FACTORS THAT INTERFER IN THE TURNOVER TIME: OPINION OF NURSING PROFESSIONALS

Fatores que interferem no tempo de intervalo entre cirurgias: opinião de profissionais de enfermagem

Factores que interfieren en el intervalo de tiempo entre cirugías: opinión de profesionales de enfermería

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ABSTRACT: Objective: To know the opinion of nursing professionals about the factors that interfere with the turnover time. **Method:** This is an exploratory, descriptive, prospective study, with qualitative data analysis. Data collection was carried out in a hospital complex in southern Brazil, with the application of a questionnaire on the perception of nursing professionals who work in the surgical center (SC). For data analysis, Bardin content analysis was used. **Results:** A total of 25 professionals participated in the study, four nurses and 21 licensed practical nurses. Two categories were listed, factors related to the team and factors related to the processes of the SC, and seven subcategories. **Conclusion:** Several factors interfere in the turnover time, highlighting team training, adequate staff, collaboration among teams, surgery size, and bureaucratic processes.

Keywords: Surgical centers. Perioperative nursing. Operating room nursing.

RESUMO: Objetivo: Conhecer a opinião de profissionais de enfermagem sobre os fatores que interferem no tempo de intervalo entre as cirurgias. **Método:** Estudo exploratório, descritivo, prospectivo, com análise qualitativa. A coleta de dados foi realizada em um complexo hospitalar no sul do Brasil, com aplicação de questionário sobre a percepção de profissionais de enfermagem que atuam no centro cirúrgico. Para o tratamento dos dados, utilizou-se análise de conteúdo de Bardin. **Resultados:** Participaram do estudo 25 profissionais, sendo quatro enfermeiros e 21 técnicos de enfermagem. Foram elencadas duas categorias, fatores relacionados à equipe e fatores relacionados aos processos do centro cirúrgico, e sete subcategorias. **Conclusão:** Diversos fatores interferem no tempo de intervalo entre cirurgias, destacando-se: capacitação da equipe, dimensionamento de pessoal, colaboração entre as equipes, porte cirúrgico e processos burocráticos.

Palavras-chave: Centros cirúrgicos. Enfermagem perioperatória. Enfermagem de centro cirúrgico.

RESUMEN: Objetivo: Conocer la opinión de los profesionales de enfermería sobre los factores que interfieren en el intervalo de tiempo entre cirugías. **Método:** Estudio exploratorio, descriptivo, prospectivo, con análisis cualitativo. La recolección de datos se realizó en un complejo hospitalario en el sur de Brasil, con la aplicación de un cuestionario sobre la percepción de los profesionales de enfermería que laboran en el quirófano. Para el tratamiento de los datos se utilizó el análisis de contenido de Bardin. **Resultados:** Participaron del estudio 25 profesionales, cuatro enfermeros y 21 técnicos de enfermería. Se enumeraron dos categorías, factores relacionados con el equipo y con los procesos del quirófano, y siete subcategorías. **Conclusión:** Varios factores interfieren en el intervalo de tiempo entre cirugías, destacando: formación de equipos, dimensionamiento del personal, colaboración entre equipos, tamaño quirúrgico y procesos burocráticos.

Palabras clave: Centros quirúrgicos. Enfermería perioperatoria. Enfermería de quirófano.

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INTRODUCTION

Time is a relevant variable in surgical centers (SC). In it, average time of cleaning operating rooms (OR) in the interval between surgeries and average time of delay for the beginning of the anesthetic-surgical procedure can be found. In addition, SC productivity assessment is another important factor that goes through monitoring, in which the OR occupancy rate is measured.[1] The latter, in turn, represents the real use of the SC operational capacity.[2] A prospective study carried out in São Paulo found a direct relation between the occupancy rate and other indicators in the SC, such as the optimization and overload indices, which relate to the gain and loss of operational capacity, respectively. The study also shows that the occupancy rate was inversely proportional to the resistance index, which is related to the use of operational capacity.[3] In order to maintain an accessible occupancy rate for use, carrying out effective bed management is essential, a factor considered fundamental for the planning of operational capacity and for the adequate use of resources.[4]

Taking into account the impact caused by time on the dynamics of the SC, the participation of nurses becomes essential to manage the unit, since they are the professionals who act, in general, in monitoring, evaluating and decision-making, continuously seeking to improve the unit and aiming for excellence.[5]

Therefore, understanding how time optimization in ORs occur is basic to the necessary improvements for the proper functioning of the SC. The implementation of strategies aimed at optimizing the unit is relevant, obtaining the reduction of surgical delays and the improvement in the occupancy rate among its results.[6]

Given the importance of knowing the factors that interfere in the turnover time, the need to expand knowledge about these factors and measures that can contribute to the quality of the service and to the improvement in occupancy rates, in addition to contributing to the quality and safety of care in the SC, gave rise to the present study, with the following research question: What is the opinion of professionals about the factors that affect the turnover time?

OBJECTIVE

To know the opinion of nursing professionals about the factors that interfere with the turnover time.

METHOD

This is an exploratory, descriptive, prospective study, with qualitative data analysis. Research comprised nurses and licensed practical nurses who work in the SC of a hospital size IV, philanthropic, located in Southern Brazil. Roughly 1,490 surgeries are performed per month, of small, medium, and large sizes, of different specialties, the main ones being: general surgery, plastic surgery, cardiac surgery, and oncology surgery. The scheduling of surgeries is done by a team of technical-administrative employees, through its own electronic system. The routine in this institution consists of maintaining a 30-minute interval between scheduling of each surgery. The schedule of appointments is reviewed by the unit's leading nurse the previous day, aiming at sector management.

All licensed practical nurses and nurses in the shift in which the study was developed (afternoon) were invited to participate in research, obtaining the participation of 57% of nurses (four) and 48% of licensed practical nurses (21).

The inclusion criteria were two: being a nursing professional and working at the SC of the hospital. The exclusion criterion referred to nursing professionals who, during data collection, were on vacation, certificate, or leave.

Data collection was carried out from January to February 2020, with the auxiliary researcher conducting interviews, recorded in audio and later transcribed. For the interviews, a script developed by the researchers was used, composed of two open questions, with emphasis on professionals' opinion on the factors that interfere in the turnover time. The instrument addressed the following questions:

- What factors do you understand that contribute to the increase in time between one surgery and the next one?;
- What factors do you understand that can or could contribute to reducing this time?

Besides that, information on sample profile was collected: age, profession, and time of work in the SC.

For data analysis, Bardin's content analysis was used,[7] which involves three stages: pre-analysis; exploration of the material and treatment of the results obtained; and inference and interpretation. To guarantee participants' anonymity, identification by the initial letter of their professions was systematized, followed by the Arabic numbering according to

interview order (N1, LPN1...). Results are presented according to the analysis categories.

The research project was approved by the Research Ethics Committee of the proposing and co-participating institutions, through Plataforma Brasil, under the Certificate of Presentation of Ethical Appreciation (CAAE) No. 24350919.5.0000.5335 and 24350919.5.3001.5308, respectively. Participants signed the Free and Informed Consent Form (FICF). Research was guided by Resolution No. 466/2012, of the Brazilian National Health Council, on ethics in research involving human beings.[8]

RESULTS

A total of 25 nursing professionals participated in the study: four nurses (N) and 21 licensed practical nurses (LPN), aged between 21 and 52 years old and working at the SC between three months and 18 years.

The results are presented according to the two categories of analysis emerging from the subjects' interviews — factors related to the team and to the processes of the surgical center — followed by the seven subcategories, three from the first category and four from the second, as described in Table 1.

Category 1: Factors related to the team

Subcategory 1.1: Training and qualification

Training and qualification of professionals who work in the SC were described by the participants as influencing the turnover time, as can be seen in the following statements:

> *I believe* [...] *that the time depends a lot on the employee who is in the room, there are employees who are quicker, who can clean a room and prepare it for the next surgery in* [...] *15 minutes, and there are employees who cannot, who may need 30 to 40 minutes.* [...] *I think they need guidance, improved training, answers to their questions, because they are often lost in some documentation; then it ends up affecting time between surgeries; it takes time for the room to be ready* (N1).

> *"Sometimes new people are not so agile; it also* [...] *increases the time needed to arrange the material, tools... So, this also increases the turnover time"* (N3).

> *What can increase the time of surgeries starts in the reception, in patients' hospitalization, if the hospitalization is inattentive* [...] *as to the place the patient will be taken, which happens a lot here, they take patients to the wrong surgical center.* [...] *And the clock is running* (LPN18).

Table 1. Categories and subcategories emerging from the speeches of nurses and licensed practical nurses.

Categories	Subcategories
Factors related to the team	• Training and qualification; • Adequate staff; • Cooperation and organization of the multidisciplinary team.
Factors related to the operating room processes	• Delays by patients and professionals; • Assembly and disassembly of operating rooms and other activities; • Surgery size; • Bureaucratic processes.

Subcategory 1.2: Adequate staff

Participants pointed out that the lack of employees has a negative influence on the interval time and care routine:

> *The lack of employees is a major factor, you do not have the employee needed for the next surgery, you have to take employees from an on-going surgery to take them to another surgery.* [...] *Sometimes you don't have a sanitation employee available either* (N4).

> *"What can increase* [the turnover time] *is that we do not have a sanitation employee, because it is not only up to nursing staff to manage the turnover time"* (LPN14).

In participants' opinions, adequate staffing would be a beneficial strategy for care:

> *It often happens to have few employees* [...]. *So I think that the reduced number of employees ends up interfering in this factor and increasing the turnover time.* [...] *I believe that an increase in staff would also be a necessary thing for us to be able to streamline and optimize the occupancy rate even more* (N2).

> *"If there was a person to prepare patients it would be wonderful* [...]. *If someone dressed them for surgeries, care would* be streamlined" (LPN5).

In addition to the lack of employees, the challenge of communication between teams is also a factor that interferes in the analyzed process:

> *The cleaning staff is made of one cleaning person here* [...] *and she serves the post-anesthesia care unit (PACU), all seven rooms in the surgical center, the dressing room for employees, for patients, so sometimes we go look for the sanitation employee and don't find her; it also contributes to the increase in the turnover time* (N2).

The cleaning time of the ORs was pointed out as one of the reasons for increasing the turnover time: *"Room time means cleaning the room between surgeries.* [...] *It has to be a little more agile for us to perform surgeries"* (LPN3).

Subcategory 1.3: Cooperation and organization of the multidisciplinary team

Participants mentioned that the lack or non-conformity of information provided by the medical team interferes with the organization of the sector and, therefore, with the time between one surgery and the next one:

> *There is also a lack of scheduling organization on the doctors' agenda, they often change it* [...]. *The change in the order of surgical schedule significantly delays the rooms, besides the lack of equipment because doctors do not say what they will need in surgeries; then it turns out that at the time of the surgery, they want something we don't have. Until we get this material, more time is lost in the operating room* (LPN13).

Some statements relate the commitment and cooperation of the multidisciplinary team in view of the increase in time between each surgery, stating that changes in these factors could reduce the idle time of ORs:

> *Sometimes, if it is the same team, they go out often, go to their break and take a long time to come back, and then* [...] *the room gets idle* [...] *Just as it is when surgery is scheduled for 1* pm, *they come at* 2pm, *and this room* also spends one additional hour. [...] *What would decrease the turnover time would be if* [...] *each one tried to leave it more organized.* [...] *Not to mention the delays, right?!* (LPN8).

> *"I think* [...] *showing them the numbers regarding delays in meetings, this type of issue... Guidance"* (LPN15).

The behavior of professionals and students has also been described as a factor that can interfere with the increase in the interval time and idleness of the OR:

> *The turnover time? What does increase it? The confusion with residents and medical students in rooms; we don't have that collaboration, people don't go out, they don't help, they leave a mess, they throw everything on the floor. And we need to collect everything, right?! This ends up taking a little longer.* [...] *Having someone who teach these things, they are interested in learning, right?!* (LPN10).

Another aspect mentioned by two participants is the collaboration in filling out the documents related to the surgery performed:

> *"Sometimes, doctors leave the room without signing documents and we end up having to go after them! Search and see where they are, because we need to deliver documents signed, so we end up holding an unused room"* (LPN11); *"Doctors also sometimes get tangled up to do the papers, they take time; then the papers do not come out with the patient, you have to wait; when we all have other things to do, right?!"* (LPN9).

Category 2: factors related to the surgical center processes

Subcategory 2.1: Delays of patients and professionals

Delays were listed as one of the subcategories for covering a large part of the aspects responsible for increasing the turnover time, in participants' opinion:

> *Usually there are surgeries that have to start at 7 am or 8 am, but they start at 8:30 am, 9 am.* [...] *I believe that the main factor is organization; in fact, the lack of it, of having someone to control, to plan.* [...] *Especially because, if you don't arrive on time, you'll delay the next surgery and so on* (LPN12).

> *"It also delays the surgery, because the patient has to wait before entering the room.* [...] *Sometimes doctors are late, you know. Anesthesiologist"* (LPN17); *"Ah, if it is delayed, sometimes patients are late, sometimes the anesthesiologist or the surgeon are late, it depends. The turnover time increases a lot. Right?! Half an hour, an hour* of delay" (LPN20); *"I often think that it is an anesthesiologist's delay and, sometimes, it is the patient's delay, the displacement from hospitals to here"* (LPN21).

Subcategory 2.2: Operating room breakdown and set up and other activities

The numerous tasks related to preparing patients and the OR for surgery were pointed out by participants as factors that interfere with the time needed to clear the room for the beginning of the next surgical procedure:

> *"I think that what increases the turnover time is having to dress patients, to take the material back to the pharmacy, listing the material that was used in surgery"* (LPN4); *"Currently, there's a new protocol for us to clean materials inside the room.* [...] *We stay there for some time to clean it and then it increases time... I believe it is a little unnecessary"* (LPN19).

In addition, professionals revealed that the lack of material interferes with the turnover time. Accidentally, one of the participants responded to the interview in a moment in an idle room caused by this reason:

> *"The lack of material* [...] *this harms* the process [...] it *lacks sheets, everything; bed clothes have not arrived until now, I haven't managed to fix it yet, because there is no sheet in my room"* (LPN10).

Employees also need to displace themselves to search for material in another sector of the hospital, which was also evidenced:

> *"There is a great lack of material. We are left with scarce material that comes from the material center, this greatly delays our surgeries, having to go to other hospitals within the complex, borrow materials, and* take them" (LPN13).

Subcategory 2.3: Surgery size

Surgery size was reported as a determinant of the turnover time, as observed in the following statement:

> *Between the beginning and the end of a surgery, the most important factor is the type of surgery, which determines if we will need to get material from the pharmacy, what we will need to get from our arsenal and set up the room so that it can start* (LPN6).

This element can even be a proportional factor: the bigger the surgery, the longer the time, and vice versa:

> *First, there is the time required for the room, for minor surgeries,* [...] *as you use less material and dirty the room less, surgeries are faster* [...] *and, cleaning and organizing the rooms is easier, because little material and little equipment is needed. Larger and more complex surgeries* [...] *demand more from the nursing team, the cleaning team, they require more materials, occupy the room more, dirty it more,* [...] *so they take longer in relation* [...] *to* surgery size (LPN1).

> *"In very large surgeries, cleaning is extensive, things get a lot dirtier, we have to clean everything, leave the room clear. So, I think that very large surgeries increase the time needed to* deliver rooms" (LPN16).

However, one of the participants considered that, in situations of small surgeries, when in large numbers, one after the other, there may be an increase in the release time of the room, differing from the previous statements:

> *"I think that surgeries happen very fast here, the circulator nurse sometimes doesn't even have time to prepare the next patient. This ends up delaying the process"* (LPN7).

Subcategory 2.4: Bureaucratic processes

Bureaucratic issues, according to participants, can also interfere with the turnover time: *"Everything in the system will contribute to make things last a little longer"* (LPN2).

> *There is a bureaucratic aspect,* [...] *and this ends up increasing the preparation time from one patient to*

> *another; so we need to register the piece that goes to the anatomopathological analysis; we need to close the system with a* checklist, [...] *print papers, which are partially sent to the financial officer; the other part goes to the post-anesthesia care unit (PACU) or with the patient*. [...] *This ends up increasing the turnover time* (LPN11).

Still, one of the statements emphasizes the importance of records, but with the condition that the documentation unification would help in reducing the time:

> *Trying to unify some information*. [...] *Of course everything has to be registered, everything needs to be described, but we realize that what is asked for in a record is asked for exactly in the other, just with different words, so maybe trying to unify it would be good* (N4).

DISCUSSION

Study results point to the importance of training and qualification of the professionals who work in the SC, showing that, many times, they arrive at the institution without previous experience, and qualification could have a positive impact in reducing the turnover time and, therefore, in the occupancy rate of the SC. Continuing education is fundamental for the quality of care provided.[9]

In the SC, nurses play a relevant role, both in the continuing education of the team and in training, and in the adequate dimensioning of the nursing team to meet the needs of patients and the unit, with quality and safety.[1,10]

Licensed practical nurses at the SC perform the functions of scrub nurses and circulating nurses;[1] they are indispensable professionals in the functioning of the SC and patient care. Continuing education contributes to the quality of the work delivered by this team. Likewise, to promote qualified and safe care, the entire surgical team must be updated.[11]

The lack of professionals reported by the interviewees is corroborated by the literature,[12] which points out the relation between suspending surgical procedures and the lack of employees. A study carried out in São Paulo[13] found that the reduced number of sanitation professionals is a factor that negatively affects the turnover time. Similarly, the authors observed that the increase in the number of employees could decrease this time. In addition, perioperative nursing aims to provide safe and quality care to patients throughout the perioperative period, and the proper dimensioning of the nursing team is essential in this process.[14] In this context, another study[15] found that hospitals that invest in human resources have better results, such as, for example, low mortality rate and lower costs, which is a measure that confirms the duty of health institutions to the culture of patient safety.[10]

As for hygiene, the professionals who clean the ORs at the institution hosting research are hired by the hospital complex, composing the hosting team. Study participants mentioned that they need to call the hosting team to clean the OR and, many times, these professionals are not easily found, since they clean the entire sector or even other units, a factor that leads to an increase in waiting time or idleness between surgeries. This practice is also described in a study that analyzed the turnover time.[13]

OR organization process is essential for the quality of care, because the preparation of rooms and the provision of necessary resources are details that contribute to smooth surgeries and, therefore, to patient safety.[16] In addition, the lack of materials interferes not only in the turnover time, but also in the suspension of elective surgeries.[13,17] Similarly, the shortage of materials is a management challenge for nurses who work in the SC.[18]

Surgery size was identified as one of the factors that increase the turnover time, related to the number of materials used and the time spent on cleaning. Accordingly, the literature states that surgery size is linked to the need for more time for cleaning and preparing ORs.[13,19]

The bureaucracy and the large amount of documents that need to be filled out, both on paper and in a system, and, often, documents with repeated information that occupy a precious time that could be used for care, increase the idle time of ORs, contributing to delays in surgeries.[20] In accordance with such information, a study demonstrated that filling out documentation was the activity which required the longest time by the nursing team during the transoperative period.[19]

As for the delay of professionals in the surgical team, a fact observed in this study, it affects the dynamics and scheduling of the surgical agenda.[4] When the first surgery of the day starts late, the entire surgical schedule is compromised, causing the upcoming surgeries to exceed their limit hours.[21] Another study pointed out a general average of 50 minutes of OR delay due mainly to the delay of the medical team, followed by other factors, such as: delay

of patients, support services, nursing human resources and organization problems, and provision of materials.[21] Another study reinforces the relation between delayed staff and idle room time, besides the suspension of surgeries at a teaching hospital.[22]

Professionals must be committed to the work, even when they are not directly involved in surgical procedures.[23] Taking into account that the increase in the turnover time can negatively impact the productivity of the SC, teams affect this time according to their actions, their organization, and their individual behaviors.[13] The transoperative period involves several people, with different knowledge, who have the same objective: to provide safe care to patients, with an effective outcome. Collaboration and effective communication contribute positively to the SC and OR environments. Besides that, developing a culture of cooperation and respect among professionals helps in patient safety.[24]

Study results confirm the findings of other similar studies, regarding the factors that interfere with the turnover time. As to weaknesses, there is still a long way to go, permeating the management of the work processes in the SC and the complex communication process among teams. A study limitation is the non-inclusion of professionals from other teams, in addition to the nursing team.

Study results combined with that evidenced by the literature show the relevance of nurses' role in the management of the SC, in conflict resolution, in decision making, and in continuing education.

FINAL CONSIDERATIONS

The study made it possible to know the opinion of professional nurses and licensed practical nurses on the factors that interfere with the turnover time. The results showed that the interviewees believe several factors contribute to extend the turnover time, such as lack of training and qualification, adequate staff, cooperation and organization of the multidisciplinary team, delays by professionals and patients, delay in providing materials, assembly and disassembly of the OR, surgery size, and bureaucratic processes.

The study also highlighted opinions on factors that could contribute to the optimization of time between surgeries, such as: staff training and qualification, adequate dimensioning of professionals, effective communication and collaboration among teams, punctuality and follow-up of scheduled procedures, and reduction of number of documents, unifying the information to be registered.

Therefore, the institution must promote continuing education, ensuring the qualification of care and strengthening patient safety, in addition to improving the performance of quality indicators.

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