prevention among staff nurses working in medical and surgical area of selected hospitals. *Methodology:* Quantitative research approach, non experimental descriptive research design. *Study setting:* selected hospitals. *Population:* staff nurses. *Sample size:* 150 samples. *Sampling technique:* purposive Sampling Techniques. *Data Analysis:* Data collected through structure questionnaire and analysis were SPSS 24.0 version 7.0. *Result:* 71.30% subject got needle stick injury. 31.33% of subject had poor knowledge, 54.67% had good, and 14% subject had very good knowledge. *Discussion:* Study shows that there is association between knowledge and demographic variables

Keywords: Blood Born Diseases (BBD), Human Immunodeficiency Virus (HIV), Acquired Immunodeficiency Syndrome (AIDS), Health Care Worker (HCW), Occupational blood exposure (OBE).

1. Introduction

“Prevention is better than cure”

Health and safety of the workers within the work place is the major concern of the millennium that has emerged with the rapid technological advancement in every field of practice. Occupational blood and body fluid exposure continue to be the major worldwide public health problem, despite advances in our understanding and control of this infections. Nurses are the major health care provider in the hospital and they are more potential to exposure with blood and body fluid. Occupational exposure to the blood pathogen plays a significant role in increasing the risk of the workers in the health care industry.^[1]

Exposure of the blood-borne pathogens have a serious risk to health care workers (HCWs). Assessment of the risk of blood-borne pathogen transmission in the health care setting requires information derived from various sources, including surveillance data, studies of the frequency and preventability of blood contacts, seroprevalence studies among patients and HCWs, and prospective studies that assess the risk of seroconversion after an exposure to infected blood. Factors influencing the risk to an individual HCW over a lifetime career include the number and types of blood contact experienced by the worker, the prevalence of blood-borne pathogen infection among patients treated by the worker, and the risk of transmission of infection after a single blood contact. Occupational exposures that may result in HIV, HBV, or HCV transmission include needle stick and other

sharps injuries; skin lesions, abrasions, or burns; and inoculation of virus onto mucosal surfaces of the eyes, nose, or mouth through accidental splashes. HIV, HBV, and HCV do not spontaneously penetrate intact skin, and airborne transmission of these viruses does not occur. The percentage of procedures with at least one blood contact of any type ranged from 3% of procedures performed by invasive radiology personnel in a study in Dallas, Tex. (130), to 50% of procedures performed by surgeons in a study in Milwaukee, Wisc. (224). The percentage of procedures with at least one injury caused by a sharp instrument also varied widely, from 0.1 to 15%.. Several of these studies assessed specific risk factors for injury or exposure. For example, of the 99 percutaneous injuries observed by Tokars et al. during 1,382 operations in five different surgical specialties (general, orthopedic, gynecologic, trauma, and cardiac), most (73%) were related to suturing (256). Rates were highest (10%) during gynecologic surgeries (256). Panlilio et al. found in their study of blood contacts during surgery that risk factors for blood contacts by surgeons included performing an emergency procedure, patient blood loss greater than 250 ml, and surgery duration greater than 1 h (208). In their study of dental procedures, Cleveland et al. found that most percutaneous injuries sustained by dental residents occurred extraorally and were associated with denture impression procedures (77). Retrospective studies and surveys have also shown high rates of blood contact among HCWs in different patient care settings. Tokars et al. found that among 3,420 participants at the American Academy of Orthopaedic Surgeons annual meeting, 87.4% of surgeons surveyed reported a blood-skin contact and

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39.2% reported a percutaneous blood contact in the previous month (258). In a retrospective survey by O'Briain in 1991 (202), 56% of 36 resident and staff pathologists reported that they had sustained a cut or needle stick injury in the preceding year. In study, pathologists reported 72 injuries, corresponding to a rate of one injury for every 37 autopsies performed and one injury for every 2,629 surgical specimens handled (202). An anonymous national survey of certified nurse-midwives by Willy et al. found that 74% had soiled their hands with blood, 51% had splashed blood or amniotic fluid in their faces, and 24% had sustained one or more needle stick injuries in the preceding 6 months (281). Among 550 medical students and residents in Los Angeles, Calif., who were surveyed anonymously by O'Neill et al., 71% reported exposures to patient's blood and body fluids during the preceding year (204). In a recent study of third and fourth year medical students in San Francisco, Calif., by Osborn et al., 12% reported an exposure to infectious body substances over the 7-year study period, from 1990 to 1996 (205). In 1987 the CDC (Centers for Disease Control and Prevention) developed universal precautions to help protect both HCWs and patients from infection with blood borne pathogens in the health care setting (46). In 1995, the CDC's Hospital Infection Control Practices Advisory Committee (HICPAC) introduced the concept of standard precautions, which synthesizes the major features of universal precautions and body substance isolation into a single set of precautions to be used for the care of all patients in hospitals regardless of their presumed infection status. Blood, certain other body fluids (e.g., semen, vaginal secretions, and amniotic, cerebrospinal, pericardial, peritoneal, and synovial fluids), and tissues of all patients should be considered potentially infectious. Standard precautions apply to blood; all body fluids, secretions, and excretions (except sweat); non intact skin; and mucous membranes. The CDC's recommendations—along with the blood-borne pathogen standard issued by the Occupational Safety and Health Administration (OSHA), which requires that HBV vaccine be made available to HCWs with risk of occupational exposure, the development of written exposure control plans, the use of engineering and work practice controls to reduce exposures, and annual HCW training—have caused widespread adoption of standard precautions in U.S. hospitals. Several investigators have attempted to assess the efficacy of standard precautions. Education of HCWs about needle stick prevention, along with effective communication and convenient placement of sharps containers, has been shown to decrease needle stick injuries by 60% among HCWs at a teaching hospital in California. Personal Protective Barriers, Work Techniques, and Safety Devices Skin and mucous membrane contacts frequently can be prevented with the use of barrier precautions, such as gloves, masks, gowns, and goggles, among HCWs in emergency room, operating room, and medical ward settings. Many injuries in the health care setting are associated with intravenous (i.v.) tubing-needle assemblies. Studies have found that i.v.-related percutaneous injuries decreased approximately 72 to 100% following the introduction of needleless systems.^[2]

2. Literature Survey

The review of literature is a systemic identification, selection, critical analysis and reporting of the existing information in relation to the problem of interest.

A cross sectional study was conducted on Prevalence and risk Factors for Blood borne Exposure and Infection in Correctional Health care Workers in 2015. The data was collected by confidential questionnaire among 310 sample. The result of the study shows that the rate of percutaneous injury (PI) was 32 per 100 person-years overall and 42 per 100 person-years for Correctional Healthcare Workers (CHCWs) with clinical job duties. The underreporting was common, only 25 (49%) of 51 formally reported to the administration. The study was concluded that the wide coverage with hepatitis B vaccination and the decreasing rate of hepatitis C virus infection in the general population are encouraging, the high rate of exposure in CHCWs and the lack of exposure documentation are concerns.^[3]

A study to assess Prevalence of needle stick injuries among healthcare workers at the Federal Medical Centre, Owerri, South-East Nigeria. The 50 study subjects selected for study by stratified simple random sampling techniques. The data collected by questionnaires and analyzed by Statistical Package for Social Sciences (SPSS) Version 20.0. The result of this study was indicated majority of the injuries occur during injection procedure (34%), recapping (14%), and improper disposal of used syringes and needle (6%), stress had (6%), overfilled disposal boxes also recorded (2%) and lack of experience among workers had (0%). The conclusion of this study was a standard and understandable programmes to avert NSI should be encouraged.^[4]

A Cross sectional study was conducted on Knowledge, attitude and practices (KAP) concerning Hepatitis B infection, among healthcare workers in Bantama, Ghana India in 2015. 175 study subject selected by using a non-probability sampling technique (purposive sampling). The data was collected by using structured questionnaire and analysed by using Inferential statistics, SPSS v. 16. The result of study showed that Knowledge 13.691 ± 2.81 , attitude 6.685 ± 2.28 and practice 2.23 ± 1.19 respectively. The conclusion of the study shows that disparities in knowledge amongst HCWs and brought to the fore a wide gap between knowledge and practices that would protect health personnel against HBV.^[5]

A Cross sectional study conducted on Knowledge Among nursing students about blood borne viruses and practices to prevent transmission in North East India in 2017. Objectives of the study was to determine the knowledge about blood borne viruses and practices to prevent its transmission. The data was collected from 200 subjects by using structured knowledge questionnaire and data analyzed by using software SPSS version 20. The results of the study showed that the students (62.5%) had knowledge about blood borne infections and 25% was aware that HIV is transmitted by infected blood, unprotected sexual intercourse, tattooing and piercing instruments, mother to child during pregnancy and during labour. The conclusion of the study showed that the implications of nursing services for education,

administration and research. Nursing education programme prepare nurses for providing effective and efficient nursing care to the patients as well as reducing the risk of occupational hazards.^[6]

A cross-sectional survey conducted on Healthcare workers and prevention of hepatitis C virus transmission: exploring knowledge, attitudes and evidence-based practices in hemodialysis units in in 2012. The objective of the study was to acquire information about the level of knowledge, the attitudes and the frequencies of evidence-based practices that prevent hospital transmission of HCV. All 37 hemodialysis units (HDU) of Calabria included in the study and all nurses invited to participate in the study. Data was collected by self-administered questionnaire and analyzed by Stata version 11 statistical software package. The result of the study shows that 90% of the nurses working in HDU participated in the study. 73.7% to 99.3% given correct answer about HCV pattern of transmission and were significantly higher in respondents who knew that isolation of HCV-infected patients is not recommended and among those who knew that previous bloodstream infections should be included in medical record and among nurses with fewer years of practice. The study concluded that Behaviour changes should be aim at band out dated practices and adopting and maintaining evidence-based practices. Initiatives focused at enabling and reinforcing adherence to effective prevention practices among nurses in HDU are strongly needed.^[7]

A cross-sectional mixed-methods survey conducted on Prevention and care of hepatitis B in the rural region of Fatick in Senegal: a healthcare workers' perspective using a mixed methods approach in 2017. The sample size of the study was 100. The data was collected by face-to-face questionnaires and semi-structured interviews and analysed by chi-square/Mann-Whitney tests. The result of the study shows that knowledge gap was observed in key areas of HBV infection. early HBV acquisition is associated with a high risk of developing chronic infection, that perinatal transmission is one of the main modes of HBV transmission in Senegal, and that three to four doses of HBV vaccine are required to ensure immunization in children. A study concluded that urgent need to strengthen MTCT prevention in this region, by improving HCW knowledge in key areas of HBV infection.^[8]

3. Problem Definition

“A descriptive study to assess the knowledge regarding occupational blood born diseases and its prevention among staff nurses working in medical and surgical area of selected hospitals.”

Objectives of Study

- 1) To assess the existing knowledge regarding occupational blood born diseases and its prevention among staff nurses working in medical and surgical area of selected hospitals.
- 2) To associate the knowledge of staff nurses regarding occupational blood born diseases and its prevention

among staff nurses working in medical and surgical with their demographic variables.

4. Material and methods

Quantitative research approach, non experimental descriptive research design. Study conducted in selected hospitals among 150 staff nurses by purposive Sampling Techniques. Tools used for data collection include two section namely demographic variable and structured knowledge questionnaires. analysis were SPSS 24.0 version 7.0.

5. Results

A structured questionnaire is used for data collection. The analysis was done with the help of descriptive and inferential statistics.

Sr. No.	Data analysis	Method	Remarks
1.	Descriptive statistics	Frequency and percentage	To describe the distribution of demographic variables
		Mean, median, standard deviation	To determine the knowledge regarding occupational blood born diseases and its prevention
2.	Inferential Statistics	Chi – square test	To determine the association of knowledge with their demographic variables.

The data was analyzed and is presented in the following sections:-

The collected data is analyzed on the bases of objectives of the study in the following way:

Section1: percentage wise distribution subject with regards to their demographic characteristics

Section 2: Level of knowledge regarding occupational blood born diseases and it's prevention

Section 3: Chi-square test – association between demographic variables.

31.33% of the subject had poor level of knowledge score, 54.67% had good, and only 14% of the subject had excellent level of knowledge score. Minimum knowledge score was 4 and maximum knowledge score was 26. Mean knowledge score was 14.24 ± 5.84 and mean percentage of knowledge score was 47.46 ± 19.49 .

6. Discussion

The present study was undertaken as, “A descriptive study to assess the knowledge regarding occupational blood born diseases and its prevention among staff nurses working in medical and surgical area of selected hospitals” Maximum of subject i.e. 71.30% had got needle stick injury whereas 28.70% of subjects not got needle stick injury. The major finding of the study result showed that among all subjects, 31.33% of the subjects had poor level of knowledge score, 54.67% had good, and only 14% of the subjects had very good level of knowledge score. Mean knowledge score was 14.24 ± 5.84 and mean percentage of knowledge score was

47.46±19.49. Minimum knowledge score was 4 and maximum knowledge score was 26.

7. Conclusion

It shows association in relation to their selected demographic variables. Hence, based on the above finding, it was concluded undoubtedly that the written prepared material by the investigator in the form of questionnaire helped the subject to assess their knowledge regarding occupational blood born diseases and its prevention.

8. Future Scope

The future scope of this study has implications for nursing administration, nursing education, nursing research and nursing practice.

Nursing Services

Nurses are key person in the health team, who play a vital role in promotion and maintenance of health. Health education is one of the nurse's responsibilities, this study emphasizes nurse to impart health knowledge related to occupational blood born diseases and its prevention while working. Nurses play a major role in promoting health of the person by various extended and expanded roles. It will also help the nurse to keep update knowledge regarding occupational blood born diseases and its prevention. Nurses can impart health education to the Health Care Workers about the prevention of occupational blood born diseases during their duty time.

Nursing Education

As a nurse educator, there are abundant opportunities for nursing professionals to educate students on occupational blood born diseases and its prevention. This study adds to the nursing knowledge as it provides information regarding prevention and control of occupational blood born diseases. Nurse educator can teach subject on occupational blood born diseases and its prevention by using various educational methods.

Nursing Administration

Medical health administration authorities or other health personnels should initiate for educating the nurses regarding occupational blood born diseases and its prevention. Nursing administrators can bring awareness among the patient in general and specific focus groups regarding occupational blood born diseases and its prevention. Nursing administrators can organize staff development programmes for Health Care Workers to update their knowledge regarding prevention and control of occupational blood born diseases.

Nursing research

This study would help the nurse researcher to develop appropriate health education tools for educating the Health Care Workers regarding occupational blood born diseases. This study has revealed the knowledge regarding occupational blood born diseases and its prevention which is less among the nurses, so they can conduct an educational programme and use different methods of education to improve their knowledge.

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