



Distractions and interruptions in a surgical room: perception of nursing staff

Distrações e interrupções em sala cirúrgica: percepção de profissionais de enfermagem

Distracciones e interrupciones en una sala quirúrgica: percepción de los profesionales de enfermeira

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ABSTRACT

Objective: To understand the perception of nursing staff about intraoperative distractions and interruptions. **Methods:** An exploratory qualitative study was performed with 16 nursing professionals of a surgical center in Minas Gerais. The data were collected through a semi-structured interview and thematic content analysis was performed. **Results:** When reflecting on the occurrence of distractions and interruptions of intraoperative activities, nursing professionals define, identify and value events in a heterogeneous way, but believe that distractions and interruptions negatively affect both the quality of the work environment and the safety of care provided to the surgical patient. Factors contributing to the occurrence of distractions and interruptions are related to aspects inside the operating room such as equipment failure and use of cell phones and to external factors such as verbal messages given at the operating room door. Incidents have been reported due to distractions, but there are no established actions to minimize these events. **Conclusion:** This study indicates the importance of implementing strategies that minimize the occurrence of distractions and interruptions of intraoperative activities in order to plan surgical care better, and prevent and mitigate harm to patients.

Keywords: Surgical centers; Patient safety; Nursing team; Medical errors.

RESUMO

Objetivo: Compreender a percepção da equipe de enfermagem sobre a ocorrência de distrações e interrupções no intraoperatório. **Métodos:** Estudo qualitativo exploratório realizado com 16 profissionais de enfermagem de um centro cirúrgico em Minas Gerais. Os dados foram coletados por meio de entrevista semiestruturada. Realizou-se a análise de conteúdo temática. **Resultados:** Ao refletirem sobre a ocorrência de distrações e interrupções das atividades no intraoperatório, os profissionais definem, identificam e valorizam os eventos de forma heterogênea, mas acreditam que distrações e interrupções influenciam negativamente tanto na qualidade do ambiente de trabalho quanto na segurança da assistência prestada ao paciente cirúrgico. Os fatores contribuintes para a ocorrência de distração e interrupção estão relacionados a fatores internos à sala operatória, como falhas nos equipamentos e uso de celulares, e a fatores externos, como avisos verbais na porta da sala cirúrgica. Foram relatados incidentes devido a distrações, mas não há ações estabelecidas para minimização desses eventos. **Conclusão:** O estudo sinaliza a importância de se implementar estratégias que minimizem a ocorrência de distrações e interrupções das atividades dos profissionais no intraoperatório, para que haja melhor planejamento da assistência cirúrgica, prevenção e mitigação de danos aos pacientes.

Palavras-chave: Centros Cirúrgicos; Segurança do Paciente; Equipe de Enfermagem; Erros Médicos.

RESUMEN

Objetivo: Comprender la percepción del grupo de enfermería sobre la ocurrencia de distracciones e interrupciones en el intraoperatorio. **Métodos:** Estudio cualitativo exploratorio realizado con 16 profesionales de enfermería de un centro quirúrgico en Minas Gerais. Los datos se recopilaron por medio de una entrevista semiestructurada. Se realizó un análisis de contenido temático. **Resultados:** Al reflexionar sobre la ocurrencia de distracciones e interrupciones de las actividades en el intraoperatorio, los profesionales definen, identifican y valoran los eventos de forma heterogénea, pero creen que distracciones e interrupciones influyen negativamente tanto en la calidad del ambiente de trabajo como en la seguridad de la asistencia proporcionada al paciente quirúrgico. Los factores contribuyentes a la ocurrencia de distracción e interrupción están relacionados con factores internos a la sala operatoria, como fallas en los equipos y utilización de teléfonos móviles, y con factores externos, como advertencias verbales en la puerta de la sala quirúrgica. Se han reportado incidentes debido a distracciones, pero no hay acciones establecidas para minimizar tales eventos. **Conclusión:** El estudio señala la importancia de implementar estrategias que minimicen la ocurrencia de distracciones e interrupciones de las actividades de los profesionales en el intraoperatorio, para que haya mejor planificación de la asistencia quirúrgica, prevención y mitigación de daños a los pacientes.

Palabras clave: Centros Quirúrgicos; Seguridad del Paciente; Grupo de Enfermería; Errores Médicos.

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INTRODUCTION

Surgical procedures are an essential practice in healthcare as they are fundamental in the diagnosis and treatment of a variety of pathologies. However, of the 234 million surgeries performed worldwide, it is estimated that two million people die and seven million suffer complications.¹ In Brazil, a study carried out in three hospitals in Rio de Janeiro in 2012 identified that 65.8% of patients had avoidable surgical adverse events.²

Several strategies have been adopted nationally and internationally to mitigate preventable incidents. In 2004, the World Health Organization (WHO) launched the World Alliance for Patient Safety, where one of the challenges focused on safe surgical care with the slogan "Safe Surgery Saves Lives". In Brazil, the National Patient Safety Program³ was established in 2013, establishing mandatory actions to promote the safety of surgical patients. Since then a notification system have been developed in the National Health Surveillance System. In 2015, 29,620 incidents related to hospital units were reported with 3.4% of incidents occurring in surgical centers.⁴

The surgical center is a high-risk hospital sector due to the multiplicity of care and procedures, variability of professional qualifications, infrastructure and management deficiencies, intense circulation, and occurrence of distractions and interruptions of professionals.^{5,6} Distractions and disruptions can prevent tasks from being carried out as planned and thus expose professionals to risks for their own safety and that of patients.⁶

A study performed in the surgical center of a university hospital in Germany observed 803 situations of distractions and interruptions, averaging 9.8 situations per hour.⁷ In the United States, a study performed in a trauma center recorded an average of 60 distractions or interruptions during the surgical procedure.⁸

In the present study, distraction is considered a diversion of attention of the individual during the development of an activity. The term interruption refers to the need to pause the execution of the main task.⁸

The sources of these situations in a surgical center are diverse, both human and technical. Human causes involve professionals, patients and family members. Technical causes are related to noise, equipment failure, alarms and lack of materials.⁹ These are often not under the control of health professionals; extra attention is required in procedures that involve patient care.^{6,10}

Thus, it is relevant to discuss the occurrence of distractions and interruptions in the surgical setting. In this study the focus is on the nursing staff because they play different roles in the surgical center and are the largest number of professionals in this sector.¹¹ Hence, the objective of this study was to understand the perception of the nursing team about the occurrence of intraoperative distractions and interruptions.

In view of the scarcity of Brazilian studies related to distractions and interruptions, this research is justified and relevant to reflect on this issue in order to identify strategies aimed at reducing risks due to distractions and interruptions and, consequently, to increase the quality of the surgical care provided.

METHODS

This qualitative and exploratory study was carried out with nursing professionals from a surgical center of a charitable 202-bed hospital in the state of Minas Gerais, Brazil.

The selection of the nursing professionals participating in this research was randomized by drawing lots. The data saturation strategy was used to delimit the number of participants. Inclusion criteria were professionals who had worked for at least six months in the surgical center and were working in the daytime due to the greater number of surgical procedures. Of the 20 professionals invited, four refused to take part and thus, 16 nursing professionals participated in this study.

Data collection took place between January and February 2017 and was achieved through audio-taped interviews with the authorization of the participants. Prior to this, a pre-test was carried out with two professionals (a nurse and a nurse technician) who work the night shift. The semi-structured script included questions related to interactions in the surgical room, the occurrence of distractions and interruptions, the impact that distractions and disruptions have on patient safety and, finally, strategies to minimize the occurrence of these events.

The interviews were made in the surgical center (in the coordination room and empty operating rooms) with an average duration of 16.5 minutes. To ensure privacy, respondents are identified by the letter N followed by a sequential number of the interview (N1 ... N16).

Subsequently, the interviews were transcribed in full, printed and validated with each participant of the research, who had the opportunity to make any observations that they deemed necessary. The Consolidated Criteria for Reporting Qualitative Research (COREQ): a 32-item checklist for interviews and focus groups was used.¹²

Data were analyzed based on the analysis process proposed by Bardin in three phases:

1) Pre-analysis: organization of the material with the aim of systematizing the initial ideas; 2) Exploration of the material: definition of categories, and identification of the recording units and context of the participants' dialogues; 3) Treatment of results, interpretation and inference: consisting in highlighting the information important for analysis, culminating in inferences.¹³

The research was approved by the Research Ethics Committees of the research institution and the hospital (Report numbers 1.799.600 and CAAE 59562416.9.0000.5545) according to Resolution 466 dated December 12, 2012 of the Ministry of Health/National Health Council.¹⁴

RESULTS

Sixteen professionals participated: one coordinating nurse of the surgical center, two supervising nurses, six nursing assistants and seven nursing technicians. The majority were female (87.5%) and the mean age was 34.8 years (range: 24-54 years). The mean time after graduation was 7.6 years and their experience working in the surgical center ranged from two to 17 years.

Data analysis revealed three thematic categories: 1) The identification of distractions and interruptions of the professionals' activities during the intraoperative period; 2) Factors contributing to the distractions and the interruptions and the professionals involved; and, 3) Impact and strategies to minimize distractions and interruptions in the operating room.

The first category showed that the perception of the nursing team about situations of distraction and interruption related to the professionals' activities in the operating room was diverse. For some participants the identification of these events was evident and was expressed clearly.

[Interruption] stop what you're doing - interrupt what he's doing for some reason (N12).

[Distraction] When you're doing something and you lose your focus (N4).

For other professionals, the description of distractions and interruptions of activities in the intraoperative period was not assertive with distractions apparently being of less importance than interruptions. The action of answering the surgeon's cell phone mentioned by N8 was considered a distraction and not an interruption. However, the primary activity of the circulating nurse was interrupted by the secondary action of answering the cell phone. Situations that may be necessary during the anesthetic-surgical act, such as a pause to solve a problem during the procedure were also described not as an interruption that may harm the patient but as a benefit.

Interruptions as such do not happen. Distractions can happen, [...] the doctor's phone rings, so we have to answer and have to give a message (N8).

[...] the anesthesiologist interrupts the surgeon: 'the patient is crashing', this is a way to interrupt, you are operating there and the patient is crashing (N1).

The professionals also mentioned that distractions and interruptions of activities are difficult to identify in the operating room. Some are directly related to the function performed by members of the surgical team such as by the circulating nurses of operating rooms who have their activities constantly interrupted to perform other actions that are important for the anesthetic-surgical act. On the other hand, when there are equipment failures during

the intraoperative period, the primary activities of professionals related to the surgery need to be halted to ensure the continuity of the surgery.

[...] the circulating nurse is the most interrupted, continuously ... I do not even know if I can call it [an interruption], because it is her function (N1).

The monitor is giving trouble. First I have to fix it, because the monitor gives me a response to the patient's hemodynamics, right? Thus, it depends what the interruption is [...]. (N6).

In the second category, the factors contributing to the distractions and interruptions mentioned by professionals were divided into factors, inside and outside of the operating room (Table 1). The professionals did not differentiate between the contributing factors of the intraoperative distractions and interruptions. This results in an interconnection between the factors, that is, a factor can contribute to both the diversion of attention (distraction) and a pause in the primary activity exerted by professionals (interruption). Lack of material due to a failure to plan the surgery carefully, for example, can contribute to both a disruption of the surgeon's activity until the necessary material is provided and the diversion of attention from the surgical procedure of previously focused staff members. The cell phone also contributes to distractions, prolonging the intraoperative period by interrupting the primary activity of the circulating nurse of the operating room who, as mentioned by E14 (Table 1), has to answer the cell phone and even put it to the surgeon's ear with this secondary activity not being related to the anesthetic-surgical act.

The interviewees' perception was that medical professionals generate the most situations of distractions and interruptions and the effect of these are greater in respect to the work of the nursing team, as in the example of the following dialogue.

[The professionals] most interrupted are the nursing staff and those who interrupt the most are the doctors, both the anesthesiologist and surgeon (N6).

The third category "impact and minimization strategies of distractions and interruptions in the operating room" showed that distractions and interruptions of some professionals are constant and interfere directly with patient safety and the quality of the work environment during the surgery.

Inside the surgical center this interruption is at all times. Never make an antibiotic only, pay attention, the anesthetist is already asking for something else (N1).

You are distracted and are not watching the monitor. It takes a second, you're distracted, the patient can have a heart attack and you do not even notice (N11).

Table 1. Factors contributing to the occurrence of interruptions and distractions according to the perception of nursing professionals.

Contributing factor	Examples reported by participants of this research
<p>Factors inside the operating room</p> <p>Parallel conversations; Music; Lack of materials; Absence of the anesthesiologist in the operating room; Equipment failure; Cell phones.</p>	<p><i>He [the surgeon] wants to talk, some have the need to operate speaking. [...] the anesthetist is telling a joke (N1).</i> <i>In the neurology room the staff is crazy, they put on very loud music, they play around a lot (N12).</i> <i>[...] sometimes you only find out that material is lacking at the time that the surgery is beginning (N5).</i> <i>He [the anesthesiologist] is not in the room! All the time we have to leave the room to call him. This disrupts(N16).</i> <i>[The circulating nurse] is opening material, [...] the doctor's cell phone rings: 'No! Don't do that! Answer my phone first, then you get it!' [...] that is when you do not have to go and put the phone to his ear [...] (N14).</i></p>
<p>Factors outside the operating room</p> <p>Messages at the operating room door; Incorrect filling of the immediate preoperative checklist; Exam results.</p>	<p><i>It's a moment of great attention and a person outside [the operating room] opens the door to give a message (N3).</i> <i>After the patient has entered [the operating room] they see that some examination is missing, whether he is allergic. Info that should be on the [immediate preoperative]checklist (N2).</i> <i>A biopsy is sent for freezing and the surgery is stopped [...]. The other day, it was an hour and a half for the results of freezing and the surgery stoppedcompletely (N14).</i></p>

Source: Research data.

It causes a lot of stress. [...] interferes with the whole team (N12).

Interviewees reported incidents due to distractions that caused risk or harm to the patient. The analysis of these incidents in the surgical center setting of the study still does not occur systemically and there is no reflection as to the root cause of the incidents. The culture of guilt prevails when an incident occurs. No incidents have been reported due to disruption of professional activities.

Nursing staff guilt, distraction really. A patient of neurology was lying down, intubated and she [the circulating nurse] was facing the other direction studying, the patient fell (N12).

[...] there was a child on the gurney, when I saw that the child was going to turn over, I ran and caught him, she [the circulating nurse] was distracted looking at a cell phone (N7).

They forgot a malleable spatula inside the patient and she had an obstruction. [The surgeons] tried to blame [the surgical scrub nurse]. I do not know whether it was a mistake of the surgical scrub nurse or whether it was the surgeon who was there looking at the patient's thoracic cavity (N9).

Interviewees report that there are no strategies to minimize distractions and interruptions. There are norms for specific issues, such as a reduction of parallel conversations and the restriction of cell phone use in the operating room. However, there are no effective mechanisms to ensure that all employees comply with these norms.

What we ask is to avoid parallel talk, the use of the cell phone. [...] but it's complicated we cannot stop the use of cell phones inside here (N1).

Despite the lack of norms or a policy aimed at minimizing distractions and interruptions in the operating room during the anesthetic-surgical act, there were occasional reports of precautionary attitudes of professionals in respect to these events. One attitude that was mentioned was a request to wait for a secondary activity (to answer the telephone of the surgeon) to be finished before dedicating attention to the primary activity which was caring for the surgical patient. Another important attitude was asking what the best time to interrupt the anesthetic-surgical act with information not related to that procedure would be.

There are times that I do not answer his phone [surgeon]. I say: wait a little, the patient's condition is serious! (N6).

I, for example, sometimes have to give a message, from outside ... I always ask: can I talk now? Because sometimes it's not the right time for us to talk (N1).

Professionals have suggested some actions to minimize distractions and disruptions. They mentioned the organization of the operating room with planning, predicting and preparing all the material resources necessary for the anesthetic-surgical act and continuing education of all types of professions.

You leave everything in order inside the room, do not miss anything. (N13).

There should be more training [...] it is always aimed at nursing, not at doctors and not at the anesthesia staff [...] (N12)

DISCUSSION

The results of this study made it possible to understand that nursing staff define, identify and value distractions and interruptions of intraoperative activities in different ways. However, for most, both distractions and interruptions of intraoperative activities can influence the quality of the work environment and the safety of care provided to the surgical patient. Researchers corroborate this perception, since they say that professionals exposed to distractions and interruptions are more susceptible to errors, hindering the successful completion of the task.¹⁵

Findings regarding factors contributing to distractions and interruptions in this study were similar to those reported in the literature. German research identified that the main sources of these events were the continuous flow of people entering and leaving the operating room, parallel conversations between professionals, and failures and/or lack of equipment.⁷ Another study identified the ringing of cell phones and the fixed-line telephone of the nursing station and parallel conversations between professionals as causes of distractions and interruptions.¹⁶

However, two contributing factors mentioned by the respondents were not reported by other studies. The first refers to the inadequate completion of a standardized checklist of the institution in the immediate preoperative period. The instrument consists of a set of items, such as tests performed and the patient's allergies, which must be completed as the patient enters the surgical center for later use within the operating room. Not answering all the checklist items can lead to the cancellation of surgery, which implies in mistakes in the implementation of perioperative phases; it is related to latent system failures, that is, hidden failures.¹⁷

The second contributing factor outside the operative room that was not identified in the literature was waiting for a biopsy result in the intraoperative period. This procedure is necessary for the surgical decision making process in order to avoid

unnecessary harm such as the patient being submitted to another procedure. However, consideration should also be given to the risk of infection and to the dispersion and distraction of the surgical staff pending the outcome of the examination. Thus, it is necessary to devise strategies to manage these risks, such as reducing the time to deliver the result by establishing priorities for the analysis of patient samples during the intraoperative period.

The interviewees reported that the doctors were the group of professionals that most caused distractions and interruptions of the activities of the nursing staff. In a survey that evaluated the self-perception of professionals, surgeons reported being significantly less disrupted than nurses and anesthesiologists.¹⁸ On the other hand, studies also indicate that the most interrupted professionals are surgeons.^{8,19,20} Regardless of the source, distractions and interruptions of the professional's activities are associated with negative consequences for the patient with compromised safety.^{8,21} However in one study, doctors did not consider distractions and disruptions to be negative.²⁰ For them, these situations are part of everyday work. However, the dynamism of intraoperative activities requires reflection, complex psychomotor and cognitive skills, and, therefore, the full attention of professionals in the activity being performed.

Another important impact of the distractions and interruptions of intraoperative activities in this study was in relation to the quality of the work environment since these events cause stress in the professionals. A study carried out in a Brazilian surgical center found that 94% of the professionals reported stress.²²

Interviewees also reported the impact of distractions on incidents in the surgical center. There were reports of falls and forgetfulness of materials in the abdomen of patients, which shows the lack of attention of the professionals, the possible lack of integration of the surgical team and the failure of essential protocols, such as the counting of materials before and after the anesthetic-surgical act. Forgetting materials in the abdomen of a patient can be avoided by implementing the WHO-approved safe surgical checklist, which demands the correct counting of pads, instruments and needles.²³ However, completing the checklist is a challenge. In a Brazilian study, the checklist for safe surgery was used in only 58.5% of 24,421 surgeries and the item "correct counting of compresses, instruments and needles" was not completed in all the checklists.²⁴

In this study it was observed that there is still a culture of finding a culprit when incidents occur. A study carried out in the interior of the state of São Paulo also identified that institutions still use a person-centered approach, stimulating a punitive condition in the face of mistakes.²⁵ This culture does not help learning with the incident that occurred; it is necessary a break from this paradigm to continuously improve the safety of patients.

In addition, the interviewees reported that there are no strategies in the hospital to effectively reduce distractions and interruptions of intraoperative activities and there are difficult situations to solve, especially regarding the use of cell phones

without there being any effective way to prohibit them. A pilot study conducted in Maryland in the US banned phone use in drug-related activities. This strategy lasted only four days and was suspended due to the pressure of the professionals. In this short period, there was a 52% reduction in interruptions. The authors concluded that forcing professionals to focus on a single task leads to conflict, however, the outcome was significantly positive for patient safety.²⁶

Few professionals reported using precautions in respect to factors contributing to distractions and disruptions. Continuing education has emerged as a possible safeguard by engaging all professional categories so that together they seek ways to lessen the impact of distractions and disruptions on the safety of surgery. Authors emphasize that in order to develop strategies to reduce distractions and interruptions efficiently, it is necessary to involve all the staff and make them aware of the risks that distractions and interruptions can cause to patient care.⁶

CONCLUSIONS

This study allowed us to understand the meaning attributed to intraoperative distractions and interruptions by the nursing staff. These events are present in the daily life of a surgical center, they affect patient safety and involve multiple factors. Contributing factors can generate both distractions and disruptions, whether or not they are associated with patient care and related to factors inside or outside of the operating room. There were no rules to minimize the occurrence of intraoperative distractions and interruptions in the study setting.

A difficulty in carrying out this research was approaching professionals due to the routine of the surgical environment. The limitations of this research is that it involved only one surgical center and only one professional category and so generalization of the results is not possible.

On the other hand, the study contributes to the elucidation of distractions and interruptions and risks to patient safety in the surgical setting, highlighting the importance of identifying strategies that minimize these situations. Strategies should focus on the entire team, guiding the management of distractions and interruptions during the surgery to better plan surgical care and, prevent and mitigate harm to patients.

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