Verbal application of the Surgical Safety Checklist: a critical analysis of the practice

Aplicação verbal do checklist *de cirurgia segura: análise crítica da prática*

Aplicación verbal de la lista de verificación de cirugía segura: un análisis crítico de la práctica

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ABSTRACT: Objective: To analyze the compliance of the Surgical Safety Checklist application, with emphasis on verbal confirmation, in a public teaching hospital. **Methods:** This is a descriptive, cross-sectional study with a quantitative approach, based on direct observation of 193 surgical procedures performed between April and August 2025. Compliance was defined as performing both verbal confirmation and documentation for each item. Data were analyzed using descriptive and univariate statistics, employing an instrument developed by the researcher based on the World Health Organization's standard Surgical Safety Checklist, which includes fields to record verbal confirmation of each item, documentation in the medical record, and completion of the checklist steps. The study was approved by the Research Ethics Committee of the institution hosting the study, via Plataforma Brasil (CAAE 86548025.7.0000.5133; Opinion No. 7.500.360), and all participants signed the Informed Consent Form. **Results:** In this study, the highest compliance rates were observed during the first phase of the Checklist, particularly in confirming patient identity, surgical site, procedure, and verifying the signed consent form. This finding suggests that professionals tend to prioritize actions with greater ethical and legal relevance over the technical aspects of the surgical process. Documentation compliance was significantly more frequent ($p<0.05$) than verbal confirmation, indicating a predominantly bureaucratic adherence to the tool. Overall compliance was low and decreased across the three phases: sign in (22.16%), timeout (16.11%), and sign out (9.40%). **Conclusion:** We demonstrated low compliance with applying the Surgical Safety Checklist aloud, with a progressive reduction in checking across the three phases and predominantly bureaucratic use, at the expense of its preventive and communicative purpose.

Keywords: Checklists. Patient safety. Time out. Operating rooms. Perioperative nursing.

RESUMO: Objetivo: Analisar a conformidade da aplicação do *Checklist* de Cirurgia Segura, com ênfase na checagem verbal, em um hospital público de ensino. **Métodos:** Estudo transversal descritivo de abordagem quantitativa baseado na observação direta de 193 procedimentos cirúrgicos realizados entre abril e agosto de 2025. A conformidade foi definida pela confirmação verbal e pelo registro em cada item. Os dados foram tratados por estatística descritiva e univariada, utilizando um instrumento elaborado pela pesquisadora fundamentado no modelo-padrão do *Checklist* de Cirurgia Segura da Organização Mundial da Saúde, em que se incluem campos para registrar a checagem verbal de cada item do checklist, o registro no prontuário e o cumprimento das etapas. O estudo foi aprovado pelo Comitê de Ética em Pesquisa da instituição sede do estudo, via Plataforma Brasil (CAAE 86548025.7.0000.5133, sob o Parecer 7.500.360) e todos os participantes assinaram o Termo de Consentimento Livre e Esclarecido. **Resultados:** No presente estudo, os mais altos índices de conformidade foram observados no primeiro momento do *checklist*, sobretudo na confirmação da identidade do paciente, do sítio cirúrgico, do procedimento e na verificação do termo de consentimento assinado. Tal achado sugere que os profissionais tendem a priorizar ações de maior relevância ética e legal, em detrimento dos aspectos técnicos do processo cirúrgico. A confirmação por registro foi significativamente mais frequente ($p<0,05$) que a verbal, revelando adesão predominantemente burocrática à ferramenta. A conformidade global foi baixa e decrescente entre os momentos: *sign in*

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Received: 10/16/2025. Accepted: 11/27/2025
https://doi.org/10.5327/Z1414-44251083

(22,16%), *timeout* (16,11%) e *sign out* (9,40%). **Conclusão:** O estudo revelou baixa conformidade na aplicação do Checklist de Cirurgia Segura em voz alta, com redução progressiva da checagem nos três momentos e uso predominantemente burocrático, em detrimento de sua função preventiva e comunicativa.
Palavras-chave: Lista de checagem. Segurança do paciente. *Time out* na assistência à saúde. Centros cirúrgicos. Enfermagem perioperatória.

RESUMEN: Objetivo: Analizar la conformidad en la aplicación del Checklist de Cirugía Segura, con énfasis en la verificación verbal, en un hospital público docente. **Métodos:** Estudio transversal descriptivo, de enfoque cuantitativo, basado en la observación directa de 193 procedimientos quirúrgicos realizados entre abril y agosto de 2025. La conformidad se definió como la realización tanto de la confirmación verbal como del registro de cada ítem. Los datos fueron analizados mediante estadística descriptiva y univariada, utilizando un instrumento elaborado por la investigadora basado en el modelo estándar del Checklist de Cirugía Segura de la Organización Mundial de la Salud, que incluye campos para registrar la verificación verbal de cada ítem, el registro en el prontuario y el cumplimiento de las etapas. El estudio fue aprobado por el Comité de Ética en Investigación de la institución sede, a través de la Plataforma Brasil (CAAE 86548025.7.0000.5133; Dictamen 7.500.360), y todos los participantes firmaron el Consentimiento Informado. **Resultados:** En este estudio, los mayores índices de conformidad se observaron en el primer momento del Checklist, especialmente en la confirmación de la identidad del paciente, del sitio quirúrgico, del procedimiento y en la verificación del consentimiento informado firmado. Este hallazgo sugiere que los profesionales tienden a priorizar acciones de mayor relevancia ética y legal, en detrimento de los aspectos técnicos del proceso quirúrgico. La conformidad por registro fue significativamente más frecuente ($p<0,05$) que la verbal, evidenciando una adhesión predominantemente burocrática a la herramienta. La conformidad global fue baja y decreciente entre los momentos: Sign-in (22,16%), Timeout (16,11%) y Sign-out (9,40%). **Conclusión:** El estudio reveló baja conformidad en la aplicación del Checklist de Cirugía Segura en voz alta, con reducción progresiva de la verificación en los tres momentos y un uso predominantemente burocrático, en detrimento de su función preventiva y comunicativa.
Palabras clave: Lista de verificación. Seguridad del paciente. Time out en la atención en salud. Centros quirúrgicos. Enfermería perioperatoria.

INTRODUCTION

Patient safety is a priority worldwide in healthcare quality policies. Since the publication of the report *To Err is Human* and the creation of the World Alliance for Patient Safety, several initiatives have been developed to reduce adverse events. Among these, the Surgical Safety Checklist stands out, proposed by the World Health Organization (WHO) as a low-cost and proven effective safety tool in reducing complications and mortality in surgical patients[1].

The checklist includes three safety checking phases: sign in (before induction of anesthesia), timeout (before skin incision), and sign out (at the end of surgery, before patient leaves operating room). The recommendation for the effective use of the tool includes verbal confirmation (aloud) of critical safety items, involving the patient and all staff present in the operating room. This practice aims to improve communication between professionals, standardize procedures, and prevent adverse events[2].

Despite its widespread use and recognition of its effectiveness, researchers indicate that the checklist is often reduced to documentary record of safety checking, without verbal checking of the items. Such practice compromises the tool's potential, constituting an active safety barrier[3-5].

In the Brazilian context, there is evidence that, even when the checklist is formally present in medical records, its complete application occurs much less frequently than ideal[4,6]. Authors of a retrospective study conducted in a reference general hospital in the state of Minas Gerais, with 423 surgical patient records, showed that the checklist was present in 95% of them, but only 67.4% were completely filled out[6]. This situation could lead to an overestimation of compliance in the application of the instrument by the surgical team and generate false indicators of the tool's efficiency, considering that the completeness and actual execution of the steps are essential for its effectiveness[7,8].

Several studies are limited to estimating adherence to the checklist by verifying the completion of the form, which may not reflect the reality of its use in surgical practice[6,9,10].

Throughout my long professional career in a surgical setting, the experience and knowledge accumulated over nearly 20 years of practice have allowed me to observe that the application of the instrument is still a practice that is frequently trivialized by professionals. This situation demands protagonism and dedication from nursing professionals to ensure that verbal confirmation occurs during the perioperative period, aiming not only at patient safety, but also at the safety of the staff and the institution.

OBJECTIVES

To analyze compliance in the application of the Surgical Safety Checklist, with emphasis on verbal confirmation, in a public teaching hospital reference in the state of Minas Gerais, Brazil.

METHODS

This is a cross-sectional, descriptive study based on direct observation of the application of the Surgical Safety Checklist of a public teaching hospital located in the Zona da Mata region of the state of Minas Gerais.

The study population comprised surgical procedures performed from April to August 2025, totaling 1,750. Sample size calculations indicated the need for a minimum inclusion of 130 surgical procedures, with a 95% confidence interval[6,7,11]. All surgeries performed on adult patients (aged 18 years or older), across all specialties, during the daytime were included in the study, with a convenience sampling of 193 procedures comprising the research sample[6,7].

Data were collected using a form developed by the researchers, based on the WHO's standard checklist, which includes fields to record the verbal confirmation of each item, documentation in the medical record, and completion of the checklist steps. Moreover, additional variables were collected to characterize the surgical procedures such as type of anesthesia, surgical specialty, and urgency of the procedure. Items classified as "not applicable" were evidenced by the heterogeneity of surgical procedures, considering that certain steps are not applicable in all clinical contexts and were, therefore, counted separately.

Verbal confirmation was defined as the checking of safety items aloud, with the participation of the team. Confirmation by documentation was defined as the formal account, in the patient's medical record, of the checklist verification. The chosen outcome was compliance in the application of the checklist, defined as the simultaneous occurrence of verbal confirmation and documentation for each safety item.

Statistical analysis was performed using the Stata v.15 software, employing descriptive statistics and estimating frequencies and percentages. The comparison of the proportion of verbal confirmation and documentary record was carried out through univariate analysis with the McNemar's test (χ^2), considering $p<0.05$ as the significance level.

The study was approved by the Research Ethics Committee of the institution hosting the study, via Plataforma Brasil (CAAE 86548025.7.0000.5133, under Opinion No. 7.500.360). All participants signed the Informed Consent Form.

RESULTS

We observed 193 procedures, of which 192 (99.5%) were elective. As for the type of anesthesia, general anesthesia was the most used, present in 38.3% of the procedures. The most frequent specialties were orthopedics (20.2%) and gynecology (16.1%).

Comparing the proportion of verbal confirmation with documentary record, we verified that the latter was significantly more frequent ($p<0.001$) in all items evaluated, in the three phases of the checklist application. In the first phase (sign in), patient identification and verification of the Informed Consent Form signature were verbally confirmed in 82.4% of procedures, while documentary record occurred in 97.9%, resulting in a compliance rate of 80.2%. Regarding blood availability, 3.2% accounted for verbal confirmation versus 85.9% documentary record, with a compliance rate of only 0.5% (Table 1).

At timeout, team identification was verbally confirmed in 9.8% of the observed procedures and documented in 92.2%, while prophylactic antibiotic therapy showed 52.1% verbal confirmation and 96.4% documentary record (Table 2).

In the third phase of the Surgical Safety Checklist (sign out), confirmations occurred more frequently in the documentary record than in verbal communication, with statistically significant differences in all items ($p<0.001$) (Table 3).

Confirmation of the procedure was recorded in 96.3% of cases, but verbalized in only 9.3%; the counting of surgical instruments, dressings, and needles, in 86.4 versus 9.9%; and sample identification, in 86.3 versus 33.3%. Items, such as equipment issues (89.1 versus 1.5%), review of concerns for patient recovery (90.6 versus 5.2%), and checking anesthesia equipment (93.2 versus 3.6%) showed even more striking discrepancies. These findings indicate that, although records are formally present, low adherence to verbalization weakens multiprofessional communication and may compromise the effectiveness of the sign out phase in preventing errors and adverse events (Table 3).

Regarding compliance by checklist item, we observed the highest percentage in the confirmation of patient data (80.2%), while the lowest concerned blood availability (0.5%).

Table 1. Comparison of verbal confirmation and documentation before induction of anesthesia (sign in) in the observed procedures (n=193).

Items	Verbal confirmation		Documentation		p-value*
	n	%	n	%	
The patient confirmed their age, surgical site, procedure, and consent					
Yes	159	82.38	188	97.92	<0.001
No	34	17.62	4	2.08	
Surgical site demarcated					
Yes	22	11.64	154	80.21	<0.001
No	167	88.36	38	19.79	
Anesthesia equipment checked					
Yes	15	7.77	179	92.75	<0.001
No	178	92.23	14	7.25	
Patients' pulse oximeter working					
Yes	19	9.84	178	92.23	<0.001
No	174	90.16	15	7.77	
The patient has an allergy					
Yes	128	66.32	187	96.89	<0.001
No	65	33.68	06	3.11	
Patient has a difficult airway/risk of aspiration					
Yes	13	6.88	177	91.71	<0.001
No	176	93.12	16	8.29	
Risk of blood loss >500 mL					
Yes	03	1.60	171	88.60	<0.001
No	185	98.40	22	11.40	
Available blood					
Yes	06	3.19	165	85.94	<0.001
No	182	96.81	27	14.06	

*McNemar's χ^2 test.
Missing values represent observations recorded as "not applicable."

When analyzing compliance by surgical phase, we verified a progressive decline: 22.2% before induction of anesthesia (sign in), 16.1% before skin incision (timeout), and only 9.4% at the end of surgery, before patient leaves operating room (sign out) (Tables 4 and 5).

DISCUSSION

According to our results, although the Surgical Safety Checklist is formally recorded in almost all procedures, verbalization among team members remains significantly low, especially in terms of critical items and in the third phase of the checklist, at the end of the surgery, before patient leaves operating room (sign out). The discrepancy between recorded information and verbal confirmation suggests that the use of the tool is a bureaucratic practice, compromising multi-professional communication, which is essential for patient safety.

For items with ethical and legal relevance, such as confirmation of patient data and consent, we verified greater compliance, while high-risk logistical and technical aspects, such as counting of surgical instruments, review of recovery concerns, and blood availability, were less confirmed. The progressive reduction in compliance throughout the surgical procedure (22.2% before induction of anesthesia, 16.1% before skin incision, and 9.4% before patient leaves operating room) reinforces the vulnerability of the sign out process, a crucial step for preventing errors and adverse events.

Although checklists are present in most medical records and formal audit systems, researchers indicate a significant

Table 2. Comparison of verbal confirmation and documentation before skin incision (timeout) in the observed procedures (n=193).

Items	Verbal confirmation		Documentation		p-value*
	n	%	n	%	
All team members confirmed their name and profession					
Yes	19	9.84	178	92.23	<0.001
No	174	90.16	15	7.77	
The team confirmed the patient's identity, surgical site, and procedure					
Yes	12	6.22	178	92.71	<0.001
No	181	93.78	14	7.29	
The surgeon confirmed critical steps, estimated duration, and potential blood loss					
Yes	15	7.77	178	93.19	<0.001
No	178	92.23	13	6.81	
The anesthesiologist confirmed specific concerns					
Yes	24	12.44	175	91.15	<0.001
No	169	87.56	17	8.85	
Nursing staff confirmed materials and equipment					
Yes	48	24.87	178	92.23	<0.001
No	145	75.13	15	7.77	
Confirmation of antimicrobial prophylaxis					
Yes	100	52.08	186	96.37	<0.001
No	92	47.92	7	3.63	
Availability of imaging exams					
Yes	18	9.42	176	91.19	<0.001
No	173	90.58	17	8.81	

*McNemar's χ^2 test.
Missing values represent observations recorded as "not applicable."

discrepancy between the recorded and the actual execution of all items by the surgical team[12,13].

In a global systematic and meta-analysis review, the authors found an average compliance rate of 73% with the WHO checklist, but an overall completeness of only 51%, indicating that many critical items are omitted or inconsistently filled out[3].

As found in an Australian observational study, although 86% of the medical records indicated that the checklist was complete, only about 27% of them were verbally checked during surgeries, suggesting that the act of "checking off" information rarely corresponds to the actual performance of the procedures[14].

According to the analysis of the results, as per the surgical phases, the percentage of compliance progressively decreased in relation to the three phases of the checklist application. We observed the highest percentage of compliance at the first phase (sign in — before induction of anesthesia), followed by the second (timeout — before skin incision), and finally, the third (sign out — before patient leaves operating room), which presented the lowest percentage of compliance identified. This result suggests that adherence to the checklist may decrease throughout the surgery, due to pressure for productivity, task overload, distractions, and team fatigue at the end of the procedure[3,5,15].

The incomplete application of the checklist indicates that essential safety items with the potential to prevent serious adverse events are not being properly checked. The literature highlights that such weakness may require new interventions and, in extreme cases, result in injuries with ethical and legal implications, such as surgeries on incorrect sites, episodes of intraoperative hypoxemia, and delays in emergency transfusions, in addition to exposing patients to risks that compromise their physical and emotional health[16].

Therefore, considering our findings, according to which there is a lower percentage of compliance in most of the

Table 3. Comparison of verbal confirmation and documentation at the end of surgery, before patient leaves operating room (sign out), in the observed procedures (n=193).

Items	Verbal confirmation		Documentation		p-value*
	n	%	n	%	
Performed procedure confirmed					
Yes	18	9.33	186	96.37	<0.001
No	175	90.67	7	3.63	
Counting of surgical instruments, dressings, and needles					
Yes	19	9.90	166	86.46	<0.001
No	173	90.10	26	13.54	
Sample identification for anatomical pathology					
Yes	63	33.33	164	86.32	<0.001
No	126	66.67	26	13.68	
Equipment issues					
Yes	3	1.55	172	89.12	<0.001
No	190	98.45	21	10.88	
Review of essential concerns for patient recovery					
Yes	10	5.18	174	90.63	<0.001
No	183	94.82	18	9.38	
Anesthesia equipment checked					
Yes	7	3.63	179	93.23	<0.001
No	186	96.37	13	6.77	

*McNemar's χ^2 test.
Missing values represent observations recorded as "not applicable."

procedures observed in the third phase of the checklist application, we suggest weaknesses in the transition of care between the intra- and postoperative periods. This step, although often undervalued, is essential to ensure the safe continuity of care, the traceability of materials and samples, and the prevention of immediate complications, which can culminate in adverse events in the post-anesthesia care unit, making it a strategic point for educational and organizational interventions.

It is paramount to develop ongoing monitoring and improvement efforts in the use of the checklist, evaluating its application regularly. If necessary, adjustments to the content should be made to strengthen the implementation process and optimize team performance, without disregarding what is recommended by the WHO as mandatory items[17].

The role of nursing is key to leading the team, being able to increase adherence, engagement, and consistency in the application of the checklist. However, logistical overburden and lack of institutional support may reduce the effectiveness of the tool, even with proactive leadership[6,18].

Practical implications include the need for continuing education, clinical simulation, observational audits with feedback, and the inclusion of verbal checklists in institutional indicators, ensuring that all professionals effectively participate in the sign out process. These measures are fundamental to transforming the Surgical Safety Checklist from a formal record into an effective patient safety tool, minimizing risks and promoting a culture of communication and shared responsibility.

Limitations

This study had some limitations. As this was a cross-sectional study, it was not possible to infer causal relationships, only associations between the application of the checklist and patient safety outcomes. The presence of the researcher during the observations may have influenced, even if minimally, the behavior of the teams (Hawthorne Effect)[12]. Furthermore, the analysis was conducted in a single public teaching hospital, which limits the generalizability of the findings to institutions with different structures, protocols, and organizational cultures. Some items

Table 4. Distribution of compliance percentage per item analyzed in the observed procedures. (n=193).

Item	Compliance	
	n	%
The patient confirmed their age, surgical site, procedure, and consent	154	80.21
Surgical site demarcated	19	10.05
Anesthesia equipment checked	12	6.22
Patients' pulse oximeter working	13	6.74
The patient has an allergy	126	65.28
Patient has a difficult airway/risk of aspiration	10	5.29
Risk of blood loss >500 mL	2	1.06
Available blood	01	0.53
All team members confirmed their name and profession	15	7.77
The team confirmed the patient's identity, surgical site, and procedure	12	6.25
The surgeon confirmed critical steps, estimated duration, and potential blood loss	12	6.28
The anesthesiologist confirmed specific concerns	21	10.94
Nursing staff confirmed materials and equipment	47	24.35
Confirmation of antimicrobial prophylaxis	98	51.04
Availability of imaging exams	12	6.28
Performed procedure confirmed	15	7.77
Counting of surgical instruments, dressings, and needles	18	9.42
Sample identification for anatomical pathology	61	32.62
Equipment issues	2	1.04
Review of essential concerns for patient recovery	8	4.17
Anesthesia equipment checked	3	1.56

Table 5. Distribution of compliance rates per surgical phase in the observed procedures (n=193).

Surgical phase	Compliance	
	n	%
Sign in: before induction of anesthesia (n=1,525)	338	22.16
Timeout: before skin incision (n=1,347)	217	16.11
Sign out: at the end of surgery, before patient leaves operating room (n=1,149)	108	9.40

on the checklist were classified as "not applicable," reflecting the heterogeneity of surgical procedures, considering that certain steps do not have universal applicability in all clinical contexts.

CONCLUSION

In the present study, we analyzed the compliance of the application of the Surgical Safety Checklist in a public teaching hospital in Minas Gerais, evidencing low overall compliance and a progressive reduction in checking throughout the three surgical phases (sign in, timeout, and sign out), reinforcing that the checklist is still frequently used as a bureaucratic instrument, and not as a strategy for communication and prevention of adverse events.

The Surgical Safety Checklist, despite being institutionalized and documented, has limited and decreasing verbal application. Feasible strategies to improve compliance in its application include active nursing leadership, practical training, systematic audits, and incorporation of verbal checklists into institutional indicators.

FUNDING

None.

CONFLICT OF INTERESTS

The authors declare there is no conflict of interests.

AUTHORS' CONTRIBUTION

CRA: Project administration, Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Funding acquisition, Resources, Writing – original draft, Writing – review & editing, Software, Supervision, Validation, Visualization.

RTP: Writing – original draft, Writing – review & editing. ALSA: Writing – original draft, Writing – review & editing. AGS: Writing – original draft, Writing – review & editing. FCC: Writing – original draft, Writing – review & editing. JBRG: Writing – original draft, Writing – review & editing. ICB: Writing – original draft, Writing – review & editing. TRS: Writing – original draft, Writing – review & editing. HSD: Writing – original draft, Writing – review & editing. LRF: Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Resources, Writing – original draft, Writing – review & editing, Software, Supervision, Validation, Visualization.

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