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Knowledge, Attitudes, And Practices Regarding Personal Protective Equipment Among Surgical Technologists at Burn Center In Peshawar

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ABSTRACT

It is crucial that the personal protective equipment (PPE) allows surgical technologists to mitigate risks within the operating room, but the lack of training, experience, and use may negatively impact the safety standard. The purpose of the research was to evaluate the knowledge of surgical technologists about the use of PPE, frequency, and the obstacles that appear in the way of following the safety rules. In this cross-sectional survey, 118 surgical technologists participated in the survey with the

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help of a structured questionnaire. Among study participants 58.5% were male and 39% fell in the 20 to 25 years age category. A majority of the respondents (63.6) had undergone some type of PPE training with 36.4 not having received any form of PPE training. The degree of knowledge was different: 39.0 percent showed high knowledge, 20.3 percent displayed excellent knowledge and 40.7 percent indicated only moderate or low knowledge. The use of PPE was overall a good one, with 67.8% having regular use and only 4.2% saying they never used it. Most of the participants had been in their careers early, with 37.3 percent of participants with three to five years of experience. The overall competency scores were between 1-10. Lack of proper training (27.1%) and time needed to use PPE (26.3) were the most commonly reported barriers, and on the whole, the study revealed that although the level of PPE awareness and adherence among surgical technologists is satisfactory, there are still significant gaps, especially in those with less training and lower scores on the competency scale.

Keywords— Personal Protection equipment (PPE); Surgical technologists; OSH; Barriers; health care workers; operative room safety.

Introduction

Blood-borne occupational illnesses (BBODs) can cause injury to health care workers (HCWs) by means of sharp objects, blood and bodily fluids. HIV infection is the most common occupational injury that is blood-borne in developing countries. A recent survey of 298 healthcare workers in Iran identified 38.3 percent of respondents who claimed to have been injured by needles or sharp objects in the last six months (Khatian et al., 2018). BBO has a risk of being caught in students who study nursing, midwifery, and surgical technology due to their academic levels and clinical placements. Reports indicate that 53.4 percent of Iranian students are under the exposure to these diseases, even though in other countries the rates are reported at 15 to 50.1. The relevance of the issue is evidenced by the high number of researches in this field (A. Abedelahi & Vali, 2017).

Personal protection equipment is of great protection against hospital-acquired infections. To acquire a positive vision, and to be able to protect themselves and other people, healthcare professionals need to have a plethora of information, as well as to understand which practice is the best with regards to personal protective equipment. The research aimed at assessing the level of knowledge, attitudes, and practices (KAP) of healthcare workers in relation to the use of personal protective equipment (PPE) and the possible factors related to it. (Kannan & Thenmozhivalli, 2023).

Personal protective equipment (PPE) is defined as protective clothing, helmets, gloves, face mask, face shields, goggles and other items created to protect the wearer against harm and prevent the spread of infection. This prevents the entry of microorganisms into the cloth and their pollution.

In order that personal protective equipment (PPE) can be efficiently utilized, there should be proper ways of disposing the contaminated PPE to prevent the transmission of the disease to both the wearer and other people. A study conducted at Mbagathi Hospital in Nairobi, Kenya notes that the issue of personal protective equipment (PPE)

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is being challenged in Africa due to the fact that the knowledge of the components of standard precautions of infection prevention is in 17.8 percent among the healthcare workers and the sociodemographic nature of healthcare workers contributes towards low infection prevention practices in healthcare setting (Ahmad .*et al* 2024).
PPE is personal protective devices used to mitigate contact with biological agents in order to safeguard health of workers. The primary strategy is to prevent the disease transmission within the medical setting where medical staff is in close contact with already infected patients. In more than 80 percent of the cases of PPE, health care workers contaminated themselves according to the findings of Kang et al. Among the organizations that have developed PPE guidelines which are more or less consistent, there are the World Health Organization, the European Center of Disease Control, the European Society of Intensive Care Medicine, and the Society of Critical Care Medicine. As per one recent study carried out in the UK and USA, frontline healthcare staff was 3.4 times more likely to report positive test as compared to the people. (Kumari, S., & Mahajan, A.*et a*l (2020)

Methodology

Study Setting
This study was conducted in the Burn Center Peshawar.

Study Design:
This project used a Descriptive cross-sectional study design.

Ethical Approval
The current study received ethical approval of the Ethical Committee of the Sarhad University of science and technology.

Study Duration:
This research took a period of 4 months

Sampling Techniques
Purposive sampling techniques

Sample Selection
The participant was chosen using Purposive sampling methods and was chosen based on a hospital meeting the inclusion criteria. Participants got informed consent and a questionnaire was provided to them.

Sample size calculation:
The sample size computed by use of Cochran Formula (Corrected to Finite Population) is 118. Adoption Cochran formula with adjustment of finite population:

Cochran's formula (for infinite population):

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- Confidence Level: 95%
- Z-score (Z): 1.96
- The Estimated Proportion (p): 0.5
- Margin of error (e): 0.05.
- Population Size (N): 50
- The required final sample size is 118.

Inclusion criteria

1. Surgical Technologist Presently working as a Surgical Technologist in any of the Tertiary Hospitals of Peshawar
2. .Willingly desires to Take part**Exclusion criteria:**
1. Who does not feel like being involved in the study?
2. Other Technologist than Surgical.

Data Collection Procedure

The information was gathered with the consent of the institutional research committee of the participants who passed the inclusion criteria. The data were gathered by taking the consent using the consent form and then the research questionnaire was given to everyone.

Data Collection Tool

The researcher used the assistance of attached data collection tool (questionnaire) to collect data after taking informed written consent.

Data Analysis

This project was done using Portable IBM SPSS Software. Categorical variables gave frequencies and percentages of the variables utilizing Descriptive Statistics. Tables and graphs were developed.

Results

One hundred and eighty-eight surgical technologists took part in the study. The data has been checked to cover all the main variables such as gender, age group, and training about the use of PPEs, level of knowledge, frequency of wearing PPEs, years of professional experience, assessment score and perceived barriers. According to our research, most of the people who responded to our questions were male (58.5%), and they represented the youthful age range of 20-25 years (39.0%). With 36.4% of the respondents having never been trained in the use of PPE, the largest percentage (63.6) had been trained on the use of PPE and only, 39.0% of the respondents had excellent knowledge on the use of PPE and 20.3% showed high knowledge, with most 40.7% showing moderate or weak knowledge. Although, 4.2 % of the participants replied that they never used PPE; 67.8% of the participants replied that they always used it which implies good PPE compliance.

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Table: Gender wise distribution of the study participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Female	49	41.5	41.5	41.5
ValidMale	69	58.5	58.5	100.0
Total	118	100.0	100.0	

As per the study findings, most of the surgical technologists- 58.5% of all respondents (n= 69) were men. The sample was 41.5% (n = 49) female participants. This shows that the workforce in the study setting, in the surgical technology, is dominated by males though a significant percentage of female professionals is also represented as indicated in table above

Table: Frequency of PPE among study participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Always	80	67.8	67.8	67.8
Never	5	4.2	4.2	72.0
Rarely	11	9.3	9.3	81.4
Sometimes	22	18.6	18.6	18.6
Total	118	100.0	100.0	100.0

Based on the results, 67.8% (n = 80) of surgical technologists reported to use personal protective equipment (PPE) always when they were doing their work. Nevertheless, 9.3% (n = 11) responded that they wear PPE not regularly, and 18.6% (n = 22) said that they do it sporadically. As indicated in the table above, the percentage that never wears PPE is a very small one, 2 (n=5).

Table 3: Shows years of Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
	>10	12	10.2	10.2	10.2
	0–2	34	28.8	28.8	39.0

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Valid	**3–5**	44	37.3	37.3	76.3
	6–10	28	23.7	23.7	100.0
	Total	118	100.0	100.0	

The greatest percentage of respondents, 37.3% (n = 44), had three to five years of professional experience, according to the distribution of years of experience. 28.8% (n = 34) with 0–2 years of experience and 23.7% (n = 28) with 6–10 years of experience came next. Of the participants, only 10.2% (n = 12) had more than ten years of experience. These results imply that the majority of surgical technologists in the study are in their early to mid-career stages, with relatively few highly experienced experts in the area, as indicated in the above table.

Table 4 Shows training and knowledge

S.no	Variables		Frequency	Percentage
1	Donning and Doffing PPE accurately	Confidently	56	47.4%
		Very Confidently	31	26.2%
		Neutral	22	18.6%
		uncomfortable	9	7.6%
2	Received training about PPE	Yes	84	71.1%
		No	34	28.9%

Discussion

This research study was aimed at determining the extent in which surgical technologists at Burn center Peshawar understand PPE, their perception about its use, and the frequency at which they use it in their day to day tasks. The results indicate that the majority of the staffs realize the significance of PPE and put it on frequently, although there are still some weaknesses that require enhancement.

Many participants were found to know a lot about PPE, and many indicated that they wear it always during the procedures. This indicates that most surgical technologists have the basic knowledge of safety. Nevertheless, the research also established that a significant proportion of the study participants (more than one-third) had never received formal PPE training. The untrained people had lower scores on PPE knowledge and were less confident about donning and doffing.

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These findings are consistent with numerous other articles, in which it was proven that training directly leads to positive effects in PPE usage and the avoidance of errors. As an illustration, it is also found in past studies that better educated and trained workers are more likely to follow PPE regulations. This trend is corroborated by our results: the knowledge and safety of the participants who had been trained in the use of proper PPE were superior.

The barriers mentioned in this study, including lack of training, time deficit and limited access to PPE are comparable to those that are found in international studies. These obstacles decrease the use of PPE and raise the chances of exposure at the workplace. The findings also indicate that younger or less-experienced technologists might have to be provided with more guidance and practicum instructions to enhance their confidence.

On the whole, this analysis indicates that despite the generally high PPE usage, the training and the supervision can be enhanced, and the PPE availability can further help to improve the safety level and minimize risks of being infected among employees and patients.

Conclusion

This research established that majority of the surgical technologists possess average to good knowledge regarding the use of PPE and they use it frequently. However, other individuals lacked PPE training, and they were less confident and more erroneous. There were also complaints about the inadequacy of PPE, time constraint, and inability to use PPE when busy with work.

Therefore, the research finds that good instructions, training, and sufficient provision of PPE are quite critical. Such measures will assist workers in remaining safe and preserving patients in a better way.

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