

Assesment Of Knowledge Of Central Sterile Supply Department Staff Regarding Sterilization In Public & Private Tertiary Care Hospitals Peshawar

Shahid Ullah

Lecturer, Emergency Clinical Medicine Technology and Academic Writer/Researcher at Rehman medical Institute Email: shahidullahmt@gmail.com

Aitazaz Rafi

MPH Scholar, Khyber Medical University, Peshawar Email: aitazazrafi@gmail.com

Zafran Ullah

Lecturer, Surgical Technology, Rehman College of Allied Health Sciences, Peshawar Email: zafranktk1998@gmail.com

Muhammad Rahid

Medical Laboratory Technologist, Rehman Medical Institute, Peshawar Email: rahidafridi1998@gmail.com

Iqra Zafar

Echo Technologist, Shaukat Khanum Memorial Cancer Hospital and Research Center Email: cardiology940@gmail.com

Tabish Siddique

Medical Laboratory Technologist and Area Manager, WIRHA & Co-GVS Filter Technology, Islamabad Email: tabishsiddique1122@gmail.com

Shayan Amir

Anesthesia Technologist, Rehman Medical Institute, Peshawar – Anesthesia Department Email: shayanamir968@gmail.com

Mushtaq Ur Rahman (Corresponding Author)

Primary Health Care Technologist (MP), Zulfiqar Ali Bhutto Postgraduate Paramedical Institute, Provincial Health Services Academy, Peshawar, Health Department Email: mushtaqkmu517@gmail.com

Abstract

Background: The background and objective of this study are to assess the knowledge on sterilization among health-care staffs of a tertiary hospital Peshawar. This cross-sectional study was done in a tertiary care hospital Peshawar city from 14, July, 2023 to 25 October 2023. An adequate knowledge will be needed for central sterile supply department. There are some Blood borne Hepatitis viruses are spread surgical instruments contamination is known high strategies are to be followed for prevention of infection A questionnaire with closed ended

Aims: The aim of this study is to assess the knowledge of staff regarding sterilization in Tertiary care hospitals in Peshawar.

Methodology: A Descriptive cross sectional study was conducted in Tertiary care hospital Peshawar (KTH PGH RMI NWGH)

Conclusions: The primary concern of the study was to find out of knowledge about staff regarding sterilization of instrument in tertiary care hospitals in Peshawar, as it is the basic one of the most important steps to prevent spread of infection especially

Author Details

Keywords:

Received on 15 Feb 2025

Accepted on 20 Mar 2025

Published on 31 Mar 2025

Corresponding E-mail & Author*:

Mushtaq Ur Rahman

Email:

mushtaqkmu517@gmail.com

surgical site infection. Good knowledge and practice of staff regarding sterilization significantly decrease morbidity and mortality rate. Our research study concluded that 60% of staff have satisfactory knowledge about sterilization of instruments, 15% having average knowledge and 25% having lower knowledge. But to raise the safety standards for staff we need excellent knowledge and good practice. Our research result indicated that some staff of the department is not fully aware of the proper method of sterilization of instruments.

Result: In this research out of 81 staff worker 64(79.0%) and 17(21.0%) in this research staff worker 60% have good knowledge about sterilization of instruments, 15% having average knowledge and 25% have lower knowledge about sterilization of instrument in our study were 1 to 5-year age 64(79.0%), 5 to 10-year age 10(12.3%), 10 to 15-year age 7(8.6%)

Introduction

The vital portion of patient safety is infection control. (1) An average had health WHO showed in survey that 8.7% patients of hospital related to infection. Generally, 1.4 million people in all over the world infected from hospital infection every time acquired mainly in hospital. (2) Basic health care related infections are urinary tract infection, infection surgical site, blood stream infection, Pneumonia infections of lower portion of respiratory tract insufficient practice of sterilization many globally reports have been found about infections risk. (3)

Sterilization is a fundamental process of killing and destruction of all kind of microorganisms such as virus, bacteria, fungus, and bacterial spores. (4) Patient which are basically connected with important sterilizing equipment are syringes, gauges, surgical instruments and bandages, etc. over the time. For the reduction of infection for both health care staff and the patients in hospital germ and pathogen microorganisms required to destroyed sufficiently. The basic role of central sterile supply department is to prevent infection and supply sterile equipment, sterile devices, or instruments which are immediately available for a surgery. run by infection control committee which is independent department. [5]

is also known as central supply department, In hospital it is separate place and other healthcare departments this department work is sterilization of medical equipment devices, instruments and other aseptic procedures.(6) The important function of center sterile supply department personnel is disinfecting, cleaning and sterilizing of patient care supplies it is important to prevent insufficient sterilization process and enhance the quality of sterilization for the enhancement and development of sterilization process many efforts are involve. The knowledge and experience that make sure a patient which prevent health care related infections one of these efforts is equipping the central supply personnel. [7]

Health care associated infection are the highly threats to the patient safety. The primary method utilized worldwide for sterilizing medical instruments is steam sterilization. Autoclaving does not kill all microorganism 100%. [8] Sterilization is an important in hospital for both medical and common community. Without sterilization there is increasing number an infectious disease such as Hepatitis B and Auto immunodeficiency syndrome (AIDS). The aim of department is to control nosocomial infection. [9].

Collaborates with the infection control committee (ICC) and other hospital programs to enhance and oversee policies related to the cleaning and decontamination of reusable instruments, as well as procedures involving wrapped equipment contaminated with substances. [5] is responsible to established and provide trained healthcare professionals.

Is the hospital department responsible for serving, monitoring, and supplying sterilized materials to all other hospital departments, including cleaning and washing services?

The central sterile supply Department plays major role by sterilizing instruments and supply these surgical instruments to different surgical departments [10]. The Staff have responsibility about cleaning, packing and sterilization of these expensive Instruments at minimal cost [11]. All sterilization processes are carried out under the supervision of trained and professional staff by saving time and make sure the effectiveness of surgical instruments [12]. plays a vital role in providing quality care to the hospital patients [13]. and ensures best availability of sterilized medical instruments [14].

The central sterilization department () has asses to different areas including OT.

The Aim of Professionals are to control hospitals infection. Defect in sterilization of surgical instruments can lead to Disastrous consequences and economic burden (15). The quality of sterilized products must be assessed by certain quality indicators such as the products, the structure and the work processes in (16)

It is the key for staff to control the Nosocomial infection by accurate sterilization packing cleaning and supply of sterilize surgical instruments (17)

The is an important part of hospital. It performs sterilization of equipment, instrument and other instrument which are regularly use in operation theater. is located in semi restricted area with area 7032 square feet [18] in the healthcare department provides sterilized materials to both the operating room and outpatient department. It is responsible for handling the packing, cleaning, sterilization, and delivery of all surgical instruments used throughout the hospital. [19] have no associated specialization within the for delivering services to these clinics. And new study of management technique shows limited enhance in quality control [20].

Methodology:

Study Settings: The study was conducted in different staff in tertiary care hospital in Peshawar

Study Population: The population for this study was the staff in tertiary care hospitals in Peshawar.

Study Design: Descriptive Cross Sectional Study

Study Duration:

2 to 3 months

2 weeks for Literature Review

1 month for data collection

3 weeks for data entry

3 weeks for thesis writing

Sample Size:

Sampling is done through Census\ Sample will be conducted through Census

A total of 81 staff was selected for this study.

Sampling Technique:

Through Census

Ethical consideration

The institution consent was taken from OT Manager, tertiary care hospital. Data was kept secret for educational purpose. Under the supervision of supervisor

Inclusion criteria:

All staff of department in Tertiary Hospitals Peshawar.

Exclusion Criteria:

Those staff is excluded from our research study who is not present in Central Sterile Supply Department or not having direct contact.
Those who unwilling to participate in the research study.

Study population

The Population for the study was the Staff in Tertiary Care Hospital in Peshawar.

Data Collection Procedure:

We have generated a questionnaire with closed ended question and distributed to the department of multiple tertiary care hospitals in Peshawar. We have collected the data from these hospitals RMI, NWGH, PGH and KTH.

Data Analyses Procedure:

We are going to analyze our collected statistical data with the help of SPSS version 23 and also do a Chi-Square Test.

RESULTS:

The following section presents the findings of the participants' knowledge assessment regarding sterilization practices and procedures. The results include participants' responses to questions related to sterilization methods, autoclave operation, sterilization principles, indicators, and applications.

Table: General Knowledge of Sterilization

KNOWLEDGE ITEM	CORRECT RESPONSE	FREQUENCY (N)	PERCENTAGE (%)
Sterilization is the process which kills	Microorganisms and spores	44	54.3
CSSD abbreviation	Central Sterile Supply Department	45	55.6
Common gas used for sterilization	ETO	43	53.1
Department controlling sterilization	ICC	25	30.9
Most common type of nosocomial infection	SSI	47	58.0
Sterilization kills viruses	True	77	95.1

This table presents the participants' general knowledge regarding sterilization. The highest proportion of participants correctly identified that sterilization kills viruses, with 77 (95.1%) selecting the correct response. More than half correctly identified the meaning of CSSD, 45 (55.6%), the common gas used for sterilization (ETO), 43 (53.1%), the microorganisms and spores eliminated by sterilization, 44 (54.3%), and the most common type of nosocomial infection, 47 (58.0%). However, only 25 (30.9%) correctly identified the department responsible for controlling sterilization. Overall, the findings indicate variable knowledge among participants, with important gaps in some basic concepts of sterilization.

Table: Knowledge Regarding Sterilization Methods and Autoclave

Knowledge item	Correct response	Frequency (n)	Percentage (%)
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ETO gas is used for sterilization at	Very low temperature	23	28.4
Steam sterilization temperature	132°C–135°C	46	56.8
Steam sterilization pressure	106 kPa	43	53.1
Gas used in autoclave	50% air and 50% nitrogen	56	69.1
Three parameters of steam sterilization	Steam under pressure, time and temperature	57	70.4
Method used to sterilize liquids	Gravity steam	9	11.1
Autoclave exposure temperature	121°C	72	88.9
Time required at 134°C for sterilization	3 minutes	15	18.5
Item sterilized by dry heat	Plastic Petri dish	28	34.6
More effective sterilization	Moist heat sterilization	39	48.1

The Table demonstrates participants' knowledge of sterilization methods and autoclave-related procedures. The highest level of correct knowledge was observed for autoclave exposure temperature, with 72 (88.9%) participants selecting 121°C. Similarly, 57 (70.4%) correctly identified the three parameters of steam sterilization, while 56 (69.1%) correctly identified the stated gas composition used in the autoclave. In contrast, knowledge was particularly low regarding the appropriate method for sterilizing liquids, with only 9 (11.1%) selecting the correct answer, and the time required for sterilization at 134°C, correctly identified by only 15 (18.5%). Knowledge regarding ETO sterilization temperature was also low, with 23 (28.4%) selecting the correct response. These findings demonstrate **considerable gaps in participants' practical and technical knowledge of sterilization procedures.**

Table: Knowledge Regarding Sterilization Principles, Indicators and Applications

KNOWLEDGE ITEM	CORRECT RESPONSE	FREQUENCY (N)	PERCENTAGE (%)
Steam sterilization is effective because steam is a	Good conductor of heat	53	65.4
Location of sterilization indicator in autoclave	At the center	58	71.6
Developer of steam sterilization	Louis Pasteur*	64	79.0
Method used for metallic devices such as needle scopes	Flaming	37	45.7

This table summarizes participants' knowledge regarding the principles, indicators, and applications of sterilization. The majority, 64 (79.0%), correctly identified Louis Pasteur as the developer of steam sterilization according to the questionnaire key. Furthermore, 58 (71.6%) correctly identified the center of the autoclave as the appropriate location for the sterilization indicator, while 53 (65.4%) correctly recognized steam as an effective sterilizing agent because of its good heat-conducting property. However, only 37 (45.7%) correctly identified flaming as the appropriate method for sterilizing the metallic device described in the questionnaire. Overall,

participants demonstrated moderate knowledge in some fundamental principles of sterilization, but deficiencies remained in the application of sterilization techniques.

DISCUSSION:

In the present study, a total of 81 staff workers were assessed for their knowledge regarding the sterilization of instruments. Overall, 64 (79.0%) participants demonstrated good knowledge, while 17 (21.0%) showed inadequate knowledge. According to the categorized findings, approximately 60% had good knowledge, 15% had average knowledge, and 25% had poor knowledge regarding sterilization practices. Regarding work experience, the majority of participants, 64 (79.0%), had 1–5 years of experience, followed by 10 (12.3%) with 5–10 years and 7 (8.6%) with 10–15 years of experience. These findings suggest that although a considerable proportion of staff possessed good knowledge, gaps remained in specific areas of sterilization practice.

The findings can be compared with a study conducted by H. Jabbari in Iran, published in the *Iranian Journal of Public Health* in 2012, which reported that 35% of participants were male and 65% were female. The study also found that 62.5% of participants had not received relevant training and demonstrated inadequate awareness regarding sterilization indicators. Compared with the present study, the findings highlight the importance of continuous education and practical training to improve knowledge and compliance with sterilization procedures.

Similarly, a study conducted at a tertiary care hospital in Jammu and Kashmir by Jyoti Kapoor reported that the largest proportion of participants had average knowledge (47%), followed by poor knowledge (26%), while smaller proportions demonstrated good knowledge. In comparison, the present study showed a higher proportion of participants with good knowledge. This difference may be related to variations in staff experience, educational background, availability of training, institutional practices, and exposure to sterilization procedures.

Despite the relatively good overall knowledge observed in the present study, the findings indicate that specific knowledge gaps still exist, particularly regarding technical aspects of sterilization, autoclave operation, sterilization indicators, temperature, pressure, and appropriate sterilization methods for different instruments and materials. Therefore, hospital authorities should arrange regular workshops, seminars, refresher courses, and practical training sessions on sterilization and infection prevention and control. Continuous monitoring and periodic assessment of staff knowledge may further improve compliance with standard sterilization practices and help ensure patient safety.

CONCLUSION:

The primary concern of the study was to find out of knowledge about staff regarding sterilization of instrument in tertiary care hospitals in Peshawar, as it is the basic one of the most important steps to prevent spread of infection especially surgical site infection. Good knowledge and practice of staff regarding sterilization significantly decrease morbidity and mortality rate. Our research study concluded that 60% of staff have satisfactory knowledge about sterilization of instruments, 15% having average knowledge and 25% having lower knowledge. But to raise the safety standards for staff we need excellent knowledge and good practice. Our research result indicated that some staff of the department is not fully aware of the proper method of sterilization of instruments.

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