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ASSESSMENT OF KNOWLEDGE AND PRACTICE OF ANESTHESIA PROVIDERS REGARDING PATIENT SAFETY GOALS IN REHMAN MEDICAL INSTITUTE PESHAWAR-PAKISTAN

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Abstract

Background: The goal of this study is to determine the anesthesia provider's present practices, evaluate their degree of knowledge and comprehension of critical patient safety standards, and identify any gaps between their knowledge and practice, as suggested by WHO and WFSA (world federation of societies and anesthesiologist) collaborated to produce international standard for a safe practice of anesthesia. **Methods**: A descriptive and cross-sectional survey were conducted using questionnaires to gather data from 90 samples. **Results:** There were 90 participants in this study, from whom we collected data and made observations that we have 77 males out of 90 respondents (85.6%),13 females out of90 respondents (14. 4%).we have 13 Technicians out of 90 respondents (14.4%) Technologist:36 out of 90 respondents (40.0%), Anesthesiologist:25 out of 90 respondents (27.8%), Anesthesia Trainee:16 out of 90 respondents (17. 8%).Finally we conclude from all these data that we have 65 out 90 respondents (72.2%) are familiar with WHO safety check list while 25 out of 90 respondents (27.8%) are not familiar with WHO safety check list. **Conclusion:** In light of these findings, it can be concluded that the WHO anesthesia safety checklist is perceived as a valuable tool by the majority of the OT+ICU staff at RMI. These results highlight the checklists potential patient safety, improve teamwork, and reduce anesthesia errors.

Keywords: Rehman medical institute, Peshawar General Hospital, Hayatabad Medical Complex

INTRODUCTION:

Anesthesia, which is a controlled, brief loss of feeling or consciousness, is induced for veterinary or medicinal objectives. There may be partial or total unconsciousness, paralysis (muscle relaxation), amnesia (memory loss), and analgesia (pain reduction or prevention). Anaesthetized refers to a person who is under the influence of anesthesia. To develop the International Standards for a Safe Practice of anesthesia, the World Health Organization (WHO) collaborated with the World Federation of Societies of Anesthesiologists (WFSA), a nonprofit organization that represents anesthesiologists in 150 countries (1)

For healthcare administrators, physicians, patients, and their families, the idea of patient safety is particularly valuable since it promotes improved care delivery and reduces costs (2). The main goal of a medical facility is to prevent and reduce damage to patients while they are being treated (3). Checklists are being used more frequently by

anesthesia teams throughout the perioperative period to improve clinical care and patient safety (4).

They are putting forth the concept of patient-centered intra-anesthesia care teams to greatly enhance anesthesia safety both within and outside of operating rooms (2). The anesthesiologist's years of experience and professional status were found to influence patient safety knowledge and practice, which seems to be low among Enugu, Nigeria's medical professionals (5). The WHO checklist improves "patient safety and inter-discipline communication" and highlights current safety procedures to avoid "possible complications"(6).

The anesthesiologist or individual being assessed for anesthesia fitness filled out a pre-made survey (7). But factors including staff instability, a general distaste for the checklist, a lack of teamwork, and a refusal to complete the checklist made its adoption difficult. Due to the absence of a crucial OR team member who was either out of the operating room or distracted by other issues, the TSO (team sign out) was not implemented (6).

One of the core principles of anesthesia care worldwide is patient safety. The field of anesthesiology has led medical research on patient safety, care standard implementation, and gradual improvement of care processes for the past 50 years. All of these efforts have resulted in significantly reduced anesthesia hazards for patients. However, not all countries have been successful in enhancing patient safety in relation to anesthesia. The views of national anesthesia society leaders in thirteen different nations are presented in this article (8).

The study was conducted between March 2021 and February 2022 using an online questionnaire. The survey link was released by Ukrainian Anesthesiologists Association (UAA) members. To sum up, 210 persons answered the poll. Only 40.3% of respondents stated that their medical institutions have complied with the Declaration's recommendations, despite 79.1% of respondents stating they were aware of the Helsinki Statement on Patient Safety in Anesthesiology. Although most respondents stated that the Helsinki Declaration's implementation had improved the quality of the work, 16% claimed there was no positive effect (9).

In order to increase patient safety and lower complications, the World Health Organization's (WHO) surgical safety checklist focusses on process organization, communication, and teamwork in clinical practice. This study aimed to characterize the experiences of registered nurse anesthetists (RNA) with the WHO surgical safety checklist. Nurse anesthetists can deliver perioperative and anesthetic care more easily thanks to the WHO checklist. It helps them better comprehend the individual issues of each patient and makes the nurse anesthetist feel more like a part of the team (10).

As a specialty, anesthesiology has a long history of technological innovation associated with increased patient safety. Nonetheless, the past 20 years have seen an unparalleled rate of technical advancement. Artificial intelligence (AI) tools are being used in the perioperative setting, mostly due to the exponential development of data and computing capacity. Current developments in perioperative medicine and anesthesiology hold great promise for further enhancing patient safety and care quality (11).

The surgical burden is more than it was previously due to the rise in non-communicable diseases, trauma, and caesarean deliveries. This makes increasing patient safety during surgery and anesthesia a significant worldwide public health concern. The surgical burden was recognized by the World Health Assembly in 2015, and as part of universal health coverage, access to emergency and essential surgical and anesthesia treatment was expanded for the first time. The main cause of the variations in anesthesia safety between countries is economic standing. In wealthier nations, it is extremely secure, but it lags far behind in other parts of the world. A study conducted in Ethiopia by Bashford found that many participants were unable to administer safe obstetric (89%), spinal (50%), pediatric (63%), and general (39%).

Following the World Health Organization's (WHO) 2009 Guidelines for Safe Surgery, checklists are now a standard part of surgical care. They have been associated with improved safety compliance, improved collaboration and communication, reduced complications and mortality, and economic benefits. The WHO Guidelines for Safe Surgery further advise that before beginning any procedure, the patient's anesthetic risk, medications, breathing circuit, and anesthetic equipment should be formally inspected (12). The WHO surgical safety checklist only contained a few really crucial anesthesia-related elements (such checks of the saturation sensor, but not blood pressure monitoring or an ECG), so a separate anesthesia pre-induction checklist (APIC) was introduced in addition to the WHO surgical safety checklist.

The World Health Organization promotes patient safety best practices during surgical procedures through its Safe Surgery Saves Life program. The best practices for patient safety are inextricably linked to anesthesia services. The availability of skilled anesthesiologists, their knowledge, the workplace, the availability of required equipment, and monitoring facilities all contribute significantly to patient safety and the safe provision of anesthesia services, even though these services are safer than ever. Although anesthesiologists offer middle-tier perioperative care, their contributions are often overlooked, especially in low- and middle-income countries (LMICs)(13).

The idea of patient safety is crucial to management, healthcare providers, patients, and their families because it promotes more effective care and reduces expenses. Examining the field of anesthesiology reveals changes in epidemiology, the complexity and quantity of procedures that have expanded, and the adoption of a new matrix of important abilities that are necessary for Brazilian anesthesiology residents. Therefore, it is essential to determine the current level of patient safety competency among residents in anesthesiology. Given the significance of the issue, the World Health Organization (WHO) has prioritized two initiatives: a global hand cleanliness campaign to reduce the dangers that damage patients and the promotion of safer surgery.

It is common to compare using crisis checklists in anesthesia to operating an aero plane and giving anesthesia. Instead of using checklists in crises, which by definition don't occur very often in real life, the notion for using them in the cockpit stems from their regular use throughout flight management.

Commercial airline and private pilots usually complete several checklists to check the condition of their aircraft during each flight cycle16: before pushing back from the gate, when the engines are started, during taxiing, during takeoff, after takeoff, at the top of the climb, before descent, during approach and before landing. Every flight concludes at the gate with a shutdown checklist (14).

"Patient safety" was first used in the groundbreaking work of the Anesthesia Patient Safety Foundation (APSF) in 1985. Patient safety is a crucial aspect of high-quality care and can be defined as the lack of adverse outcomes from medical procedures that could result in death, prolonged hospitalization, or permanent injury.

In addition to resulting in long hospital stays and chronic incapacity for victims, adverse healthcare events caused by medical errors are well documented; according to recent estimates, they contribute to 200,000 fatalities annually in the United States alone (5).

MATERIAL & METHODS:

Study Design: A Cross-sectional descriptive study was conducted from anesthesia care providers (OT+ICU) in Rehman Medical Institute.

Study Setting: The study was carried out RMI, Peshawar.

Study Duration: The study was completed in 3 to 4 months.

Inclusion Criteria:

- Anesthesia provider who are currently practicing in RMI.
- Individuals who voluntarily agree to participate in the study and provide informed consent.

Exclusion Criteria:

- Anesthesia provider who are not practicing in RMI.
- Refusal to participate.
- Staff other than anesthesia health care provider

Sample size: The number anesthesia care team in RMI is 117 and the sample size was calculated 90 by using openepi.com. by putting margin of error 5% and level of confidence 95%.

Using this formula $n=p(1-p)(z/e)2$

Sampling Technique: Convenient sampling

Data collection procedure: This study was conducted in the duration of 3 to 4 months in RMI Peshawar.

Ethical approval: After we received approval from the GSC head of department, permission was granted by the research ethical committee of RMI. Data was collected from Rahman Medical Institute.

Simple Collection: After ethical committee approval data was recorded on a questionnaire after anesthesia providers experience reports in RMI. Questions include demographic information, WHO patient safety checklist, World Federation of Society of Anesthesia, and Anesthesia provider's experience.

Analysis Plan: For data analysis, we use SPSS (statistical package for the social sciences) and data will be entered into the MS Excel spreadsheet.

RESULTS: A total of 90 anesthesia care providers working in the operation theaters and intensive care units of Rehman Medical Institute (RMI), Peshawar, completed the questionnaire. The demographic profile of the participants is presented in Table 1. The sample was predominantly male (n = 77; 85.6%), while 13 participants (14.4%) were female. By designation, technologists formed the largest group (n = 36; 40.0%), followed by anesthesiologists (n = 25; 27.8%), anesthesia trainees (n = 16; 17.8%) and technicians (n = 13; 14.4%).

Table 1. Demographic characteristics of the anesthesia providers (n = 90)

Characteristic	Frequency (n)	Percentage (%)
Gender		
Male	77	85.6
Female	13	14.4
Designation		
Technician	13	14.4
Technologist	36	40.0

Characteristic	Frequency (n)	Percentage (%)
Anesthesiologist	25	27.8
Anesthesia trainee	16	17.8

Values are frequency and percentage.

Knowledge of patient safety goals is summarized in Table 2. Almost all participants (n = 84; 93.3%) knew that patient identification must be confirmed before anesthesia is administered, which was the highest-scoring item. Most participants were also familiar with the patient safety goals specific to anesthesia (n = 74; 82.2%) and recognized the importance of obtaining informed consent (n = 72; 80.0%). Knowledge was somewhat lower for the importance of post-anesthesia monitoring in preventing complications (n = 68; 75.6%), for verification of allergy status (n = 66; 73.3%) and for the protocol for managing a difficult airway (n = 66; 73.3%). Familiarity with the WHO anesthesia safety checklist itself was the lowest, with 65 participants (72.2%) reporting that they were familiar with it and 25 (27.8%) reporting that they were not. Across all seven knowledge items, 78.6% of responses were affirmative.

Table 2. Knowledge of anesthesia providers regarding patient safety goals (n = 90)

Knowledge item	Yes, n (%)	No, n (%)
Familiar with the WHO anesthesia safety checklist	65 (72.2)	25 (27.8)
Aware that patient identification must be confirmed before anesthesia administration	84 (93.3)	6 (6.7)
Aware that allergy status must be verified before administering anesthesia	66 (73.3)	24 (26.7)
Familiar with patient safety goals specific to anesthesia	74 (82.2)	16 (17.8)
Know the importance of informed consent before anesthesia	72 (80.0)	18 (20.0)
Familiar with the protocol for managing a difficult airway	66 (73.3)	24 (26.7)
Know the importance of post-anesthesia monitoring in preventing complications	68 (75.6)	22 (24.4)
Overall (7 items × 90 responses = 630)	**495 (78.6)**	**135 (21.4)**

Values are n (%). Overall row is based on 630 responses (7 items × 90 participants).

The practice of patient safety measures and the perceived effect of the checklist are shown in Table 3. The most commonly reported practice was performing an equipment safety check before every anesthesia procedure (n = 74; 82.2%), followed by continuous monitoring of the patient's vital signs during anesthesia (n = 70; 77.8%). Routine use of the WHO anesthesia safety checklist before starting anesthesia was reported by 60 participants (66.7%), and 57 participants (63.3%) stated that they always ensure the checklist is completed before beginning a procedure. Practice was weakest for drug safety: only 36 participants (40.0%) consistently verified that all anesthesia drugs were correctly labeled and stored, whereas 54 (60.0%) did not. Despite these gaps, 73 participants (81.1%) believed that the safety checklist had improved communication and teamwork in the operating room. Overall, 68.5% of responses across the six practice items were affirmative, about 10 percentage points lower than the overall knowledge level (78.6%).

Table 3. Practice of patient safety measures and perceived impact of the safety checklist among anesthesia providers (n = 90)

Practice / perception item	Yes, n (%)	No, n (%)
Always use the WHO anesthesia safety checklist before starting anesthesia	60 (66.7)	30 (33.3)
Perform an equipment safety check before every anesthesia procedure	74 (82.2)	16 (17.8)
Always ensure the safety checklist is completed before starting a procedure	57 (63.3)	33 (36.7)
Monitor the patient's vital signs continuously during anesthesia	70 (77.8)	20 (22.2)
Consistently verify that all anesthesia drugs are correctly labeled and stored	36 (40.0)	54 (60.0)
Believe the checklist has improved communication and teamwork in the operating room	73 (81.1)	17 (18.9)
Overall (6 items × 90 responses = 540)	**370 (68.5)**	**170 (31.5)**

Values are n (%). Overall row is based on 540 responses (6 items × 90 participants).

DISCUSSION: The evaluation of anesthesia practitioners' proficiency and understanding of anesthesia safety checklists in operating rooms (OT+ICU) at Rahman Medical Institute a knowledge and practice study conducted in Peshawar, Pakistan, provides valuable

insight into the opinions and experiences of occupational therapy personnel with relation to this vital instrument for enhancing anesthesia safety.

Useof compliancewiththeAnesthesiasafety checklist

Notably, though, a few respondents disagreed or expressed no opinion regarding their compliance. This discrepancy in adherence highlights the necessity of continual oversight and encouragement oftheuseofsafetychecklists in order to guaranteetheir uniform implementation in surgical practice.

The comparison between our survey and the provider survey on perceptionswith routine checklists.

A total of 142 anesthetists completed the questionnaire. The participants were mostly women (52.1%) with a meanage of 44.28±8.01 years. Most of them were working for more than 10 years (54.9%);the mean working time was 12.83±7.76 years.Therewas no statistical difference among the participants regarding sex, age and working years. They were employed by state hospitals (46.5%), university hospitals (40.1%) and private hospitals (13.4%).

Education about patient safety was received by 58.5% of the participants, which was provided by private (68.4%), university (64.9%) and state hospitals (68%). Training and research hospitals had the lowest ratio of participants receiving the education (39%, p=0.028). It is claimed that 59.9% of the institutions provide patient safety education; however, in 57% of them, issues regarding human factors associated with patient safety were not taught. Private hospitals had higher human factor education ratios (p=0.016). The knowledge about the Helsinki declaration was limited, whereas knowledge about patient safetywas sufficient (Figures 1 and 2). A total of69% of the participants could not define the Helsinki declaration correctly (19).

We obtained some results from our survey in comparison to this research. In a group of 90 people, there are 77 males, making up about 85.6% of the total. On the other hand, there are 13 females, which is around 14.4%. In that survey, we have 13 technicians(14.4%),36technologists(40.0%),25anesthesiologists(27.8%)and16Anesthesia trainee(17.8%). Out of 90 respondents, 65(72.2%) are familiar withthe WHO Anesthesia safety checklistas compared to 25(27.8%) respondents who are not familiar.

Perceived impact on communication and teamwork

The majority of respondents acknowledged that the ASC improves teamwork and communication in theoperatingroom.The ASC's main goals are betterteamwork and communication, both of which increase patient safety. However, other respondents were either neutral or disagreed with the ASC's impact on these factors. These results imply that there may be opportunities to improve communication and teamwork in particular

situations or that more work is necessary to guarantee that ASC continuously improves these essential components of anesthesia practice.

CONCLUSION: Overall, the majority of respondent expressed positive attitudes towards the checklist, its value, and its potential to improve patient safety. Additionally, a significantnumber of respondents reported a commitment to ensuring the completion of the checklist before surgeries and acknowledged its contribution to enhanced communication and teamwork in the operating room. Furthermore, a substantial percentage believed that the checklist led to a reduction in anesthesia error or complications.

However, there are areas where respondents indicated less certainty, particularly in their ability to identify the checklists phases and the specific purpose of ―Sign-in‖ phase. This suggests a need further education and training to enhance checklist comprehension among (OT+ICU) staff.

In light of these findings, it can be concluded that the WHO anesthesia safetychecklist is perceived as a valuable tool by the majority of the OT+ICU staff at RMI. These results highlight the checklists potential patient safety, improve teamwork, and reduce anesthesia errors. The study underscores the importance of continuededucation and training to ensure full understanding and implementation of the checklist in anesthesia practice. These findings can inform efforts to promotechecklist utilization and strengthen anesthesia safety practice with in the institution.

Limitations: Participants were chosen from three particular institutions RMI, which may not accurately reflect the procedures or expertise of anesthesiologists in other hospitals, particularlythose in smaller or more rural areas. As a result, the findings might not be generalizable to all medical institutions.

The research only looks at anesthesiology doctors, although a multidisciplinary team is involved in patient safety. It may have provided a more comprehensive view of patient safety procedures to incorporate feedback from other medical specialists(such as surgeons, nurses, and technicians).

RECOMMENDATION

Implement a Standardized Checklist: Use a thorough and standardized checklist, such the "Anesthesia Safety Checklist" or ones based on the Safe Surgery Checklist from the World Health Organization (WHO), which contains essential stages for both intraoperative management and preoperative preparation.

Preoperative Patient Assessment: Verify the patient's identity, the anesthesia strategy, and the surgical technique. The patient's medical history, allergies, comorbidities, and other dangers associated with anesthesia should all be covered in the checklist.

Confirm Informed Consent: Confirm that informed permission has been acquired and recorded for the procedure and anesthesia.

Equipment and Drug Verification: Make sure all required medications, supplies, and equipment are on hand and in working order. This involves making that the right drugs, doses, and anesthesia equipment are used.

Enhanced Training Programs: To guarantee that all healthcare personnel are knowledgeable about the most recent rules and procedures, provide regular training sessions centered on best practices. This should incorporate practical workshops and skill-reinforcement simulations.

Training on Checklist Use: All members of the anesthesia team should get regular training on the significance and proper application of the checklist. Effective use of the checklist during each anesthesia phase and how to record the outcomes should be covered in training.

Electronic Checklists: Use easily accessible, updated, and trackable electronic checklists in situations where technology permits. In the event that crucial tasks are overlooked, these systems can also alert users.

Mentorship and Peer Support: Create mentorship programs in which seasoned medical experts assist less experienced employees. This could increase adherence to safety procedures and promote a culture of learning.

Increased Awareness Campaigns: Start internal awareness efforts to draw attention to the safety checklist control procedures and their direct influence on patient safety and healthcare results.

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