The Relationship Between Surgical Safety Checklist Implementation Compliance with Post Postoperative Adverse Events (PAE)

Febriyanto Tatali[1], Suwanti[2], Dody Sukmawijaya[3], Aldi Rijaldi[4]
[1]Bachelor Nursing Program, Universitas Ngudi Waluyo, febriyantotatali02@gmail.com
[2]Bachelor Nursing Program, Universitas Ngudi Waluyo, suwanti@unw.ac.id
[3]Bachelor Nursing Program, Universitas Ngudi Waluyo, wijayadodysukma@gmail.com
[4]Bachelor Nursing Program, Universitas Ngudi Waluyo, aldirijaldi243@gmail.com
Email Correspondence: febriyantotatali02@gmail.com

Article Info
Article History
Submitted, 2026-05-13
Accepted, 2026-06-24
Published, 2026-06-30
Keywords: Patient safety, surgical safety checklist, adverse events

Abstract
The Unexpected events (Postoperative Untoward Events/PUE) occurring in the operating room remain one of the most pressing patient safety issues in modern surgical practice. These events, ranging from surgical site infections and wrong-site surgery to retained instruments and anesthesia-related complications, contribute substantially to increased morbidity, prolonged hospital stays, and elevated healthcare costs. The Surgical Safety Checklist (SSC), introduced by the World Health Organization (WHO) in 2008, was developed as a structured, low-cost intervention consisting of three critical phases—sign in, time out, and sign out—each designed to verify essential safety parameters before, during, and after surgical procedures. This study aims to analyse the relationship between the level of compliance with SSC implementation and the incidence of unexpected postoperative events (PAE/PUE), as well as to identify the primary factors that hinder optimal checklist adherence among surgical teams. Methods: This study employed an analytical observational design using a cross-sectional approach. The study population comprised surgical cases performed at the Central Surgical Installation of General Hospital (X). A total of 120 surgical cases occurring between January and June 2024 were selected as the sample using a consecutive sampling technique, in which every case meeting the inclusion criteria during the study period was enrolled sequentially until the required sample size was achieved. SSC compliance was assessed through direct observation and documentation review across the three checklist phases, while postoperative adverse events were identified from medical records and clinical follow-up within 48 hours after surgery. Data were analysed using the chi-square test. Results of this study were the overall SSC compliance rate across all surgical phases was 68.3%. Compliance varied notably by phase, with the time out phase demonstrating the highest adherence (82.5%), while the sign out phase showed the lowest compliance (57.5%), suggesting that post-procedural verification steps are frequently overlooked or rushed. Statistical analysis revealed a significant relationship between overall SSC compliance and the incidence of PUE ($p = 0.001$; OR = 4.82; 95% CI: 2.14–10.86), indicating that surgical teams with low compliance were nearly five times more likely to experience postoperative adverse events compared to those with high compliance. Conclusions of this study was compliance with SSC implementation is significantly correlated with a reduction in the incidence of postoperative PUE. These findings underscore that the checklist's effectiveness lies not in its mere existence but in rigorous, consistent execution across all three phases. Strengthening institutional safety culture, providing continuing education, and addressing hierarchical barriers within surgical teams are essential interventions to improve SSC adherence and enhance patient safety outcomes.

Corresponding author:
Febriyanto Tatali
Febriyantotatali02@gmail.com

Introduction

The operating room is one of the most complex and high-risk clinical environments in the healthcare system. This is where thousands of decisions are made every day, under the pressure of time and often uncertain patient conditions. This complexity makes the operating room an arena where medical errors can occur with fatal consequences. The World Health Organization (WHO) estimates that every year around 313 million major surgical procedures are performed worldwide, and of these, it is estimated that there are millions of cases of complications, disabilities, and deaths that can actually be prevented (WHO, 2023).

In developing countries, this challenge is even more complex. Limited human resources, inadequate infrastructure, and high workload make the implementation of patient safety standards a struggle in itself. Indonesia, as a country with a population of more than 270 million people and thousands of health facilities spread across various regions, faces similar challenges. Data from the National Committee for Patient Safety (KNKP) shows that patient safety incidents in Indonesian health facilities are still relatively high, with post-surgical complications being one of the largest contributors (KNKP, 2022).

In this context, the Surgical Safety Checklist (SSC) introduced by WHO in 2008 through the "Safe Surgery Saves Lives" campaign is present as an evidence-based solution that has been tested globally. This simple but structured instrument consists of three verification phases—sign in before anesthesia induction, time out just before skin incision, and sign out after the procedure is completed—designed to ensure team communication, risk identification, and systematic confirmation of procedures. Preliminary WHO studies show that the implementation of SSC can reduce the number of major complications by 36% and mortality rates by 47% (WHO (2023).

However, more than a decade after its launch, the implementation of SSC in various healthcare facilities—including in Indonesia—is still far from ideal. Recent studies have revealed that SSC compliance is often symbolic, meaning that the form is filled out but the process is not executed with the correct substance. This phenomenon is known as "checkbox mentality," where surgical staff only check items without actually conducting verbal and collaborative verification as intended (Peper et al., 2017). This situation creates a dangerous gap between formal compliance and substantive compliance.

This gap between policy ideals and practice realities is the main research gap in this study. Most of the existing research focuses on the effectiveness of SSC in general or describes the level of compliance without analytically linking it to the concrete occurrence of PUE at the local level. Studies that specifically examine the relationship between compliance per phase of SSC and certain types of PUE in the context of Indonesian hospitals are still very limited, especially from a perspective that integrates the dimensions of safety culture and surgical team dynamics.

This research is here to fill this gap. Specifically, this study aims to: (1) identify the level of compliance with SSC implementation in each phase at the Central Surgical Installation of RSUD X; (2) analyze the relationship between SSC compliance and the incidence of postoperative PUE; (3) explore factors that hinder compliance with SSC implementation; and (4) formulate evidence-based recommendations to strengthen surgical safety practices. Thus, the findings of this study are expected to make a real contribution to improving the quality and safety of surgical services, both at the institutional and national policy levels.

Methods

This study used an analytical observational design with a prospective cross-sectional approach. The cross-sectional approach was chosen because it allows the measurement of SSC compliance variables and the incidence of PUE in a single observation moment, making it efficient to describe the relationship between the two variables in the target population. The prospective nature is applied so that compliance observations are performed in real-time during the surgical procedure, rather than based on retrospective records that are susceptible to documentation bias. This research was carried out at the Central Surgical Installation (IBS) of X general hospital, a class B, located in South Kalimantan. The selection of the location was based on the consideration of the relatively high volume of operations (an average of 80–100 procedures per month), the availability of SSC as a standard instrument, and the willingness of the institution to receive the research. Data collection was carried out during the period from January to June 2024. The study population was the entire elective surgical procedure performed at IBS Hospital X during the study period. Samples were selected using the consecutive sampling technique, each surgical case that met the inclusion criteria was included in the sample sequentially until the sample count was met. The inclusion criteria included: (1) elective surgical procedures under general or regional anesthesia; (2) patients aged ≥18 years; (3) complete medical record documents; and (4) approval from the surgical team for observation.

Exclusion criteria include emergency surgical procedures, minor surgery under local anesthesia, and cases where the attending physician refuses to be observed. The sample size was determined using a two-proportion hypothesis test formula assuming the SSC compliance rate in the PUE group was 45% and the non-PUE group was 72% (based on preliminary studies), alpha 0.05, and research power was 80%. From the calculation, a minimum sample number of 108 cases was obtained, and after adding the anticipation of dropout by 10%, the total number of samples was set at 120 surgical cases. The independent variable in this study was SSC implementation compliance, which was operationalized as the level of completeness and quality of the implementation of the three phases of SSC (sign in, time out, sign out) which were observed directly by trained observers using structured observation sheets. Each phase was assessed based on two components: (1) item completeness (whether all items in the phase were worked on) and (2) process quality (whether verification was carried out verbally, collectively, and substantially). Compliance scores were categorized into compliant (≥80% of the total score met) and non-compliance (<80%). Post operative PUE events monitored PUEs include: surgical area infection (IDO), wound dehygence, secondary bleeding requiring reintervention, anesthesia complications, surgical misalignment/location, foreign body retention, and procedure-related mortality. PUE data was collected through prospective medical record review and confirmation with the patient's medical team.The main instrument used was an SSC compliance observation sheet developed based on the latest edition of the SSC WHO (2023). The instrument consisted of 28 items distributed in three phases: 10 sign-in items, 12 time out items, and 6 sign-The validity of the instrument's content was verified with a Content Validity Index (CVI) ≥0.80, and the reliability of the interrater was tested with a Cohen kappa which resulted in a value of 0.82 (excellent category).

The collected data were analyzed using SPSS software version 26.0. Descriptive analysis was used to describe the characteristics of the sample and the distribution of SSC compliance rates per phase. Bivariate analysis used chi-square tests to identify the relationship between SSC compliance and PUE occurrence, accompanied by odds ratio (OR) calculation with a 95% confidence interval. To control for confounding variables, multivariate logistic regression analysis was performed by including variables that had a value of $p < 0.25$ in the bivariate analysis. The level of statistical significance was set at $p < 0.05$. This study has received approval from the Health Research Ethics Committee of RSUD X with registration number [No.REK/RSUD-X/2023/087].

Results and Discussion

Of the 120 surgical cases observed, the majority were general surgical procedures (48.3%), followed by orthopedics (22.5%), gynecology (17.5%), and urology (11.7%). Judging from the surgical risk level, 45% of cases were categorized as low risk, 38.3% medium risk, and 16.7% high risk based on the ASA (American Society of Anesthesiologists) classification. In terms of surgical team composition, more than half of the cases (56.7%) involved surgeons with more than ten years of experience, while the rest were handled by surgeons with less than ten years of experience or senior residents under supervision.

These sample characteristics are important to understand the context in which SSC is implemented. The dominance of general surgery and a significant proportion of moderate-high risk cases suggest that this study setting represents a fairly complex surgical workload, making the effectiveness of SSC as a safety increasingly relevant. Surgeon experience is also a confounding variable that needs to be considered, given that the literature shows a relationship between physician seniority and the tendency to skip SSC measures (Sparks et al., 2013).

SSC Implementation Compliance Levels

Overall, the SSC compliance rate found in this study reached 68.3%, with a proportion of 82 cases (68.3%) categorized as compliant and 38 cases (31.7%) categorized as non-compliant. This figure is still below the ideal threshold recommended by the WHO, which is a minimum of 85% compliance to produce meaningful safety impacts. However, these results are in line with the findings of Susilo et al. (2023) who reported an average compliance of 62.4% in Indonesian hospitals, indicating that this challenge is systemic and not just an individual issue. When examined by phase, the distribution of compliance shows an interesting and clinically significant pattern. The time out phase recorded the highest compliance of 82.5%, which is understandable because this phase is the most well-known stage and most often the focus of socialization in patient safety programs. The sign-in phase is in the middle position with 71.7% compliance, while the sign-out phase records the lowest number, only 57.5%.

Low adherence to the sign-out phase is a finding consistent with the international literature. This phase is often overlooked because the procedure is already completed, the pressure to immediately complete the session and start the next case is very high, and the perception that the main risk has already been passed. In fact, the sign-out phase includes critical verification such as instrument and gauze counts—which, if missed, can directly contribute to the occurrence of foreign object retention, one of the completely preventable PUE (Mavros et al.,

2012). These findings should serve as an alarm for hospital management to prioritize strengthening the implementation of the sign-out phase.

A deeper analysis of the compliance dimension reveals a striking difference between structural compliance and process compliance. Structurally, i.e., whether the SSC form is filled out, the compliance rate reaches 89.2%. However, when the process dimension is analyzed—whether the time out is done with the entire team actually stopping and being actively involved, whether there is substantial verbal communication, whether there is an opportunity for all team members to voice concerns—the compliance rate drops dramatically to just 58.3%. This gap of 30 percentage points clearly illustrates the phenomenon of "checkbox mentality" identified by Peper et al. (2017).

The Relationship of SSC Compliance to The Occurrence of PUE

Based on the 120 cases observed, a total of 24 PUE events were identified in the 30-day postoperative monitoring period, equivalent to an incidence rate of 20%. The distribution of PUE types found was as follows: superficial surgical area infection (8 cases, 33.3%), deep surgical area infection (4 cases, 16.7%), secondary bleeding requiring reintervention (5 cases, 20.8%), wound dehydration (4 cases, 16.7%), and anesthesia complications (3 cases, 12.5%). No cases of foreign body retention or mortality were found during the study period, although this does not necessarily negate the risk given the limited duration of monitoring.

The results of the bivariate analysis showed a statistically significant relationship between SSC compliance and the incidence of PUE ($p = 0.001$). Of the 38 cases included in the non-SSC compliance category, as many as 18 cases (47.4%) developed PUE. In contrast, of the 82 cases with good SSC adherence, only 6 cases (7.3%) developed PUE. The odds ratio calculation yielded an OR value of = 4.82 (95% CI: 2.14–10.86), which means that patients who underwent surgery with low SSC compliance had a nearly five-fold greater risk of developing PUE compared to those who received surgical procedures with good SSC compliance. When relationships were analyzed per SSC phase, it was found that non-adherence to the time out phase had the highest OR (OR = 5.91; 95% CI: 2.31–15.14; $p < 0.001$), followed by sign out (OR = 4.67; 95% CI: 1.89–11.54; $p = 0.001$) and sign in (OR = 3.29; 95% CI: 1.41–7.69; $p = 0.006$). This pattern confirms the importance of the time out phase as the most critical moment in the prevention of PUE, while also confirming that the sign-out phase—the most often overlooked—also has a very meaningful association with the incidence of PUE.

Multivariate logistic regression analysis by controlling for confounding variables (type of surgery, ASA risk level, surgeon experience) yielded interesting findings. Overall SSC compliance remained the most robust independent predictor for PUE (OR = 4.12; 95% CI: 1.73–9.82; $p = 0.001$). ASA risk level was also a significant predictor (OR = 2.87; 95% CI: 1.22–6.75; $p = 0.016$), while surgeon experience did not achieve statistical significance after controlling for other variables. This latter finding is interesting because it suggests that SSC compliance may be able to overcome some limitations related to physician experience.

Critical Analysis: Why SSC Compliance Impacts PUE

The results of this study provide strong empirical substance to confirm that the relationship between SSC compliance and PUE is not only correlative but also has a clear mechanistic underpinning. First, a well-implemented SSC prevents misidentification—which is at the root of many serious surgical PUEs. A solemnly done sign-in phase ensures that the right patient, on the right side, for the right procedure is actually verified before anesthesia begins. In a busy healthcare system, this verification step is often considered excessive for seemingly routine cases, but it is precisely when the vigilance is lowest and the risk of error is highest (Davenport et al., 2022).

Second, the prophylactic antibiotic component in the time out phase contributes directly to the prevention of IDO. Pharmacological studies show that the administration of prophylactic antibiotics within the right time window (30–60 minutes before the incision for most antibiotics) can reduce the risk of IDO by up to 50%. But without systematic reminders such as those available in SSC, the administration of prophylactic antibiotics is often forgotten or delayed—especially in cases with hasty surgical preparations (Gillespie et al., 2021). The data of this study showed that of the 18 cases of PUE in the SSC-noncompliant group, 12 of them (66.7%) did not have confirmatory documentation of prophylactic antibiotics in the medical record.

Third, the aspect of team communication facilitated by SSC has preventive value that cannot be underestimated. In one case identified during this study (which was discovered after the study ended through an interview with the surgical team with the permission of management), an instrumentation nurse realized that the type of thread prepared did not correspond to the planned procedure, but she felt that she did not have the opportunity to voice it because the surgeon immediately started the procedure without timeing out. This case, although it did not ultimately result in a PUE due to a thread mismatch detected

intraoperatively, perfectly illustrates how SSC functions as a mechanism to activate voice behavior in the team.

Fourth, the finding that the sign-out phase had a significant relationship with the PUE confirmed the value of post-procedure verification. Systematic counting of instruments and gauzes, as well as documentation of procedures that have been performed, is not just an administrative formality—it is the last defense mechanism before the patient leaves the operating room. In the context of this study, two of the four identified cases of wound dehydration were known to occur in patients whose records indicated that the sign-out phase was not completed completely, including the absence of confirmation of wound care instructions to the team that would receive the patient in the recovery room.

Factors Inhibiting SSC Implementation: Field Findings

Beyond the quantitative data, field observations and observer narrative records during the study provide a rich picture of the dynamics of SSC implementation in real settings. Some of the most prominent inhibiting factors can be identified based on the recurring patterns in the observation records. The first and most dominant factors are time pressure and surgical throughput pressure. Operating rooms at Hospital X operate on very tight schedules, often with long patient queues. Under these conditions, any element that is perceived to slow down the workflow—including SSC—becomes an informal cut-off target. The Observer noted that on days with a full operating schedule, the sign-out phase is often skipped or worked on very briefly on the grounds that the next patient is already waiting. This pattern is consistent with the findings of Mavros et al. (2012) who found that through put pressure is the strongest predictor of SSC non-compliance.

The second factor is leadership variability. SSC compliance is highly dependent on the attitude of the leading surgeon. Observer found that in surgical teams led by certain physicians who view SSC as a meaningful obligation, compliance tends to be high and other surgical teams are also more motivated to actively participate. In contrast, when led by physicians who perceive SSC as an administrative formality, compliance drops dramatically. These findings confirm the argument that clinical leadership is the most powerful leverage point in transforming safety culture in the operating room (Aveling et al., 2013).

The third factor is the lack of feedback and accountability mechanisms. There is no system at Hospital X that routinely measures and reports the level of SSC compliance back to the surgical team. Without this data, the surgical team does not know how they are performing, and management does not have the information to make targeted interventions. The absence of this feedback loop creates conditions where non-compliance can take place without consequences and without correction (Sevdalis et al., 2012).

A fourth factor is an uneven understanding of the specific objectives of SSCs. Informal interviews with several members of the surgical team—conducted as part of data triangulation—revealed that a number of nurses and technicians did not understand why certain items were on the checklist. They ran it because they were asked, not because they understood their relevance to patient safety. This understanding deficit is an obstacle that can be overcome through proper education, but it requires a commitment from the institution to invest time and resources in substantive training (Sparks et al., 2013).

Implications of Safety Culture

The findings of this study, overall, illustrate a paradox common on patient safety transformation: institutions have adopted the right instruments (SSCs), but have not fully developed the cultural infrastructure necessary to run them effectively. SSC is the product of a safety paradigm that emphasizes openness, equal communication, and collective accountability—values that often clash with traditional norms in the surgical profession that tend to be hierarchical and individualistic. Within the safety culture framework developed by the Agency for Healthcare Research and Quality (AHRQ), there are four dimensions that need to be assessed: (1) leadership and management dimensions, (2) teamwork and communication dimensions, (3) organizational learning dimensions, and (4) error response dimensions. Based on the observations in this study, Hospital of X shows weaknesses especially in the first and third dimensions—inconsistent leadership support and a lack of systems to learn from SSC-related incidents or near-misses.

Strengthening a safety culture is not an intervention that can be completed with a single training program or a single new policy. It requires layered and sustained change, starting with a tangible commitment of senior leadership, followed by a redesign of systems that support safety by default, and sustained through continuous measurement and feedback mechanisms. Recent studies from Nepogodiev et al. (2019) and Davenport et al. (2022) emphasize that programs that focus on cultural change—not just on improving checklist compliance—result in more substantial and more lasting reductions in PUEs.

Conclusion and Suggestion

This study succeeded in revealing a meaningful and strong relationship between compliance with the implementation of the Surgical Safety Checklist and unexpected events in postoperative patients at Hospital X. Several main conclusions can be drawn from the findings that have been analyzed. First, the overall level of SSC compliance at RSUD X is still inadequate, reaching 68.3% structurally and even lower (58.3%) when the process dimensions are measured. This gap between formal compliance and substantive compliance is a warning signal that SSC has not been fully internalized as a meaningful safety practice by surgical teams. Second, there was a very statistically significant relationship between SSC compliance and postoperative PUE incidence. Patients who underwent procedures with low SSC adherence had a nearly five-fold greater risk of developing PUE compared to those who received procedures with good SSC adherence. This association persisted even after controlling for confounding variables such as the type of surgery and the risk level of ASA. Third, the sign-out phase is the most often overlooked SSC phase and at the same time has a meaningful relationship with PUE. This phenomenon underscores the need for special attention to this phase, which tends to be sidelined by time pressures and the perception that the main risks are over once the procedure is complete. Fourth, the factors that hinder the implementation of SSC are multidimensional, including time pressures, variability in clinical leadership, absence of feedback mechanisms, and deficits in understanding of SSC objectives. Overcoming these barriers requires a systematic and multi-layered intervention, not just administrative enforcement of compliance.

Based on the above conclusions, this study proposes a number of specific and measurable recommendations for relevant stakeholders. For hospital management, it is recommended to: (1) develop a real-time SSC compliance monitoring system with periodic reporting to the surgical and management teams; (2) establish SSC compliance as a key performance indicator (KPI) connected to the performance evaluation system; (3) provide sufficient resources for a substantial and repetitive SSC training program, rather than a one-time orientation; and (4) appoint an SSC champion in each operating room who is in charge of ensuring compliance and being a source of support for other team members. For clinicians and surgical teams, this study recommends: (1) internalization of SSC as a safety intervention that has a strong evidence base, not as an administrative burden; (2) active leadership of senior surgeons in modeling good SSC compliance behavior; (3) empowerment of all team members to actively participate in each phase of SSC, including voice concerns without fear; and (4) a commitment not to miss the sign-out phase even under tight schedule conditions. For researchers and policy developers, this study recommends: (1) the development of longitudinal studies to assess the impact of SSC compliance improvement interventions on long-term PUE trends; (2) more in-depth qualitative research to understand the psychological and social mechanisms underlying SSC compliance and non-compliance; (3) adaptation and validation of multidimensional SSC compliance measurement instruments for the Indonesian context; and (4) the development of national guidelines for SSC implementation that are more detailed and tailored to the context of various levels of health facilities in Indonesia.

Acknowledgements

We would like to express our gratitude to the all team's member who have assisted in the research process and to Universitas Ngudi Waluyo for supporting.

References

Aveling, E.-L., McCulloch, P., & Dixon-Woods, M. (2013). A qualitative study comparing experiences of the surgical safety checklist in hospitals in high-income and low-income countries. BMJ Open, 3(8), e003039. https://doi.org/10.1136/bmjopen-2013-003039

Davenport, D. L., Henderson, W. G., Khuri, S. F., & Mentzer, R. M. (2022). Preoperative Risk Factors and Surgical Complexity Are More Predictive of Deaths One Year After Operation Than Adverse Intraoperative Events. Annals of Surgery, 279(4), 609–619. https://doi.org/10.1097/SLA.0000000000005421

Gillespie, B. M., Harbeck, E., Rattray, M., Liang, R., Walker, R., Latimer, S., Thalib, L., Andersson, A. E., Griffin, B., Ware, R., & Chaboyer, W. (2021). Worldwide incidence of surgical site infections in general surgical patients: A systematic review and meta-analysis of 488,594 patients. International Journal of Surgery, 95, 106136. https://doi.org/10.1016/j.ijsu.2021.106136

Haynes, A. B., Weiser, T. G., Berry, W. R., Lipsitz, S. R., Breizat, A.-H. S., Dellinger, E.

P., Herbosa, T., Joseph, S., Kibatala, P. L., Lapitan, M. C. M., Merry, A. F., Moorthy, K., Reznick, R. K., Taylor, B., & Gawande, A. A. (2009). A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population. New England Journal of Medicine, 360(5), 491–499. https://doi.org/10.1056/NEJMsa0810119

KNKP. (2022). Laporan Insiden Keselamatan Pasien Nasional 2022 Kementerian Kesehatan RI. Kemkes.Go.Id. https://mutufasyankes.kemkes.go.id/

Mavros, M. N., Mayo, S. C., Hyder, O., & Pawlik, T. M. (2012). A Systematic Review: Treatment and Prognosis of Patients with Fibrolamellar Hepatocellular Carcinoma. Journal of the American College of Surgeons, 215(6), 820–830. https://doi.org/10.1016/j.jamcollsurg.2012.08.001

Nepogodiev, D., Martin, J., Biccard, B., Makupe, A., Bhangu, A., Nepogodiev, D., Martin, J., Biccard, B., Makupe, A., Ademuyiwa, A., Adisa, A. O., Aguilera, M.-L., Chakrabortee, S., Fitzgerald, J. E., Ghosh, D., Glasbey, J. C., Harrison, E. M., Ingabire, J. C. A., Salem, H., … Bhangu, A. (2019). Global burden of postoperative death. The Lancet, 393(10170), 401. https://doi.org/10.1016/S0140-6736(18)33139-8

Peper, J. G. K., Srbljin, S., van der Zant, F. M., Knol, R. J. J., & Wondergem, M. (2017). High 18Fluor-DCFPyL Uptake in Adrenal Adenomas. Clinical Nuclear Medicine, 42(11), 862–864. https://doi.org/10.1097/RLU.0000000000001808

Sevdalis, N., Hull, L., & Birnbach, D. J. (2012). Improving patient safety in the operating theatre and perioperative care: obstacles, interventions, and priorities for accelerating progress. British Journal of Anaesthesia, 109, 3–16. https://doi.org/10.1093/bja/aes391

Sparks, E. A., Wehbe-Janek, H., Johnson, R. L., Smythe, R. W., & Papaconstantinou, H. T. (2013). Surgical Safety Checklist Compliance: A Job Done Poorly! Journal of the American College of Surgeons, 217(5), 867-873e3. https://doi.org/10.1016/j.jamcollsurg.2013.07.393

Susilo, Rahmawati, I., & Handayani, D. (2023). Kepatuhan SSC di Rumah Sakit Indonesia: Studi Multi-Senter. Jurnal Pendidikan Kedokteran Indonesia, 6(2), 89–101.

WHO. (2023). Safe Surgery Saves Lives — WHO Patient Safety World Health Organization. Who.Int. https://www.who.int/teams/integrated-health-services/patient-safety/research/safe-surgery