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PERCENTAGE OF USE OF INSTRUMENTS IN SURGICAL PROCEDURES

Percentual de utilização de instrumentais em procedimentos cirúrgicos

Porcentaje de uso de instrumentos en procedimientos quirúrgicos

Silvia Elena Ezidio da Silva dos Santos[1]
Carolina Montagner Baptistella[1]
Jaqueline Mendes Silva Thomazini[1]
Rafael Silva Marconato[2]
Clesyane Alves Figueiredo[3]
Aline Maino Pergola-Marconato[3]

ABSTRACT

Objective: to analyze the percentage of surgical instruments that make up the operating laparotomy box and are not used during surgeries. **Method:** descriptive, cross-sectional study with quantitative approach, which counted instrumental constituents of the exploratory laparotomy box used and not used during 13 surgeries performed in a period of 17 days, in a hospital in the interior of São Paulo. **Results:** in the 13 surgeries analyzed, a total of 1300 (100%) tweezers were obtained in the boxes, where 832 (64%) were not used and 468 (36%) were used. In surgical times, the highest number of use was 166 (35.5%) articles, for seizures and reparators. **Conclusion:** there were 64% of instruments not used in the analyzed surgeries. There is a need to implement management strategies that reduce the numbers found and, consequently, reduce expenses, to generate less waste and reduce failures in the management of material resources.

DESCRIPTORS: Sterilization; Practice management; Surgical instruments; Nursing.

[1] Centro Universitário da Fundação Hermínio Ometto (FHO), Araras, São Paulo, Brazil
[2] Hospital de Clínicas da Unicamp, Campinas, São Paulo, Brazil
[3] Universidade de Campinas – UNICAMP, Campinas, São Paulo, Brazil

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Corresponding Author: Carolina Montagner Baptistella, E-mail: baptistellacm@gmail.com

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RESUMO

Objetivo: analisar o percentual de instrumentais cirúrgicos que compõem a caixa de laparotomia exploradora e não são utilizados durante as cirurgias. **Método:** estudo descritivo, transversal com abordagem quantitativa, que contabilizou instrumentais constituintes da caixa de laparotomia exploradora utilizados e não utilizados durante 13 cirurgias realizadas em um período de 17 dias, em um hospital do interior paulista. **Resultados:** nas 13 cirurgias analisadas, obteve-se um total de 1300 (100%) pinças presentes nas caixas, onde 832 (64%) não foram utilizadas e 468 (36%) foram utilizadas. Nos tempos cirúrgicos, o maior número de uso foi de 166 (35,5%) artigos, para preensão e afastadores. **Conclusão:** houve 64% de instrumentais não utilizados nas cirurgias analisadas. Há necessidade de implementar estratégias gerenciais que reduzam os números encontrados e, consequentemente, reduzam gastos, para gerar menor desperdício e reduzir falhas no gerenciamento de recursos materiais.

DESCRITORES: Esterilização; Gerenciamento da prática profissional; Instrumentos cirúrgicos; Enfermagem.

RESUMEN

Objetivo: analizar el porcentaje de instrumentos quirúrgicos que componen la caja de laparotomía quirúrgica y no se utilizan durante las cirugías. **Método:** estudio descriptivo, transversal con enfoque cuantitativo, que contó constituyentes instrumentales de la caja de laparotomía exploratoria utilizada y no utilizada durante 13 cirugías realizadas en un período de 17 días, en un hospital del interior de São Paulo. **Resultados:** en las 13 cirugías analizadas, se obtuvieron un total de 1300 (100%) pinzas en las cajas, donde no se utilizaron 832 (64%) y 468 (36%). En tiempos quirúrgicos, el mayor número de uso fue de 166 (35,5%) artículos, para convulsiones y reparadores. **Conclusión:** hubieran 64% de instrumentos no utilizados en las quirurgias analizadas. Es necesario implementar estrategias de gestión que reduzcan los números encontrados y, en consecuencia, reduzcan los gastos, para generar menos residuos y reducir las fallas en la gestión de los recursos materiales.

DESCRIPTORES: Esterilización; Gestión de la práctica profesional; Instrumentos quirúrgicos; Enfermería.

INTRODUCTION

The Centro de Material e Esterilização (CME) is the sector responsible for receiving health care products considered contaminated, for reprocessing, cleaning, sterilization, packaging, and distribution of the same in the hospital environment.[1] It is of utmost importance because, besides guaranteeing conditions for health care to the individuals who need it, it is also directly linked to the control of hospital infections.[2] Surgical site infection is one of the main complications caused in patients who need surgical procedures. Thus, the instruments to be used must be processed efficiently and safely in order not to become a source of contamination and transmission of microorganisms.[3]

The health products used during surgeries or other care procedures return to the CME to be submitted to specific cleaning, disinfection, and sterilization procedures depending on the classification of the article. Reprocessing consists of performing the entire cleaning process up to its storage.[4] The way these materials are managed directly implies hospital costs. The instruments must be accounted for in order to avoid unforeseen events, since the excess of these materials may cause unnecessary costs to the Estabelecimentos de Assistência à Saúde (EAS) and cause depreciation and active deterioration of these articles.[5]

The evaluation of costs is extremely important because, in the case of sterile supplies, three factors should be considered: materials used, labor, and technology employed. When well managed, these factors allow the quality of care and the guidance of expectations to reduce costs.[6]

The nurse who manages the Surgical Center (SC) and the CME assumes an important role, becoming an important manager and strategist, in order to reduce the expenses related to material expenses, guaranteeing a greater survival of the patients. In addition, there is the disuse of products, that is, many surgical instruments are not used during surgery, but need to be sterilized again, generating an unnecessary additional expense.[5]

Because of this, this work is important to account for and thus present a proposal to minimize the costs of reprocessing articles.

The objective was to evaluate the percentage of surgical instruments that compose the exploratory laparotomy box, focusing on those not used during these surgeries, in a medium-sized hospital in the countryside of the State of São Paulo.

METHODS

This is a descriptive, cross-sectional study with a quantitative approach, carried out in a medium-sized hospital in the countryside of São Paulo. A data survey was performed by observing and quantifying the surgical instruments used and not used in the surgical box used in laparotomy.

The data were obtained from the counting of the surgical instruments present in the laparotomy boxes, considering the following variables: the exact number of materials contained in the box according to its specification; the number of materials used and the number of materials not used from the observation of the same during reprocessing in the CME.

The box of exploratory laparotomy instruments was selected because it was the unit with the largest number of instruments (total of 100 instruments in each box), being the most used in surgeries at the site of this study.

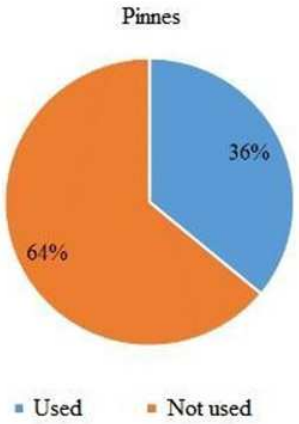
The project did not involve human beings and was submitted to the Research Ethics Committee of Fundação Hermínio Ometto – FHO, being approved under protocol No. 383/2019, after consent of those responsible for the study site.

RESULTS

This study was conducted in a medium-sized hospital in the interior of São Paulo. The instrument analyses were performed in the CME, of the laparotomy instrument boxes used in surgeries in the period from March 14 to 31, 2019.

In this period, 13 surgeries included in the study were performed. A total of 1300 forceps were obtained, where those used in surgery had a percentage of 36% (468 forceps), while those not used were 64% (832 forceps), as shown in Figure 1.

Figure 1 – Percentage of clamps used and not used in laparotomy surgeries



When separated in surgical times, the most used instruments were the grasping instruments and the least used were the retractors, as observed in Table 1. The overall average of waste of surgical instruments present in the laparotomy boxes was 64%, in the 1300 materials analyzed, however among these only 468 were used, in a total of 13 surgeries.

Regarding the average time used in the reprocessing of the articles, it was observed that the removal of the instruments from the Surgical Center took 15 minutes and the pre-washing and washing of the instruments lasted an average of 20 minutes. The preparation, assembly and packaging time totaled 17 minutes, while the sterilization time was 70 minutes.

The autoclave model used was the Prismatec 215, manufactured in 2001. The autoclave consumes 200 liters of water per hour, spending an average of 21000 kW, which corresponds to R$82.00 (water) and R$18.06 (electricity) per cycle. Regarding the cost of the enzymatic detergent, it was spent R$15.88/liter, using 20mL. Two 60cmx60cm SMS blankets were used for R$0.48 each. The zebra tape costs R$2.24 per roll, where 0.5 cm was used. While the crepe tape costs R$1.61, where 0.80cm was used. The chemical indicator box costs R$123.00, and only 1 is used, costing R$0.49.

DISCUSSION

A high percentage of unused instruments was observed, corresponding to 64% of the total materials analyzed. However, although not used in the surgery, because they are in an open box, they should be submitted to processing, generating unnecessary costs of resources and time, besides the wear of the instruments themselves.

When the surgical box is opened, regardless of the use or not of its components, it must be sent to the CME for the reprocessing of these instruments. However, when this process is performed unnecessarily, that is, without the materials having been used, it causes undue expense and more damage to the material in a shorter time than expected.[6-7]

In a similar study performed to analyze the quantity of instruments used in 17 surgeries in a small hospital in the interior of São Paulo it was evidenced that the instruments not used in the laparotomy surgery boxes that had the greatest waste were those of the prehension surgical time, corresponding to 69 unused pieces out of a total of 150 pieces.[4] In another similar study, the materials that stood out for not being used were those of the hemostasis surgical time, obtaining a percentage of 39.7%.[3]

The correct management of hospital resources reflects directly on cost reduction and use of materials. About 75% of the capital of Health Care Establishments (HE) corresponds to material resources and surgical instruments are included in this value.[4]

The research that evaluated the use of surgical instruments in an ambulatory surgical center observed that of the materials used in 176 surgeries, the number of open boxes varied from one to four, and only one box was used in each surgery. Among all the surgeries analyzed it was found that an average of 11.7% of the instruments were not used, and the overall average was 49.1%, a percentage considered high, since the materials will have to go through the whole sterilization process again, resulting in costs to the institution..[6]

As analyzed in this study, the exacerbated number of unused materials corresponds to 64% of the 36% used, causing loss to

Table 1 – Presentation of the instruments used according to the surgical time

Surgical time	n of clamps used	%
Grasp	126	26,9
Hemostasis	88	18,8
Overview	65	13,9
Spreaders	40	8,5
Other articles	103	22,0
Total	**468**	**100**

the institution, since these instruments will have to go through the whole sterilization process again and generate new costs both for the labor that will be used to clean these materials, as well as spending on supplies, packaging, storage, electricity and water, and maintenance of the autoclave.[6-7]

In a study performed in the Surgical Center of a university hospital in São Paulo, it is noteworthy that of the 275 surgeries observed, only 65 did not present waste of materials.[7]

Therefore, the generation of unnecessary costs, generally caused by an inadequate management of these products, brings losses to the EAS, but these costs can be avoided and corrected. The results obtained in this study and in the referenced studies, portray the idea that the management of material resources, an important aspect in the nursing management process, is not being effective, and this is a worrisome factor within a hospital unit.[8]

The waste of materials is a factor that deserves attention, since the lack of control of these inputs can cause damage to the material itself, reducing the durability and integrity of its raw material.[9-10] In this sense, it is necessary to promote strategic actions to minimize or stop unnecessary expenses, from the implementation of a management system that aims to reduce costs and minimize the deterioration of the instruments, without losing the quality of service.[4]

Surgical instruments should be used properly, since they require a large investment and high costs for EAS. However, they are exposed to limited resources and exorbitant care costs, and it is still up to them to guarantee the quality of these materials so that they have a long life, finding alternatives to reduce expenses, increase productivity, in order to control this waste.[6]

Consequently, it is essential that nurses develop skills in the management of economic variables, obtaining knowledge that can help in decision making, especially related to the allocation of resources, because in hospitals and other health care facilities it is of great importance to contain costs, whether in the rationalization of activities, the choice of the type of sterilization process and its subsequent steps, the control of materials, the reduction of waste, or the monitoring and training of the team.[1]

LIMITATIONS OF THE STUDY

This study had as limitations the analysis of only one type of surgical box in a medium size hospital by a single researcher, which may compromise the generalization of the results.

CONTRIBUTIONS TO THE PRACTICE

Despite the limitations of the study, the results demonstrate the need to evaluate the content of the surgical boxes, which must contain a sufficient quantity and be adequate to the several surgeries, avoiding excessive placement of instruments. This evaluation is the responsibility of the CME nurse together with the SC nurse.

CONCLUSION

This study allowed quantifying, by means of percentage, the used and unused instruments of the laparotomy boxes. With this, it was demonstrated that of the 13 surgeries analyzed there was a waste of 64% of the parts used, with predominance in the surgical time of prehension.

This study also verifies the importance of the nurse in the CME and his/her responsibility to trace managerial strategies for the reduction of the numbers evidenced previously, once the high index of unused instruments causes losses to the institutions and increases the expenses in the reprocessing phase and in the purchase of a new article, due to its faster deterioration. It is noteworthy, however, that the analyses of this study refer only to quantitative observational variables.

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