

SURGICAL COUNT AND PATIENT SAFETY IN THE PERSPECTIVE OF THE OPERATING ROOM CIRCULATING NURSE

Contagem cirúrgica e segurança do paciente na perspectiva do circulante de sala operatória

Conteo quirúrgico y seguridad del paciente en perspectiva del circulante de quirófano

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ABSTRACT: Objective: To investigate the perspective of the operating room circulating nurse on surgical count for patient safety. **Method:** Qualitative exploratory study, performed at the surgical center of a large hospital in the Northeast of Brazil, between January and March 2018. We carried out a Content Analysis of the interviews conducted with 11 operating room circulating nurses using theoretical saturation. **Results:** The responses were organized in two thematic categories – “Surgical count for patient safety” and “Flaws in the surgical count protocol” –, revealing the need to invest in practice change, as most interviewees understood or acknowledged the importance of surgical count for patients. **Conclusion:** The relevance of surgical count is empirically recognized and must be strengthened through actions that guarantee the understanding of the extent and impact of this practice on patient safety. **Keywords:** Perioperative nursing. Patient safety. Nursing research. Nursing care.

RESUMO: Objetivo: Investigar a perspectiva do circulante de sala operatória sobre a contagem cirúrgica para a segurança dos pacientes. **Método:** Estudo exploratório, qualitativo, realizado em um centro cirúrgico de um hospital de grande porte do Nordeste do Brasil, entre janeiro e março de 2018. Foi realizada Análise de Conteúdo das entrevistas realizadas com 11 circulantes de sala operatória por saturação teórica. **Resultados:** As falas foram organizadas em duas categorias temáticas — “Contagem cirúrgica para a segurança do paciente” e “Falhas no protocolo de contagem cirúrgica” —, revelando que a mudança da prática deve ser investida, visto que a maioria entende ou reconhece a importância da contagem cirúrgica para os pacientes. **Conclusão:** Há o reconhecimento empírico da relevância da contagem cirúrgica, devendo ser reforçada por meio de ações que garantam a compreensão da dimensão e a repercussão dessa prática na segurança dos pacientes.

Palavras-chave: Enfermagem perioperatória. Segurança do paciente. Pesquisa em enfermagem. Cuidados de enfermagem.

RESUMEN: Objetivo: Investigar la perspectiva del circulante de quirófano sobre el conteo quirúrgico para la seguridad de los pacientes. **Método:** Estudio exploratorio, cualitativo, realizado en un centro quirúrgico de un hospital de grande porte del Nordeste de Brasil, entre enero y marzo de 2018. Fue realizado Análisis de Contenido de las entrevistas realizadas con 11 circulantes de quirófano por saturación teórica. **Resultados:** Las conversas fueron organizadas en dos categorías temáticas — “Conteo quirúrgico para la seguridad del paciente” y “Fallas en el protocolo de conteo quirúrgico” —, revelando que el cambio de la práctica debe ser invertida, visto que la mayoría entiende o reconoce la importancia del conteo quirúrgico para los pacientes. **Conclusión:** Hay el reconocimiento empírico de la relevancia del conteo quirúrgico, debiendo ser reforzada por medio de acciones que garanticen la comprensión de la dimensión y la repercusión de esa práctica en la seguridad de los pacientes.

Palabras clave: Enfermería Perioperatoria. Seguridad del paciente. Investigación en enfermería. Atención de enfermería.

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INTRODUCTION

The process of counting the items used during surgery is often called surgical count. This practice is crucial to ensure that items such as instruments, sponges, and needles are not forgotten inside of patients¹. They must be counted before closing the incision, as they can be accidentally disposed of in the trash or remain in the operative fields at the end of the procedure². Despite being a rare event, forgetting sponges and instruments at the end of the surgery is an adverse event with severe implications².

The World Health Organization (WHO) recommends that, during the implementation of the Surgical Safety Checklist, in the Time out phase, the whole team confirms if the count of items is correct, and, if it is not, they must review the count and check trash cans and hampers³. WHO elected Surgical Count as the Objective 7 for Safe Surgery worldwide⁴.

The circulating nurse, a specialized nursing technician (NT) that stays in the room during the whole intraoperative period, is responsible for recording the events and materials used in the surgery and is essential for the implementation of patient safety protocols in the surgical center.

Considering the importance of this professional for patient safety, this study aimed to answer the following question: “What is the perspective of circulating nurses on surgical count for patient safety?”

OBJECTIVE

To investigate the perspective of operating room circulating nurses on surgical count for patient safety.

METHOD

This is a qualitative exploratory study, performed at the surgical center (SC) of a large university hospital in the Northeast of Brazil, between January and March 2018.

The SC used for this study has 14 surgical specialties in ten operating rooms (ORs), including highly complex (cardiac, thoracic, neurological, and transplants), elective, and urgent surgeries. Small and ambulatory surgeries are performed in another SC at the same hospital. During service, there was no standardized routine to count needles,

but a Standard Operating Procedure (SOP) was being implemented. Even though the institution has a notification system for adverse events (AE), counts that do not match are rarely notified.

The surgical count protocol of the hospital where the study was conducted includes measures that must be taken to prevent the Retention of Surgical Items and is the result of a project that implemented evidence-based nursing care called “Surgical count in open surgeries: a project to implement evidence-based best practices.” This project was developed in the Brazilian Center for Evidence-based Healthcare: Joanna Briggs Institute Center of Excellence, at the Nursing School of Universidade de São Paulo (EEUSP), designed to be used in the service of the study site. The research preceded the implementation of the evidence-based protocol in SC.

The study was based on interviews with the following guiding question: “What is the importance of surgical count protocols for patient safety?”

The research included nursing technicians who worked as OR circulating nurses on the data collection period for at least six months and only during the day shift, given that the unit does not perform elective surgeries on the night shift, just the occasional urgent surgery.

The sample of technicians was intentional, and we estimated the number of interviewees using the theoretical saturation method⁵. Interviews were transcribed in full and read exhaustively to identify units of analysis in the responses; statement themes and types were compiled for each one of them, combined in pre-categories, and distributed in a table as new units of analysis were found⁵. Saturation occurred when the interviews showed no new units of analysis⁵. This table enabled us to determine the saturation or repetition of data after 11 interviews (Table 1).

After identifying the theoretical saturation, we conducted the Content Analysis proposed by Bardin^{6,7}. Researchers performed the final categorization of responses based on the stages of pre-analysis, material exploration, and treatment of results, grouping data by semantic content similarity. The previous process of identifying theoretical saturation facilitated this analysis^{5,6}.

The first stage of the analysis consisted of formulating a reproducible study protocol and elaborating a guiding question and secondary ones of easy comprehension for the participants. The second stage – development – comprised the identification of theoretical saturation. The interviews

were conducted ethically and respectfully, based on interviewer-interviewee interaction. Since the first approach, each participant knew all ethical aspects involved, that they would remain anonymous, and that their answers would not be submitted to their managers as a form of evaluation. Interviews were recorded and transcribed in the same week. The third stage - assessment of results – used the researcher triangulation technique, conducted in this study with two researchers present at the time of interview and a different transcriber. Respondents revised the transcriptions, which represented an important step in validating the content collected. Subsequently, the two researchers who conducted the interview reviewed the content collected and categorization⁸.

Circulating nurses were approached for the interview outside surgery time, after they finished the day procedures, to not disturb their work. Responses were identified by the letter “E” followed by a number drawn by the respondents, which did not reflect the order of interviews (E1, E2, E3, and so on). This research complied with the principles of Resolution No. 466/2012 of the National Health Council. Data collection started only after consideration and approval by the Research Ethics Committee of the institution (Report No. 2,430.629/2017, CAAE: 79740517.10000.5208).

RESULTS

We interviewed 11 OR circulating nurses, four males and seven females. Their mean age was 35.08±9.3 years; they had an average of 10.03±4.21 years of SC experience and 3.89±6.23 years working in the SC of the study site. Five technicians had

degrees in Nursing and one in another area. Only three of them worked on other services at the time of data collection. No technician reported having attended any continuing education course in SC nursing or patient safety in the past two years besides the training provided by the institution, and only three declared having participated in events in the area during this period.

Table 1 shows the theoretical saturation of interviews that contributed to delimit the sample.

We present the responses below in two thematic categories: “Surgical count for patient safety” and “Flaws in the surgical count protocol.”

Surgical count for patient safety

At first, one of the factors that stands out is the lack of knowledge about surgical count. Most interviewees mentioned only the count of sponges: “It’s the process of counting sponges” (E1); “It’s counting instruments at the end of the surgery to know if any of them are missing” (E5); “It’s when we count to see if no sponges were left inside the patient” (E10).

Only two circulating nurses included the count of sharp objects in the process: “I think we’re supposed to count everything that we put on the table: sponges, gauzes, sharp objects, instruments, everything” (E4); “To me, we’re supposed to count everything we put on the field, and that can be left inside the patient: sponges, needles, blades, clamps, everything” (E8).

Regarding the importance and purpose of the count, most interviewees seem to understand the relevance that should be attributed to the process due to the AE effect it can cause: “It’s very important this thing of counting everything we use on the patient, so we don’t forget anything inside” (E11); “We have to count everything, because a sponge left inside is already a big

Table 1. Report on the theoretical saturation of interviews. Recife (PE), Brazil, 2018.

Statements about surgical count	Interviewee											Recurrence
	1	2	3	4	5	6	7	8	9	10	11	
Unawareness of sharp objects being counted	X	X	X		X	X	X		X	X	X	9
Identification of only sponges being counted	X	X	X		X	X	X		X	X	X	9
Technician’s role in the count	X			X	X	X			X		X	6
Responsibility of the scrub nurse	X	X	X		X	X	X	X	X	X	X	10
Purpose of the count	X	X	X	X	X	X	X	X	X		X	10
Importance of the count	X		X	X		X	X	X	X		X	8
Flaws in the count	X	X	X	X	X	X	X	X	X	X	X	11
Need for involvement of the team	X	X	X		X	X	X	X	X	X	X	10

problem, imagine a clamp?” (E9); “People don’t care much about this because it is rare to forget, but they have to understand that if it happens, the damage is huge” (E10); “Imagine the mess: you start to feel pain, a pain that nobody knows what it is and it ends up being a sponge or a mosquito [Halsted forceps] that someone forgot inside you?” (E1).

Flaws in the surgical count protocol

The retention of items at the end of the surgery appeared in some responses as an aspect perhaps more common than documented: “I’ve seen people forgetting sponges. I’ve seen it about three times” (E2); “I saw a sponge that people had to open to remove after years. I’ve never seen an instrument, but I’ve heard stories” (E3);

I’ve many years of surgical center. I’ve seen everything. The worst thing is that when they remove the sponge left inside, which is rotten, they say that it was a surgery to remove a foreign body, they don’t say what it was not to compromise the team that did the surgery and forgot it there (E7).

Responses also included near miss AEs, when circulating nurses identified situations in which the count did not match and, in a review of the field, the missing item was found:

He [the resident doctor working on instrumentation] insisted with me that the problem was mine, that I hadn’t counted right, and that the missing sponge was in the trash. I stood my ground and said that it was inside the patient. The surgeon asked him to look all over again in front of him. In the end, it was there, full of blood. They were going to close it, and the sponge would stay there, but I insisted, I was sure! (E7).

When they began to close the surgery site, I said that it was missing. They said it was my count that was wrong and that there was nothing there, that they were sure there wasn’t anything left inside. I was firm with them. I said that I had counted correctly and would write it on the nursing and medical records. They scowled, but checked anyway, opened a few stitches, stuck a hand inside, and found it. It was so red that no one would have seen it there in the back. I stayed silent. I didn’t need to say anything. Later, one of them came to thank me. The others remained silent (E8).

Circulating nurses declared that the scrub nurse was responsible for the counting process, not them, but admitted that the entire team should be involved: “I don’t think it’s my responsibility, the person in instrumentation is responsible. The person in instrumentation is the one who has to count things” (E1); “I think that it’s the person in instrumentation who has to count everything, you know? It’s not us. We just write everything down to see if it matches later. How am I supposed to see if there was anything left inside?” (E2);

“I think everyone is responsible. Because I, who am out of the field, write down everything that I put on the table. The scrub nurse needs to be organized and separate everything correctly. And the surgeon has to look inside the cavity. If everyone does their work, the patients reap the benefits, because nobody is going to forget anything inside them” (E5).

Possible causes of flaws in the counting process came up gradually over the discourse of all circulating nurses: “I believe the problem is that some surgeons, in 2018, still have the nerve to say that we don’t need to count sponges!” (E3); “To me, we don’t count everything we should because nothing happens, ever, when someone forgets something inside. If it did, everyone would care” (E8);

“It’s very hard to write everything down and count correctly when the team rushes to finish and pester us to get things done faster. Sometimes, they start the surgery without even waiting for us to empty the trash! It’s hard to work like this” (E9).

“A lot of people don’t care. I’m not talking about surgeons only, but other circulating nurses as well. Some people think it’s all right not to count because it’s less work, but it’s worse for the patient, and we have to do it, it’s not to please anyone, it’s for the patient because it could have been our mother or child in there” (E10).

Lastly, only two technicians identified surgical count as a protocol to prevent accidents for the professionals involved:

“I think that we have to count everything, and sharp objects are the least counted and the most important for us. Because if the scrub nurse separated everything correctly and we counted to ensure they are all in there, there would be less chance of us being pierced while removing dirty instruments at the end of surgery” (E11). Once, a colleague was pierced while removing the instruments. The scrub nurse said he had placed all sharp objects on a small basin, but he hadn’t, one was

out, and she hadn't seen it. If they had counted, they'd know that there was one missing in the basin, precisely the one that pierced her!" (E8).

DISCUSSION

The responses indicate that professionals and health institutions should invest in practice change, as most of them understand or recognize the importance of surgical count for patients. In their responses, circulating nurses showed no concern for the financial aspect involved, given that many instruments can be lost in the fields or the trash if not counted. Most of them expressed, in some way, concern and understanding that surgical count is important for patient safety.

Currently, the manual count is predominant, and some studies reveal that needles are the least counted item⁹⁻¹². Circulating nurses identified risk in removing sharp objects from the operative field and that counting them could prevent accidents. Professionals did not report knowing alternatives to the manual count in their interviews, but several centers use bar codes to count instruments⁹⁻¹².

Standardized procedures to prevent the Retention of Surgical Items (RSI) involve at least two moments and two professionals. Two members of the surgical team, one inside the operative field and one outside, count the items immediately after they are placed on the sterile field and count them again at the end of surgery before the patient leaves the OR¹. If the count at the end does not match the one of items provided, the team cannot ensure patient safety and must take an x-ray as soon as possible^{9,12-15}. Every discrepant count should be settled before the patient leaves the OR^{1,4,9,10}. Circulating nurses must understand the importance of their role not only in recording the items provided in the operative field but also in drawing the attention of the team for the count. More than one person, besides the circulating nurse, should do the recount and the nurse must be present to participate, writing down the count that does not match as an AE and taking safety measures for the patient¹.

No interviewee mentioned the WHO objectives for safe surgeries, evidence, or references that justify the practice, only an empirical knowledge and ethical reflection on the impact of the retention of surgical items.

The Joanna Briggs Institute (JBI), an Australian institution committed to producing, disseminating, and implementing

evidence-based clinical practice worldwide, has organized the best practices in surgical count for OR. In a recent evidence summary based on systematic literature reviews and evidence, JBI included results from well-designed studies to be considered as a high level of evidence, indicating the best practices recommended in the topic Operating Room: Surgical Counts¹.

The document reveals the persistence of RSI and surgical count errors, leading to a high priority in developing more effective standardized count procedures. Automated processes to count and use sponges marked in surgery show strong evidence of a decrease in count errors and RSI. JBI reinforces the need to introduce a new practice, protocol, or technology followed by good training¹.

Circulating nurses did not mention the possibility of using x-rays to prevent RSI. Routine X-rays in the intraoperative period of high-risk surgeries can be a useful measuring instrument to reduce the incidence of RSI^{1,4,9,12,14}.

The multidisciplinary approach of the surgical team should emphasize the responsibility of preventing RSI. Training of the surgical team, standardized surgical count, formal review of all stages when the count does not match at the end, and an organizational policy to prevent RSI are some initiatives recommended to reduce the number of discrepant counts^{1,2,4,9,10,12,16-19}. The surgical team must understand and respect the time to prepare the OR and to implement the security protocol correctly^{1,10,16-19}.

FINAL CONSIDERATIONS

The study showed that circulating nurses recognize the importance of surgical count. However, we identified the need to strengthen the protocol with permanent and continuing education actions so the professionals can understand the extent and impact of this practice on patient safety.

Investments in the permanent training of the entire surgical team are necessary, with systematic evaluation and monitoring of the criteria used – through an audit –, according to the recommendation of scientific evidence-based best practices.

A limitation of the study was assessing the reality of only one center and not investigating factors related to the lack of knowledge and other barriers that contribute to the non-compliance with the criteria described in the literature on the best evidence about the theme. Further studies should validate strategies to implement best practices in surgical count that stimulate the adherence of all surgical team.

REFERENCES

- McArthur A. Operating room: surgical counts surname. Evidence Summary. Austrália: The Joanna Briggs Institute; 2016.
- Stawicki S, Moffatt-Bruce S, Ahmed H, Anderson III HL, Baliya TM, Bernescu I, et al. Retained surgical items: a problem yet to be solved. *J Am Coll Surg* [Internet]. 2013 [acessado em 20 jun. 2018];216(1):15-22. Disponível em: <http://doi.org/10.1016/j.jamcollsurg.2012.08.026>
- World Health Organization. World Alliance for Patient Safety. Implementation manual surgical safety checklist. Geneva: World Health Organization; 2008 [acessado em 25 jul. 2018]. Disponível em: http://www.who.int/patientsafety/safesurgery/tools_resources/SSSL_Manual_finalJun08.pdf?ua=1
- World Health Organization. WHO guidelines for safe surgery 2009 - Safe surgery saves lives. Geneva: World Health Organization; 2009 [acessado em 25 jun. 2018]. Disponível em: http://apps.who.int/iris/bitstream/handle/10665/44185/9789241598552_eng.pdf;jsessionid=F785D8684C05FBF825F6C7B183458C6A?sequence=1
- Fontanella BJB, Luchesi BM, Saidel MGB, Ricas J, Turato ER, Melo DG. Amostragem em pesquisas qualitativas: proposta de procedimentos para constatar saturação teórica. *Cad Saúde Publica* [Internet]. 2011 [acessado em 20 jun. 2018];27(2):389-94. Disponível em: <http://doi.org/10.1590/S0102-311X2011000200020>
- Bardin L. Análise de Conteúdo. São Paulo: Ed 70; 2011. 280 p.
- Caregnato RCA, Mutti R. Qualitative research: discourse analysis versus content analysis. *Texto Contexto-Enferm* [Internet]. 2006 [acessado em 20 jun. 2018];15(4):679-84. Disponível em: <http://doi.org/10.1590/S0104-07072006000400017>
- Ollaik LG, Ziller HM. Concepções de validade em pesquisas qualitativas. *Educ Pesqui* [Internet]. 2012 [acessado em 20 jun. 2018];38(1):229-41. Disponível em: <http://doi.org/10.1590/S1517-97022012005000002>
- Freitas PS, Mendes KDS, Galvão CM. Surgical count process: evidence for patient safety. *Rev Gaúcha Enferm* [Internet]. 2016 [acessado em 20 jun. 2018];37(4):e66877. Disponível em: <http://doi.org/10.1590/1983-1447.2016.04.66877>
- Wan W, Le T, Riskin L, Macario A. Improving safety in the operating room: a systematic literature review of retained surgical sponges. *Curr Opin Anaesthesiol* [Internet]. 2009 [acessado em 20 jun. 2018];22(2):207-14. Disponível em: <http://doi.org/10.1097/ACO.0b013e328324f82d>
- Greenberg C, Diaz-Flores R, Lipsitz S, Regenbogen S, Mulholland L, Mearn F, et al. Bar-coding surgical sponges to improve safety: a randomized control trial. *Ann Surg* [Internet]. 2008 [acessado em 20 jun. 2018];247(4):612-6. Disponível em: <http://doi.org/10.1097/SLA.0b013e3181656cd5>
- Harihran D, Lobo DN. Retained surgical sponges, needles and instruments. *Ann R Coll Surg Engl* [Internet]. 2013 [acessado em 20 jun. 2018];95(2):87-92. Disponível em: <http://doi.org/10.1308/03588413X13511609957218>
- Gawande A, Studdert D, Orav E, Brennan T, Zinner M. Risk factors for retained instruments and sponges after surgery. *N Engl J Med* [Internet]. 2003 [acessado em 20 jun. 2018];348:229-35. Disponível em: <http://doi.org/10.1056/NEJMsa021721>
- Williams TL, Tung DK, Steelman VM, Chang PK, Szekendi MK. Retained surgical sponges: findings from incident reports and a cost-benefit analysis of radiofrequency technology. *J Am Coll Surg* [Internet]. 2014 [acessado em 20 jun. 2018];219(3):354-64. Disponível em: <http://doi.org/10.1016/j.jamcollsurg.2014.03.052>
- Greenberg C, Regenbogen S, Lipsitz S, Diaz-Flores R, Gawande A. The frequency and significance of discrepancies in the surgical count. *Ann Surg* [Internet]. 2008 [acessado em 20 jun. 2018];248(2):337-41. Disponível em: <http://doi.org/10.1097/SLA.0b013e318181c9a3>
- Norton EK, Micheli AJ, Gedney J, Felkerson TM. A nurse-led approach to developing and implementing a collaborative count policy. *AORN J* [Internet]. 2012 [acessado em 20 jun. 2018];95(2):222-7. Disponível em: <https://doi.org/10.1016/j.aorn.2011.11.009>
- Moffatt-Bruce SD, Cook CH, Steinberg SM, Stawicki SP. Risk factors for retained surgical items: a meta-analysis and proposed risk stratification system. *J Surg Res* [Internet]. 2014 [acessado em 20 jun. 2018];190(2):429-36. Disponível em: <https://doi.org/10.1016/j.jss.2014.05.044>
- Goldberg J, Feldman D. Implementing AORN recommended practices for prevention of retained surgical items. *AORN J* [Internet]. 2012 [acessado em 20 jun. 2018];95(2):205-19. Disponível em: <https://doi.org/10.1016/j.aorn.2011.11.010>
- Norton E, Martin C, Micheli A. Patients count on it: An initiative to reduce incorrect counts and prevent retained surgical items. *AORN J* [Internet]. 2012 [acessado em 20 jun. 2018];95(1):109-21. Disponível em: <https://doi.org/10.1016/j.aorn.2011.06.007>