ORIGINAL ARTICLE e-ISSN: 2349-0659 p-ISSN; 2350-0964

Sterilization: A Study of Knowledge, Attitude, and Practice among Staff of Tertiary Care Hospital

Mukesh Kumar[1], Sommya Kumari[2], Rameshwar Singh[3], Sanjay Kumar[4], Amit Prasad[5]

Abstract

Background: For a hospital to discharge its duty properly to safe guarding human life and to decrease in the incidence of nosocomial infections with corresponding increase in the mortality, length of stay and cost, it is necessary for a hospital to have a good CSSD set-up and an efficient working staff with adequate knowledge and practice of sterilization techniques. Moreover, the fatal disease AIDS became so powerful and spread worldwide, the demand for proper procedures for hospital infection control has gained momentum enormously. Diseases, such as Hepatitis B and C, are known to be transmitted through contaminated surgical instruments; there is a need to adopt stricter guidelines for disinfection and sterilization. **Aim:** The purpose of this study was to know the knowledge, attitude, and practice regarding sterilization among health-care staff working in Central sterile supply department of Naland Medical College and Hospital, Patna. **Methods**: The study is a descriptive, observational, and hospital based which was carried out at our institution. The tools include observation check list and questionnaire. Data were analyzed by SPSS 11.0. **Conclusion:** We conclude that our hospital CSSD staff are having adequate knowledge and positive attitude and are highly practicing sterilization methods. We recommend every hospital to conduct such studies to assess the knowledge of their staff regarding sterilization and disinfection techniques on regular basis to prevent the nosocomial infections.

Keywords: Attitude, CSSD staff, Knowledge, Practice, Sterilization

Asian Pac. J. Health Sci., (2021); DOI: 10.21276/apjhs.2021.8.1.17

Introduction

It is mandatory to carry out adequate sterilization procedures in the dental hospital and clinics for safe guarding human life. Because despite stupendous advances in the medical and dental field, hospital-acquired infection remains the most serious concern. Sterilization is the process by which the probability of occurrence of the viable microorganism in a medical product is reduced to $<10^{-6}$. Sterilization is the condition that is difficult to achieve and hard to prove.

Sterilization is now an essential pre requisite for certain procedures and devices. Nowadays, there are several new techniques of sterilization and newer innovations in equipment's of sterilization. However, it is not economically feasible to plant sterilization equipment in all hospitals and dental clinics.

"Central Sterile Supply Department" (CSSD) is a service which caters to the needs of big hospitals for the supply of sterilized material to the all departments of the hospital. The department involves in the activities of receipt, cleaning, assembly, sterilization, and distribution of sterilized materials and equipment after conducting bacteriologically safe sterilization practice under controlled conditions with proper technical supervision in a minimum cost.[1]

Hence, Central Sterile Supplies Department was established to centralize the sterilization procedures under a trained professional. CSSD setting will save nursing time, sterilization process being more effectively controlled throughout the hospital. Sterilization, therefore, plays a very important role in task of providing quality care to the patients and the CSSD ensures optimum availability of sterilized products. This study was conducted with objective to know the knowledge, attitude, and practice regarding sterilization among health-care staff working in our hospital.

[1]Department of Dentistry, Nalanda Medical College and Hospital, Patna, Bihar, India

[2]Department of Prosthodontics and Crown and Bridge, Buddha Institute of Dental Sciences and Hospital, Patna, Bihar, India

[3]Department of Dentistry, Vardhman Institute of Medical Sciences, Pawapuri, Bihar, India

[4]Department of General Medicine, Nalanda Medical College and Hospital, Patna, Bihar, India,

[5]Private Practice, Deoghar, Jharkhand, India

Corresponding Author: Sommya Kumari, Department of Prosthodontics and Crown and Bridge, Buddha Institute of Dental Sciences and Hospital, Patna, Bihar, India. E-mail: sommyakumari@gmail.com

How to cite this article: Kumar M, Kumari S, Singh R, Kumar S, Prasad A. Sterilization: A Study of Knowledge, Attitude, and Practice among Staff of Tertiary Care Hospital. Asian Pac. J. Health Sci., 2021; 8(1):84-86.

Source of support: Nil

Conflicts of interest: None.

Received: 22/11/2020 **Revised:** 22/12/2020 **Accepted:** 19/01/2021

Materials and Methods

Participants

The descriptive, observational, and hospital-based cross-sectional study was carried out at Nalanda Medical College and Hospital, Patna. The study was approved by the institutional research and ethical committee.

All the staff (n = 26) including males and females, working in CSSD department of the hospital was included after obtaining free, written, and voluntary informed consent.

Tools and Technique

The tools include observation check list and questionnaire.

Questionnaire

Questionnaire was prepared to study the staff attitude and knowledge toward use of sterilization techniques. It was prepared on the basis of information obtained from the review of literature on the topic. There were separate questions for attitude and knowledge. Both have two parts. Part one has questions on demographic factors and second part contains 16 and 14 statements of knowledge and attitude questions, respectively.

The following criteria were used to grade the knowledge/ attitude.

1. Complete knowledge/ completepositive attitude/ always practice – 100%
2. Very good knowledge/highly positive attitude/very high practice – 80–99%
3. Good knowledge / moderately positive attitude/high practice – 60–80%
4. Average knowledge/neutral attitude/moderate practice – 40–60%
5. Poor knowledge/moderately negative attitude/poor practice – 20–40%
6. Very poor knowledge/high negative attitude/very poor practice – 1–20%.

Observation

The activities of CSSD were observed and sterilization techniques were noted with the help of check list.

Data Analysis

Data were analyzed by SPSS 11.0.

Results

Results were presented in Table 1 question wise percentage score of knowledge. Table 2 shows question wise percentage score of attitude. Table 3 shows question wise percentage score of practice.

Discussion

Sterilization and disinfection in hospitals are a significant concern for both the medical and the dental community. There has been an increase in many infectious diseases such as Acquired Immunodeficiency Syndrome (AIDS) and Hepatitis B because of inadequate sterilization.[2-5] Kane *et al*. revealed that approximately 8–6 million HBV, 2.3–4.7 million HCV and 80000–160000 HIV infections may result every year from unsafe injections.[6] Very few studies have been done in India quoting the importance of CSSD in the prevention of infections and control. Basu *et al*. conducted a study regarding the operation of CSSD in a 167 bed oncology center in the eastern part of India and documented the importance of CSSD in control of nosocomial infections.[7] Our study assessed the knowledge of CSSD staff in our hospital regarding use and implementation of sterilization techniques. As per our study findings and results, the staff is having very good knowledge and is having high positive attitude

Table 1: Question wise percentage score of knowledge

Question	*Total*	*%*	*Remarks*
Do u know about sterilization	26	100	Complete knowledge
What is CSSD and its importance	26	100	Complete knowledge
Do u know autoclave and its principle	26	100	Complete knowledge
Do u know about fumigating gas	26	100	Complete knowledge
Do u know about ETO gas	18	69	Good knowledge
ETO gas is used for	22	85	Very Good knowledge
What are common equipment used for sterilization	26	100	Complete knowledge
Do u know different methods used in sterilization	20	77	Good knowledge
What are temperatures used in hot air oven	26	100	Complete knowledge
To kill spores which temperature we should use	26	100	Complete knowledge
Do you know what are biological indicators	20	77	Good knowledge
What is Fumigation time	26	100	Complete knowledge
Do you know when autoclave should be used/ should not be used	26	100	Complete knowledge
Name some disinfectants	26	100	Complete knowledge
What is infection	26	100	Complete knowledge
What are dangers of infections	26	100	Complete knowledge

Table 2: Question wise percentage score of attitude

Question	*Total*	*%*	*Remarks*
Sterilization is effective in killing microorganisms	26	100	Complete positive attitude
Need of updating staff knowledge regularly	26	100	Complete positive attitude
Need to maintain records in CSSD	26	100	Complete positive attitude
Proper handling of sterilization equipment	26	100	Complete positive attitude
Conducting regular inventory check	26	100	Complete positive attitude
Precautions during fumigation	26	100	Complete positive attitude
Equipment should be checked regularly	26	100	Complete positive attitude
Need of imparting knowledge about sterilization	26	100	Complete positive attitude
Staff should be made aware of safety techniques	26	100	Complete positive attitude
Fumigation is an effective sterilization technique	26	100	Complete positive attitude
Indicators used to ensure proper sterilization of articles is essential	20	77	Highly positive attitude
Importance of labeling articles processed in CSSD	21	81	Highly positive attitude
Double wrapping of equipment is needed	19	73	Highly positive attitude
Knowledge about steam sterilization	26	100	Complete positive attitude

Table 3: Question wise percentage score of practice

Question	*Total*	*%*	*Remarks*
Staff maintaining aseptic techniques	24	92	Very high practice
Proper inventory present	26	100	Always practice
Steam sterilization temperature is maintaining	26	100	Always practice
Equipment in the autoclave packed in double lining	26	100	Always practice
Maintaining holding time in autoclave and hot air oven	26	100	Always practice
Fumigating CSSD at proper intervals	26	100	Always practice
Using biological and chemical indicators	26	100	Always practice
Safety measures are taking	26	100	Always practice
Maintaining different records in the department	26	100	Always practice
Proper handling of equipment	26	100	Always practice

toward use of sterilization techniques and is efficiently practicing the sterilization techniques. Positive correlation exists between attitude and practice. The staff of our CSSD is well trained and has scientific rationale behind principle. Our hospital also conducts regular training classes to update the knowledge of CSSD staff regarding new sterilization techniques.

Conclusion

We conclude that our hospital CSSD staff is having adequate knowledge and positive attitude and is properly practicing sterilization methods which will play a very important role in the decrease of nosocomial infections and deadly infections such as HIV, Hepatitis, and HCV. We recommend every medical and dental hospital to conduct such studies to assess the knowledge and practice of their CSSD staff regarding sterilization techniques and to improve the working qualities of the healthcare workers of CSSD on regular basis to prevent hospital acquired infections effectively.

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