



Journal of Nursing

Revista de Enfermagem

UFPE On Line

ISSN: 1981-8963

ORIGINAL ARTICLE

CLINICAL AND ORGANIZATIONAL FACTORS RELATED TO CANCELLATION OF SURGICAL PROCEDURES

FATORES CLÍNICOS E ORGANIZACIONAIS RELACIONADOS À SUSPENSÃO DE PROCEDIMENTOS CIRÚRGICOS

FACTORES CLÍNICOS Y ORGANIZATIVOS RELACIONADOS CON LA CANCELACIÓN DE PROCEDIMIENTOS QUIRÚRGICOS

Priscilla Glazielly dos Santos de Moraes¹, Nayara Machado Dias Pachêco², Rubiane Gouveia de Souza e Silva³, Paula Carolina Valença Silva⁴

ABSTRACT

Objective: describe the frequency and the clinical and organizational factors related to cancellation of surgeries. **Method:** descriptive, retrospective, documentary study, with a quantitative approach, which analyzed 2,956 elective surgical procedures at a surgical center in a teaching hospital, using surgical charts. Data underwent descriptive statistical analysis by means of the software *Epi Info*, version 7.0, displayed in tables and discussed in the light of the literature. **Results:** 9,648 elective surgeries were scheduled, and 30.6% of them were cancelled. There was a predominance of women and medium-complexity surgeries. The specialties that cancelled most surgeries were: general surgery, orthopedic surgery, and urological surgery. The most frequent reasons included patient's absence, failure of previous surgery, and replacing elective surgery with emergency surgery. **Conclusion:** it was found that surgical cancellations can be avoided through actions taken by the active search service, as well as updating patients' data and adopting indicators to devise institutional policies. **Descriptors:** Perioperative Nursing; Quality Indicators in Health Care; Teaching Hospitals.

RESUMO

Objetivo: descrever a frequência e os fatores clínicos e organizacionais relacionados à suspensão de cirurgias. **Método:** estudo descritivo, retrospectivo, documental, de abordagem quantitativo, que analisou 2.956 procedimentos cirúrgicos eletivos em um centro cirúrgico de um hospital escola, por meio de mapas cirúrgicos. Os dados foram submetidos à análise estatística descritiva no programa *Epi Info*, versão 7.0, apresentados em tabelas e discutidos à luz da literatura. **Resultados:** foram agendadas 9.648 cirurgias eletivas, sendo 30,6% suspensas. Houve predomínio do sexo feminino e cirurgias de média complexidade. As especialidades que mais suspenderam cirurgias foram: cirurgia geral, cirurgia ortopédica e cirurgia urológica. Os motivos mais frequentes incluíram ausência do paciente, insucesso de cirurgia anterior e substituição de uma cirurgia eletiva por uma cirurgia de emergência. **Conclusão:** constatou-se que os cancelamentos cirúrgicos podem ser evitados por meio de ações do serviço de busca ativa, bem como atualização de dados dos pacientes e adoção de indicadores para formular políticas institucionais. **Descritores:** Enfermagem Perioperatória; Indicadores de Qualidade em Assistência à Saúde; Hospitais De Ensino.

RESUMEN

Objetivo: describir la frecuencia y los factores clínicos y organizativos relacionados con la cancelación de cirugías. **Método:** estudio descriptivo, retrospectivo, documental, de abordaje cuantitativo, que analizó 2.956 procedimientos quirúrgicos electivos en un centro quirúrgico de un hospital de enseñanza, por medio de mapas quirúrgicos. Los datos se sometieron a un análisis estadístico descriptivo en el software *Epi Info*, versión 7.0, presentados en tablas y discutidos a la luz de la literatura. **Resultados:** fueron programadas 9.648 cirugías electivas, y 30,6% de estas fueron canceladas. Hubo un predominio del sexo femenino y cirugías de complejidad media. Las especialidades con más cirugías canceladas fueron: cirugía general, cirugía ortopédica y cirugía urológica. Las razones más comunes incluyen la falta de paciente, fracaso de una cirugía previa y sustitución de una cirugía electiva por una cirugía de emergencia. **Conclusión:** se constató que las cancelaciones quirúrgicas se pueden evitar a través de acciones del servicio de búsqueda activa, así como actualización de datos de los pacientes y adopción de indicadores para formular políticas institucionales. **Descriptores:** Enfermería Perioperatoria; Indicadores de Calidad de la Atención de Salud; Hospitales de Enseñanza.

¹Nurse. Resident in Surgical Nursing at the Comprehensive Medicine Institute "Professor Fernando Figueira" (IMIP). Recife (PE), Brazil. Email: glaziellymoraes@hotmail.com; ²Nurse. Resident in Surgical Nursing at the IMIP. Recife (PE), Brazil. Email: nayaramdias@yahoo.com.br; ³Nurse. MBA in Health Management and Infection Control. Manager of the Hospital Infection Control Committee of the IMIP. Recife (PE), Brazil. Email: enf.ccih@imip.org.br; ⁴Nurse. Ph.D. in Tropical Medicine. Professor at the Federal University of Pernambuco (UFPE). Vitória de Santo Antão (PE), Brazil. Email: paulacvalenca@gmail.com

INTRODUCTION

The completion of a surgical procedure depends on the work of the entire surgical team.¹ As a key member of the surgical center, a nurse has her/his working process focused on administering and managing this facility, in order to provide better conditions so that the surgical process occurs according to prior scheduling and the requirements stated in the Handbook of Safe Surgery of the World Health Organization (WHO).¹⁻³

The program Safe Surgery Saves Lives has warned of the need to improve quality standards in health care services, through practices that include prevention of surgical site infection, safe anesthesia, safe surgical teams, and surgical care indicators.² Surgical care is regarded as a variable that interferes with hospital quality and productivity indicators.⁴ Due to the increased number of elective surgeries in recent years, the cancellation rate of surgeries has been studied and adopted as a quality indicator in health care.^{5,6}

Cancellation of surgeries is an insidiously common occurrence in surgical programming and its main reasons range from problems related to the patient, the institution, and the medical and nursing staff, such as patient's absence, unfavorable clinical condition, lack of beds, scheduling errors, and communication mistakes.⁷⁻¹¹

Frequency, as well as examination of causal factors related to cancellation of surgical procedures in large hospital centers worldwide, has also been addressed in recent decades.^{3,12} In countries such as Australia, Ireland, Mexico, the USA, and the UK, a high rate of cancellations due to organizational issues of health institutions has been reported.^{3,9,12-14}

In Brazil, data are alarming for high surgical cancellation rates, which range from 14.14% to 27.4%, especially in the South and Southeast regions, however, there are few studies in the Northeast region.^{12,15,16}

Many effects derive from surgical cancellation, there are changes in the routine of a patient and her/his family members, because, just after deciding to resort to a surgical intervention, everyone needs to reorganize her/his activities and adapt to the new event she/he is going to experience⁵, besides, anxiety and distress increase during a surgery, interfering with the outcome of care and the effectiveness of service.¹⁵

This similarly interferes with the health team itself, regarding work

operationalization, time consumption, and material resources to provide both the cancellation and rescheduling, which is needed most of the times⁵, in addition to the costs resulting from these events.⁴ Considering the consequences that surgical cancellation may entail for users and hospital institutions, this study aims to describe the frequency and the clinical and organizational factors related to cancellation of surgeries.

METHOD

This is a descriptive, retrospective, and documentary study, with a quantitative approach conducted at the surgical center of a reference service in the state of Pernambuco, Brazil. 2,956 elective surgical procedures cancelled between February 2015 and February 2016 were listed. The monthly surgical chart was used to determine the frequency, as well as the organizational reasons related to the cancellation of these surgeries.

The elective surgeries cancelled and described in the surgical chart were included and the surgeries whose reasons for cancellation have not been described in the surgical chart were excluded.

For collecting data, a form was used to investigate these variables: sex, complexity of the procedure, specialty, working shift, and reason for cancellation. The determinants for such cancellations covered innumerable causes, totaling 32 possible justifications, categorized by reasons related to the patient, the institutional factors, and the surgical team. Data collection took place from June to August 2016. Data underwent descriptive statistical analysis using the software *Epi Info*, version 7.0.

This study complied with the provisions of Resolution 466/2012, from the Brazilian National Health Council (CNS), and it was approved by the Research Ethics Committee of the Comprehensive Medicine Institute "Professor Fernando Figueira" (REC/IMIP), under the Brazilian Certificate of Submission for Ethical Assessment (CAAE) 55479816.6.0000.5201.

RESULTS

The hospital institution had 9,648 surgeries scheduled from February 2015 to February 2016, out of which 896 surgeries were cancelled due to patient-related reasons, 1,818 surgeries were cancelled for medical staff-related reasons, 242 surgeries were cancelled for institution-related reasons, and 26 surgeries were excluded due to incomplete

data in the surgical charts. In the end, 2,956

surgeries were cancelled (30.6%) (Figure 1).

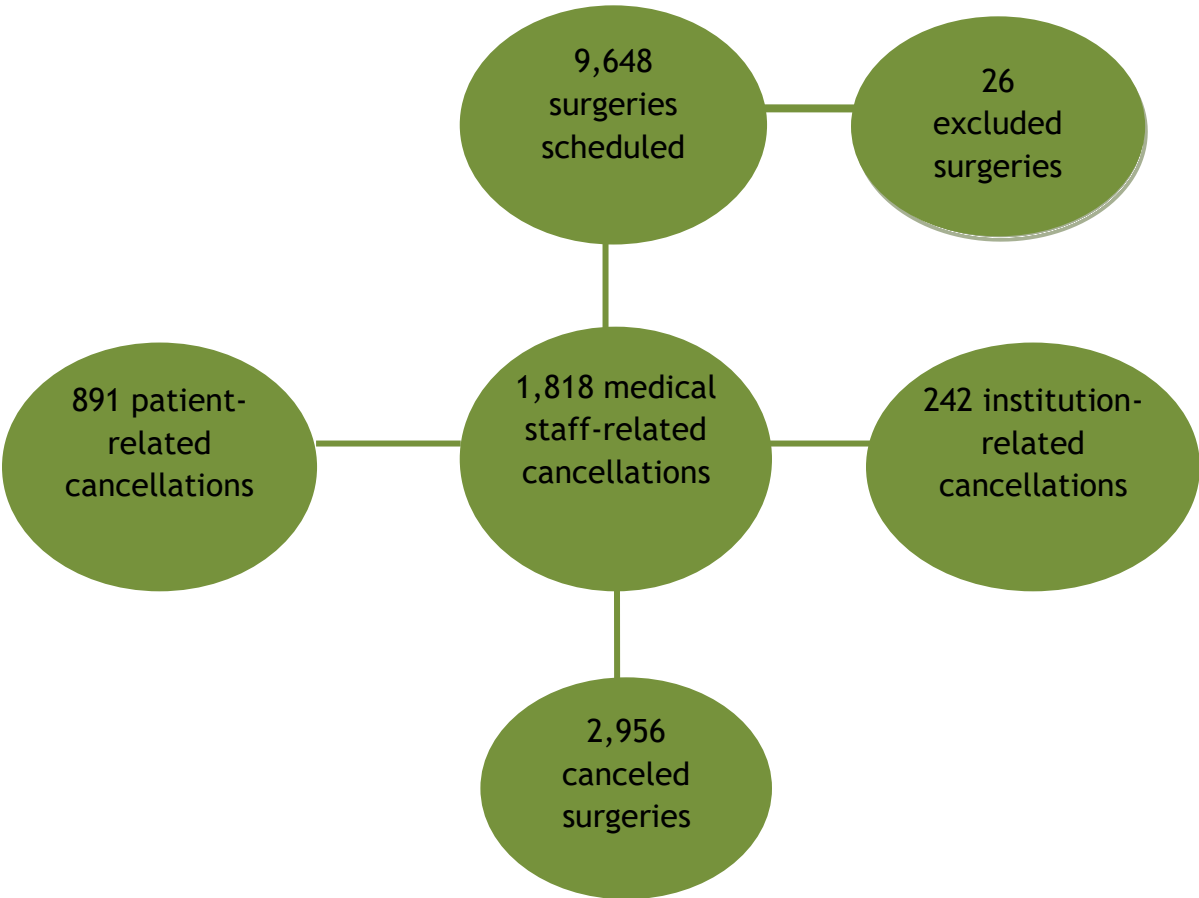


Figure 1. Flow chart of eligibility of cancelled surgeries.

Table 1 depicts the number of cancellations of surgeries according to sex, surgical complexity, specialty, and scheduled working shift. There was predominance of women (56%). Regarding the level of surgical complexity, 84% of the cancelled procedures correspond to medium-level complexity (Table 1).

The surgical specialties with the highest frequencies of surgical cancellation were: general surgery (29.8%), followed by orthopedic surgery (17.6%), and urological surgery (16.7%). Most of the cancelled surgeries (65.2%) would be performed in the morning working shift (Table 1).

Table 1. Distribution of the frequency of surgeries cancelled, by sex and surgical procedure, from February 2015 to February 2016. Recife, 2016.

Variables	N	%
Sex		
Female	1,658	56
Male	1,298	44
Total	2,956	100
Complexity		
Low	112	3.8
Medium	2,485	84
High	359	12.2
Total	2,956	100
Surgical specialty		
Head and neck surgery	201	6.8
General surgery	879	29.8
Gynecological surgery	274	9.4
Urological surgery	496	16.7
Orthopedic surgery	522	17.6
Vascular surgery	128	4.3
Otorhinolaryngologic surgery	144	4.9
Plastic surgery	177	6
Thoracic surgery	57	1.9
Mastological surgery	78	2.6
Total	2,956	100
Working shift		
Morning	1,926	65.2
Afternoon	1,030	34.8
Total	2,956	100

Regarding the cancellation of 683 surgical procedures for patient-related reasons, there were 23.2% surgeries cancelled due to

absence and 4.9% had clinical problems, as described in Table 2.

Table 2. Distribution of the frequency of surgeries cancelled for patient-related reasons, from February 2015 to February 2016. Recife, 2016.

Variables	N	%
Patient's absence	683	23.2
Had clinical problems	147	4.9
Gave up before entering the surgical block	9	0.3
Patient fed	18	0.6
Clinical improvement	7	0.2
Others	32	1.1
Total	896	30.3

We identified 1,818 surgeries for medical staff-related reasons (Table 3). Considering all of the 2,956 surgeries under analysis, it is worth highlighting failure of previous surgery

(16.8%), replacing the surgery concerned with emergency surgery (14.1%), and absence of the surgical staff (8.4%).

Table 3. Distribution of the frequency of surgeries cancelled for surgical staff-related reasons. Recife, 2016.

Variables	N	%
Lack of complementary exams	22	0.7
Lack of blood supply	10	0.3
Delay of the surgical team	35	1.2
No surgical team attendance	248	8.4
Did not request ICU bed reservation	99	3.5
Failure of previous surgery	498	16.8
Unscheduled elective surgery	16	0.5
Anesthesiologist's delay	5	0.2
Lack of vacancy	43	1.5
Lack of anesthetist	240	8.1
Replacing the surgery with emergency surgery	416	14.1
Rescheduled for another day	62	2.1
Surgery cancelled due to transplantation	13	0.4
Others	111	3.7
Total	1,818	61.5

Out of the 242 reasons related to the institution displayed in Table 4, we observed that other reasons, including problems with laundry and without justification, were

related to surgical cancellations (3.4% of all the 2,956 surgeries), followed by lack of surgical material (1.4% of the total) and lack of consigned material (1.3% of the total).

Table 4. Distribution of the frequency of surgeries cancelled due to institution-related reasons. Recife, 2016.

Variables	N	%
Lack of surgical material - instrumental	41	1.4
Lack of consigned material	38	1.3
Broken equipment	7	0.2
Lack of water/light supply	10	0.3
Lack of blood-type supply	1	0.0
Lack of material in the drug store	27	0.9
Contaminated material	12	0.4
Lack of vacancy in the ICU	9	0.3
Others	97	3.4
Total	242	8.2

DISCUSSION

In this study, we evaluated the main factors and surgical specialties responsible for surgical cancellations in a reference service in Pernambuco. The Brazilian Ministry of Health defines the rate of cancellation of surgeries as the number of cancelled surgeries divided by the total number of scheduled surgeries within a given period and multiplied by 100.¹⁷

This study showed an alarming figure represented by the high rate of cancellation of surgeries. Similarly, in a national study that evaluated 1,145 scheduled surgeries and 379 cancelled surgeries, scholars found a 33% cancellation rate, indicating the need for further research to know the causes and reasons for surgical cancellation, as well as greater participation of nursing in investigations addressing this issue.¹

On the other hand, a study that evaluated the rate of surgical cancellation at a teaching hospital in Minas Gerais, Brazil, found out lower cancellation values (14.1%). The authors have suggested that these rates could be reduced through health care, administrative, and structural measures, such as better distribution of beds and implementation of population awareness programs to ensure patient’s safety and improved service.¹²

The repercussions of surgical cancellation are unfavorable not only on the user, but also on the nursing team (working operationalization, time consumption and material resources, decreased quality of care), surgeons, anesthesiologists, and on the health care institution itself, as well as other professionals.^{9,18-20} These cancellations may contribute to user-related emotional impact, and also increased hospital costs and lack of operating room availability.²¹

In this study, we found predominance of women, corroborating another study²² conducted in a public hospital in São Paulo

addressing cancellation of cataract surgeries, where 54.3% of the patients were women.

It is generally observed that the presence of men in health services is lower than that of women, when conducting research on the causes of not seeking health services by men, the authors found out that the main justifications for such an event were association with a hegemonic model of masculinity, as seeking the health service, from a preventive perspective, could associate a man to lack of confidence, fear, and weakness, in addition to fear of finding severe disease, shame of body exposure to a health professional, and lack of specific facilities for men’s health.²³

On the other hand, a study¹⁵ conducted in Rio de Janeiro city, Brazil, showed that 60.6% of the patients who had their surgeries cancelled were men, a fact evidenced by the type of surgeries performed in the institution, which was mainly herniorrhaphy, more frequent among men.

The study also showed that most of the cancelled surgeries were medium-sized. On the other hand, a study⁴ evaluating 249 surgeries cancelled in the countryside of São Paulo showed a higher frequency of cancellations in small surgeries (43.8%), followed by medium-sized (35.7%), values very different from those found in this study, but they may be understood due to the higher cancellation of otorhinolaryngological and ophthalmological surgeries, which are mostly small-sized.

There was a predominance of cancellation of surgeries during the morning working shift in this study, a fact also found by another study¹⁰, carried out in southern Minas Gerais, where scholars revealed that most surgical cancellations (72.1%) took place in the morning. This finding may be justified by the fact that the number of surgeries scheduled in

the morning is higher than that in the afternoon in both institutions.

In this study, the sectors with higher cancellation rates were general, orthopedic, and urological surgery, respectively. A research²⁴ conducted in Rio de Janeiro city, addressing the causes of cancelled surgeries, has shown that the sectors with higher number of cancellations were general (28.95%), urological (13.16%), and ophthalmologic surgery (13.16%).

A national study carried out in a university hospital in São Paulo city, which evaluated 9,490 scheduled surgeries has shown that the cancellation rate was 17.3% and the surgical specialties that cancelled the most were orthopedic surgery (18.4%), followed by gastroenterology (16.1%) and ophthalmology (10.6%); it also revealed that 46.5% of the cancelled surgeries were not rescheduled. Still according to this study, when the institution postpones treatment, it becomes more expensive because of vacancy of the surgical room and repeated hospitalizations.¹⁹

The most frequent reason for cancellation of surgeries in this study was patient's absence. It is a reason that requires deeper investigation, since the cause of non-attendance is unknown, and because there is no active search service to confirm patient's presence at the hospital.

When conducting a study on the implications of cancellation of surgeries in Paraná, Brazil, the authors also identified that patient's absence (24.3%) was regarded as the main justification for patient-related cancellations. They also found that 41.12% of cancelled procedures were in the category 'other reasons,' which was divided into 'notice not found' (14.95%) and 'without justification' (26.17%), demonstrating failure in the scheduling of the surgical chart.³

We realize that potential causes for cancellation of surgeries could be avoided if there was a better surgical planning and communication between patients and health professionals.²⁵

In this study, failure of previous surgery, replacing elective surgery with emergency surgery, and absence of the surgical staff were the main justifications for cancellation of surgeries related to the surgical team. In another study¹⁹, the researchers noticed that reasons for cancellation related to the medical team, such as a change in the surgeon's behavior (17.3%) and exceeding the routine scheduled time (16.5%) and they showed lack of organization in surgical planning and routine, with excessive

scheduling of surgeries, something which did not allow all the surgeries to be performed.

Herein, other reasons for cancellation of institution-related surgical procedures included problems with laundry and cancellations without justification. The results of this study differ from a research⁴ carried out at a surgical center in a teaching hospital in São Paulo that evaluated 249 surgeries, where scholars observed that problems related to the sector organization caused a significant portion of cancellations (22.1%), where the main reasons were lack of beds available for hospitalization (29.1%) and the occurrence of emergency surgeries (25.5%).

Investigating cancellation of surgeries as an indicator of quality is crucial, as it allows professionals to evaluate and analyze aspects relevant to care, as well as the health care provided. This analysis makes it possible to identify the difficulties shown in the flow of information and also in the working dynamics of the surgical sector.⁷

The waiting list, expressed by a list of patients who need the same service or medical treatment where demand is greater than supply, it is still poorly investigated by the health community, even though this is a reality in many hospitals around the country. Much can be done to reduce waiting lists, and control of cancellation rates is one of the efforts with direct repercussions on waiting^{7,26}, as well as scheduling confirmations within a period close to surgery, periodic meetings to discuss and plan further surgeries, promoting the maximum use of available resources.¹⁰

It is worth emphasizing that incomplete information in the surgical charts, such as not stating the reason for cancellation of surgery in some cases, was a limitation of this study. People suggest the need for training and awareness of nursing practitioners in charge of registering this event, so that data is complete and reliable.

The findings of this investigation show alarming figures about cancellation of surgeries in the public institution in focus, it is believed that a large part of the causative factors could have been avoided and foreseen, since excessive scheduling of surgical procedures, as well as patient's absence. The latter can be minimized by creating an active search service to confirm patient's presence to undergo the surgery, a few days before the scheduled date.

This research allowed us to conduct a situational analysis of the surgical center by identifying the quantity, the sectors, and the reasons involved in cancellation of surgeries,

providing significant data to monitor and promote changes in the management of health facilities, leading to improved quality of care and lower loss of resources.

It is important not only to quantify cancellation of surgeries, but also to qualify them by identifying their motives and the people involved, in order to allow devising strategies according to the reality of each institution to decrease these indexes in a safe way.

It is necessary to update statistical data and indicators to assist in the formulation of institutional policies aimed at reducing the rates of cancellation of surgeries, and nurses are crucial elements in this process, since these professionals participate in all phases of the perioperative period.

CONCLUSION

Cancellation of surgeries is a multifactorial, organizational, and clinical problem that can have negative consequences for the institution, the staff, and the patient.

In this study, most patients who had cancellation of surgeries were women and they would undergo medium-complexity surgeries in the morning. The specialties that cancelled most of the procedures were general surgery, orthopedic surgery, and urological surgery.

A large part of the cancelled procedures derived from patient's absence, failure of previous surgery, replacing the scheduled surgery with emergency surgery, non-attendance of the team, and lack of surgical instruments and consigned material.

REFERENCES

1. Cavalcante JB, Pagliuca LMF, Almeida PC. Cancelamento de cirurgias programadas em um hospital-escola: estudo exploratório. *Rev Latinoam Enferm* [serial on the internet]. 2000 [cited 2016 Sept 15];8(4):59-65. Available from: <http://www.scielo.br/pdf/rlae/v8n4/12385>
2. Organização Mundial da Saúde. Segundo desafio global para a segurança do paciente: cirurgias seguras salvam vidas (orientações para cirurgia segura da OMS). Brasília (DF): OMS; 2009.
3. Morgan W, Bernardino E, Wolff LDG. Implications of cancellation of surgery in a surgery department: a descriptive-exploratory study. *Online Braz J Nurs* [serial on the internet]. 2010 [cited 2016 Sept 15];9(1):211-20. Available from: <http://www.objnursing.uff.br/index.php/nursing/article/view/j.1676-4285.2010.2591>
4. Perroca MG, Jerico MC, Facundin SD. Monitoring cancellations of surgical procedures: an indicator of organizational performance. *Rev Esc Enferm USP* [serial on the internet]. 2007 [cited 2016 Sept 15];14(1):113-9. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342007000100015
5. Landim FM, Paiva FDS, Fiuza MLT, Oliveira EP, Pereira JG, Siqueira IA, et al. Análise dos fatores relacionados à suspensão de operações em um serviço de cirurgia geral de média complexidade. *Rev Col Bras Cir* [serial on the internet]. 2009 [cited 2016 Sept 15];36(4):283-7. Available from: <http://www.scielo.br/pdf/rcbc/v36n4/a02v36n4.pdf>
6. Bisinotto FMB, Pedrini JM, Alves AAR, Andrade MAPR. Implantação do serviço de avaliação pré-anestésica em hospital universitário dificuldades e resultados. *Rev Bras Anesthesiol* [serial on the internet]. 2007 [cited 2016 Sept 15];57(2):167-76. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-70942007000200005
7. Nascimento LA, Tillvitz LR, Fonseca LF. Suspensão cirúrgica: o ângulo estatístico de um problema de repercussões humanas. *Rev Enferm UFPE On Line* [serial on the internet]. 2013 [cited 2016 Sept 15];7(Spec):6592-600. Available from: www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/download/.../7842
8. Aquino FM, Moura VLF, Pinto ACS. A suspensão de cirurgia e o processo de comunicação. *Rev Pesqui Cuid Fundam (Online)* [serial on the internet]. 2012 [cited 2016 Sept 28];4(2):2998-3005. Available from: http://www.seer.unirio.br/index.php/cuidadofundamental/article/view/1810/pdf_559
9. Avila MA, Bocchi SCM. Confirmação de presença de usuário à cirurgia eletiva por telefone como estratégia para reduzir absenteísmo. *Rev Esc Enferm USP* [serial on the internet]. 2013 [cited 2016 Sept 28];47(1):193-7. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342013000100024
10. Botazini NO, Toledo LD, Souza DMST. Cirurgias eletivas: cancelamentos e causas. *Rev SOBECC* [serial on the internet]. 2015 [cited 2016 Sept 28];20(4):210-9. Available from: <http://files.bvs.br/upload/S/1414-4425/2015/v20n4/a5300.pdf>
11. Kumar R, Gandhi R. Reasons for cancellation of operation on the day of intended surgery in a multidisciplinary 500 bedded hospital. *J Anaesthesiol Clin*

Pharmacol [serial on the internet]. 2012 [cited 2016 Sept 28];28(1):66-9. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3275976/>

12. Barbosa MH, Miranda GDM, Vieira AE, Mattia AL. Análise da suspensão de cirurgias em um hospital de ensino. *Enferm Glob* [serial on the internet]. 2012 [cited 2016 Sept 28];11(26):164-73. Available from: http://scielo.isciii.es/pdf/eg/v11n26/pt_administracion2.pdf

13. Aguirre-Cordova JF, Chavez-Vazquez G, Huitron-Aguillar GA, Cortes-Jimenez N. Why is surgery cancelled? Causes, implications, and bibliographic antecedents. *Gac Med Mex* [serial on the internet]. 2003 [cited 2016 Oct 21];139(6):545-51. Available from: https://www.researchgate.net/publication/8920140_Why_Is_Surgery_Cancelled_Causes_Implications_and_Bibliographic_Antecedents

14. Argo JL, Vick CC, Graham LA, Itani KMF, Bishop MJ, Hawn MT. Elective surgical case cancellation in the Veterans Health Administration System: identifying areas for improvement. *Am J Surg* [serial on the internet]. 2009 [cited 2016 Oct 21];198(5):600-6. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/19887185>

15. Sampaio CEP, Ribeiro DA. Perfil cirúrgico e fatores determinantes das suspensões de cirurgias gerais ambulatoriais: contribuições para assistência de enfermagem. *Rev Pesqui Cuid Fundam (Online)* [serial on the internet]. 2012 [cited 2016 Oct 21];4(2):2938-47. Available from: http://www.seer.unirio.br/index.php/cuidadofundamental/article/view/1866/pdf_525

16. Souza NVDO, Mauricio VC, Marques LG, Mello CV, Leite GFP. Determinantes para suspensões cirúrgicas em um hospital universitário. *REME - Rev Min Enferm* [serial on the internet]. 2010 [cited 2016 Oct 21];14(1):82-7. Available from: <http://www.reme.org.br/artigo/detalhes/91>

17. Brasil. Normas e padrões de construções e instalações de serviço de saúde. 2. ed. Brasília (DF): Ministério da Saúde; 1978.

18. Ávila MA, Gonçalves IR, Martins I, Moyses AM. Cancelamento de cirurgias: uma revisão integrativa da literatura. *Rev SOBECC* [serial on the internet]. 2012 [cited 2016 Oct 21];17(2):39-47. Available from: http://www.sobecc.org.br/arquivos/artigos/2012/pdf/revista/abril_junho/cancelamento.pdf

19. Macedo JM, Kano JA, Braga EM, Garcia MA, Caldeira SM. Cancelamento de cirurgias em um hospital universitário: causas e tempo de

espera para novo procedimento. *Rev SOBECC* [serial on the internet]. 2013 [cited 2016 Oct 21];18(1):26-34. Available from: http://www.sobecc.org.br/arquivos/artigos/2012/pdf/Artigos-Cientificos/Ano18_n1_jan_mar2013_cancelamento-de-cirurgias-em-um-hospital-universitario.pdf

20. Nascimento LA, Tillvitz LR, Garcia AC, Fonseca LF. Além das taxas de suspensão cirúrgica: uma análise de seus reais motivos. VII Encontro Internacional de Produção Científica Cesumar; 2011 25-28 Oct; Maringá. Anais. Maringá (PR): Cesumar; 2011.

21. Paschoal MLH, Gatto MAF. Rate of surgery cancellation at a university hospital and reasons for patients' absence from the planned surgery. *Rev Latinoam Enferm* [serial on the internet]. 2006 [cited 2016 Oct 21];14(1):48-53. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-11692006000100007

22. Magri MPF, Espíndola RF, Santhiago MR, Mercadante EF, Kara Júnior N. Cancelamento de cirurgias de catarata em um hospital público de referência. *Arq Bras Oftalmol* [serial on the internet]. 2012 [cited 2016 Nov 8];75(5):333-6. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0004-27492012000500007

23. Gomes R, Nascimento EF, Araujo FC. Why do men use health services less than women? Explanations by men with low versus higher education. *Cad Saúde Pública* [serial on the internet]. 2007 [cited 2016 Nov 8];23(3):565-74. Available from: http://www.scielosp.org/scielo.php?script=sci_arttext&pid=S0102-311X2007000300015

24. Barbeiro FMS. Why surgeries are canceled? A study about the causes, rates and consequences in a general hospital in Rio de Janeiro. *Rev Pesqui Cuid Fundam (Online)* [serial on the internet]. 2010 [cited 2016 Nov 8];2(4):1353-62. Available from: http://www.sumarios.org/sites/default/files/pdfs/55453_6398.PDF

25. Nascimento LAD, Fonseca LF, Garcia ACKA. Suspensão cirúrgica: perspectiva do residente de medicina em clínicas cirúrgicas. *Rev Bras Educ Méd* [serial on the internet]. 2014 [cited 2016 Nov 8];38(2):205-12. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022014000200007

26. Sarmiento Junior KMA, Tomita S, Kos AOA. O problema da fila de espera para cirurgias otorrinolaringológicas em serviços públicos. *Rev Bras Otorrinolaringol* [serial on the internet]. 2005 [cited 2016 Nov 8];71(3):256-

62. Available from:
http://www.scielo.br/pdf/rboto/v71n3/en_a01v71n3.pdf

Submission: 2017/02/03

Accepted: 2017/03/16

Publishing: 2017/07/01

Corresponding Address

Priscilla Glazielly dos Santos de Moraes
Rua Esmeralda, 105
Bairro Jardim Primavera
CEP: 54753-784 – Camaragibe (PE), Brazil