Available online at http://www.journalijdr.com

IJDR

International Journal of
DEVELOPMENT RESEARCH

ISSN: 2230-9926

International Journal of Development Research
Vol. 06, Issue, 12, pp.10792-10795, December, 2016

Full Length Research Article

RISK OF SURGICAL SITE INFECTION IN THE OPERATING ROOM: DANGEROUS INCIDENTS

[*1]Regiane Aparecida Santos Soares Barreto, [2]Cyanea Ferreira Lima Gebrim, [1]Karina Suzuki, [3]Lorena Morena Rosa Melchior, [4]Elaine Ferreira Froes, [1]Marinesia Aparecida do Prado, and [3]Maria Alves Barbosa

[1]Nurse – Doctor of Nursing, Adjunct Professor, Faculty of Nursing, Federal University of Goias, Goiania, Goias, Brazil
[2]Nurse – University Hospital, Federal University of Goias. Master of Nursing. Goiania, Goias, Brazil
[3]Nurse – Federal University of Goias. Goiania, Goias, Brazil
[4]Nurse – University Hospital, Federal UniversityofGoias. Goiania, Goias, Brazil

ARTICLE INFO

Article History:
Received 14th September, 2016
Received in revised form
19th October, 2016
Accepted 20th November, 2016
Published online 30th December, 2016

Key Words:
Patient Safety;
Surgical Wound Infection;
Nursing.

ABSTRACT

Objective: This study analyzed incidents in the operating room related to the risk of surgical site infection.
Method: Qualitative study performed using the critical incident technique and thematic content analysis.
Results: Five categories were established: "patient exposure," "proactivity for patient safety," "awareness of patient exposure," "ethical and bioethical issues" and "patient protection." Data analysis revealed surgeon dominance within the inter professional team as a conditioning factor in the adoption of unsafe acts.
Conclusion: This situation contradicts the point of view of safe surgery, since the team and their actions in operating rooms must be focused on patients. We emphasize the need to establish effective clinical protocols that strive for patient safety.

INTRODUCTION

Surgical care is essential in health care. However, of the 240 million surgeries performed worldwide each year, 3% to 16% result in complications, 7 million incapacitating (Anvisa, 2013; Who, 2009). Incidents resulting from lack of care have been the subject of worldwide discussion, as indicators affecting the quality and safety of such care. Such tools indicate aspects to be improved for safer care (Toffoletto *et al*., 2008). Incidents are circumstances that may result in adverse events in health care, that is, structural or functional impairment of the body, such as disease, injury, suffering, death, disability or dysfunction (MS, 2013). They occur in 5% to 17% of surgeries and are preventable in 60% of them. They may be related to infrastructure, equipment, supplies, medicine quality, management, and training and qualification of personnel (ANVISA, 2013; WHO, 2009). Surgical site infection is a serious adverse surgical event and a quality indicator in health services.

Corresponding author: Regiane Aparecida Santos Soares Barreto
Nurse – Doctor of Nursing, Adjunct Professor, Faculty of Nursing, Federal University of Goias, Goiania, Goias, Brazil

Technical failures, incapacity, unsafe behaviors and deficiencies in communication are factors extrinsic to its occurrence (Anvisa, 2013; CDC, 2009; Gouvêa and Travassos, 2010). The success and quality of surgical care depend on the actions of an interprofessional team (Bohomol and Tartali, 2013; Grittem, Meier, and Peres, 2009). The nursing team is responsible for the development and use of quality indicators in process and surgical results. Such indicators include the recording of incidents and adverse events, which helps management to propose strategies for professional awareness and patient safety culture (Souza *et al*., 2011). This study analyzed incidents in the operating room related to the risk of surgical site infection.

Materials and Methods

Qualitative descriptive study performed in 2016 and approved by the Medical Ethics Committee of the Clinics Hospital of the Federal University of Goiás (CEP/HC/UFG nº 18/2011), with 27 members of the interprofessional team at the surgical center of a public university hospital in Goiânia, Goiás, Brazil. The critical incident technique was used for data collection

(FLANAGAN, 1973) by means of a guiding question with positive and negative polarities: "Tell me about a situation experienced during care in the operating room, considered as negative or positive for patient safety and related to the prevention of surgical site infection. Describe what was done (behavior) and the results (consequences)." Data were analyzed concurrently with collection, that is, after each interview. The reports were classified according to the three elements of a critical incident: situation, behavior and consequence. Then thematic content analysis (BARDIN, 1977) was performed using software (FRIESE, 2011).

RESULTS

The participants were predominantly female (51.8% vs. 48.2%); 59.2% were over 30 years of age; 63.0% graduated more than 5 years ago; and 59.2% had over 5 years of experience. The nursing team consisted of 15 professionals: 7 technicians (T), 5 graduates (E) and 3 surgical technicians (I); and there were 12 members in the medical team: 4 anesthesia residents (RA), 4 surgery residents (RC), 3 anesthesiologists (A) and a surgeon (C). From the critical incidents analyzed, five categories were established: "patient exposure," "proactivity for patient safety", "awareness of patient exposure," "ethical and bioethical issues" and "patient protection." The category "patient exposure" involved breaks in the aseptic chain in the operating room, exposing patients to the team and environmental microbiota. RA17: A member of the anesthesia staff punctured a peripheral vessel without previous hand cleaning, without gloves, without antisepsis, and he turned the needle using his hands before puncture.

E5: There was patient exposure due to inadequate surgical scrubbing.
T8: In a heart surgery, the perfusionist aspired the solution. During air removal, he expelled it in the surgical focus, spilling it onto the surgical drape, in the chest incision.
I13: The surgery occurred even though 28 medical students were in the room.
E22: During an orthopedic surgery, the anesthesiologist changed the table position, and the patient fell to the floor. The patient was quickly repositioned without, however, repeating aseptic procedures, drape changing and gowning.
I12: The surgeons denied the request for replacement of the contaminated surgical aprons, alleging petulance from the nurses.

The category "proactivity for patient safety" was introduced due to the actions of a few professionals before patients were exposed to the risk of contamination.

RA1: The anesthesia staff encouraged hand washing and care with aseptic technique, saying, "The staff here is not used to washing their hands, but we know it decreases the risk of infection and our colleagues (doctors) notice it when we have this attitude".
E5: I registered in the record of the Hospital Infection Control Committee the surgeon's refusal to remove his wedding ring during scrubbing.
T25: I registered in the record of the Hospital Infection Control Committee the fact that the surgeon left the room to look for materials in another operating room while wearing surgical scrubs.
I20: I questioned the surgeon about lack of scrubbing.
E23: There was a discussion and I warned the surgeon about the attempt to perform another surgery with material covered with chemical solution without previous cleaning.

In the category "awareness of patient exposure," professionals expressed various feelings in situations contradictory to patient safety.

RA1: I felt powerless, thinking that in my professional life I should not act as anesthesia staff, contaminating anesthetic materials.
E2: The surgical resident apologized, feeling bad about performing the procedure without plastic cable protection, contaminating the surgery.
T3: I was frustrated and I criticize myself because I should have taken a stand with the surgeon and hygienized a wider area.
I13: There was a tense atmosphere in the room after my refusal to lubricate instruments with non-sterile Vaseline.
RA21: Only after discussion and threats did the victim (surgical resident) come down and go through the correct sequence for the accident protocol with biological material.
T24: An unpleasant tension was created when the medical team brought the second child in to operate without cleaning the room.

The "ethical and bioethical issues" category involved human failures and not following the principles of asepsis in routine procedures.

E2: The staff and the resident performed the procedure without plastic cable protection, even though it was on the instrument table, and the optical cable was exposed and it contaminated the surgical apron, gloves, instruments, and finally, the patient.
T15: A surgeon who was in a hurry and trying to save sterile material used the same anesthesia tray for the indwelling urinary catheter and hygiene of the patient's skin.
E5: There were no measures before the notification on the use of a wedding ring by the surgeon during surgical scrubbing.
T25: The pediatric surgeon decided to use contaminated materials and rinse them with saline solution. After 30 minutes of discussion, he gave up.
T19: The surgeon did not make us scrub, because there is no need for it in short procedures.
I20: The surgeon reported that the surgery was potentially contaminated and there would be no need for the surgical apron, and stated that the surgical apron was intended to protect the team.

The "patient protection" category concerned the professional decision-making process preceding patient exposure.

I20: The plastic team avoided using a hose since it was wet inside and I searched for another hose to replace it.
E2: The catheter was secured and protected by a sterile bandage compress and the resident recommended care when handling it, guiding the nurse and the nursing technician in the recovery room on aseptic technique.
E5: The team patiently waited for the patient's body to be cleaned up before indwelling urinary catheter use, because they noticed the risk of infection due to dirt.
RC9: I changed all drapes contaminated by the x-ray device. The patient was monitored and there was no infection due

to breaking the aseptic chain due to contamination of a drape. The wound was washed thoroughly prior to suture.

T15: I noticed that the surgeon would use the same tray for several procedures so I provided another sterile tray.

T24: We had to remove the second child from the room, because the child was inadvertently brought in by the medical team to perform cleaning.

DISCUSSION

Low levels of adoption by professionals of the principles of surgical asepsis is among the indicators associated with postoperative infection episodes (Grittem, Meier, and Peres, 2009; National Collaborating centre for Women's and Children's Health, 2008). Surgeons and residents in an Iranian university hospital pointed out the lack of in-service training for more than 80% of staff, and there was low adherence to standard precautions (Antunes *et al*., 2010; Askarian, Mclaws, and Meylan, 2007). Although most surgical site infections occur due to the patient endogenous microbiota, exogenous sources such as the air in the operating room, instruments, prosthetics and implants and the surgical team (Friese, 2011) cannot be ignored. A study in Brazil found that 55.6% of the medical students at a federal university were not aware of standard precautions (Askarian, Mclaws, and Meylan, 2007). This reinforces the need to assess and adapt the teaching of biosafety in health.

The technical literature describes corporatism of medical teams, lack of leadership and teamwork, and lack of communication and accurate records as barriers to the safety culture in the operating room. This is also related to lack of understanding of safety by physicians, which prevents other types of staff from adopting safety initiatives (Ques, Montoro, and González, 2010). Unsuccessful face-offs between teams and surgeons are considered to be loss of power, contributing to the passivity of the oppressed in relation to the oppressor, leading to discouragement and loss of identity in the work process (Ques, Montoro, and González, 2010). A European study highlighted working conditions, relationship problems between teams, emotional difficulties, dissatisfaction with assigned competencies and lack of autonomy as reasons for job abandonment among nurses (ESTRYN-BEHAR *et al*., 2010).

Regarding the ethical aspects involved in the incidents, we refer to Article 1 of Chapter III of the Code of Medical Ethics of Brazil, which forbids the physician from causing harm to the patient by act or omission, which can be considered incompetence, recklessness or negligence (Neves and Siqueira, 2010). Considering organizational safety requires changes in thought and knowledge about errors, along with relevant records. A culture of lack of communication and error notification results from fear of criticism and social incomprehension. Notification is a problem for the person responsible for the records in the operating room. It is essential to adapt the services to legal standards regarding safety and error communication culture (Ques, Montoro, and González, 2010). Some professionals display attitudes towards patient safety that override the team hierarchy before patient exposure to the risk of contamination. However, in reality, in the absence of safety culture, decision-making in favor of the patient results in conflicts, internal crises and losses in interpersonal relationships in teams (Ques, Montoro and González, 2010).

Violations of the principles of asepsis by members of the medical team resident in the environment influence other professionals to repeat such behavior (Nascimento and Travassos, 2010; Neves and Siqueira, 2010). Operating rooms are complex political, social and cultural structures in which there are rituals marked by hierarchy and conflicts. But their essence is teamwork. However, in medical culture, professionals are solely responsible for the care and health of patients. This hegemony generates functional deviations in teams and dismantles processes, causing gaps in safety procedures for patients and professionals: first, loss in quality and treatment results; and second, moral violence and violation of ethical and bioethical principles at work (Pronovost and Freischlag, 2010). The "Safe Surgery Saves Lives" program of the World Health Organization directs the focus of attention in the operating room to patients and establishes a checklist, which represents a tool that could change the hegemonic paradigm (Pronovost and Freischlag, 2010). However, despite the low operating cost, its institutionalization is a transdisciplinary challenge.

Conclusion

A surprising finding was the frequency of occurrence of critical incidents in the operating room that involved risk of surgical site infection and loss of patient safety. This highlights the vulnerability created by failures in standard precautions, exposing patients and workers to cross-contamination. This is a matter of concern due to the public, educational nature of the institution, which is a scientific and academic model for public and private entities and a creator of human resources in health for the West Central Region and Brazil. Medical hegemony over health teams was decisive in the adoption of unsafe acts by professionals. Many of the critical incidents reported were caused by the centralization of care in physicians. The need for fast completion of procedures sought to meet the demands of professionals, and not patient safety. Even though surgeons are responsible for the surgical procedures themselves, work processes in the operating environment are performed by interprofessional teams. The decision making of this professional are contrary to ethical and bioethical principles. Hence, we emphasize the need for establishing clinical protocols that strive for patient safety and the "Safe Surgery Saves Lives" program.

Acknowledgements

We recognize the work of the Center for Management and Studies in Workers Safety and Users of Health Service - NUGESTUS (Núcleo de Gestão e Estudos em Segurança do Trabalhador e Usuários do Serviço de Saúde) of the Nursing School at the Federal University of Goiás, Brazil during the execution of this study.

Author Contributions

Concept and design: Barreto, Rass. Data collection: Barreto, Rass. Data analysis: Barreto, Rass; Souza, ACS. Bibliographic contributions and discussion: Barreto, Rass; Prado, MA; Gebrim, CLF; Suzuki, K; Barbosa, MA.

REFERENCES

Antunes, H. M., Cardoso, L. O., Antunes, R. P. G., Gonçalves, S. P., Oliveira, H. 2010. Biossegurança e Ensino de

Medicina na Universidade Federal de Juiz de Fora, (MG). *Rev Bras Edu Med,* 34(3): 335–45.

Anvisa, 2013. Assistência Segura: uma reflexão teórica aplicada à prática, 1a ed.: 168p. Brasília: Agência Nacional de Vigilância Sanitária.

Askarian, M., McLaws, M. L., Meylan, M. 2007. Knowledge, attitude, and practices related to standard precautions of surgeons and physicians in university-affiliated hospitals of Shiraz, Iran. *Int J Infect Dis,* 11(3): 213-9.

Bardin, L. 1977. Análise de conteúdo. Lisboa: Edições 70.

Bohomol, E., Tartali, J. A. 2013. Eventos adversos em pacientes cirúrgicos: conhecimento dos profissionais de enfermagem. *Acta Paul Enferm*, 26(4): 376-81.

CDC. 2009. The National Healthcare Safety Network Manual - NHSN. Pacient Safety Component Protocol. In Centers for Diseases Control and Prevention (Ed.), Vol. Division of Healthcare Quality Promotion National Center for Preparedness, Detection and Control of Infectious Diseases: 225. Atlanta: Division of Healthcare Quality Promotion National Center for Preparedness.

Estryn-Behar, M., Van-Der, B. I. H., Fry, C., Hasselhorn, H. M. 2010. Longitudinal analysis of personal and work-related factors associated with turnover among nurses. *Nurs Res,* 59(3): 166-77.

Flanagan, J. C. 1973. A técnica do incidente crítico. *Arq Bras Psic Apl*, 25(2): 99-141.

Friese, S. 2011. Doing qualitative research with ATLAS. ti. London: Sage.

Gouvêa, C. S. D., Travassos, C. 2010. Indicadores de segurança do paciente para hospitais de pacientes agudos: revisão sistemática. Cadernos de Saúde Pública, 26(6): 1061-78.

Grittem, L., Meier, M. J., Peres, A. M. 2009. Sistematization of perioperative care - a qualitative research. *Online Braz J Nurs,* 8(3).

Ministério da Saúde. 2013. Portaria Nº 529, de 1º de abril de 2013: Institui o Programa Nacional de Segurança do Paciente (PNSP). Brasília: Gabinete do Ministro.

Nascimento, N. B., Travassos, C. M. d. R. 2010. O erro médico e a violação às normas e prescrições em saúde: uma discussão teórica na área de segurança do paciente. Physis, 20(2): 625-51.

National Collaborating Centre for Women's and Children's Health. 2008. Surgical site infection: prevention and treatment of surgical site infection. In A. Welsh (Ed.), Clinical Guideline. London: Royal College of Obstetricians and Gynaecologists.

Neves, N. M. B. C., Siqueira, J. E. 2010. A bioética no atual Código de Ética Médica. Rev Bioética, 18(2): 439-50.

Pronovost, P. J., Freischlag, J. A. 2010. Improving teamwork to reduce surgical mortality. JAMA, 304(15): 1721-2.

Ques, Á. A. M., Montoro, C. H., González, M. G. 2010. Strengths and threats regarding the patient s safety: nursing professionals opinion. *Rev Latino-am Enfermagem,* 18(3): 339-45.

Souza, L. P., Bezerra, A. L. Q., Silva, A. E. B. C., Carneiro, F. S., Paranaguá, T. T. B., Lemos, L. F. 2011. Eventos adversos: instrumento de avaliação do desempenho em centro cirúrgico de um hospital universitário. *Rev enferm UERJ,* 19(1): 127-33.

Toffoletto, M. C., Nascimento, C. C. P., Gonçalves, L. A., Freitas, W. G., Padilha, K. G. 2008. Indicators of healthcare results: analysis of adverse events during hospital stays. *Rev Latino-Am,* 16(4): 746-51.

World Health Organization/World Alliance for Patient Safety. 2009. Summary of the evidence on patient safety: implications for research. The Research Priority Setting Working Group of the World Alliance for Patient Safety. Geneva: World Health Organization.

****