

The Knowledge And Practices Of Safety Measures Among Operation Theatre Technicians of Sheikh Zayed Medical College/Hospital Rahim Yar Khan.

Dr.Muhammad Tanveer Aziz; Dr.Iftikhar Ahmed; Dr.Sajid Akhtar.

ABSTRACT

Background:Health care workers are prone to many kinds of hazards and injuries during their whole life due to the nature of the duty. Hazards can be physical like lacerations and cuts due to scalpel or needle prick, chemical, mechanical, infectious hazards and hazards due to radiations.

Objective: The objective of this study was to determine the knowledge and practices of safety measures among operation theatre technicians of Sheikh Zayed Hospital Rahim Yar Khan.

Methodology :We conducted study at Sheikh Zayed Hospital, Rahim Yar Khan. Duration of study was 17-04-2017 to 21-07-2017.Subject under study was OT technicians of Sheikh Zayed Hospital, Rahim Yar Khan. Inclusion criteria was that the OT technicians present at the time of data collection in all 3 duty shifts gave informed verbal consent. Exclusion criteria was that some OT technicians did not give informed verbal consent. Sample size was 40. Data was collected by pre-designed questionnaire Including variables on age, sex and education, vaccination and questions on knowledge of safety measures like disease transmitted, protective measures and variables on practice work, whether they use gloves, gowns, masks shoe and head cover during OT work. Data was entered and analyzed by using

SPSS-20. Informed verbal consent was taken before data collection.

Results:80% OT Technicians have knowledge of face mask as safety measure,70% of head covers,67.5% of gloves,60% of gowns and 72.5% of shoe cover.100% wear face masks and shoe covers,92.5% wear head cover,85%wear gloves and 90% wear gowns.

Conclusion: The Study showed that among OT technicians of Sheikh Zayed Hospital, Rahim Yar Khan $\frac{3}{4}$ th have correct knowledge of transmissible diseases during OT work. $\frac{1}{3}$ rd do not have correct knowledge of safety measures during OT work. One tenth do not practice all steps of safety measures.

Key Words: Knowledge of safety measures, practices of safety measures among Operation Theatre Technicians.

INTRODUCTION

Operation theatre technicians and nurses play an important role in maintaining the health and well-being of patients.

SAFETY: The state of being "safe" (from French*sauf*), the condition of being protected from harm or other non-desirable outcomes.

Safety can also refer to the control of recognized hazards in order to achieve an acceptable level of risk.

OCCUPATIONAL HAZARD: *An occupational hazard is a hazard experienced in the workplace. Occupational hazards can encompass many types of hazards, including chemical hazards, biological hazards (bio hazards), psychosocial hazards, and physical hazards. In the United States, the National Institute for Occupational Safety and Health (NIOSH) conduct workplace investigations and research addressing workplace health and safety hazards resulting in guidelines.¹*

OPERATING ROOM TECHNICIAN: An operating room technician is a healthcare worker who is a professional registered nurse and assists the surgeon and the surgical team in their tasks. Operating room technician are responsible for the supply of all of the surgical needs and for keeping of inventory of all of the various items that were used during the operation.

Next is our topic of discussion which is about the study on the hazards faced by operation theatre staff and the safety measures they adopt.

The fundamental ethic of health care is that sick persons must receive care. This premise carries an unstated consequence: an occupational risk to healthcare workers who respond to the needs of contagious patients. We come across on daily basis a number of incidents occurring due to carelessness of the technicians in operating room, during handling of samples or during surgical procedures and thus having diseases transmitted to them via needle pricks or by

direct contact to the blood or body fluids of the patients having communicable infections. Certain groups of individuals are at greater risk than others because of the nature of their work especially the health care workers because they handle sharp devices or equipment's such as scalpels, sutures, hypodermic needles, blood collection devices or phlebotomy devices. The most common sharps injury is caused by needles. Needlestick injury is defined as any per cutaneous injury with sharp equipment used in the delivery of medical care. Such equipment may include hollow-bore needles, suture needles, scalpels, IV equipment. Furthermore, HCWs in high risk areas of hospital setting are potentially at an increased risk of exposure and experience substantial anxiety and depression, which may lead to changes in occupation and behavior.

In Pakistan: According to World Health Organization (WHO) regional classification, Pakistan comes in Eastern Mediterranean Region D (EMR D). Unfortunately this region has the highest rate of needle stick injuries as compared to the entire world. The incidence and prevalence of chronic liver disease due to HBV and HCV is gradually increasing in Pakistan. An increasing number of these patients are brought to tertiary care hospitals for diagnosis and management. This puts HCWs and the patients they deal with, at an ever growing risk of exposure to these blood borne pathogens. Even though there are many sources of spread of these blood borne pathogens, sharps injuries remain a major source of HCV infection among HCWs, accounting for almost 40% of HCV infections. Contaminated sharps were estimated to cause 66,000 HBV infection annually,

associated with 261 deaths. Different studies from Pakistan reported prevalence of NSI ranging from 45% to 94% among HCW ; however, these were conducted in a single hospital and had small sample sizes.ⁱⁱA big incident recently took place in Bahawalpur, Pakistan where Doctors and a nurse lost their lives after treatment of a patient suffering from Congo viral infection. Senior Registrar Dr. Sagheer Sameeja was put on ventilator and These hazards can be tabulated as follow:ⁱⁱⁱ

laboratory reports of Agha Khan Karachi Hospital confirmed congo virus from Miss Nadia of Lodhran who underwent a surgery at Bahawalpur Victoria Hospital’s surgery ward. The surgery was performed by Dr. Sagheer. A student- nurse expired a day after surgery. Two other Doctors who were assisting Dr. Sagheer during surgery also have had congo viral infection.

Accident hazards	Injuries to legs and toes caused by falling objects, e.g., medical instruments.
	Stabs and cuts from sharp objects, especially needle-pricks and cuts by blades
	Slips, trips, and falls on wet floors, especially during emergency situations
	Acute back pain resulting from awkward body position or overexertion when handling heavy patients.
Physical hazards	Exposure to radiation from x-ray and radioisotope sources.
Chemical hazards	Exposure to various anesthetic drugs (e.g. N ₂ O, halothane, ethyl bromide, ethyl chloride, ether, methoxyfluorane, etc.).
	Skin defatting, irritation, and dermatoses because of frequent use of soaps, detergents, disinfectants, etc.
	Irritation of the eyes, nose, and throat because of exposure to airborne aerosols or contact with droplets of washing and cleaning liquids.
	Chronic poisoning because of long-term exposure to medications, sterilizing fluids (e.g., glutar aldehyde), anesthetic gases, etc. Latex allergy caused by exposure to natural latex gloves and other latex-containing medical devices.
Biological	Infections due to the exposure to blood, body fluids or tissue specimens possibly leading to blood-borne diseases such as HIV, Hepatitis B and Hepatitis C.

<i>hazards</i>	Possibility of contracting palm and finger herpes (Herpes Whitlow)
	Increased hazard of spontaneous miscarriages.
	Risk of contracting a nosocomial disease as a result of a prick from a syringe needle (e.g. infectious hepatitis, syphilis, malaria, tuberculosis).
<i>Ergonomic, psychosocial and organizational factors</i>	Psychological stress caused by a feeling of heavy responsibility towards patients.
	Stress, strained family relations, and burnout due to shift and night work, overtime work, and contact with sick patient
	Problems of interpersonal relations with surgeons and other members of the operating team.
	Exposure to severely traumatized patients, multiple victims of a disaster or catastrophic event or severely violent patients may lead to post-traumatic stress syndrome
	Fatigue and lower back pain due to the handling of heavy patients and to longer periods of work in a standing posture

Safety Measures for Operation Theatre Technicians:

Besides surgeon and assistants, Operating room technicians are equally prone to the hazards of Operation Theater. In order to avoid any hazardous outcome, they must take care of them and should adopt following measures to be safe:

The need for sterile technique:

Strict aseptic and sterile techniques are needed all times in the Operation Theater, because freshly incised or traumatized tissue can easily become infected. Therefore, anything unsterile in the contact with any personnel is potentially dangerous and can transfer microbes. All operative procedures are performed under sterile

conditions. Conversely, terminal decontamination and sterilization of all material and equipment used during an operation is performed with the assumption that every patient is a potential source of infection for other persons.^{iv}

- Vaccination: They must have vaccination against most common infections caused merely by a needle prick e.g. Hepatitis B, C infection.^v
- Orientation of new staff members: There should be proper training for all members about handling the contaminated samples, blood stained instruments and equipments or any infected tissue removed by a surgery. It is

important that all new members are introduced to the operating theater on the first day or as soon as possible to familiarize themselves in the new and unknown surrounding. Every member of the health facility should be oriented including staff members from health centers and clinics.

- **In-service training:** The operation theater must have regular in-service training programmes in the form of discussions, demonstrations with regard to procedures and methods can be done. The medical-legal risks in the operating theater and recovery room must be emphasized time and again.
- **Hand Hygiene:** They should take care of hand hygiene before and after contact with any of the object described above.
- **In case of diseased patient:** If a patient is suffering from any communicable infectious disease, they should be more vigilant in handling the patient and samples collected from him.
- **Waste disposal:** There should be proper waste disposal methods to avoid any kind of contamination.
- **Disinfection of area:** Operating room technicians must have training of disinfection of area after the surgical procedure.
- **Know about diseases:** They must have knowledge of modes of transmission of various diseases so that they might protect themselves.
- **Awareness of Hazards:** They should have awareness of all possible hazards of operation

theater e.g. biological hazards, chemical hazards, occupational hazards etc.

- **PPE(personal protective equipments):** People in operating room must wear PPE (personal protective equipments) which include the following :
- **Head cover:** All facial and head must be covered in the restricted area. Headgear should fit well to prevent any escape of hair and to confine micro-organisms. A cap or hood is put on before a scrub suite or dress to protect the garment from contamination by hair.
- **Surgical mask:** Masks over their lower face , covering their mouths and nose with minimal gaps to prevent inhalation of plume or airborne microbes.
- **Eye protection:** Goggles and face shields: Shades or glasses over the eyes, including specialized colored glasses with different lasers . A fiber-optic headlight may be attached for greater visibility. Eye protection must be worn as part of personal protective equipment to act as a barrier to infectious material entering the eye during all invasive surgical procedures, including endoscopic procedures or in any situation where splash injury to the eyes could occur.
- **Surgical Scrub:** The surgical scrub is the process of removing as many micro-organisms as possible from the hands and arms by mechanical washing and chemical antiseptics before participating in an operative procedure.

The purpose of surgical scrub is to remove soil, debris, natural skin oil sand micro-organisms from hands and forearms of sterile team

members. The surgical scrub is done just prior to gowning and gloving for each operation.

- *Gloves:* Vinyl gloves on hands ; latex is used as well, but much less common due to latex sensitivity which affects some health care workers and patients. Sterile gloves complete the attire for scrubbed team members. They are worn to permit the wearer to handle sterile supplies or tissues of the operative wound.

- *Gown:* Sterile long gowns , with bottom of the gown no closer than six inches to the ground.

- *Appropriate operation room shoes and shoe covers:* that cover the feet must be worn all times in the restricted area . Overshoes are not recommended.

- *In case of radiations:* If X-rays are expected to be used, lead aprons /neck covers should be used to prevent over exposure to radiations.

Objectives

The objectives of this study were to:

- Assess the knowledge about the safety measures among Operation Theatre Technicians.
- Determine of practices about safety measures among Operation Theatre Technicians.
- Determine the demographic features of Operation Theatre Technicians.

MATERIALS AND METHODS

Study Design:

Cross sectional study

Study population:

OT Technicians in Sheikh Zayed Medical College & Hospital, Rahim Yar Khan.

Setting:

Sheikh Zayed Hospital, Rahim Yar Khan

Duration of study:

17 April to 21 July 2017.

Sample size:

A total of forty OT Technicians were included in study.

Sample technique:

Non probability convenient sampling technique.

Inclusion Criteria:

1. OT technicians of either sex present at the time of data collection in all three duty shifts.

2. Those who gave informed verbal consent for data collection.

Exclusion Criteria:

1. Those who didn't give informed verbal consent for data collection were excluded.

Data Collection Procedure:

Pre-designed questionnaire was used to collect data. The questionnaire included variables on age, sex, education, vaccination status. Questions on knowledge of safety measures like disease

transmitted, protective measures & variables on practice work, whether they use gloves, apron, masks, head cover, shoe cover during OT-work.

Data Analysis:

Data was entered and analyzed by using SPSS-20. Numerical variables like age, were presented as mean (+,-) Standard Deviation. Categorical variables like sex, education, vaccination status, knowledge and practices regarding safety measures are presented as percentages.

Ethical Approval:

Ethical approval was sought from conduction of institutional review board for study conduction & informed verbal consent was taken before data collection.

Table 1: Age of study subjects

Characteristics of age	No.
Mean	27.4
Std. Error of Mean	1
Median	26
Mode	22.00 ^a
Std. Deviation	6.600

Range	36.00
Minimum	19.00
Maximum	55.00

Table 1 Shows that the mean age of study subjects was 27.4, median was 26, mode 22 and standard deviation 6.600.

Table 2: Hepatitis B vaccination status

Status	Frequency	Percent
Yes	21	52.5
No	14	35.0
Don't Know	5	12.5
Total	40	100.0

Table 2 shows that among OT technicians 52.5% were vaccinated, 35% not vaccinated and 12.5% have no idea.

Table 3: Training during service

Status	Frequency	Percent
Yes	24	60
No	16	40
Total	40	100.0

Table 3 shows that among OT Technicians 60% people has training during service and 40% do not have training.

Table 4: Perception of OT Technicians about transmissible diseases During Operation Theatre work

Disease	NO.	%age
Hepatitis	30	75%
AIDS	25	62.5%
Bacterial/Viral Infections	9	22.5%
TB	8	20%
Skin disease		
Others	17	42.5%

Table 4 shows that 30(75%) OTT responded that hepatitis is transmissible disease during OT work, 25(62.5%) said AIDS, 10(25%) bacterial infections, 9(22.5%) TB, 8(20%) skin disease and 17(42.5%) said other diseases.

Table 5: Knowledge about safety measures

During Operation Theatre work

Safety measures	NO.	%age
Face mask	32	80%
Head cover	28	70%
Gloves	27	67.5%
Gowns	24	60%
Shoes cover	29	72.5%

Table 5 shows that 32(80%) OTT have knowledge of face mask as safety measure, 28(70%) of head covers, 27(67.5%) of gloves, 24(60%) of gowns and 29(72.5%) OTT have knowledge of shoes cover as safety measure during OT work.

Table 6: Practice of face mask and head covers by Operation Theatre technicians In Operation Theatre

Status	Frequency	%age
Yes	40	100
No	0	0
Total	40	100

Table 6 shows that 40(100%) of OT technicians Wear face mask in Operation Theatre.

Table 7: Practice of gloves and gowns by Operation Theatre technicians In Operation Theatre

Status	Frequency	%age
Yes	34	85
No	6	15.0
Total	40	100.0

Table 7 shows that 34(85%) OT technicians wear gloves in operation theatre, while 6(15%) not wear gloves.

Table 8: Practice of OT shoes wearing by OT technicians In OT

Status	Frequency	%age
Yes	40	100.0
No	0	0.0
Total	40	100.0

Table 8 shows that 40(100%) of OT technicians wear shoes in operation theatre.

DISCUSSION

This study assessed the safety measures among the OT technicians in Sheikh Zayed Medical College and Hospital Rahim Yar khan. The basic idea to conduct this study was that we wanted to know the infectious and life threatening diseases to which OT technicians are very much exposed during their contacts with the patient. In our study among OT technicians 62.5% were male and 37.5% female and mean age of study subjects was 27.4, median 26, mode 22 and standard deviation 6 years.

In current study, 30(75%) OTT responded that hepatitis is transmissible disease during OT work, 25(62.5%) said AIDS, 10(25%) bacterial infections, 9(22.5%) TB, 8(20%) skin disease and 17(42.5%) said other diseases 32(80%) and

32(80%) OTT have knowledge of face mask as safety measure, 28(70%) of head covers, 27(67.5%) of gloves, 24(60%) of gowns and 29(72.5%) OTT have knowledge of shoes cover as safety measure during OT work while it has been founded in previous study that only 46% nurses or lab technicians have correct knowledge about transmissible diseases and safety measures such as use of gloves.

In our study it is noted that among OT technicians 52.5% were vaccinated, 35% not vaccinated and 12.5% have no idea while in another study conducted to assess the hepatitis-B vaccination status, knowledge, attitude and practice of High risk health care workers, it was reported almost similar to current study 64% subjects were vaccinated, 31% had no idea

about vaccination and 45% knew about vaccination but still they were not vaccinated.

Limitation of this study included; a relatively small sample size, mainly due to time constraints and we included only one institute that too a public sector hospital, it would have been better to include more public sector and private sector hospitals in this study. Additionally convenient sampling technique was used that has its inherent problems of lack of generalizability.

Conclusion

We were able to have correct knowledge of transmissible diseases during OT work. One in four OT-Technicians does not have knowledge of Hepatitis as transmissible disease. One in three OT-Technicians does not have knowledge of AIDS as transmissible disease. Three in four OT-Technicians do not have knowledge of Bacterial and Viral Infections as transmissible disease. Up to one third of OT-Technicians don't have correct knowledge of safety measures during OT-work. About one out of ten OT-Technicians don't practice all steps of safety measures. Additionally, half of the OT-

Technicians aren't vaccinated against Hepatitis B. About half of the study subjects weren't trained during service regarding safety measures. This study concluded that only up to three fourth OT-Technicians have correct knowledge of safety measures in operation theatre.

Suggestions

It is recommended that further researches should be carried out in our country about knowledge and practices of safety measures among operation theatre technicians during operation work.

- i) Strong rules and regulations should be set in Pakistan so that everyone should follow safety health measures.
- ii) Moreover, vaccination of all health care workers should be done with documentation.

References;

ⁱCenters for Disease Control and Prevention. Retrieved from NIOSH 2016-06-24



ⁱⁱSiddique K, Mirza S. H., Tauqir S. F., Anwar I, Malik A. Z. Knowledge attitude and practices regarding needle stick injuries amongst healthcare providers. Pakistan JSurg. 2008;24(4):243–248.

ⁱⁱⁱ international Labour Organization: International Hazard Data sheets on Occupation: Nurse, Operating Room, <http://www.ilo.org>

^{iv}. Implementation Manual – WHO Surgical Safety Checklist (First Edition). United States, World Health Organization , 2008. WHO/IER/PSP/2008.05. retrieved from www.who.edu.com

^v.Altok M, Kuyurtar F. Karacorlu S. et al. Health care workers experiences with sharp and needlestick injuries and precautions they took when injuring. Journal of Maltepe, <http://www.ncbi.nlm.nih.gov>.