

DIMENSIONING OF NURSING PROFESSIONALS AND THE OCCURRENCE OF ADVERSE EVENTS ON SURGICAL ADMISSION¹

Bruna Telemberg Sell*
Lúcia Nazareth Amante**
Tatiana Martins***
Camilla Telemberg Sell****
Carla Vieira Amante Senna*****
Maria Fernanda Lehmkuhl Loccioni*****

ABSTRACT

Cross-sectional study of quantitative approach that aimed to analyze the design of nursing professionals facing the occurrence of adverse events. It was performed in inpatient surgical unit of a university hospital. The data were collected in 94 patients, between 23 March to 14 April 2015. The average hospital stay was 8.46 days. They put an average of 21.6 Patients classified with minimal care, 2.7 with intermediaries and 1.1 wither. The application and it demonstrated quantitative sizing 25 professionals according to the requirements of the Federal Council of nursing. As for the number of professionals, there was a daily average of 1.8 nurse in the morning period, two in the afternoon and one at night. On the middle level professionals, it was possible to identify a 5.2 average in mourning period, four in the afternoon and three at night. Of the 252 evaluations, was observed the occurrence of adverse events between 20: surgical site infection, loss of venous access, infection of venous access and falls. It is concluded that even with a framework of appropriate professionals, there were adverse events, however, when the workforce decreased adverse events increased significantly, what allows to infer that these incidents may be related to multiple factors, including the number of professionals.

Keywords: Personal sizing. Perioperative nursing. Patient safety.

INTRODUCTION

The nurses know and understand the perioperative period (pre-op, post-op and intraoperative) to conduct a good welfare practice. The nurse needs to maintain a relationship of trust with the patient and a wire, which seeks to understand the real needs of the patient, even those that are not expressed through verbal communication, and give efficaciousness needs⁽¹⁾. In addition to the nurse, the entire health team (doctors, nutritionists, psychologists) is responsible for the promotion of patient safety and quality of services, which directly influence in preventing the occurrence of errors, incidents and adverse events (EA). The occurrence of errors and can have multiple causes, among them improper sizing of nursing professionals; training and professional qualification; materials and equipment available; structural conditions; and access to new technologies and information. Current studies show that the use of personal sizing has been central to the quality in the process of nursing work and to also

interfere with the quality of care, patient safety and spending control^(2,3).

In this scenario, the design of nursing staff is directly related to the promotion of patient safety and must be understood as a fundamental management tool in the process of work of nurses. So, it is important to be sure the expanded concept of dimensioning of nursing staff, understood as a systematic process that is based on the planning and the quantitative and qualitative evaluation of nursing professionals sufficient to provide assistance, taking into consideration the individuality of the health services, ensuring security for patients and employees, enabling thus the workload evaluation⁽⁴⁾.

The scaling of the nursing staff is determined by the assistance needs of the patients, considering the activities indirectly linked to the patient, in addition to the time spent on the provision of assistance. So is the product of the average daily quantity of patients assisted by the average time of nursing care per patient⁽⁴⁾.

To determine the average daily of patients requires a classification instrument that makes it possible to

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*Nurse of the Health Secretariat of the State of Santa Catarina. Health Department of the Municipality of São José. Master in nursing. São José/SC. E-mail: sellbruna@hotmail.com

**Nurse. Doctor. Associate Professor of Nursing Department of Federal University of Santa Catarina. E-mail: lucia.amante@ufsc.br.

***Nurse. Master in Nursing. Professor at the Estácio University of SC. Doctor student in Nursing by the Graduate Program in Nursing at the Federal University of Santa Catarina (PEN / UFSC). E-mail: tatiana_martins15@hotmail.com.

****Nurse of the Health Secretariat of the State of Santa Catarina. Master in nursing E-mail: camillasell@hotmail.com

*****Nurse of the Secretary of Health of the State of Santa Catarina. Master in Nursing. Member of GIATE / UFSC. Email: cvsenna@hotmail.com.

*****Nurse in the Imperial Outreach Charity Hospital (IHC/Florianópolis-SC). A member of the GAO/UFSC E-mail: fe_loccioni@hotmail.com.

highlight the degree of dependence of the patient in relation to nursing⁽⁴⁾. The instrument for classifying patients⁽⁵⁾ considers some areas of care for classification of the degree of dependence of the patient, such as: mental state, oxygenation, vital signs, motility, walking, feeding, care body, elimination and therapy.

In order to standardize the appropriateness of quantitative and qualitative minimum nursing professionals the Federal Council of nursing (COFEN) published resolution No. 543/2017 which updates the setting and the establishment of parameters for scaling the Board of nursing professionals in health institutions and assists the like⁽⁶⁾.

At the teaching Hospital in which it was conducted this study, actions that aim at patient safety are made possible through the implementation of patient safety in accordance with the Ordinance No. 529, April 1, 2013, which instituted the National Programme Patient safety (PNSP)⁽⁷⁾. In addition, in this hospital, have already been carried out studies on patient safety and patient safety culture⁽⁸⁻¹¹⁾, as well as studies that characterize the design of nursing professionals and the workload of the nursing⁽¹²⁾.

However, a study to relate the personal and Scaling errors, incidents and was not performed on surgical admission unit and it is known that in this environment, errors and incidents and prevalent are: accidental removal of probes, drains and catheters, falls and Surgical Site Infection (ISC)^(13,14). The and are considered a public health problem, in view of the frequency of their occurrence in health services, resulting in serious consequences to the patient and/or healthcare professionals⁽¹⁴⁾. Thus, the research question: what is the relationship of nursing professionals in sizing a unit of Surgical Hospitalization of a teaching Hospital with the occurrence of adverse events? To answer it, defined as the study objective: analyze the design of nursing professionals facing the occurrence of adverse events.

METHODOLOGY

Descriptive research, quantitative, cross design held on surgical admission unit (UIC) of a university hospital in the South of Brazil, whose project was submitted to the Ethics Committee and research with Human Beings teaching institution origin and received a favorable opinion (certificate of introduction to Ethics Assessment: 39652314.6.0000.0115). With this approval, contact with

the managers of UIC nursing for authorization to the start of data collection.

Data collection was carried out between 23 March to 14 April 2015 on alternate days. The UIC meets head and neck surgery, gastrointestinal and biliary tract, ENT, Maxillofacial, thoracic, liver transplantation, neurosurgery. The nursing staff are set out in eight nurses, 17 nursing technicians and seven nursing assistants, totaling 32 members of the nursing staff.

For the calculation of sample size, the number of inpatients in this surgical unit in 2013, as obtained from the Epidemiological Bulletin of hospital infection control Committee, which was 1,489⁽¹⁵⁾, with a monthly average of 730.65 hospitalizations. 2,259 surgeries were performed, being clean, 1,248 surgeries 738 potentially contaminated surgeries, 233 contaminated surgeries and 40 infected surgery⁽⁶⁾.

We used the computer program of teaching-learning of statistics SestatNet, resulting in a sample of 94 patients, with 95% confidence level. Were part of this study all patients admitted to the UIC during the data collection period, both sexes, 15 years larger, until the minimum number of 94 patients. The authorization for participation in the research of patients younger than 18 years was requested to the parents or responsible for hospitalization.

Six instruments were used for data collection: Roadmap for characterization and identification of adverse events; Script to evaluate the occurrence of fall; Script to evaluate the occurrence of ISC; Script to evaluate the occurrence of loss or infection of venous access; Script to evaluate the daily framework of nursing professionals. Validation of instruments came about through a pretest conducted with 28 patients, over 18 years, admitted to the UIC before data collection, whose results were used for data analysis. These instruments were built from the concepts and studies found in the literature review.

The sizing calculation of nursing professionals was carried out based on the number of patients admitted for dependency level and number of professionals by category. To this end, we used the proposed instrument by Fugulin⁽⁵⁾, named Fugulin rating system⁽⁵⁾, which evaluates the degree of dependence from nine areas of care, assigning values from one to four as the degree of dependency, being a lesser degree of dependency and four the largest. After each stated score values were summed and the total score resulted in the degree of dependence of the patient, considering minimal care: nine to 14 points; intermediate care: from 15 to 23 points; semi-intensive care: from 24 to 31 points; intensive care: up to 31 points.

In the days of data collection all patients admitted to the UIC were evaluated and interviewed in order to identify the occurrence of EA and sort them according to the degree of dependency of nursing. In parallel with the assessment and interview with the patient, bedside, in time reserved was recorded the number of nursing professionals in attendance, according to the Professional category by work shift from monthly range, and reporting absenteeism by the nurse coordinator.

At the end of the data collection was performed the scaling analysis of the nursing professionals from the COFEN and application-sizing. Thus, it was shown the total hours of nursing and the amount of nursing professionals for Professional category, which are required for the number of patients according to the patient classification system proposed by Fugulin⁽⁵⁾.

The data were recorded in the statistical software Statistical Package for the Social Sciences (SPSS). For the analysis of categorical variables using the frequency distribution and the Chi-square test, and for quantitative variables we used average, standard deviation (SD) and the ANOVA with a fixed factor. To inferences analysis, the significance level adopted was 5%.

RESULTS

There was a variation of age between 15 and 83 years, and the average age of the patients of 50.04 years (SD = 16.928). When it comes to sex 57 (60.6%) were women. Evaluating the marital status found that 51 (54.3%) were married, 21 (22.3%), 12 (12.8%) widowers, six (6.4%) divorced and four (4.3%) lived in stable. It was noted that 27 (28.7%) patients had incomplete elementary education; 26 (27.7%) high school 14 (14.9%); primary education complete; ten (10.6%) higher than incomplete, eight (8.5%) high

school incomplete; seven (7.4%) complete upper and two (2.1%) patients were not literate.

The length of stay of patients ranged from 0 to 59 days, the average length of stay of 8.46 days (SD = 11.294). In relation to the degree of dependency of nursing, average of inpatients with minimal care was 21.6 (DP = 2.319); intermediate care was 2.7 (DP = 1.767); semi-intensive care was 1.1 (DP = 1.370). During the data collection period were not identified patients needing intensive care.

In relation to the number of nursing professionals per period, there was a daily average of 1.8 nurses (DP = 0.789) in the morning period, two nurses (DP = 0.943) begin in the afternoon and a nurse at night. In relation to the Board of nursing professionals of average level was identified an average of 5.2 Professional (DP = 0.422) in the morning period, four professionals in the evening period (without DP) and three professionals at night (without DP).

In relation to the occurrence of the EA and ISC, loss of venous access, infection of venous access and crashes in the 252 evaluations, there was a total of 20 (7.9%) EA. (3.6%) Occurred nine notifications of loss of venous access; seven (2.8%) notifications of ISC, four (1.6%) notifications of infection of venous access and there was no occurrence of a fall during the days when the data were collected.

It is observed as the picture 1, that in 10 days of data collection, in nine there was the identification of some EA. And on the day that there was no identification and, the number of middle-level professionals and superior in all shifts in the median. However, the day that there was a higher number of registration and the number of nurses in the morning and evening periods was lower than average.

Table 1- Number of nursing professionals and the occurrence of adverse events.

Day	Paragraph nurses			Paragraph Mid-Level Professionals			Occurrence of EA
	Morning	Late	Night	Morning	Late	Night	
1	2	3	1	5	4	3	3
2	2	3	1	5	4	3	2
3	1	3	1	5	4	3	1
4	3	2	1	5	4	3	0
5	1	3	1	5	4	3	2
6	3	1	1	5	4	3	2
7	1	2	1	5	4	3	1
8	2	1	1	6	4	3	5
9	1	1	1	5	4	3	1
10	2	1	1	6	4	3	3

Source: Author data, 2015.

DISCUSSION

It is observed that most of the patients was in adulthood, were women, in a stable, and on the other

hand, the minority was not literate. For the UIC where patients undergo surgical procedures, such as treatment for their illnesses, the length of stay of patients ranged from 0 to 59 days, the average length of stay of 8.46 days (SD = 11.294). In other words, patients, in your most, roamed the preoperative and postoperative periods, intraoperative and so established the surgical recovery the patient received discharge.

Most of the hospitalized patients were clinically stable and physically self-sufficient to meet their basic needs, depending on orientation, measurement of vital signs, administering medicines and liable to care of all members of the nursing staff⁽⁶⁾. For this reason, were considered, in your most, minimal care patients as to the degree of dependency of nursing.

The scaling of UIC nursing professionals of a university hospital in southern Brazil is suited to the requirements of the COFEN. The total number of professionals crowded in this sector is 32 members of the nursing staff and the E-application scaling, whose index of technical security is 15%, showed that for this scenario requires a quantitative Professional (QP) of 25.

The workload of nursing staff is determined by patient needs assistance, whereas including the activities indirectly linked to it, and the time taken to provide this assistance⁽⁴⁾. Considering the number of UIC nursing professionals showed a numerical suitability COFEN requirements, although the rate of occurrence of EA has been higher than the surgical study of Moura and Mendes⁽¹⁶⁾ where the incidence of patients with and was 3.5% surgical. However, the occurrence of and can have several causes, associated with scaling of professionals⁽³⁾. The human resource deficit and the instability of the team reduces the responsiveness, favoring the occurrence of EA, and the institution encourage notifications with complete data, and thus, control strategies can be developed in order to prevent further occurrences⁽¹⁷⁾.

The presence of the nurse in this surgical unit reinforces your role as supervisor of the nursing staff, whereas the day with highest record of EA, the roster had a number of nurses less than the average of the other days. In the case of an error, the nurse has a fundamental role in the investigation, seeking the details involved, in order to correct and prevent future mistakes, without assigning blame only to the professional involved. In this sense, is part of this professional to ensure patient safety in all processes, in order to prevent errors and implement a systematic process able to promote patient safety. It is extremely

important that the nurse understands the risk factors predisposing to errors and to and, in order to implement actions that reduce the chances and risks, as the surveillance system, access to information against the measures of prevention and control of hospital infections, for example⁽¹⁸⁾.

The identification of some EA, in this research can be associated with the number of professionals and highlights, too, the existence of other factors for the occurrence of EA. It should be noted that there have been fewer nurse's association with the increase of the registration and, leading to infer the presence of nurses is factor for the occurrence of fewer EA.

One of the possibilities and analyses, for the emergence of the EA, is associated with the place of choice for the development of this research, for being on a school institution with students, in order that the students are in supervised internships, which increases the chances of errors, since they are in the learning process. Although supervised by teachers and nurses of the assistance, the chances of errors are increased, contributing to statistical data on these risk factors.

And most prevalent was the loss of the venous access, which is directly connected to the nursing care provided, whether used for antisepsis, by fixing the catheter, the choice of the puncture site, by the caliber of the IV, which should be compatible with the vein chosen or with the volume infused, by dilution of medicines, the patient care guidelines, among other factors. Stands out that of the nine instances of loss of venous access in four there was the occurrence of infection of venous access, reinforcing the need for nursing care during the whole process of venipuncture.

The nursing staff has key role in reduction of complications related to peripheral venous access, considering that this procedure is the responsibility of nursing and affects the patient's skin integrity, increasing the risk of infection. Prevention of peripheral venous catheter-related infection is, in essence, the responsibility of your nursing staff, reflecting on the quality of care and patient safety, while reducing the length of stay and costs⁽¹⁹⁾.

It was confirmed that the knowledge in management, and technical handling performed by nursing professionals to watch a patient with intravenous device, reduces the risk of development of hospital-acquired infections, especially the infections of the bloodstream, preventing serious complications such as sepsis⁽¹⁹⁾.

Considering the complications for the patient, as a result of an infection of the bloodstream (ICS), the

importance of the role of the nurse in the assistance of patients with CVC and to minimize the risk of development of this type of infection, This study seeks to answer the following question: what are the best scientific evidence about the nursing care targeted at patients using CVC in order to minimize the risk of development of ICS?

In relation to the ISC knows that the nurse is directly linked to the surgical site care because it evaluates the surgical wound, choose the topical therapy, makes the daily exchange of dressings and provides care to patient's guidelines. However, the occurrence of this event can be related to multiple factors, such as preoperative procedures and intraoperative, which are associated with actions of other health professionals.

The risk factors for the development of the ISC can be related to the potential for contamination of the surgery, disease or associated Comorbidities, low educational level and socio economic conditions unfavorable, smoking, alcoholism, long periods of hospitalization, surgical risk classification, inadequate achievement of the bath before surgery, shaving with razor blade or with more than 2 hours before the procedure, the presence of drains, choice of antibiotic therapy, post-surgical among other factors⁽²⁰⁾.

Although technological advances and studies on patient safety, human error is strongly related to these events and often error episodes involving health professionals in hospitals are advertised through for press and media, causing great commotion. Even with a number of appropriate nursing professionals, the occurrence of and demonstrating the diversity of factors that can cause the occurrence of an EA. The occurrence of these events can be caused by several factors, including those related to managing the service and nursing care (multiprofessional team related issues, lack of leadership, nursing supervision appropriate, among others). Highlights that communication and leadership are associated to the orientation and training that help identify potential gaps and needs for adjustments in the scope of quality nursing care⁽²⁰⁾.

As well as the recognition of occurrences, it is of the utmost importance to seek an organizational safety culture not punitive against the EA, which may contribute to greater notification on the part of professionals and consequently appropriate treatment of occurrences⁽²⁰⁾.

It should be noted that the instrument used for classification of patients was enough for this study, making it possible to carry out the calculation of the design of nursing professionals. From this instrument is possible to evidence the patient fully, from care areas, making it possible to identify those areas that require more or less nursing attention. In a surgical clinic, where patients in postoperative skin integrity care feature, it would be interesting that the instrument could address this area of care.

CONCLUSIONS

With respect to the number of nursing professionals, this study showed that there is compliance with requirements of the UIC a COFEN teaching hospital in the South of Brazil. However, the occurrence of and was higher than in other similar studies, demonstrating the existence of other factors related to the occurrence of EA.

So, it is clear that the occurrence of and is not only related to the number of nursing professionals, which may occur by multiple factors such as guidance in pre-op, surgical site preparation, lack of leadership on the team, inadequate procedures in the intraoperative on the part of the entire health team, continuing education, among others.

Finally, noting the occurrence of the EA and the scaling of nursing professionals, suggests to future studies, research with longer data collection and addressing qualitative aspects of surgical and, to the preparation of a plan of prevention of occurrence of and surgical and the establishment of a culture of patient safety.

Points as limiting the period of collection of data in a single unit of surgical hospitalization only hospital.

DIMENSIONAMENTO DOS PROFISSIONAIS DE ENFERMAGEM E A OCORRÊNCIA DE EVENTOS ADVERSOS EM INTERNAÇÃO CIRÚRGICA

RESUMO

Estudo transversal de abordagem quantitativa que objetivou analisar o dimensionamento de profissionais da enfermagem frente à ocorrência de eventos adversos. Foi realizado em unidade de internação cirúrgica de um hospital universitário. Os dados foram coletados em 94 pacientes, entre 23 de março a 14 de abril de 2015. A média de internação foi de 8,46 dias. Internaram em média 21,6 pacientes classificados com cuidados mínimos, 2,7 com intermediários e 1,1 com semi-intensivos. O aplicativo E-dimensionamento demonstrou quantitativo de 25 profissionais conforme as exigências do Conselho Federal de Enfermagem. Quanto ao número de profissionais, verificou-se uma média diária de 1,8 enfermeiro no período matutino, dois

no vespertino e um no período noturno. Sobre o quadro de profissionais de nível médio, foi possível identificar uma média de 5,2 profissionais no período matutino, quatro no período vespertino e três no período noturno. Das 252 avaliações, foi observada a ocorrência de 20 eventos adversos entre: infecção do sítio cirúrgico, perda do acesso venoso, infecção do acesso venoso e quedas. Conclui-se que mesmo com um quadro de profissionais adequado, houveram eventos adversos, entretanto, quando o quadro de pessoal diminuiu os eventos adversos aumentaram significativamente, o que permite inferir que estas ocorrências podem estar relacionadas a múltiplos fatores, dentre eles o quantitativo de profissionais.

Palavras-chave: Dimensionamento de pessoal. Enfermagem perioperatória. Segurança do paciente.

RELACIÓN DEL DIMENSIONAMIENTO DE LOS PROFESIONALES DE ENFERMERÍA EN EL ACONTECIMIENTO DE EVENTOS ADVERSOS EN HOSPITALIZACIÓN QUIRÚRGICA

RESUMEN

Estudio transversal de abordaje cuantitativo que tuvo el objetivo de analizar el dimensionamiento de profesionales de la enfermería frente al acontecimiento de eventos adversos. Fue realizado en unidad de hospitalización quirúrgica de un hospital universitario. Los datos fueron recolectados en 94 pacientes, entre 23 de marzo a 14 de abril de 2015. El promedio de hospitalización fue de 8,46 días. Hospitalizaron en promedio a 21,6 pacientes clasificados con cuidados mínimos, 2,7 con intermediarios y 1,1 con semi-intensivos. La aplicación E-dimensionamiento demostró cuantitativo de 25 profesionales conforme las exigencias del Consejo Federal de Enfermería. En cuanto al número de profesionales, se verificó un promedio diario de 1,8 enfermeros en el período matutino, dos en el vespertino y uno en el período nocturno. Sobre el cuadro de profesionales de nivel medio, fue posible identificar un promedio de 5,2 profesionales en el período matutino, cuatro en el período vespertino y tres en el período nocturno. De las 252 evaluaciones, fue observada la ocurrencia de 20 eventos adversos entre: infección del sitio quirúrgico, pérdida del acceso venoso, infección do acceso venoso y caídas. Se concluye que aunque con un cuadro de profesionales adecuado, es evidente la presencia de eventos adversos, lo que permite inferir que estos acontecimientos no están relacionados solo al cuantitativo de profesionales, sino también a múltiples factores.

Palabras clave: Dimensionamiento de personal. Enfermería perioperatoria. Seguridad del paciente.

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Corresponding author: Bruna Telemberg Sell. Rua José Lino Kretzer, 915 – apto 406 A. Praia Comprida, São José/SC. Telefone: (48) 84795876. E-mail: sellbruna@hotmail.com.

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