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ORIGINAL RESEARCH

Perceptions of the perioperative team regarding the use of the WHO Surgical Safety Checklist

N Sima,[1] J Scribante,[2] H Perrie,[1] L Green-Thompson[3]

[1] Department of Anaesthesiology, School of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand, South Africa
[2] Surgeons for Little Lives and Department of Paediatric Surgery, School of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand, South Africa
[3] Deanery, Faculty of Health Sciences, University of Cape Town, South Africa
Corresponding author, email: *greensideclinic@gmail.com*

Background: The World Health Organization Surgical Safety Checklist (WHO Checklist) fosters communication and teamwork among the perioperative team; however, perceptions influence its acceptance and use. This study explores the perceptions of the perioperative team regarding the WHO Checklist in operating theatres at the University of the Witwatersrand (Wits) affiliated hospitals.

Methods: A qualitative, contextual, and exploratory research design was employed. Purposive sampling was used to invite theatre nurses, anaesthetists, and surgeons to participate. Focus group interviews were held for each group, which were audio-recorded and transcribed verbatim. Thematic analysis was used to analyse the data.

Results: Ten nurses, six anaesthetists, and four surgeons participated in the focus group interviews. Four themes relating to patient safety were identified: the prevalence of power struggles in theatre, a breakdown in communication, a culture of silence, and inadequate and siloed training. The metaphor of a daily flight plagued by turbulence describes the perceptions of the interviewed perioperative teams, which may result in serious adverse events.

Conclusion: In a complex system, such as a hospital theatre environment, introducing a simple tool, such as the WHO Checklist, is perceived to have a limited impact on patient safety if the underlying supportive network is not intact. This study demonstrates the importance of interpersonal relationships, changing teams, lack of integration of teams, processes, and training on the use of the WHO Checklist as a safety tool in a South African hospital setting. A prevailing culture of safety is a prerequisite for the successful implementation and use of the WHO Checklist.

Keywords: WHO Surgical Safety Checklist, perioperative team, perceptions

Introduction

Gawande et al.[1] state that surgery has been an essential component of public healthcare for over a century. Complications of surgical care have become a major cause of death and disability worldwide, half of which are preventable.[2,3] Gawande et al.[1] highlight that almost seven million surgical patients suffer serious complications each year, and one million die during or immediately after surgery. In South Africa, Biccard et al.[4] reported a mortality risk of 25.5% for urgent or emergency surgery and a 23.7% risk of admission to critical care. Operating theatres are complex, stressful environments, while the nurses, anaesthetists, and surgeons' knowledge and experience are the most critical resources. Effective teamwork can avert a considerable proportion of life-threatening complications. However, perioperative teams have had little guidance in fostering effective teamwork.[1]

The World Health Organization (WHO), urged by the World Health Assembly in a 2002 resolution to strengthen the safety of healthcare and monitoring systems, recognised surgical safety as a significant public health concern.[1] The WHO also realised that surgical safety in developing countries is further compounded by a lack of resources, skill shortages, and under-financing. The WHO developed the Safe Surgery Guidelines in 2007 in collaboration with experts worldwide and launched the Safe Surgery Saves Lives programme. In 2009, the WHO introduced the WHO Surgical Safety Checklist (WHO Checklist) as part of its Safe Surgery Saves Lives programme. The WHO Checklist was designed to promote safety by ensuring that preoperative, intraoperative, and postoperative safety checks are undertaken in a timely and efficient manner with open communication while fostering teamwork. Its aim was not to create a regulatory tool but rather to introduce key safety elements into the operating theatre routine without undue burden on the system or the providers.[1]

Following its introduction, the effects of using the WHO Checklist were tested at eight international pilot sites representing diverse socio-economic conditions.[5] The results demonstrated a significant reduction in surgical complication and mortality rates post-checklist use.[5] These results were reproduced in subsequent studies at different sites worldwide, leading to the widespread use of the WHO Checklist.[6-8] Further studies revealed that using the WHO Checklist improved communication between the operating theatre staff, positively affecting patient safety and avoiding errors.[9-11]

Nonetheless, healthcare workers often view the WHO Checklist with scepticism, and in some settings, it has been reduced to a mere tick-box exercise.[10,12,13] Some of the criticisms by healthcare workers are that the WHO Checklist is too time-consuming, repetitive of existing safety practices, and inappropriate in certain surgical cases.[14] Quantitative studies have demonstrated that attitudes and opinions differ among healthcare workers in the same healthcare setting.[10-12] Also, a lack of training on its use, poor implementation strategies, and a lack of leadership contribute to a negative attitude.[14] Haugen et al.[15] demonstrated a ceiling effect of WHO Checklist use in settings where compliance with safety practices was already high. This raised the possibility that safety culture and the use of the WHO Checklist are unrelated.[15] This study aimed to explore the perceptions of the perioperative team regarding the use of the WHO Checklist in the operating theatres at the Wits affiliated hospitals.

Methods

A qualitative, contextual, and exploratory research design was followed. The Wits Human Research Ethics Committee (Medical, M191123) approved the study.

The study population consisted of the perioperative teams working in the operating theatres at the three main Wits affiliated hospitals. These hospitals have a total of 4 588 beds and 53 theatres performing more than 96 500 surgeries annually. In this study, the perioperative team refers to all theatre nurses, anaesthetists, and surgeons. The sample consisted of three focus groups, aiming to include 6–9 participants per group. Purposive sampling was employed to ensure rich data. Interns, nursing, and medical students were excluded.

Due to power relations in the perioperative team, the focus groups were divided according to nurses, anaesthetists, and surgeons. The anaesthetists and surgeons rotate between the hospitals while the nurses represent all three hospitals. The author (NS) facilitated the interview process, supported by an experienced moderator (JS). The interviews were held in a private, permissive, non-evaluative, and non-threatening environment to facilitate group discussion. Participation was voluntary. The direction of the interview was not predetermined, but an interview guide was used.

Participants were greeted and welcomed by NS and JS and offered light refreshments. A few minutes were spent on introductions. At the beginning of the session, NS explained the reason for the interview and briefly described the study's aim. Participants signed two consent forms, one to participate in the study and the other to be audio-recorded during the interview. The author outlined the process of the session and explained that the participants were not being evaluated or judged and that their input was improving the understanding of the topic being researched. Participants were encouraged to freely express their emotions, opinions, and experiences.

Access to recordings was limited to the authors. The focus group interviews lasted 60–90 minutes. Field notes were used to increase the richness of the data collected and its interpretation. Two smartphone devices, placed on the table, were used to record the interviews. NS transcribed all audio recordings from the focus group interviews verbatim, which were verified for accuracy by NS, JS, and one person from each focus group. Thematic analysis, according to Braun and Clark, was used to analyse the data.[16]

Trustworthiness was ensured as proposed by Lincoln and Guba.[17] Credibility was ensured by the range of participants validating the data by providing their multiple perspectives of the subject within the group, and by returning the transcripts to participants for final validation. Transferability of the data was enabled by providing context to the environment and population being studied. A detailed description of the methodology allows for dependability. The primary author reflected on her role as an anaesthetist in this environment and acknowledged the impact of her interpretation on the data. This study ensured authenticity by comprehensively recording data and giving examples of contextual descriptions by participants to illustrate the interpretation of the information collected.

Results

A summary of the focus group sessions and participants is shown in Table I. Only four surgeons were available to attend the focus group session due to service delivery commitments that day. All three focus group interviews yielded lively discussions.

Table I: Summary of focus group sessions and participants

Group	Nurses	Anaesthetists	Surgeons
Total	10	6	4
Males	1	1	4
Females	9	5	0
Range of experience (years)	2–29	5–11	3–5
Age group < 50 years	9	6	4
Age group > 50 years	3	0	0
Duration of interview	1 h 1 min	1 h 18 min	48 min

The perceptions among participants from the perioperative teams (nurses [N], anaesthetists [A], and surgeons [S]) of the WHO Checklist and its usage revealed four themes relating to patient safety: the prevalence of power struggles in theatre, a breakdown in communication, a culture of silence, and inadequate and siloed training.

Prevalence of power struggles in theatre

Participants in this study outlined the daily power struggles between nurses, anaesthetists, and surgeons in theatre. They also recognised the benefits of using the WHO Checklist. Patient safety was perceived to be enhanced when power was wielded by a senior and respected member of the operating team to create a positive working environment.

"There is harmony when we started the list and there was peace and there was a team. And then the likelihood of incidences become low, because there is support." (N1)

Certain surgical disciplines (vascular surgery and arthroplasty) conducted a team huddle at the beginning of the surgical list followed by WHO Checklist completion for every patient. Usually, a senior surgeon drove the process of getting everyone in the theatre to stop and pause for the huddle.

"It's a person of authority who drives that moment of silence." (A2)

In theatres where good relationships already existed between nurses, anaesthetists, and surgeons, everyone felt part of the team, and the person of authority wielded that power to a positive outcome.

In most hospital theatres, complex power relationships exist. Participants described fractious relationships between nurses, anaesthetists, and surgeons. These relationships were further complicated by the embedded hierarchy between senior and junior team members. Nurses perceived anaesthetists as afraid of the surgeons, while surgeons perceived nurses as being in control of the theatre. Anaesthetists felt that surgeons wielded power in the theatre and set the tone for the prevailing culture, stating:

"If the surgeon takes it seriously, then everyone else does." (A2)

They further described the power struggles evident between anaesthetists and surgeons.

"The problem boils down to the attitude between surgeons and anaesthetists in terms of who drives this. Because the reality here is surgeons are in charge, we like to think we're running the show, but the surgeons are in charge." (A1)

The interviewed surgeons acknowledged that the hierarchical structure made the theatre environment particularly challenging.

"I don't think there is a flat hierarchy in medicine by any stretch. So, it can be a challenging environment to manage the egos, let's call it, in theatre." (S1)

Surgeons perceived that nurses controlled whether the WHO Checklist was completed or not.

"… it feels from my perspective like it is administered by the nurses and they take control by asking us the questions." (S4)

The surgeons admitted to relegating the morning huddle in theatre to the most junior team members, who lacked insight into the potential pitfalls of the cases ahead. This practice was considered part of the training culture for the junior surgeon. Junior team members admitted to succumbing to intimidation and being placed in situations beyond their comfort levels.

"I must say that I often do succumb to intimidation and yes, I'm not comfortable about it, but it's a dynamic that exists." (A5)

Anaesthetists felt that the hierarchical relationships in theatre created a sense of helplessness in taking any initiative. They described feelings of powerlessness and pressure from their seniors to move ahead with the theatre list.

"You keep your head down until there's like a real disaster." (A2)

Anaesthetists viewed WHO Checklist initiation as one of the nurse's duties and described surgeons as unwilling to take responsibility for patient safety processes in theatre.

"They're in charge of theatre but they don't want to be stuck in with all the nitty-gritty stuff." (A2)

Nurses were tasked with initiating the WHO Checklist in theatre but perceived disinterest and negativity from the rest of the team. They described surgeons as irritated when asked to pause and impatient to push forward with the surgical list. They expressed feeling disrespected and unsupported by the rest of the operating team.

"Now it becomes a nurse's duty. Where is the respect there? Because this is a team effort." (N5)

This created a work environment fraught with frustration and resentment.

"If you keep on continuing getting resistance, you end up demotivated to do the right thing." (N1)

Breakdown in communication

In aviation, miscommunication between a pilot, his crew, and air traffic control can be catastrophic. Similarly, miscommunication between operating team members performing complex procedures leads to adverse patient outcomes. The WHO Checklist was introduced as a tool to facilitate communication, starting with basic personal introductions. An important component of open communication is addressing each other by name.

"If you address someone by their name, I think you get a better response, more participation." (S3)

Anaesthetists acknowledged that open communication was essential to raise any patient issues.

"I do think it makes it easier to voice concern." (A2)

Participants across groups confirmed that good communication improved participation and brought attention to the procedure being performed by focusing on the patient.

"I feel that if everybody is participating, everyone is concerned about this patient." (N2)

"When everyone is on the same page, there seems to be a lot more focus." (S3)

Furthermore, when surgeons initiated the completion of the WHO Checklist, it decreased the tension in the theatre and created a more harmonious environment, improving workflow and theatre efficiency.

Even though participants were aware of the importance of communication, the daily practice was far more disjointed. When trying to complete the WHO Checklist, nurses complained of being met with sarcasm and disinterest by surgeons and anaesthetists. They experienced a reluctance from the other team members to share information with them, stating:

"They don't tell you anything. They don't want to participate." (N2)

Surgeons viewed this lack of communication and participation differently. They felt pressured to proceed with surgery, especially in an emergency, and to complete theatre lists. They viewed pausing to complete the WHO Checklist as wasting time and said that it was irrelevant to them.

"I think irrelevant to me as a surgeon, but I'm sure it's still got some relevancy to nursing staff, to anaesthesia, the machine checks, etc." (S1)

Surgeons also doubted nurses' commitment to the process, regarding it as a tick-box exercise.

The anaesthetists interviewed acknowledged that they often turn a blind eye to whether the WHO Checklist was completed or not. They displayed a lack of initiative and ownership of the safety practices in theatre, admitting:

"I think we have a role to play to reinforce the actual Checklist itself, not just if it's not done, it's not done, it's not my problem." (A4)

They expressed that facilitating communication in theatre with the aid of the WHO Checklist was everyone's responsibility.

"It shouldn't just be the sole responsibility of the nurse to grab everyone's attention. I think we should all have an onus upon ourselves to say that, okay, this is important." (A5)

It became apparent from the focus group interviews that the WHO Checklist enhanced teamwork and good communication rather than creating it. Operating team members felt that they needed to get to know each other first by working together regularly to build trusting relationships.

"You get to know your team; you know the weak points. You know their strengths and actually it makes a big difference." (A2)

Participants further proposed that interdepartmental communication was essential to create a consistent safety culture across all theatres.

A culture of silence

Silence and personal blame characterised the response to an adverse outcome. This is seen in the aftermath described when a patient fell off an operating theatre table.

"It becomes very personal, that you were at fault." (A1)

This participant was discouraged by a senior colleague from openly discussing the event. However, it did not prevent clandestine discussions in corridors among colleagues. Such events lead to a culture of non-disclosure, with participants fearing reprimand and blame.

"If I don't feel like talking about it, I'm not going to tell anyone." (A3)

The surgeons interviewed detailed the process following an adverse event in their department.

"In surgery, we've got a pretty robust M&M (morbidity and mortality) system. We do weekly M&Ms and we're harsh on each other, let's put it that way." (S1)

A participant described his experience following an adverse event and the personal blame and regret he felt.

"We had an incident at … hospital where a few registrars were reprimanded because we operated on the wrong kidney. So, I feel like if only we stopped for a second to do the checklist that day, probably that would never have happened." (S2)

Nurses' perceptions were that patient safety was only taken seriously after an adverse event had already occurred or when a team member faced litigation.

"Those who experience litigations, they follow the proper things." (N4)

Nurses believed that when an adverse event occurred, team members scrambled for cover and searched for a scapegoat. This once again perpetuated the culture of silence. None of the participants in this study experienced formal debriefing processes following adverse events.

Inadequate and siloed training

Effective training on the use and implementation of the WHO Checklist is imperative for its successful introduction. At the hospitals studied, it was apparent that the WHO Checklist training and implementation was inadequate, lacked depth, siloed into different departments, and further siloed within departments to different ranks. Of the three focus groups interviewed, the nurses were the most familiar with the contents of the WHO Checklist. A random pattern to the training emerged, reflected by:

"Other people would have been taught maybe in the seminar, or another person would have been taught maybe by a colleague. Another person would have been taught by somebody that is senior." (N1)

Nurses acknowledged that the inadequate training resulted in knowledge gaps and poor understanding of the WHO Checklist and its role in patient safety. They also lacked training on how to implement the WHO Checklist.

The surgeons interviewed held the perspective that the WHO Checklist belonged to nurses, but that they lacked understanding of it. This view was echoed by the anaesthetists who believed the nurses lacked training.

"I just don't think the nursing staff actually receive training on the WHO form." (A2)

Participants admitted to their own lack of knowledge and understanding of the WHO Checklist.

"If you had to ask one of us now, what are the components of the Checklist, we probably won't know, and the assumptions that we think we know is not a true reflection of how much we know." (A4)

Neither the surgeons nor the anaesthetists demonstrated buy-in to the WHO Checklist use and training.

"Imagine if we announced a compulsory workshop for all theatre staff on the Checklist and how we run it. Can you imagine the complaints? Or not even complaints, I don't think people would come." (A1)

From the interviews, it was evident that WHO Checklist training at the hospitals studied was sporadic and existed in departmental silos. Most participants lacked insight into its relevance to them and lacked a deeper understanding of its relevance to patient safety.

Discussion

In the aviation industry, checklists for seemingly mundane tasks avoid the costs of human error. Checklists reduce the reliance on human judgement and memory. Similarly, anaesthesia is often likened to flying a plane, with induction equating to take-off, maintenance to cruising altitude, and landing to emergence. Numerous processes need to dovetail and anaesthetists must be in tune with the rest of the team and rely on their skills and experience to safely land the patient. The team huddle, where the planned operating schedule for the day and specific changes and concerns are discussed, followed by WHO Checklist completion for each patient, are critical components in creating teamwork and safety culture in the theatre.

The WHO Checklist was introduced in South African hospitals to foster teamwork and communication, and to mitigate the potential for error and serious adverse events. However, the participants describe a daily flight plagued by turbulence that may result in serious adverse events. The theatre process is perceived as generally disjointed, characterised by a breakdown in communication and teamwork, both in the microcosm of a theatre environment and the macrocosm of a hospital system. They describe the response to adverse events as reflecting toxic hierarchies and a culture of silence with limited accountability. Participants use the correct buzzwords but lack a deeper knowledge and understanding of the relevance of the WHO Checklist to patient safety. The perioperative period depicted as a turbulent flight is illustrated in Figure 1.



Figure 1: The perioperative period is depicted as a turbulent flight buffeted by several factors

In our study, participants agreed that the use of the WHO Checklist impacted patient safety positively and helped reduce adverse events, using all the appropriate buzzwords. Upon deconstruction, a turbulent picture of the operating theatre environment emerged. Participants described disinterest and resistance to using the WHO Checklist, deeming it redundant, time-consuming and irrelevant. Interviewing operating theatre staff, Russ et al.[14] demonstrated similar barriers to WHO Checklist completion across hospitals in England. Nurses in our study perceived the greatest negativity from surgeons when attempting to complete the WHO Checklist. Ronnberg et al.[18] reported similar results surveying Swedish nurse anaesthetists. In our study, nurses were the most accepting of the WHO Checklist and viewed it positively, similar to Norton et al.[11] and Santana et al.'s[10] findings. Sexton et al.[19] found in their research that doctors are the most likely to deny the effects of stress, fatigue, and human error, and therefore, the most likely to resist the use of a checklist. Of concern was that Vohra et al.[12] found the lowest WHO Checklist use in low- to middle-income countries where patient safety is a greater challenge.[1] Although South Africa is classified as an upper- to middle-income country, many hospitals operate in a resource-constrained environment.[20] A cost-effective tool such as the WHO Checklist would be an added benefit to improving patient safety.

Our study demonstrates that using the WHO Checklist is perceived to have a limited impact on improving safety culture. The pre-existing safety culture in our operating theatres is influenced by individual behaviour, attitudes, and hierarchical structures. Daily power struggles play out between nurses, anaesthetists, and surgeons, as well as between senior and junior team members. Safety-related tasks, such as WHO Checklist completion, are relegated to junior team members who lack insight into potential patient complications. A breakdown in communication and lack of teamwork makes WHO Checklist completion challenging. Scott and Shafi noted that empowered theatre environments, where open discussion is encouraged, generate a culture of safety in which tools such as the WHO Checklist are valued.[21] Interestingly, in environments with a high baseline safety culture, the WHO Checklist had a limited impact on improving patient safety, as demonstrated in Norway and Canada.[15,22] A baseline culture of safety is required for the WHO Checklist to be accepted, but it fails as a sole instrument to create a culture of safety.

Organisational problems contribute to the WHO Checklist being reduced to a tick-box exercise.[13] Participants in our

study detailed a theatre environment with sporadic leadership, depending on individual personalities and a visible lack of support from management. Inadequate and siloed training and implementation strategies were among the organisational problems encountered. Kappagoda detailed how systems thinking is necessary to improve patient safety.[23] The patient is exposed to the entire hospital system where cultural, social, and organisational problems, as well as technical errors, will lead to the occurrence of adverse events. Systems thinking promotes proactive solutions when potential errors are identified.[23] Bosk et al.[13] cautioned on the limitations of checklists; they will not fix every safety problem. Russ et al.[14] found that checklists might distract from how safer care is achieved, leading to a false sense of security on patient safety issues. Our operating theatres require a shift to address organisational problems, focusing on interdepartmental communication and comprehensive training programs.

The management of adverse events in our study is mostly reactionary and punitive. Staff are discouraged from open discussions, they experience personal blame, and no feedback is given after an adverse event. This is in contrast to the aviation industry, which fosters a flat hierarchy, thereby encouraging open communication and dealing with adverse events non-punitively and proactively.[19] This has led to improved safety in the aviation industry. A similar approach is required in the medical field to improve patient safety.

Although the initial studies on WHO Checklist implementation conveyed a positive outcome on patient safety, it has since been recognised that patient safety is a complex problem that a simple checklist cannot fix.[5,7,9,13,24] Unlike the aviation industry, checklists are not broadly accepted in the medical field in ensuring a safe flight through patient care. Broader organisational problems need to be addressed, systems need to be reviewed, and a theatre environment promoting a culture of safety is required for a tool such as the WHO Checklist to be effective.

Recommendations

The challenge remains in creating and fostering an overall culture of patient safety alongside varying resource settings in our South African hospital environments. This will require commitment from management, education and training of junior and senior personnel across multiple disciplines, and constant evaluation and feedback to improve processes. Only then can a tool such as the WHO Checklist be perceived to enhance patient safety.

Conclusion

In a complex system, such as a hospital theatre environment, the introduction of a simple tool, such as the WHO Checklist, is perceived to have a limited impact on patient safety if the underlying supportive network is not intact. This study demonstrates the importance of interpersonal relationships, changing teams, lack of integration of teams, processes, and training on the use of the WHO Checklist as a safety tool in a South African hospital setting. A prevailing culture of safety is a prerequisite for successful implementation and use of the WHO Checklist. This is the first qualitative paper to describe the interactions that accompany the use of the WHO Checklist. In a society continually grappling with asymmetrical discriminatory relationships, this brings an important understanding to the work of teams, which is envisaged in the introduction of the Checklist.

Conflict of interest

The authors declare that we have no financial or personal relationships that may have inappropriately influenced the writing of this paper.

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Ethical approval

Ethical approval was obtained and the University of the Witwatersrand Human Research Ethics Committee (Medical, M191123) approved the study.

ORCID

J Scribante https://orcid.org/0000-0002-2221-5024
H Perrie https://orcid.org/0000-0002-9890-7887
L Green-Thompson https://orcid.org/0000-0002-2950-9527

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