

## Assessment of Knowledge and Attitude of Medical Students on Various Sterilization Techniques

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### ABSTRACT

**Background:** Infection control holds utmost importance in medical practice. Every medical staff should be aware about sterilization, disinfection and asepsis. It should be seen by the authorities that they follow universal precautions while handling patients. Medical students during their budding stages are very enthusiastic and careless and therefore are at increased risk of cross infection. These students have to work in an environment which is often contaminated because of exposure to infected blood, saliva and aerosols. The aim of present study was to assess the knowledge and attitude of medical students on various sterilization techniques.

**Materials and Methods:** The current study was conducted at Department of Microbiology, RKDF Medical College, Bhopal during a period of 1 year. Final year medical students and intern doctors participated in the study. Students were asked to fill a semistructured proforma containing open ended questions. Their demographic data including age, sex and educational status was also included. Their confidentiality and anonymity was ensured.

**Results:** Around 256 students took part, out of them only 232 gave a completely filled proforma. Out of 232 candidates, 89.2% students (n=207) were aware about sterilization, disinfection and asepsis and 72.4% students (n=168) had knowledge about different methods of sterilization.

Existence of sterilization policy of the hospital was known by 54.3% students and only 49.5% students knew that there

was an infection control committee in the hospital. Around 169 candidates (72.8%) made sure that they use protective wear while handling patients. There were 95.3% students who had used disposable needles, iv sets etc and 20.6% have had needle stick injury once in their career. There were 82.7% students who were willing to treat HIV patients after wearing protective gear and following universal precautions.

**Conclusion:** By this study it can be concluded that the students are not much aware about the sterilization norms of the hospital. Care should be taken to ensure that they are imparted knowledge about infection control.

**Keywords:** Asepsis, Disinfection, Knowledge, Sterilization.

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### INTRODUCTION

Infection control is of critical importance in any medical practice. It is of utmost value whenever surgical practice is considered. Sterilization is a process of destruction or removal of all microorganisms including the vegetative forms like spores. Prevention and control of infection are crucial steps during patient care. Information regarding blood borne diseases, highly infectious respiratory diseases requires students and medical practitioners to evaluate and continually update prevention control strategies and protocols.<sup>1</sup> Medical students much imbibe complete preclinical knowledge regarding patient care, infection control before entering the clinical environment. Medical students during their budding stages are very enthusiastic and careless and therefore are at increased risk of cross infection. These students have to work in an environment which is often contaminated

because of exposure to infected blood, saliva and aerosols. Various blood borne diseases like hepatitis B, AIDS can spread through the use of unsterile instruments. Students should be encouraged to adhere to proper sterilization protocols and every effort should be taken to ensure that these protocols are followed. Use of barrier techniques like gloves, masks, spectacles, universal precautions and use of sterilized instruments must be encouraged.<sup>2</sup> Despite of various measures taken by the institutes, medical professionals do not seem to adhere to these standardised procedures.<sup>3-5</sup> Awareness should be created regarding the importance of sterilization which could further aid in decreasing the incidence of communicable diseases. The aim of present study was to assess the knowledge and attitude of medical students on various sterilization techniques.

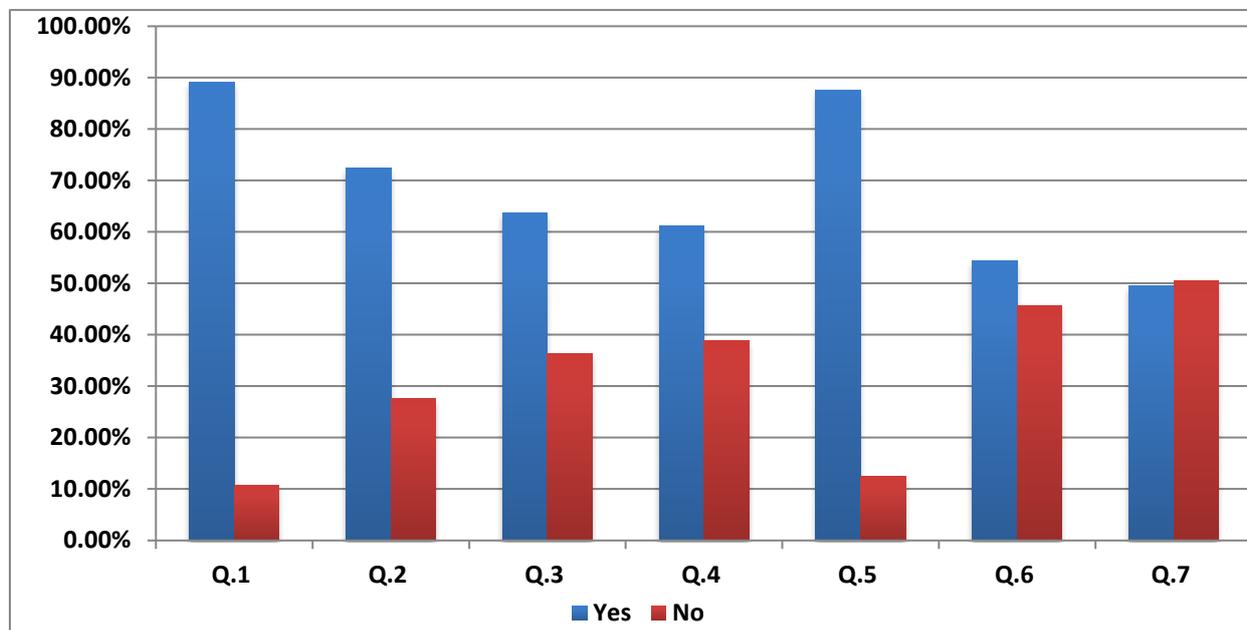
**MATERIALS AND METHODS**

The hospital based observational descriptive study was conducted at Department of Microbiology, RKDF Medical College, Bhopal during the period of 1 year. The institute is a tertiary care centre as well as a teaching centre. Ethical committee clearance was obtained prior to the initiation of the study. The study participants included interns and final year students who have to deal and manage the patients. A semi structured proforma containing open ended questions were given to every participant. It had questions

to assess the knowledge, attitude and awareness of students towards the techniques of sterilization. The validity of the questionnaire was checked by giving it to 5 medical practitioners and they were asked to indicate their level of validity using a five point scale. In the end some of the questions were modified according to the rating scale and some were removed. The demographic data including age, sex and educational status of all the candidates was also included. Their confidentiality and anonymity was ensured.

**Table 1: Awareness of the medical students regarding sterilization techniques**

<b>AWARNESSS (n=232)</b>	<b>YES (%)</b>	<b>NO (%)</b>
<b>Q.1 Do you have any idea about sterilization, disinfection, and asepsis?</b>	207(89.2)	25(10.7)
<b>Q.2 Do you know the different methods of sterilization?</b>	168(72.4)	64(27.5)
<b>Q.3 Do you know the most common method of sterilization?</b>	148(63.7)	84(36.2)
<b>Q.4 Are you aware of the temperature for sterilization in autoclave?</b>	142(61.2)	90(38.7)
<b>Q.5 Do you know that infectious diseases can be transmitted when aseptic precautions are not taken?</b>	203(87.5)	29(12.5)
<b>Q.6 Is there any sterilization protocol/policy in this hospital?</b>	126(54.3)	106(45.6)
<b>Q7. Is there an Infection Control Committee in this hospital?</b>	115(49.5)	117(50.4)



**Graph 1: Awareness of the medical students regarding sterilization techniques**

**Table 2: Practice measures that are followed by the medical students**

<b>PRACTICE MEASURES (n=232)</b>	<b>YES (%)</b>	<b>NO (%)</b>
<b>Q.1 Do you think washing hands with antiseptic before and after handling patients is necessary?</b>	162(69.8)	70(30.1)
<b>Q.2 Is the use of personal protective measures while handling patients/blood/tissues etc., for example, gloves, masks, glasses, caps, and apron necessary?</b>	169(72.8)	63(27.1)
<b>Q.3 Have you used disposable needles, intravenous sets, etc.?</b>	221(95.3)	11(4.7)
<b>Q.4 Did you ever get needle injury?</b>	48(20.6)	184(79.3)
<b>Q.5 Did you report and take treatment for needle injury? N=48</b>	41(86.2)	7(14.5)
<b>Q.6 Have you been vaccinated against hepatitis B</b>	159(68.5)	73(31.4)
<b>Q. 7 Do you know how to operate an autoclave?</b>	126(54.3)	106(45.6)

**Table 3: Attitude of students towards sterilization methods**

ATTITUDE	YES (%)	DONT KNOW (%)	NO (%)
<b>Q.1 Health staff should always put on gloves while handling blood/saliva/tissues etc. of patients</b>	147(63.3)	65(28.0)	20(8.6)
<b>Q.2 Health staff should always put on glasses while handling blood or surgical cases</b>	59(22.8)	113(48.7)	60(25.8)
<b>Q.3 Health staff should always put on a mask while handling oral or nasal cavity of patients</b>	177(76.2)	42(18.1)	13(5.6)
<b>Q.4 Are you willing to treat HIV patients after using protective gear and taking universal precautions</b>	192(82.7)	17(7.3)	23(9.9)
<b>Q.5 Health staff should always wash hands with antiseptic before and after handling patients</b>	190(81.8)	26(11.2)	16(6.8)

## RESULTS

In our present study, 256 students took part, out of them only 232 gave a completely filled proforma. The response rate was 90.6%. The mean age of participants was 21.4 years with a range of 20-24 years. There were 67.2% (n=156) male candidates and rest (n=76) female candidates.

Table 1 illustrates the awareness of the candidates regarding sterilization techniques. It also includes awareness about health hazards, the protocols followed by the hospital. Out of 232 candidates, 89.2% students (n=207) were aware about sterilization, disinfection and asepsis and 72.4% students (n=168) had knowledge about different methods of sterilization. Around 148 students (63.7%) knew the commonly used method of sterilization and 61.2% students (n=142) were aware about the temperature used in autoclave for sterilization.

There were 203 students (87.5%) who knew an infectious disease can spread if precautions were not taken. Existence of sterilization policy of the hospital was known by 54.3% students and only 49.5% students knew that there was an infection control committee in the hospital.

Table 2 shows the commonly used protocols followed by most of the students. There were 69.8% students who washed their hands with antiseptic before and after handling patients. Around 169 candidates (72.8%) made sure that they use protective wear while handling patients.

There were 95.3% students who had used disposable needles, iv sets etc and 20.6% have had needle stick injury once in their career. Out of these only 86.2% students (n=41) reported the incident. There were 68.5% students who were vaccinated against Hepatitis B. Only 54.3% students (n=126) knew of had an idea about working of an autoclave.

Table 3 demonstrates the attitude of students towards the sterilization methods. There were 63.3% students according to whom the health staff should wear gloves while handling patient's blood/saliva/tissues and 22.8% students think that health staff should wear glasses while handling blood or surgical cases. Around 177 students think that mask should be worn when handling oral or nasal cavity of patients. There were 82.7% students who were willing to treat HIV patients after wearing protective gear and following universal precautions. 81.8% students think that health staff should always wash hands before and after handling patients.

## DISCUSSION

In our study, majority of students were aged between 20-24 years. According to universal precautions, all the body fluids must be regarded as a source of infection for transmitting blood borne pathogens like HIV, Hep B and Hep C. According to our study, 87.5% students knew that infectious diseases can be transmitted if aseptic techniques were followed. In a study by Sukhlecha et al<sup>6</sup> on the attitude of health care professionals towards sterilization techniques in a tertiary care hospital in western India, 55.9% candidates knew that Hep B could be transmitted by the use of unsterile instruments. In a similar study done by Sessa A et al<sup>7</sup> in Italy, 77.6% to 79.2% nurses agreed to this statement. According to Uti OG et al<sup>8</sup> and Sofola OO et al<sup>9</sup>, 79.2% and 84.1% respondents stated that autoclaving was the most common method of sterilization. In our study 63.7% students knew this fact, which was comparatively fewer as reported by other studies. In a study by MA Hashemipour<sup>10</sup> evaluating the knowledge and attitude of dental students towards sterilization, 81% students chose sodium hypochlorite as an effective material for sterilization and 78% chose hot air oven as an efficient technique. In a study conducted in Nigeria, 73.2% knew that autoclaving was the most widely used method.<sup>11</sup> In our study, 69.8% candidates believed in washing hands with antiseptic before and after handling patients. According to a study conducted by Siddiqui HK et al<sup>12</sup>, 42.6% respondents washed their hands twice and 14.8% washed their hands at least four times a day and 1.4% didn't feel the need of washing their hands during day. Protective wear i.e. gloves; apron and mask are an integral part of universal precautions. In our study 63.3% candidates believed that wearing gloves were necessary while handling patient's blood/saliva/tissues and 22.8% believed that glasses should also be worn. There were 76.2% students according to whom wearing mask was necessary while dealing with patient's nasal or oral cavity. According to a study by Sukhlecha et al<sup>6</sup>, 63.8% participants used protective wear while handling patients. In a similar study, 89.9% health care professionals followed barrier protocol.<sup>11</sup>

In our study, 82.7% of the candidates were ready to treat HIV patients while taking universal precautions but this incidence was low compared to a study conducted in Nigeria, where 93% respondents were ready.<sup>11</sup> In order to ensure proper sterilization, every institute must implement and follow strict sterilization norms and protocols and it should be ensured that these are followed.

Regular cross checking should be done. From first year itself students should be encouraged to follow sterilization protocols and proper infection control knowledge should be imparted. All the students must be well aware about infection control committee of the hospital and must be encouraged to inform in case of any needle stick injury.

## CONCLUSION

From the above study it can be concluded that knowledge and awareness about sterilization techniques was not up to the mark. Lectures and hands on training should be conducted at regular interval to ensure that knowledge imparted is at par with the recent protocols.

## REFERENCES

1. Royal College of Dental Surgeons of Ontario. Guidelines on Infection Prevention and Control in the Dental Office. Ontario: RCDSO, 2012.
2. Morris E, Hassan FS, Al Nafisi A, Sugathan TN. Infection control knowledge and practices in Kuwait: a survey on oral health care workers. *Saudi Dent J* 1996; 8:19–26.
3. Duffy RE, Cleveland JL, Hutin YJ, Cardo D. Evaluating infection control practices among dentists in Vâlcea, Romania, in 1998. *Infect Control Hosp Epidemiol* 2004; 25:570-575.
4. Elkarim IA, Abdulla ZA, Yahia NA, Al Qudah A, Ibrahim YE. Basic infection control procedures in dental practice in Khartoum-Sudan. *Int Dent J* 2004; 54:413-417.
5. Mehtar S, Shisana O, Mosala T, Dunbar R. Infection control practices in public dental care services: findings from one South African Province. *J Hosp Infect* 2007;66:65-70.
6. Sukhlecha AG, Vaya S, Parmar GG, Chavda KD. Knowledge, attitude, and practice regarding sterilization among health-care staff in a tertiary hospital of western India. *International Journal of Medical Science and Public Health*. 2015; 4(10):1377-82.
7. Sessa A, Giuseppe GD, Albano L, Angelillo IF. An investigation of nurses' knowledge, attitudes, and practices regarding disinfection procedures in Italy. *BMC Infect Dis* 2011; 11:148.
8. Uti OG, Agbelusi GA, Jeboda SO, Ogunbodede E. Infection control knowledge and practices related to HIV among Nigerian patient. *J Infect Dev Ctries* 2009; 3(8):604–10.
9. Sofola OO, Savage KO. An assessment of compliance of Nigerian dentists with the universal precaution guidelines for infection control. *Infect Control Hosp Epid* 2003; 24:737–40.
10. Hashemipour MA, Mozafarinia R, Mirzadeh A, Aramon M, Nassab SA. Knowledge, attitudes, and performance of dental students in relation to sterilization/disinfection methods of extracted human teeth. *Dental research journal*. 2013 Jul; 10(4):482.
11. Azodo CC, Ehizele AO, Umoh A, Ogbemor G. Preventing HIV transmission in Nigeria: role of dentists. *Malays J Med Sci* 2010; 17(2):10–17.
12. Siddiqui HK, Ikram K, Aftab NH, Uzair F. Knowledge and practice of sterilization among different health care workers. *Pak Oral Dental J* 2014; 34(3):507–9.

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