Original Research Article **Microbiology**

International Journal of Pharma and Bio Sciences

ISSN 0975-6299

KNOWLEDGE, AWARENESS AND ATTITUDE OF NEEDLE STICK AND SHARP INJURIES AMONG ALLIED MEDICAL SCIENCE STUDENTS OF A TERTIARY CARE CENTRE

ARCHANA NAGARAJAN*, M.KALYANI, S.S.M UMAMAGESWARI, NEELU SREE

Department of Microbiology, Saveetha Medical College and Hospital, Thandalam,Kancheepuram District, TamilNadu, India.

ABSTRACT

Blood borne pathogenic micro-organisms are transmitted to healthcare workers through needle stick and sharp injuries (NSSI), and these contribute an important occupational hazard. To assess the knowledge, awareness and attitude of needle stick and sharp injuries (NSSI) among allied medical science students in a tertiary care centre. A cross-sectional study was conducted among allied medical students. A pre-test and post-test questionnaire, were used to assess the knowledge, awareness and attitude of NSSI. Data were analyzed statistically. All the 100 nursing, 110 Allied Health Sciences (AHS) and 25 medical laboratory technician (MLT) students participated. The median age was 18 years and the male to female ratio was 1:4. Even though all these students had previous diploma in nursing qualification, the pre-test revealed that their knowledge, awareness and attitude on NSSI were suboptimal. In this study, the students had suboptimal level of knowledge regarding the occurrence and prevention of NSSI before pre-test. After post-test significant improvement was noticed. Completion of Hepatitis B vaccination should be ascertained and completed in the beginning of various health care professional courses. Role play and small group were considered to be the better way to improve their understanding and attitude towards prevention and management of NSSI.

Key words: *Needle stick injury, sharp injury, Hepatitis B virus, HIV and HCV, education and training.*

ARCHANA NAGARAJAN*

Department of Microbiology, Saveetha Medical College and Hospital, Thandalam, Kancheepuram District, TamilNadu, India.

***Corresponding author**

Received on: 10.01.2017
Revised and Accepted on: 23.01.2017
DOI: http://dx.doi.org/10.22376/ijpbs.2017.8.1.b648-651

INTRODUCTION

Blood borne pathogens are transmitted to healthcare workers through needle stick and sharp injuries (NSSI), and these contribute an important occupational hazard. There are more than 20 blood-borne diseases which include Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and Human Immunodeficiency Virus (HIV)[1]. The risk of contracting acute HBV infection is estimated to be 6-30%, HCV infection is 1-3 %, HIV is 0.3-0.5 % due to a single sharp prick[2]. The maximum risk groups for blood-borne infections are nurses, staff of diagnostic laboratories, surgical staff and biomedical waste management team[3]. NSSI occur commonly during blood collection, surgical procedures, checking blood sugar, injection administration, intravenous cannulation and other procedures with contaminated sharps, but also after some time, if the needles carry dry blood[4]. The infectiousness of HIV and HCV decreases within a couple of hours, while HBV remains stable for more than a week. Earlier publications [5] on the knowledge, awareness and attitude among health care workers and students from India revealed variable responses, whereas reports on these areas are lacking from allied medical students. There were no studies available to our search on the assessment of NSSI among allied medical science students concurrently using pre-test and post-test as well as helpfulness of role play on teaching and training on NSSI. Hence, we took up an initiative to elicit the knowledge, attitude and practices of students undergoing allied science courses in our tertiary care Centre and provide remedial measures through different forms of education and training.

MATERIAL AND METHODS

A cross-sectional study was conducted among 245 new students Nursing(N=100), different courses of Allied Health Sciences (N=120) and Medical Laboratory Technology (N=25) while undergoing first year of their courses at Saveetha Medical College and Hospital during July 2016.All these students had one year training in diploma nursing earlier. This work was carried out after an approval from institutional ethics committee and the participation was voluntary. A structured anonymous questionnaire/statement consisting of five each on knowledge, awareness and attitude was prepared and peer reviewed by the senior faculty. A lesson plan and teaching methodology were prepared which were also reviewed and modified by senior faculty so as to maintain consistency and uniformity during teaching, learning and evaluation. These 245 students who came in batches of 50, were informed about the proposed work, and explained on pre-test and post-test. A didactic lecture on NSSI was delivered over a period of 45 mins using power point, chalk and board. After that,the principal author organized a role play for 15 mins to emphasize on various ways of acquiring and avoiding NSSI, as well as the measures to be undertaken if sustained NSSI for each batch. Their knowledge, awareness and attitude were elicited prior to the lecture (pre-test) and end of the class (post-test) using the previously prepared questionnaire (Table 1). They were asked to respond to each question/ statement. The data were analyzed by simple descriptive statistics.

RESULTS

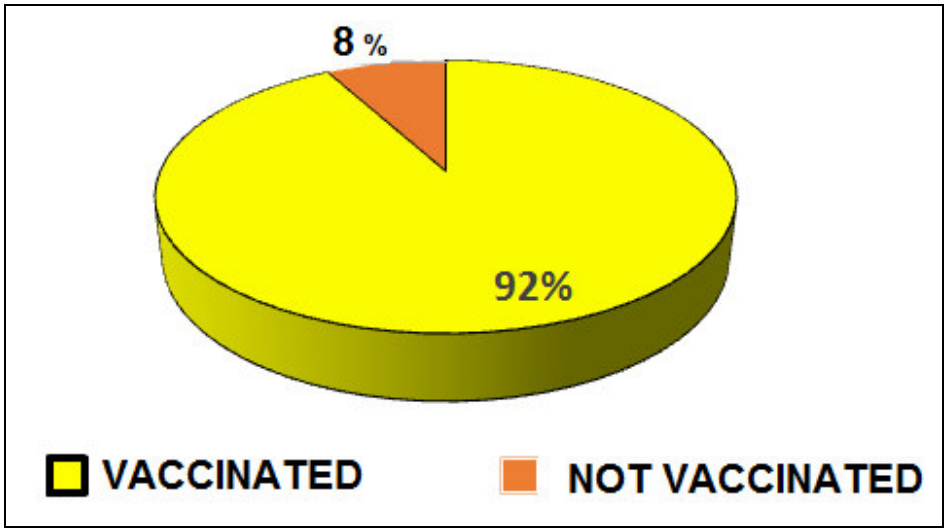
All the 245 students responded and the response rate was 100 %.There were 45 males and 200 females and the Male to Female ratio was 1:4. Their median age was 18 years. Correct pre-test response for knowledge, awareness and attitude varied from 6 to 81.6, 46.9 to 100, 73.5 to 89.7 % respectively, and the post-test response for the same were 97.9 to 100, 85.6 to 100 and 86.5 to 97.5 respectively. The detailed response for each questionnaire/ statement with regard to pre and post-test is depicted in table 1.Overall, the students had different views about NSSI. The students were able to understand and appreciate the methods to be adopted for the prevention of NSSI more effectively after role play. Graph: 1 Depicts the percentage of students vaccinated for Hepatitis B.

Table 1
Response of the Participants (N=245)

SNO	QUESTIONARE/STATEMENT	PRE TEST		POST TEST	
		YES (%)	NO (%)	YES (%)	NO (%)
1	Needle stick and sharp injuries (NSSI) are frequent events in health care settings.	6.1	93.9	97.9	1.1
2	NSSI is an occupational hazard.	81.6	18.4	98.8	1.2
3	Blood borne disease like HBV, HCV and HIV are transmitted by NSSI.	73.5	26.5	100	----
4	Currently there is no vaccine for HCV Infection.	61.2	38.8	100	---
5	Post exposure prophylaxis (PEP) should be initialised within one hour of injury.	59.2	40.8	100	----
6	Most of the NSSI are neglected.	46.9	53.1	85.6	14.4
7	NSSI need not be reported.	55.1	44.9	80	20
8	Hepatitis B vaccine prevents HBV infections.	85.7	14.3	100	---
9	All disposable sharps must be placed in puncture proof container after use.	100	---	100	---
10	A logbook for NSSI has to be maintained in every health care setting.	85.2	14.8	97.9	1.1
11	After the NSSI, the affected area should be rinsed and washed thoroughly with soap and water.	73.5	26.5	97.5	2.5
12	I would like to know the HBV, HCV and HIV status of the patient from whom I acquired NSSI.	75.6	24.4	86.5	13.5
13	A designated person may be made available for management of NSSI in health care settings.	85.7	14.3	97.5	1.5
14	I had full course of Hepatitis B vaccination.	85	15	81.6	18.4
15	Training sessions reduces the risk of acquiring NSSI.	89.7	10.3	95.5	3.5

NSSI = Needle stick and sharp injuries; HBV = Hepatitis B Virus; HCV= Hepatitis C Virus HIV= Human Immunodeficiency Virus.

Graph 1
Percentage of Students Vaccinated for HBV



DISCUSSION

Many studies were conducted earlier among health care workers of various tertiary care centers to elicit their knowledge, awareness and attitude towards NSSI. NSSI commonly occurs during simple clinical procedures such as drawing blood [6], checking blood sugar, administration intramuscular or intravenous drugs involving sharps and various surgical procedures from simple suturing /suture removal, draining an abscess and complex surgical procedures especially when the procedure is prolonged or during emergencies [3]. Though NSSI results in health care setting and contributes to transmission of blood borne diseases, it is neither reported as expected, nor documented. Moreover active surveillance in these areas are not maintained for want of mandatory regulations. HBV, HCV and HIV were known to 73.5 % of our study group probably due to their earlier training and this aspect was similar to the study by Sangeethalakshmi et al[1]. This study has brought out the gaps and enabled us to improve our teaching and training modalities. Since 15% of nursing, 13% of allied health sciences (AHS) and 8% of Medical Laboratory Technology (MLT) students made some errors, we conducted a role play to enforce the principles to be adhered to prevent NSSI as well as what is to be followed after NSSI.Knowledge and attitude of nursing students on NSSI have improved to 100% after a role play. Since NSSI is the most important risk factor for transmission of blood borne diseases such as Hepatitis B, Hepatitis C and the Human Immunodeficiency Virus (HIV), the nursing, AHS and MLT students have to be taught on NSSI from the day they join their respective courses. Students get NSSI mostly during blood sugar monitoring and intravenous cannulation, which can be prevented by the use of safety devices such as special cannula and lancet pens for blood sugar estimation. Needle recapping and failure to place used needles in puncture proof container can also result in NSSI and hence these activities have to be discouraged [8]. Hepatitis B Virus infection can be prevented by vaccination. In this study 85 % were vaccinated compared to the report of Anupriya et al study wherein only 55 % were vaccinated. Education on NSSI has improved vaccination against HBV [4].Strict adherence to universal precautions and hand hygiene is the only way to prevent HIV and HCV infection in health care settings. The strengths of the study are anonymous nature of the questionnaire which was reviewed and modified by faculty, adoption of different modalities to teach and train students and the conduct of the session with a group of 50 students. The limitations of the study were that it was done in a single centre and among paramedical science students of few discipline only.

CONCLUSIONS AND SUGGESTIONS

The knowledge, awareness and attitude towards NSSI and its management as well as prevention were sub optimal among nursing, allied medical science students and medical laboratory technology students, even though these students have completed their nursing diploma earlier.The study has brought out that NSSI has to be taught not only by didactic lecture but also by role play or by demonstration. Hence the lesson plan on NSSI should have multimodalities of teaching and training. It is suggested that regular training program is required to reinforce their knowledge and improve their attitude so as to reduce the occurrence of NSSI and related hazards. There is a need to develop surveillance activities which has to be discussed in the monthly Hospital Infection Control Committee meeting. Counselling has to be given to the students so that they don't have psychological stress and enable them to discharge their services efficiently. Hepatitis B vaccination though made mandatory for all medical and paramedical students has not been effectively implemented nor monitored. Efforts have to be taken to complete HBV vaccination successfully for students of health sciences and all Health Care Personnel.

CONFLICT OF INTEREST

No Conflict of interest to declare.

REFERENCES

1. Sangeethalakshmi GNS, Bhat R.A study on awareness of needle stick injury in students undergoing paramedical course. IOSR Journal of Dental and Medical Sciences 2015:14(11):34-38.
2. Swe KMM, Somrongthong R, Bhardwaj A, Abas AL. Needle Sticks Injury among Medical Students during Clinical Training, Malaysia. International Journal of Collaborative Research on Internal Medicine and Public Health 2014; 6 (5):121-131.
3. Tahir ahmad,Tayyaba komal, Midhat mustafa and Sadia anjum -Hospital waste management awareness, attitude and practices in twin cities of Pakistan, National University of Sciences and Technology, Islamabad, Pakista International Journal of Pharma and Bio Sciences 2015 April; 6(2): (B) 503 – 512
4. Gupta Dk, Agrawal VK, Gupta SB, Ahmad F. Needle Stick Injuries among Health Care Worker. People's Journal of Scientific Research 2015; 8 (2):17-22.
5. Anupriya A, Manivelan S. KAP study on the assessment of needlestick injuries and occupational safety among health-care workers. International Journal of Medical Sciences and Public Health 2015;4(3):342-345.
6. Mehta A, Rodrigues C, Ghag S, Bavi P, Shenai S, DasturF. Needlestick injuries in a tertiary care centre in Mumbai, India. J Hosp Infect 2005; 60: 368-73.
7. Kermode M, Jolley D, Langkham B, Thomas MS, Crofts N. Occupational exposure to blood and risk of bloodborne virus infection among health care workers in rural north Indian health care settings. Am J Infect Control 2005; 33:34-41.
8. Elmiyeh, Whitaker IS, James MJ, Chahal CA, Galea A, Alshafi K. Needle stick injury in National Health Service: Journal of Social Medicine 2004;97:326-7.
9. SweYMM, SomrongthongR, Bhardwaj A, Abas AL. Needle Sticks Injury among Medical Students during Clinical Training, Malaysia. International Journal of Collaborative Research on Internal Medicine & Public Health 2014; 6(5):121-131.
10. ShahR, Mehta HK2, Fancy M, Nayak S, Donga SN5 Knowledge and awareness regarding needle stick injuries among
11. Health care workers in tertiary care hospital in Ahmedabad, Gujarat. National Journal of Community Medicine 2010; 1(2);93-96.