

Good practices for patient safety in the operating room: nurses' recommendations

Boas práticas para segurança do paciente em centro cirúrgico: recomendações de enfermeiros
Buenas prácticas para seguridad del paciente en centro quirúrgico: recomendaciones de enfermeros

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ABSTRACT

Objective: To describe nurses' recommendations for good patient safety practices in the operating room. **Method:** Quantitative, descriptive and exploratory research developed from an online survey of 220 operating room nurses from different regions of Brazil. The data processing for textual analysis was performed by the software IRAMUTEQ. **Results:** There were eight recommendations: (1) Involvement of the multiprofessional team and the managers of the institution; (2) Establishment of a patient safety culture; (3) Use of the safe surgery checklist; (4) Improvement of interpersonal communication; (5) Expansion of nurses' performance; (6) Adequate availability of physical, material and human resources; (7) Individual search for professional updating; and (8) Development of continuing education actions. **Conclusion:** These recommendations can be used as care management strategies by nurses for patient safety in the operating room.

Descriptors: Patient Safety; Operating Rooms; Operating Room Nursing; Quality of Health Care; Practice Management.

RESUMO

Objetivo: Descrever as recomendações de enfermeiros para boas práticas de segurança do paciente em centro cirúrgico. **Método:** Pesquisa quantitativa, do tipo descritiva e exploratória, desenvolvida a partir de um *survey on-line* com 220 enfermeiros de centro cirúrgico de diferentes regiões do Brasil. O processamento dos dados para análise textual foi realizado pelo software IRAMUTEQ. **Resultados:** Obtiveram-se oito recomendações: (1) Envolvimento da equipe multiprofissional e dos gestores da instituição; (2) Estabelecimento de uma cultura de segurança do paciente; (3) Utilização do *checklist* de cirurgia segura; (4) Melhoria da comunicação interpessoal; (5) Ampliação da atuação do enfermeiro; (6) Disponibilidade adequada de recursos físicos, materiais e humanos; (7) Busca individual por atualização profissional; e, (8) Desenvolvimento de ações de educação continuada. **Conclusão:** Essas recomendações podem ser utilizadas como estratégias de gestão de cuidado pelos enfermeiros para a segurança do paciente em centro cirúrgico.

Descritores: Segurança do Paciente; Centros Cirúrgicos; Enfermagem de Centro Cirúrgico; Qualidade da Assistência à Saúde; Gerenciamento da Prática Profissional.

RESUMEN

Objetivo: Describir las recomendaciones de enfermeros para buenas prácticas de seguridad del paciente en el centro quirúrgico. **Método:** La investigación cuantitativa, del tipo descriptivo y exploratorio, desarrollada a partir de un *survey on-line* con 220 enfermeros de centro quirúrgico de diferentes regiones de Brasil. El procesamiento de los datos para el análisis textual fue realizado por el software IRAMUTEQ. **Resultados:** Se obtuvieron ocho recomendaciones: (1) La participación de un equipo multidisciplinario y los gestores de las instituciones; (2) Establecimiento de una cultura de seguridad del paciente; (3) Uso del *checklist* de cirugía segura; (4) Mejora de la comunicación interpersonal; (5) Ampliación de la actuación del enfermero; (6) Disponibilidad adecuada de recursos físicos, materiales y humanos; (7) Búsqueda individual por actualización profesional; y (8)

Desarrollo de acciones de educación continuada. **Conclusión:** Estas recomendaciones pueden ser utilizadas como estrategias de gestión de cuidado por los enfermeros para la seguridad del paciente en centro quirúrgico.

Descriptores: Seguridad del Paciente; Centros Quirúrgicos; Enfermería de Quirófano; Calidad de la Atención de Salud; Gestión de la Práctica Profesional.

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INTRODUCTION

The operating room is the unit of the hospital environment where anesthetic-surgical, diagnostic and therapeutic procedures are performed, both elective and emergency. This scenario presents a peculiar dynamics of health care, due to the attendance to a variety of situations and the accomplishment of invasive interventions that require the use of high precision technologies. In addition, work in the operating room is marked by the development of complex and interdisciplinary practices, with a strong dependence on the individual performance of some professionals, but also the need for teamwork under conditions, often marked by pressure and stress⁽¹⁻³⁾.

Because of these characteristics, operating rooms are considered to be high risk scenarios, extremely susceptible to errors. The surgical complications account for a large proportion of the deaths and damages (temporary or permanent) caused by the care process, considered avoidable. For this reason, in 2004, the World Health Organization (WHO) launched a campaign entitled "Safe Surgeries Saves Lives" as part of the World Alliance for Patient Safety, aimed at awakening professional awareness and political commitment to improving health care, support the development of public policies and the induction of good care practices^(1,4).

In the context of health organizations, a good practice is one that, through the correct application of concepts, techniques or methodological procedures, has a proven reliability to lead to a positive result for the patient⁽⁵⁻⁶⁾. For this, the development of good practices in Health and Nursing requires, in addition to scientific evidence and theoretical foundations, the understanding of the environment and context in which care is developed. It is also important to consider the beliefs, values and ethical principles of those who construct and those who are the target of actions and services, focusing on promoting and improving the living and health conditions of the population⁽⁶⁻⁷⁾. Therefore, the formulation of good practices is based on the analysis of the actions developed by the health services through a process of critical reflection on what works well in a given situation. This requires thinking about the action, its why, and how it might be most effective⁽⁶⁻⁸⁾.

In the search for quality of health care, the nurse is a professional with the potential to design processes for continuous improvement of care, from the planning of strategies to reduce errors by different team members and indication of good care practices. This strategic position of the nurses is due to the proximity with the patient and the performance of these professionals in practically all areas of health organizations, both in the development of care activities and in management positions⁽⁹⁾.

In this context of the operating room, the search for safety and quality of care in the intraoperative period has been configured as an important management activity of nurses. Nursing is present in all stages of the perioperative period, being considered the main

team and agent of change for the transformation of the health system, in order to make it safer. In the surgical environment, nurses play a key role in ensuring that best care practices provide patient safety⁽¹⁰⁾.

Therefore, the relevance of this study about good practices for patient safety in the operating room is emphasized, based on nurses' recommendations. In addition, in spite of the extensive academic production available on patient safety, an integrative review on the main themes explored as preventive measures for patient safety in the hospital environment evidenced the lack of studies related to safe surgery⁽¹¹⁾. Thus, this study was delineated with the following guiding question: What are the recommendations of nurses for good practices of patient safety in the operating room?

OBJECTIVE

To describe nurses' recommendations for good patient safety practices in the operating room.

METHOD

Ethical aspects

The study integrates a macroproject on management of patient care and safety in the operating room, which was developed in accordance with the Ethical Recommendations for Research with Human Beings in Brazil. The research was approved by the Research Ethics Committee of the *Universidade Federal de Santa Catarina*.

Type of study

It is a quantitative, descriptive and exploratory research, developed from an online survey, through the Google Forms[®] platform. The option for a virtual questionnaire had as objective to increase the data collection, since the researches by the internet make it possible to overcome geographical barriers and to increase the number of participants of the study⁽¹²⁾.

Methodological procedures

Data source

The research began with the sending of the link with the questionnaire of the research by e-mail to nurses of operating room of different regions of Brazil, registered in the Brazilian Society of Operating Room Nurses, Anesthetic Recovery and Central Sterile Supply (*Sociedade Brasileira de Enfermeiros de Centro Cirúrgico, Recuperação Anestésica e Central de Materiais e Esterilização-SO-BECC*), the *Brazilian Network for Nursing and Patient Safety (Rede Brasileira de Enfermagem e Segurança do Paciente-REBRAENSP)* and the Network of Brazilian Hospitals with Centers for Patient Safety (NSP) registered at the Brazilian Health Surveillance Agency called ANVISA (*Agência Nacional de Vigilância Sanitária*). The messages were sent directly by the mentioned institutions or researchers from the e-mail list provided by them.

The search link was also shared in WhatsApp® groups and on social networks Facebook®, LinkedIn®, and Instragam®. In a complementary way, the questionnaire was sent to the Regional Nursing Councils (*Conselhos Regionais de Enfermagem* - COREN) and to the state sections of the Brazilian Nursing Association (*Associação Brasileira de Enfermagem* - ABEn) with its members.

Inclusion criteria were: minimum three months of professional experience as an operating room nurse. Questionnaires with incomplete and duplicate information were excluded, that is, when the same participant answered more than once the questionnaire. Duplication of responses was assessed by auditing participants' e-mail records, and the last response received was considered. From this, a convenience sample was obtained.

In total, 248 responses were received, but for the research sample, the responses of 220 nurses were considered. We excluded 10 participants who indicated less than three months in the operating room, 10 questionnaires due to double participation and eight due to incomplete items.

Collection and data organization

Before data collection, face validity and pre-test of the instrument were performed with three operating room nurses and two teaching nurses with experience in the study theme, which were not included in the study. There was no need for modifications to the instrument. Data collection was performed from June to August 2017, based on an instrument composed of a socio-professional characterization form for nurses and an open-ended question about their recommendations for patient safety in the operating room. The data obtained was organized into a Microsoft Excel worksheet®.

Data analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS), version 19. The categorical variables were evaluated by means of absolute frequency and percentage. For the continuous variables, the position measurements (mean, minimum and maximum) and dispersion (Standard Deviation) were analyzed.

The answers to the open-ended question of the questionnaire were analyzed through the software *Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires* (IRAMUTEQ), which explores the main information contained in a text through statistical processing and analysis. For the processing of data, a single corpus of texts is organized, but each text analyzed corresponds to the response of one of the participants to the open-ended question⁽¹³⁻¹⁴⁾.

The corpus was prepared in an Open Office® file and the material was revised for standardization of terms and correction of typing errors. Terms with more than one word were rewritten, using the underscored stroke between the words

in order to identify them as a single term. The categories of words included for analysis were: adjectives, nouns, verbs and unrecognized forms, so that 98.3% of the material was used by the software.

The analysis in the IRAMUTEQ occurs through the grouping of words, called occurrences, by semantic similarity, allowing five types of analyzes: classic textual statistics; research of group specificities and confirmatory factorial analysis; Descending Hierarchical Classification (DHC); word similitude analysis; and a cloud of words⁽¹³⁻¹⁴⁾. In this study, the analysis was performed by DHC, which generates semantic classes. From the text segments assigned to each of the classes revealed by the program, the data were analyzed and interpreted by the researchers to identify the recommendations of the nurses for good practices of patient safety in the operating room.

RESULTS

Of the 220 nurses, the majority were female (n = 186; 85%), with a mean age of 37.6 years (SD = 8.40, minimum 21 and maximum 62 years) and with specialization in the area of Operating room (n = 75; 35%). Regarding the professional performance, nurses from private hospitals predominated (n = 79; 39%), from the Southeast region (n = 75; 35%), with an average operating time of 7.84 years (SD = 7.11, minimum of 0.25 and maximum of 37 years).

The *corpus* analyzed was composed of 162 texts, 3,393 words, 967 different occurrences, divided by the software into 177 text segments. The DHC analysis generated eight semantic classes: (1) Involvement of the multiprofessional team and the managers of the institution (9.8%); (2) Establishment of a patient safety culture (23%); (3) Use of the safe surgery checklist (24.7%); (4) Improvement of interpersonal communication (9.8%); (5) Expansion of nurses' performance (6.9%); (6) Adequate availability of physical, material and human resources (9.2%); (7) Individual search for professional updating (2.9%); and (8) Development of continuing education actions (13.8%). The frequency of occurrences per class and the relationships between classes are shown in Figure 1.

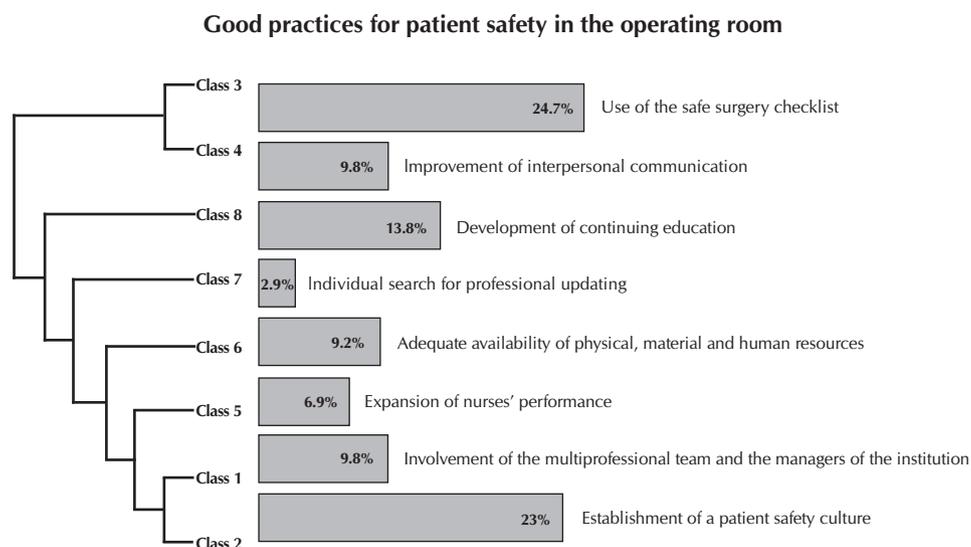


Figure 1 – Distribution of occurrences and relationships between semantic classes

Chart 1 – Qualitative synthesis of semantic classes

Recommendation	Qualitative synthesis
1. Involvement of the multiprofessional team and the managers of the institution	The search for patient safety in the operating room requires the involvement and participation of the multiprofessional team, especially surgeons and anesthesiologists, and the institution's managers. Nursing stands out in the development of actions aimed at patient safety, but this initiative can not only start from a professional category.
2. Establishment of a patient safety culture	The safety culture is a set of practices shared by the health team and planned institutionally to avoid risks to patients during the pre, intra and postoperative period. The planning of care should follow the institution's standard, but allow for adaptations according to the particularities of each patient and sector.
3. Use of the safe surgery checklist	The full application of the safe surgery checklist is critical to reducing damage to the surgical patient. Institutional protocols with adaptations of the safe surgery checklist to the specificities of the institution's care practice are recommended. It is important that the use of the checklist and safe surgical protocols is constantly monitored through a continuous improvement plan.
4. Improvement of interpersonal communication	Effective communication facilitates the standardization and continuity of care behaviors. It also contributes to the union and the good interpersonal relationship between the professionals of the health team, which makes possible the creation of a work environment favorable to the development of actions for patient safety. It is important to improve communication between the nursing staff, medical surgeons and anesthesiologists.
5. Expansion of nurses' performance	The expansion of nurses' work involves quantitative and qualitative aspects. Quantitatively, it is important to increase the number of nurses in the operating room, allowing them to stay longer in the operating room. Qualitatively, it is necessary to grant greater autonomy to the nurse in supervising the nursing staff in the operating room and conducting pre-operative nursing appointment.
6. Adequate availability of physical, material and human resources	The equipment and materials needed for the surgical procedure must be available in sufficient quantity and properly tested and/or checked before surgery. A preventive and periodic maintenance plan is essential for the proper functioning of equipment and materials. The work team must also be adequately sized and qualified to perform the actions that fit in the surgical context.
7. Individual search for professional updating	Health professionals should constantly seek the technical-scientific update to provide quality care to the surgical patient.
8. Development of continuing education actions	Continuing education should be systematic, involve professionals from all areas of care, and focus on updates on care procedures and new equipment and/or technologies available for patient safety. The success of continuing education actions is directly related to participation, and to the support of the institution's managers and leaders.

The relationships between semantic classes indicate two main groupings of the data. In the first grouping, there was complementarity between classes 3 and 4, which indicates coherence of the semantic content between them. The second cluster was composed of classes 1 and 2, which are included in class 5. These, in turn, are consecutively encompassed by class 6, 7, and 8. Chart 1 presents the qualitative synthesis of each semantic class.

DISCUSSION

The analysis of the results shows the existence of complementarity and interdependence among the semantic classes. The recommendations presented can be used as nurse care management strategies for patient safety in the operating room.

In Class 1, it was highlighted that besides the involvement of the nursing team, it is also fundamental the participation of the multiprofessional team and the institution's managers in the development of good practices for patient safety in the operating room. In the area of health, the nursing team has enormous responsibility for the prevention of adverse events in care practice⁽¹⁵⁾. In addition, the nurse stands out in the hospital environment by acting in the articulation of the professionals and the different care areas to perform quality care⁽¹⁶⁾. However, patient safety should be an institutional goal and responsibility of all health professionals⁽¹⁷⁾.

In this sense, it is important to point out the emphasis of nurses on the need for greater involvement of surgeons and anesthesiologists in the quest for patient safety in the operating room. This result may be related to the lack of knowledge about protocols and/or patient safety checklists in the operating room, as evidenced in an Indian study⁽¹⁸⁾. In addition, many surgeons and anesthesiologists operate sporadically in operating rooms according to their specialties, without a greater involvement in organizational discussions about patient safety.

Class 2 emphasizes the importance of establishing a patient safety culture in the institution and concentrated the second largest number of occurrences (23%). The patient safety culture is defined as values, attitudes, norms, beliefs, practices, policies and behaviors, institutions, health professionals and the patient to improve health care, with substitution of guilt and punishment for the opportunity of learning with the failures. Based on this understanding, the health team should be guided by a commitment that emanates from the guidelines of the health institution, in which each member and the group as a whole follow the same safety rules/protocols with shared responsibilities⁽¹⁷⁾.

The patient safety culture aims at a practical transformation in understanding what health teamwork is and at the heart of its activity. In this sense, it is important to overcome cultural issues present in the context of Health Care, especially in the hospital environment, which may interfere with patient safety,

such as: hierarchy of positions, medical professional enhancement, disease focus, individual failures, professional punishment, concealment of assistance failures and inadequate or outdated practices^(17,19-20).

The building of partnerships and commitments is a way to boost development of a safety culture in institutions. As all health professionals enhance this idea of collective responsibility, it will be possible to move towards a patient safety culture. To promote patient safety, it is necessary to promote a good relationship and cooperation in the team, with unity, respect and motivation between individuals of different levels of responsibility and lines of action in the institution^(17,19,21).

Class 3 focused on the safe surgery checklist and was the one that obtained the highest number of occurrences (24.7%). The safe surgery checklist was developed from the 10 essential goals for patient safety, established by the World Health Organization (WHO) Safe Surgery Program. This Program aims at reducing the number of deaths and surgical complications such as performing surgery on the patient or wrong location and inadvertent retention of foreign bodies. Thus, the checklist aims to reinforce patient safety practices and promote better communication among health professionals⁽²²⁻²³⁾.

Considering that Class 3 has concentrated the largest number of occurrences, it can be inferred that the safe surgery checklist has not been used properly. A Brazilian documentary study, for example, identified a 98% adherence of the team to the 10 goals proposed by the WHO through the checklist of safe surgery. However, many items were not adequately filled, evidencing a failure in patient safety⁽²⁴⁾. In addition, the use of the safe surgery checklist is proportional to the knowledge and awareness of its importance by health professionals⁽²⁵⁾. In this sense, it is a priority to implement measures that guarantee the quality of care and patient safety in the operating room.

Class 4 refers to improving the interpersonal communication of the surgical team, aiming at the uniformity and continuity of care behaviors. Communication in the context of health work is important to provide information, exchange experiences, persuade in order to generate behavior changes and discuss the most varied subjects⁽¹⁹⁾. However, because it is a closed working environment with several professional categories, the occurrence of communication problems and relationship conflicts is common in the operating room, especially among medical and nursing staff, since historically the medical team has a tendency to place itself in a hierarchically superior position to the nursing team⁽²⁶⁻²⁷⁾. In this context, nurses play an important mediating role to promote integration between professionals and conflict resolution^(3,27).

Despite the importance of teamwork for quality and safety in health care, it is complex and challenging. In this context, effective communication represents a constant challenge, mainly due to the differences in values, habits, beliefs, understandings and experiences experienced by the professionals in the team work, as verified by a study carried out in Sweden with nurses, medical surgeons and anesthesiologists⁽²⁸⁾.

Among the strategies to improve communication among surgical team professionals, international studies have highlighted the potential of WhatsApp® as a secure and efficient communication

technology for sharing real-time medical information and discussing patient care behaviors⁽²⁹⁻³⁰⁾. The application also contributes to the decrease of the hierarchy among the professionals of the surgical team⁽²⁹⁾.

Class 5 is related to the expansion of nurses' performance in the operating room. Of note is the suggestion to increase the number of nurses in the operating room so that they can remain in a larger time supervising activities in the operating room. This result may be related to the fact that nurses mainly perform management activities in the operating room in Brazil. This makes this professional, as leader of the nursing team, not always be able to work within the operating room and supervise the activities of nursing technicians^(2-3,31). In Brazil, the Federal Nursing Council (*Conselho Federal de Enfermagem - COFEN*), through Resolution 543/2017 on the sizing of the nursing professionals staff in the services in which nursing activities are carried out, determines the ratio of one nurse to every three nurses elective surgeries in the 24 hours⁽³²⁾.

Participants also scored in Class 5 on the importance of increasing nurse autonomy in the operating room. The autonomy of the nurse is important for him to apply measures of risk management and prevention of harm to the patient as soon as this is necessary in the operating room^(26,33). In addition, autonomy assists in the satisfactory development of nurses' activities in relation to the management of nursing care and the work of the multiprofessional team^(3,26).

Class 6 refers to the structural dimension of health organizations, that is, adequate availability of physical, material and human resources. The structure is one of the pillars of the quality of health care and concerns the physical, material and organizational configurations of health services, such as: facilities, equipment, financial resources, and human resources qualification and quantity⁽³⁴⁾. Therefore, providing an adequate structure is critical to the development of best patient safety practices.

However, the scarcity of financial, material and human resources is one of the main problems faced by nurses in the planning and organization of the operating room⁽²⁷⁾. Staff sizing was one of the main intervening factors in patient safety related to the nursing team highlighted by nurses in a study conducted in a public hospital in the city of Fortaleza, CE, Brazil⁽³⁵⁾. Similarly, a study developed in hospitals in China found that the adequate design of nursing staff and organizational support are directly related to improving patient safety⁽³⁶⁾. Class 7 notes the importance of the individual search of each health professional for technical-scientific update. The training of professionals is one of the main guidelines when discussing and planning the practices of people management in health organizations and services. However, individual characteristics may influence the assimilation of the learning provided by the institution. Study developed by researchers from Belgium on informal workplace learning among nurses highlighted the importance of self-confidence, motivation and proactivity for professional development⁽³⁷⁾.

Class 8 emphasizes the potential of continuing education for health team empowerment for patient safety and quality of care. The use of workspaces, as fields of learning and development of skills, allows the professional to live with the diversity

and speed with which knowledge has been produced in the modern world⁽³⁸⁾.

As the term "continuing education" was the most used by the study participants, this nomenclature remained in the class title. However, it is important to point out the tendency of the Brazilian Ministry of Health in adopting the term Permanent Education in Health (*Educação Permanente em Saúde* - EPS) to refer to the practices of education "in" and "to" work. EPS aims to promote changes in the different realities of health services through critical-reflexive and participatory actions involving professionals, managers, students and teachers inserted in the context of health work⁽³⁸⁾. The mention of continuing education as good practice for patient safety by nurses suggests that this term is the most widespread among health professionals. However, the actions to which the nurses report are close to the guiding assumptions of EPS.

Study limitations

The main limitation of an online survey is the control of the composition of the sample, since anyone can complete the questionnaire. It is also more likely that the participant refuses to participate or leaves the study in progress. There is also the possibility that people interested in the subject of the research

bias the composition of the sample. In addition, it is important to point out the diversity of the profile of health institutions in Brazil and this may have impacted the results of the study.

Contributions for Nursing, Health and Public Policy

The results of this study may assist in the implementation of procedures for improving patient safety in the operating room. In addition, they may also contribute to the practice of nurses in the management of care and the nursing/health team in these scenarios. For future studies, it is suggested to apply and evaluate the good practices presented in this study through an intervention to improve the environment of professional practice in the operating room.

CONCLUSION

The nurses participating in the study presented eight good practice recommendations for patient safety in the operating room. Recommendations regarding the use of the safe surgery checklist and establishment of a patient safety culture were emphasized. The recommendations presented can be used as nurse care management strategies for patient safety in the operating room.

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