Prevalence of no harm incidents and adverse events in a surgical clinic

Prevalência de incidentes sem dano e eventos adversos em uma clínica cirúrgica

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Abstract

Objective: To estimate the prevalence of no harm incidents and adverse events in a surgical clinic.
Methods: Cross-sectional study conducted with a sample of 750 hospitalizations in the surgical clinic of a hospital in the mid-west region. A descriptive analysis was performed and the prevalence of incidents was calculated.
Results: It was demonstrated that 615 hospitalizations were exposed to no harm incidents and 140 to adverse events. Of the 5,672 reported incidents, 218 were characterized as adverse events that caused harm to the patient. No harm was proven for the others; however, they highlighted the need for an adjustment to work processes.
Conclusion: The prevalence of no harm incidents was estimated at 82%, and 18.7% for adverse events.

Resumo

Objetivo: Estimar a prevalência de incidentes sem dano e eventos adversos em uma clínica cirúrgica.
Métodos: Estudo transversal conduzido com amostra de 750 internações ocorridas na clínica cirúrgica de um hospital da região centro-oeste. Realizou-se análise descritiva e calculou-se a prevalência dos incidentes.
Resultados: Evidenciou-se que 615 internações foram expostas ao incidente sem dano e 140 ao evento adverso. Dos 5.672 registros de incidentes, 218 foram caracterizados como evento adverso por causarem dano ao paciente. Os demais não evidenciaram dano, entretanto apontaram necessidade de adequação dos processos de trabalho.
Conclusão: Estimou-se prevalência de 82% de incidentes sem dano e 18,7% de eventos adversos.

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Introduction

Incidents resulting from care have been the subject of global discussion, reflecting on the improvement of quality and safety of health care. The World Health Organization defines incident as a preventable event or circumstance resulting from care that is not associated to the underlying illness. Depending on their consequences, incidents are classified as no harm incidents, which, in spite of impacting the patient, do not result in damage yet nonetheless constitute a risk, or an adverse event which necessarily results in damage to the patient.[1]

It is estimated that annually, of the 234 million surgeries performed worldwide, two million deaths occur while seven million people experience incidents, 50% of which are preventable. Among the highly-complex surgeries performed in developed countries, 3 to 16% report complications, and one death occurs for every 300 patients admitted.[2]

The impact of these events culminated in the creation of the World Alliance for Patient Safety, which proposes the challenge "Safe surgeries save lives," and encourages the adoption of best practices for reduction of morbi-mortality from surgeries.[2,3] However, prevention of problems of quality and safety in surgical care must also focus on pre- and post-surgical care, since it is estimated that 19% of incidents are related to organization of service and care.[4]

In the scenario of services evaluation, this study has the objective to estimate the prevalence of no harm incidents and adverse events in a surgical clinic.

Methods

This cross-sectional, retrospective study was conducted with the medical records of patients hospitalized in the Surgical Clinic of a hospital pertaining to the Sentinel Hospital Network of the Brazilian Health Surveillance Agency, which has the purpose to diagnose adverse events and technical complaints related to health services.

The choice of the institution was motivated by the fact that it is part of the Sentinel network, it has had a risk management program since 2002, and has a system of incident notification.

The period selected for the study was the year 2010, in which 2,610 hospitalizations occurred. The sample was 750 medical records, considering a prevalence of 10% of adverse events, precision of 2.5%, design effect of 1.5, confidence interval of 95%, and an increase of 9% due to possible losses related to data capture.

The data was collected between January and May of 2011. A structured, pre-validated questionnaire with questions regarding the characteristics of the patients and incidents was used.

The incidents were evaluated by three researchers specialized on the topic of patient safety. Those that did not indicate damage to the patient were classified as no harm incidents, with those indicating damage classified as adverse events, according to the definition of the World Health Organization.[1]

The data was analyzed descriptively using the software *Statistical Package for Social Science*, version 17.0 for Windows, presenting relative and absolute frequencies. The prevalence was calculated considering the number of hospitalizations exposed to the incident as a numerator, and the total number of hospitalizations investigated as a denominator, calculating a 95% confidence interval.

The development of the study adhered to national and international ethics in research involving human beings.

Results

Seven hundred and fifty hospitalizations were analyzed, with 449 (59.9%) women and 301 (40.1%) men, with a mean age of 46.9 years, and hospitalization time eight days or less for 83.3% of the cases. A total of 5,672 incident reports were verified, classified according to consequence to the patient.

The prevalence of no harm incidents was 82% (CI 95%; 79.13 – 84.63%), indicating that 615 hospitalizations were exposed to at least one incident.

The no harm incidents recorded during the hospitalizations totaled 5,454 events, as shown in table 1.

Table 1. No harm incidents

No harm incidents	Records n(%)
Procedure /clinical process	
Incomplete vital signs	4,012(73.56)
Omission of care	121(2.22)
Technical procedures errors	2(0.04)
Incorrect diagnosis	2(0.04)
Medication	
Omission of dose	1,285(23.56)
Wrong time	13(0.24)
Dose not prescribed	8(0.15)
Incorrect prescription	6(0.11)
Wrong medication	2(0.04)
Wrong method of administration	1(0.02)
Administration on wrong patient	1(0.02)
Medical equipment	
Inadequate maintenance	1(0.02)
Total	5,454(100)

Table 2. Adverse Events

Adverse events	Records n(%)
Procedure /clinical process	
Post-surgical acute pain	54(24.77)
Not programmed removal of catheters/tubes drains	23(10.60)
Technical procedure errors	13(5.96)
Obstruction of catheters/tubes/tracheal tubes	13(5.96)
Surgical dehiscence	8(3.67)
Allergic reaction	2(0.92)
Venous infiltration	2(0.92)
Inadequate fixation of catheters	1(0.46)
Clinical administration	
Suspension of surgery	16(7.34)
Undue hospitalization	6(2.75)
Exam scheduled and not performed	1(0.46)
Medication	
Adverse reaction	26(11.93)
Hospital infection	35(16.10)
Accident with patient	
Pressure ulcer	6(2.75)
Fall	6(2.75)
Chemical product burn	1(0.46)
Medical equipment	
Inadequate maintenance	3(1.38)
Blood products	
Adverse reaction	1(0.46)
Insufficient stock	1(0.46)
Total	218(100)

The conducts adopted in response to the no harm incident were in regard to diagnosis error when the patient was informed about the professional mistake, and then the real diagnosis and, in response to incorrect drug prescription, which was replaced.

A prevalence of 18.7% (CI 95%; 16 – 21.58%) of adverse events was estimated, with 140 hospitalizations exposed to at least one event.

As shown in table 2, 218 adverse events were recorded.

The most recurring adverse events were related to the clinical process, with acute post-operatory pain being highlighted, and requiring substitution or addition of drug therapy.

The unplanned removal of tubular devices resulted in an additional procedure, for example, re-implantation of the catheter, tube and/or drain, new puncture and increased time spent on caring for the patient.

Technical procedure errors were related to professional inability, resulting in surgical intervention; longer hospitalization time; camber or hematoma in puncture location; and mechanical lesion due to improper position of the tracheostomy; and death.

In regard to clinical administration, surgical suspensions and undue hospitalization resulting in rescheduling of procedures and prolonged hospitalization time were highlighted.

Medication-related adverse events were associated with adverse and allergic reactions, resulting in the addition or substitution of the drug therapy.

Hospital infections resulted in aggravation of the clinical condition, and required observation of the patient and/or additional drug therapy, with death being the most serious damage.

Pressure ulcer and falls caused pain and femur fracture, requiring surgical intervention and greater care time.

Inadequate equipment maintenance and adverse reaction or lack of blood products resulted in prolonged hospitalization, observation and/or additional therapy. Lack of blood products resulted in death.

The magnitude and gravity of the consequences of the adverse events were distinct. Of the 218 events, 170 (77.98%) resulted in light damage, 36 (16.51%) in moderate damage and five (2.29%) in severe damage. With low prevalence but greater impact, seven (3.21%) events resulted in death.

Discussion

The study method presents limitations in regard to frequency and consequences of the incidents, because it deals with situations in which professionals are subject to fear of punishment, and therefore fail to record the event. Therefore, to know the real prevalence of the incidents is difficult since not all are recorded.

The findings from this study contribute to the improvement of health and nursing work processes, since they are configured as result indicators of care, guiding the actions of managers to implement best practices and training of professionals, in an effort to improve the quality of care and safety of the patient.

Development of a culture of safety, the practice of recording incidents, discussion of the circumstances in which the incidents occurred, as well as professional and organizational conduct in the face of incidents, are a path to be followed for the transformation of the reality in health institutions.

The majority of the no harm incidents were in regard to incomplete vital signs and the omission of care, characterizing errors in nursing care and service management.

The annotation of vital signs is critical to showing the general condition of the patient. Their absence makes the real evaluation of care activities difficult, impeding the visualization of hemodynamic deviations.[5] Inadequate action and omission by the nurse or other professionals may expose the patient to risks due to negligence, imprudence or malpractice.[6]

Diagnosis errors are recognized as one of the most frequent causes of lawsuits and are financially costly, occurring in between 10 and 15% of health services.[7,8] The use of a taxonomy for standardization and systematic analysis of these cases may reveal errors and suggest improvements in specific areas of the knowledge.[8]

The application of checklists before suggesting a diagnosis is encouraged to reduce dependency on memory and intuition, which are often associated with uncertainties and limited time.[7] Proper investigation of the health status of the patient, scientific knowledge and clinical discussion by a multi-professional team, make possible the reduction of unnecessary surgical preparation, and, primarily, flawed diagnoses.

Incidents related to medication, whether without damage or adverse events, show the need to evaluate the process of prevision, provision, dispensation and administration of drugs.[9] Risk factors include prescription of multiple drugs and different dosing, deficient knowledge of the team about the drug, lack of return of unused medicines to the pharmacy, interferences during preparation, transcription of prescriptions and writing and composition errors.[10,11]

Because the nursing team professionals essentially work at the end of the process of drug therapy, their responsibility to substantiate and prevent these errors increases because the act of administration may interrupt the system and avoid errors initiated in the first stages.[10]

Among adverse events, post-operatory pain was the most frequent and its effective control aims to minimize the discomfort of the surgical patient, prevent deleterious effects, and facilitate the recovery process.[12]

Pain control is one of the evaluation items for the certification of quality of hospital services in Brazil, as well as in the programs of the *Joint Commission International*. [13] In the sphere of nursing care, pain monitoring is fundamental to measure whether or not the drug therapy has been successful.[14]

The inadequate management of tubular devices reflects the quality of the nursing care, exposing the patients to preventable adverse events. The frequency of these events has been related to the quantitative inadequacy of personnel, inefficient qualification and training, and poor orientation to patients and families.[4,15,16]

In regard to adverse events related to clinical administration, inadequacies in planning, control and health services management were highlighted.

The cancellation of elective surgery implies an increase of hospital costs due to occupation of the bed and/or operating room, waste of sterilized material, time spent by personnel involved in the preparation of material and operating room, and substitution of the patient on the surgical schedule.[17] This reality interferes in the administrative and logistical aspects, and demands adaptation of the organizational structure for improvements in the dynamic of the service.[17,18]

Hospital infections are frequent during surgical care, threatening patients and professionals, and university hospitals have an annual estimated rate of 8.2%.[19] Nurses are the main professionals indicated for the prevention of infections related to health care, and should assure the correct use of dressings, performance of aseptic techniques, proper training, and, primarily, development of a critical awareness among health professionals.[20]

Monitoring of the pressure ulcer is also the responsibility of the nursing team, with its occurrence estimated at 19.5%, reaching 35% among hospitalized adult patients. This number can be reduced through the adoption of best clinical practices, including massage, changing positions, training, and use of the Braden Scale.[21]

Falls, the most common adverse event among hospitalized patients, with an incidence of 12.4% in surgical environments, can be preventable through improvement of hospital infrastructure, prevention programs and monitoring of the patient by nursing before an activity.[22]

The World Health Organization taxonomy is recent. Studies were not found for the comparison of the prevalence of the no harm incidents. In the surgical environment, the prevalence of adverse events is estimated at between 15% and 21.9%.[3,23,24] As a consequence, 45.4% to 83.9% of these events result in temporary damage and/or prolonged hospitalization, and 16.1% in death.[4,23]

Mortality resulting from adverse events was 3.21%; three times higher than the estimate of 1.0% of mortality in surgical environment shown in international studies.[25,26]

The occurrence of these incidents signals that the structures and processes may be causing and/or increasing the risk of damage to patients, and that the care needs improvement.[27] In this perspective, the World Health Organization encourages the recovery of incidents aiming to promote a system of active resilience in health institutions, with the purpose of continuously preventing, detecting, attenuating or easing risks and promoting improvements.[1]

The involvement of the patient to guarantee his/her own safety is recommended, being the last barrier for the interception of an incident, as well as an important evaluator of safety and quality of the assistance received.[28]

The occurrence of incidents can be minimized with changes in the management and professional attitudes, strengthening of leadership and knowledge, improvement in access, quality and use of medical-hospital products, and competent and productive maintenance of professionals.

It is emphasized that one no harm incident is a potential adverse event, since the difference between both is the consequence for the patient. Therefore, its recording should be stimulated together with professionals to make possible the implementation of preventative measures, and consequently the reduction of avoidable adverse events.

The Brazilian Ministry of Health instituted the National Safety Program, which may contribute to the production, systematization and dissemination of knowledge about the incidents, in addition to promoting the culture of patient safety in the institutions of healthcare training and practice.[29]

It is important to publicize precise and clear concepts about the types of incidents, and to understand that they are primarily caused by inadequacies in work processes. In addition to comprising a situational diagnostic, monitoring of the incidents should be amply communicated to guide decision-making processes in the context of the health practice for improvement of patient care.

Conclusion

A total of 5,454 records of no harm incidents were identified, with an estimated prevalence of 82.0%. The adverse event was identified in 218 registrations, with an estimated prevalence of 18.7%.

Collaborations

Paranaguá TTB; Bezerra ALQ; Silva AEBC and Filho FMA declare that they contributed to the conception and project; analysis and interpretation of data; writing of the article; critical revision of the intellectual content and final approval of the version to be published.

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