International Journal of Medical Science and Education

www.ijmse.com

Original Research Article

pISSN- 2348 4438 | eISSN-2349- 3208

KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING NEEDLE STICK INJURY AMONG JUNIOR DOCTORS IN A RURAL GOVERNMENT TEACHING HOSPITAL, WEST BENGAL

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Received: 25/08/2018 ***Revised:04/09/2018*** ***Accepted: 25/12/2018***

ABSTRACT

Background: Health care workers are to exposed needlestick injuries during their routine work. Doctors who have just passed MBBS and join for duty in various departments are most vulnerable in this early part of their career. This study was conducted to increase the awareness regarding the risks of needlestick injury, ways to prevent it and finally management of needle stick injury. **Material and Methods:** Twenty-six doctors who are working in the various department of Malda Medical College and Hospital, West Bengal participated. These doctors are working as house staff or interns. A 15 item questionnaire was answered by the doctors. The reply to this questionnaire was used for assessment regarding needle stick injury. **Results:** Majority of the doctors that is eighty-one percent (n=21) had good awareness regarding needle stick injury. Exposure to needle stick injury was reported by seventy-three percent of doctors (n=19). **Conclusion:** This study showed that doctors are highly exposed to the occupational risk of needle stick injury. Therefore awareness about needle stick injury is essential both for the prevention and management of this health hazard.

KEYWORDS: needle stick injury, re-capping, junior doctors, post-exposure prophylaxis

INTRODUCTION

Health care workers worldwide are exposed to blood-borne infections. Needlestick injury being one of the common cause of such infections. According to the World Health Organisation, each year a health worker in a developing country like India is exposed to about two to three needlestick injuries. Needlestick injuries are an important cause of HBV and HCV infections among Healthcare workers worldwide. Exposure to this health hazard is responsible for thirty-nine percent of HCV infections and thirty-seven percent of HBV infections in health care workers. Next important blood-borne infection caused by exposure to needle stick injury is four percent of HIV infections. **(1)**

Among the health care workers, doctors have the highest exposure to needlestick injuries. The junior doctors form the most vulnerable group. Junior doctors are exposed to long working hours, the pressure to learn new skills and limited time for patient management. Further due to time constraint it is often an uphill task for them to develop the right attitude and good practice skills to work under pressure. Clinical

studies conducted in India showed that most of the needle stick injuries have occurred in newly joined doctors. These junior doctors have just passed MBBS and joined various clinical departments. They have perform various procedures like drawing blood from patient veins for various tests, giving medications to patients via intravenous or intramuscular route etc.**(2)**

In a developing country like India, the factors which are responsible for needle stick injury is unnecessary injections, lack of vaccination among health care personnel, poor quality of devices, and finally limited knowledge of safety precautions. Taking care of the above factors can play major role in reducing the exposure to needle stick injury. In clinical trials conducted in India have shown that a particular habit of the health care worker, recapping of the needle is the most common cause of needle stick injury. **(3)**

Clinical trials have shown that preventive measures are highly effective in reducing the incidence of needlestick injuries. It is estimated that safety devices, proper health education and safe working environment can reduce the incidence of needle stick by ninety percent. Thus it is essential to create awareness about needlestick injuries among junior doctors. Regarding the risks involved after exposure to such injuries. Several preventive measures are currently recommended to stop exposure to needlestick injuries. **(4, 5)**

Needlestick injury exposure and the steps were taken by the health care worker to prevent transmission of blood-borne infection form a vital component in the management of this health hazard. Steps like Post-exposure prophylaxis (PEP) within two hours of exposure is eighty percent effective in preventing the transmission of HIV infections. Therefore PEP in appropriate health setting is highly effective. Similarly to prevent HBV infections PEP with Hepatitis B Immunoglobulin in combination with Hepatitis B vaccination can prevent Hepatitis B infection in seventy-five percent to ninety percent of cases in various post exposure scenarios. Junior doctors should be well conversant with the steps to be taken in case of needle stick injury. Basic steps like hand washing with soap and water, reporting, evaluation of the patient and Early PEP consideration can reduce such infections. **(6)**

At present data available regarding awareness of junior doctors in rural hospital at West Bengal is limited. Therefore this study aims at creating awareness of needlestick in rural hospital at West Bengal among junior doctors.

METHODS

This study was conducted between July to August 2018. Twenty-six junior doctors who have passed MBBS and working as Interns or house-staff in Malda Medical College & Hospital, West Bengal participated voluntarily in this study. Interns have passed MBBS and doing an internship in the hospital. House staff have passed MBBS, completed a one-year internship and working in the various clinical department in the hospital. The data collected was kept confidential.

Study Questionnaire: A questionnaire consisting of fifteen items was used to assess the awareness about needle stick injury. A score of seventy percent or more was marked as a good score. The score below seventy percent was marked as a poor score. The questionnaire also assessed the participants regarding exposure to needle stick injury.

The study was approved by the Institutional Ethics Committee, Malda Medical College, Malda, Government of West Bengal. The data was calculated using online statistical data analysis software: social science statistics.

RESULTS

Demographic data:

The age of the participants ranged from twenty-two to twenty-eight years. Total of twenty-six junior doctors participated. Among the participants, there were eleven interns and fifteen house staff. There were six female doctors and twenty male doctors.

Assessment of predominant scores:

Majority of doctors had a good score in knowledge, attitude and practice questions (KAP) - Table 1. Eighteen doctors that are sixty-nine percent had good knowledge scores; the mean score of all participants

was 5.15 out of 8. Twenty-five doctors that are ninety-six percent had good attitude scores, mean score of all participants was 3.7 out of 5. Twenty-one doctors that are eighty-one percent had good practice score, mean score of all participants was 3.2 out of 5. Total KAP score regarding needlestick injury was good in twenty-one doctors that is eighty-one percent; the mean score of all participants was 12.05 out of 18.

Question-wise assessment:

In knowledge component question related to management after exposure to needle stick injury was correctly answered by ten doctors that is thirty-eight percent, the mean score of all participants was 1.30 out 3. Rest of the knowledge questions was answered correctly by the majority of the doctors (73%-92%) – Table 2.

In attitude and practice component question related to recapping after needle use was answered correctly by six doctors that is twenty-three percent in attitude section, the mean score of all participants was 0.23 out of 1.

A similar question in the practice section was answered correctly by eight doctors that is thirty-one percent, mean score of all participants was 0.31 out of 1- Table 3 and Table 4.

Exposure to Needlestick injury:

Nineteen doctors that are seventy-three percent suffered from exposure to needle stick injury-Table 5. Among the doctors exposed to needle stick injury, fifteen doctors had good total KAP scores, and four doctors had poor total KAP scores. Mean total KAP score of doctors exposed to needle stick injury 12.21 out of 15.

Among the doctors who have not exposed to needle stick injury, six doctors had good total KAP scores, and one doctor had poor total KAP scores. Mean total KAP score of doctors not exposed to needle stick injury 11.85 out of 15.

There was no statistical difference between the mean total KAP score of exposed and un-exposed doctors at p-value <0.05- Table 6.

Table 1: Overall Knowledge, Attitude and Practice Score of Doctors regarding needle stick injury

	Doctors (n=26)	Percentage
Good Knowledge Score	18	69
Good Attitude Score	25	96
Good Practice Score	21	81

Table 2: Doctors answering knowledge statements correctly

Knowledge Statements	Doctors (n=26)	Percentage
Management of needle-stick injury (NSI)	10	38
Transmission possibility of HBV in comparison to HIV	23	88
Reporting NSI	24	92
HCV transmission following NSI	24	92
Incidence of transmission HIV, HBV infection	19	73

Table 3: Doctors answering Attitude statements correctly

Attitude Statements	Doctors (n=26)	Percentage
Avoid needle re-capping	6	23
Post-exposure prophylaxis	25	96
Needle-stick injury reporting	25	96
Immediate needle discarding after use	26	100
Protection by wearing gloves	14	54

Table 4: Doctors answering Practice statements correctly

Practice Statements	Doctors (n=26)	Percentage
Needle cutter used	21	81
Wear gloves	19	73
Vaccinated against HBV	21	81
Needle recapping prohibited	8	31
Reporting	16	62

Table 5: Exposure to needle stick injury

Number of Needlestick injury	Doctors (n=26)	Percentage
1-2 Times	10	38
3-5 Times	8	31
More than 5 Times	1	4
Total	19	73

Table 6: Mean Total KAP score exposed versus not exposed

Mean Total KAP score out 15	Exposed to NSI	Not Exposed to NSI	P value	Significance
	12.21	11.86	0.389404	Not significant

DISCUSSION

World health organization has introduced the concept of safe injection. Safe injection ensures the safety of patient, health care provider and the community. To understand the importance of this concept WHO had mentioned in its report that unsafe injection is responsible for thirty-two percent of new cases of HBV, forty percent new cases of HCV and five percent new cases of HIV. To avoid the catastrophic consequences of unsafe injection WHO guidelines for safe injection should be followed. **(7)**

WHO guidelines about safe injection describe in detail about hygiene, protective measures, safe procedural technique and waste management. Guidelines also recommend early consideration of post-exposure prophylaxis for maximum benefit. Thus it covers all the aspects of giving a safe injection to a patient. So before working in the clinical setting a health care worker should be thorough in this concept of safe injection.

Now let us understand when this needle stick injury usually takes place. Various clinical studies have shown that the maximum percentage of needle stick injuries have occurred after use. A study conducted at tertiary care hospital, New Delhi very specifically showed that most of the exposure occurred during recapping of the needle. **(8)** This study showed that the majority of the junior doctors had limited information about the dangers of recapping. In attitude and practice questions in the context of recapping seventy percent of the doctors answered incorrectly, thirty percent of junior doctors in this study gave correct answers. A similar study conducted at a tertiary care teaching hospital in Pondicherry, India showed that the majority of the health care workers (seventy-nine percent) were recapping the needle after use. **(9)** WHO guidelines have clearly mentioned no recapping should be done after the use of a needle. Thus there is a definite scope of improvement in this particular area.

In the case of exposure to needle stick injury, the basic knowledge about post-exposure prophylaxis (PEP) is essential. Eighty-one percent of HIV infections and ninety percent of HBV infections can be prevented with appropriate PEP after needle stick injury exposure. **(10)** This study showed good awareness of PEP among doctors. Ninety-six percent of the doctors had good knowledge of PEP. Though awareness about PEP was high in our study, early PEP consideration as a part of management protocol was not routinely followed. Sixty-two percent of the doctors had not mentioned early PEP in the management of needlestick exposure. A similar study conducted at a tertiary care hospital, New Delhi showed thirty-nine percent awareness about PEP. Therefore it is the area

where the focus is required to protect the junior doctors from the occupational hazard. **(11)**

The remaining questions in the knowledge section assessed transmission of HIV, HBV, HCV infections and reporting. These questions were answered correctly by about eighty percent of the doctors. In the attitude section, the majority of the doctors had right knowledge questions related to discarding used needles; gloves were answered correctly. Finally, in the practice section, doctors responded that eighty-one percent were vaccinated against HBV. Overall the knowledge section, attitude section and practice section the scores were good.

Needlestick injury exposure was seen in seventy-three percent of the junior doctors in this study. In a similar study conducted at a teaching hospital of Armed Forces, India incidence of exposure to needle stick injury was seventy one percent among health care workers. **(12)** So the need of the hour is to create a safe working environment for junior doctors. This will increase awareness about doctors about occupational hazards, ways to reduce occupational hazards and management in case of exposure to occupational hazard. This will decrease fear among the junior doctors about occupational hazard. In a developing country like India the doctor to patient ratio is not as much of developed countries. Due to this junior doctors are often exposed to heavy work load. A positive and safe environment, free from occupational hazard would be instrumental in providing better care to the patients.

One of the most effective ways to manage the occupational hazard like needle stick injury is though continuous medical education (CME). CME should involve the senior faculty, administrative staff and technical staff. A holistic approach is the best approach, involving better devices, better technical skills, better working place and better waste management.

CONCLUSION

The mean scores of knowledge, attitude and practice were good. In total, KAP scores twenty-one doctors scored seventy percent or more. Needlestick exposure was seventy-three percent.

Continuous medical education is required to update the doctors about safe technical skills like avoiding recapping. Importance of early PEP consideration in the management of needlestick injury exposure is another area where there is the scope of improvement.

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How to cite this article: Kumar S. Knowledge, Attitude And Practice Regarding Needle Stick Injury Among Junior Doctors In A Rural Government Teaching Hospital, West Bengal. Int.J.Med.Sci.Educ 2018;5(4):489-494