Surgery cancellation related to the patient: how to interpret this indicator?

Cancelamento cirúrgico relacionado ao paciente: como interpretar esse indicador?

Cancelación quirúrgica relacionada con el paciente: ¿cómo interpretar este indicador?

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ABSTRACT: Objective: This study aimed to identify the reasons for surgery cancellation related to patients in Brazilian hospitals and interpret its definition and applicability. **Method:** An integrative review was conducted in six steps. The search took place in the Virtual Health Library, SciELO, MEDLINE/PubMed and Google Scholar, including original articles carried out in Brazilian hospitals published after 2012. **Results:** We found 28 publications, which identified 11 reasons for surgery cancellation related to the patient and organized by order of prevalence in the studies: did not have clinical conditions, did not attend or was delayed, did not respect the fasting period, refused to undergo surgery, did not have the preoperative examinations, died, did not prepare properly, did not discontinue contraindicated drugs, did not have a companion, did not provide blood reservation and refused blood transfusion. **Conclusions:** The study allowed to identify the reasons for surgery cancellation related to the patient in Brazilian hospitals, which can contribute with more assertive professional conduct facing preventable reasons and, consequently, reducing the cancellation levels.

Keywords: Surgicenters. Elective surgery procedures. Withholding treatment. Quality indicators, health care. Perioperative nursing.

RESUMO: Objetivo: Identificar os motivos de cancelamento cirúrgico relacionados aos pacientes em hospitais brasileiros e interpretar sua definição e aplicabilidade. **Método:** Revisão integrativa elaborada em seis etapas. A busca ocorreu na Biblioteca Virtual em Saúde, SciELO, MEDLINE/PubMed e Google Acadêmico, incluindo artigos originais realizados em hospitais brasileiros, publicados a partir de 2012. **Resultados:** Foram encontradas 28 publicações, nas quais se identificaram 11 motivos de cancelamento cirúrgico relacionados ao paciente e organizados por ordem de prevalência nos estudos: não possuía condições clínicas, não comparecimento ou atraso do paciente, não respeitou o jejum, recusou-se a submeter-se à cirurgia, paciente não possuía os exames pré-operatórios, foi a óbito, não se preparou adequadamente, não suspendeu os medicamentos contraindicados, não possuía acompanhante, não providenciou a reserva de sangue e recusou-se a ser hemotransfundido. **Conclusão:** O estudo permitiu identificar os motivos de cancelamento cirúrgico relacionados aos pacientes em hospitais brasileiros, o que pode contribuir para uma atuação profissional mais assertiva diante dos motivos preveníveis e, consequentemente, reduzir os índices de cancelamento.

Palavras-chave: Centros cirúrgicos. Procedimentos cirúrgicos eletivos. Suspensão de tratamento. Indicadores de qualidade em assistência à saúde. Enfermagem perioperatória.

RESUMEN: Objetivo: Identificar los motivos de cancelación quirúrgica relacionados con pacientes en hospitales brasileños e interpretar su definición y aplicabilidad. **Método:** Revisión integrativa elaborada en seis etapas. La búsqueda se realizó en la Biblioteca Virtual en Salud, SciELO, MEDLINE/PubMed y Google Scholar, incluyendo artículos originales realizados en hospitales brasileños, publicados a partir de 2012. **Resultados:** se encontraron 28 publicaciones, en las cuales 11 motivos de cancelación quirúrgica relacionados con el paciente fueron identificados y organizados en orden de prevalencia en los estudios: no tiene condiciones clínicas, inasistencia o retraso del paciente, no ayunó, se negó a someterse a la cirugía, el paciente no tiene los exámenes

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preoperatorios, falleció, el paciente no se sometió a preparación, no suspendió medicamentos contraindicados, no tiene acompañante, no reservó sangre, se negó a recibir transfusiones. **Conclusión:** El estudio permitió identificar los motivos de cancelación quirúrgica relacionados con pacientes en hospitales brasileños, lo que puede contribuir para una actuación profesional más asertiva ante motivos evitables y, en consecuencia, reducir las cancelaciones.
Palabras clave: Centros Quirúrgicos. Procedimientos quirúrgicos electivos. Privación de tratamiento. Indicadores de calidad de la atención de salud. Enfermería perioperatoria.

INTRODUCTION

Managing indicators in the Surgical Center is important for the several evaluations of the sector. Surgery cancellation is one of the most common indicators administered by nurses[1]. To better interpret these cancellations, managers end up grouping the reasons in several ways, for example, those related to the patient, institutional factors and surgical team[2], as well as the clinical, non-clinical and not informed[3].

Segregating these reasons in large groups helps to interpret the problem, but considering that approximately 80% of cancellations are considered avoidable, it is also important to recognize the factors that lead to this kind of event[4].

Studies identify the patient as a contributing factor to cancellation factor,, but do not describe exactly what are the causes related to the patients, and if they are likely to be prevented[5]. In this sense, the nurse's preoperative visit can be aligned with the other institutional strategies to prevent surgery cancellations[6-8].

Therefore, it is believed that such events related to the patients could be interpreted and better discriminated to point out the weaknesses and strengths regarding the nursing work[9-12]. However, the analysis of which types of cancellation could be prevented by a direct action of the nurse is still little explored in the scientific literature. So, the following study questions appears: what are the reasons for surgery cancellation related to the patient in Brazilian hospitals, how can they be interpreted and how are they applied?

OBJECTIVE

To identify the reasons for surgery cancellation related to the patients in Brazilian hospitals and interpret their definition and applicability.

METHOD

This is an integrative literature review. The choice for such a methodology is justified by the organization and synthesis of a body of literature to allow interpretations about the current status of the analyzed theme[13].

The methodology of the integrative review was conducted in six steps: identification of the theme and selection of the research question, establishment of inclusion and exclusion criteria, information to be extracted from the selected studies, evaluation of the studies, interpretation of results and synthesis[13].

The guiding question was elaborated according to the PCC mnemonics: what are the reasons for surgery cancellation (P=problem) related to the patient (C=concept) in Brazilian hospitals (C=context), how can they be interpreted and how are they applied?

The bibliographic survey included consultations to the Virtual Health Library (VHL) and the Scientific Electronic Library Online (SciELO), using the following combination of keywords through the Boolean operators, as presented in Chart 1: (cancellation OR suspension) AND (surgery OR surgical OR procedure OR elective). This strategy was chosen because the combination of health science descriptors (DeCS) presented unsatisfactory results. We also considered the application of the referred research statement in the search fields for "title, subject, abstract" in VHL and "all indexes" in SciELO.

We also searched the *Medical Literature Analysis and Retrievel System Online* (MEDLINE), via PubMed, using a combination of the term MeSH (*Medical Subject Headings*) *"brazil"* with the keywords *"surgical cancellation"*, generating the following search strategy: *brazil AND surgical cancellation*.

Additionally, we looked into grey literature, through Google Scholar, using the advanced search field to determine

Chart 1. Search strategy per database.

Database	Level of evidence
VHL	(cancellation OR suspension) AND (surgery OR surgical OR procedure OR elective)
SciELO	
MEDLINE/PubMed	*brazil AND surgical cancellation*
Google Scholar	brasil "surgical cancellation"

the research statement. IN this process, the term "brazil" was inserted in the field "find article with all the words" and "surgery cancellation", in the field "with the exact sentence". This allowed the following formulation of the search strategy, described in Chart 1, which does not use Boolean operators: brazil "surgical cancellation".

The search and selection were conducted in November and December, 2022, by two independent reviewers, using the online software *Rayyan*[14].

Original articles about Brazilian hospitals were included, containing the discrimination of the reasons for surgery cancellation related to the patient, in a way that its meaning could be inferred, published after 2012 in any language.

The decision was made to focus on a ten-year time frame, considering the need to identify more current reasons for surgery cancellation, despite potential advancements in nursing knowledge in the field.

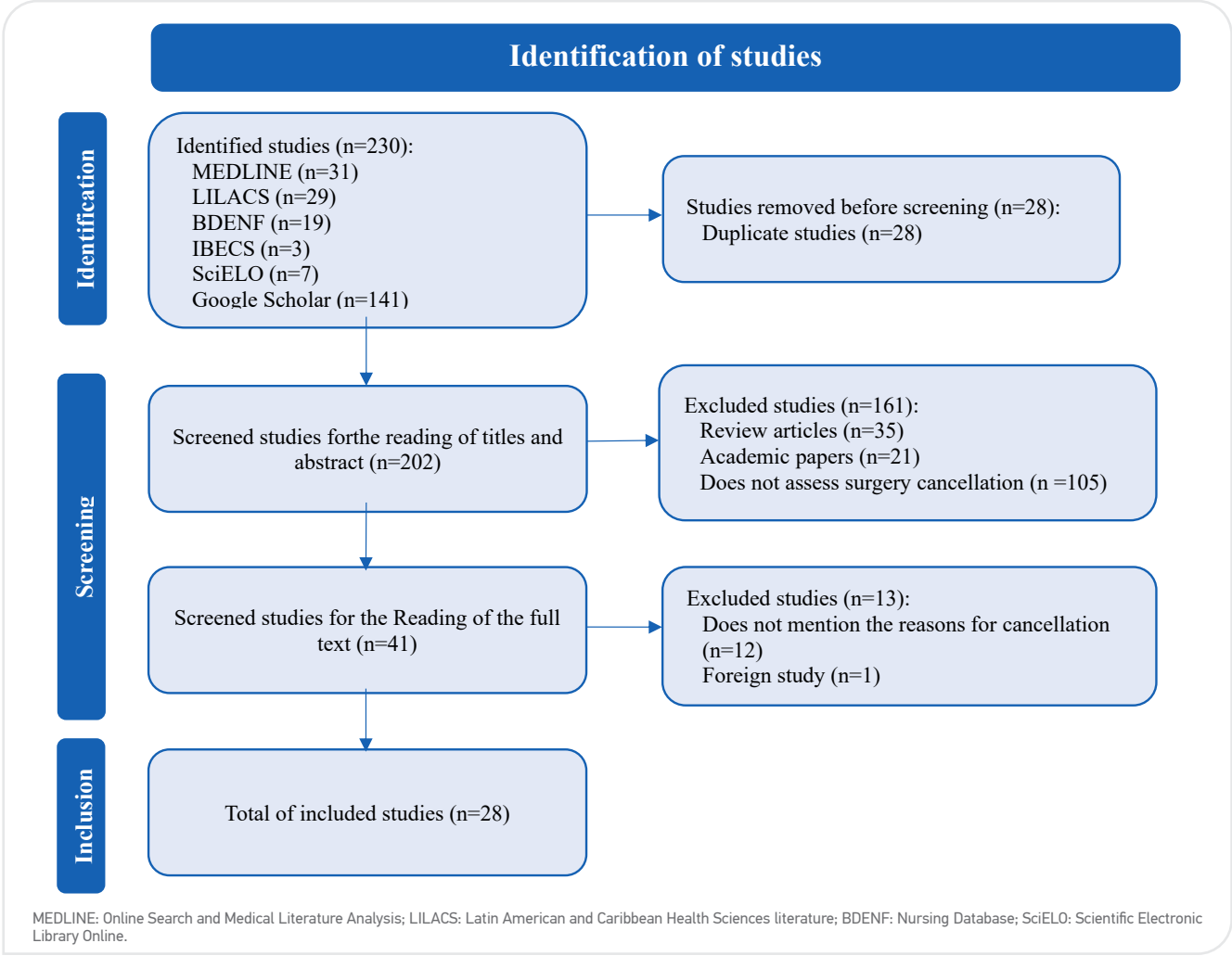
On the other hand, academic papers, review articles, studies carried out in other countries or other hospital sectors that did not discriminate the reasons for cancellation related to the patient, as well as those published until 2011, were excluded.

The process of identification and selection of studies was organized in a flowchart (Figure 1).

In the analysis of the included articles, definitions used to show the reasons for surgery cancellation related to the patients, as well as the context for its application, were extracted.

Additionally, we collected information about the characterization of the publication and the methodological quality using the Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions[15].

For better interpretation, the reasons for surgery cancellation related to the identified patients were organized in thematic groups, mentioning the unified nomenclature that represented each group, as well as their definition and applicability.



MEDLINE: Online Search and Medical Literature Analysis; LILACS: Latin American and Caribbean Health Sciences literature; BDENF: Nursing Database; SciELO: Scientific Electronic Library Online.

Figure 1. Flowchart of the study identification process.

The definition of each surgery cancellation was owed to the ability to comprehend the content of the related sub-motives. For that, the attempt was to maintain the master word, which was repeated in most sub-motives for cancellation.

Applicability was represented by the sub-motives for surgery cancellation, indicating examples about when to be used.

The data produced in the review were presented in Charts and Graphs.

RESULTS

The search process resulted in 230 articles, of which 41 were fully read, whereas the others were excluded based on the criteria. Of the fully read productions, 28 met the inclusion criteria and constituted the final sample, according to Figure 1. In the characterization presented in Chart 2[2,3,6-12,16-34], it is possible to identify the article according to year of publication and type of hospital institution where the research took place, as well as the Brazilian state and level of evidence.

As to year of publication, the studies were distributed between 2012 and 2022; however, there was no publication in 2014.

The public hospitals, which were the most studied ones, were represented in 17 analyses (61%); the studies carried out in philanthropic institutions were present in six article (21%). Unfortunately, five publications (18%) did not inform what type of institution was represented in the article. No studies were identified in private hospitals.

Chart 2. Characterization of the included studies.

Authors	Year	Type of hospital institution	Brazilian state	Level of evidence
Brito et al.[16]	2022	Public	Distrito Federal	VI
Sousa et al.[17]	2022	Public	Distrito Federal	VI
Ribeiro et al.[18]	2021	Public	Goiás	VI
Sodré et al.[19]	2021	Public	São Paulo	VI
Machado et al.[6]	2021	Public	Santa Catarina	VI
Silva et al.[20]	2021	Philanthropic	Minas Gerais	VI
Araújo et al.[21]	2020	Public	Rio Grande do Norte	VI
Rezende et al.[22]	2020	Public	Rio de Janeiro	VI
Gouveia et al.[23]	2020	Philanthropic	São Paulo	VI
Gonçalves et al.[24]	2020	Public	Rio de Janeiro	VI
Araújo et al.[25]	2019	Philanthropic and public	Nordeste	VI
Reis et al.[26]	2019	Public	Rio de Janeiro	VI
Lima Júnior et al.[10]	2019	Not informed	Maranhão	VI
Rangel et al.[11]	2019	Not informed	Pernambuco	VI
Gomes et al.[9]	2018	Public	Distrito Federal	VI
Santos et al.[3]	2017	Public	São Paulo	VI
Pinheiro et al.[27]	2017	Public	Paraná	VI
Moraes et al.[2]	2017	Not informed	Pernambuco	VI
Carvalho et al.[8]	2016	Public	Sergipe	VI
Moreira et al.[7]	2016	Philanthropic	Minas Gerais	VI
Sampaio et al.[12]	2016	Not informed	Rio de Janeiro	VI
Botazini et al.[28]	2015	Philanthropic	Minas Gerais	VI
Cihoda et al.[29]	2015	Philanthropic	São Paulo	VI
Macedo et al.[30]	2013	Public	São Paulo	VI
Avila et al.[31]	2013	Public	São Paulo	VI
Magri et al.[32]	2012	Public	São Paulo	VI
Barbosa et al.[33]	2012	Public	Minas Gerais	VI
Sampaio et al.[34]	2012	Not informed	Rio de Janeiro	VI

As to study locations, 11 States were mentioned, being São Paulo the most prevalent one, with seven publications (25%), followed by Rio de Janeiro (n=5, 18%) and Minas Gerais (n=4, 14%). The North region of Brazil was not mentioned in the studies.

All articles were classified as VI – descriptive or qualitative studies, in the level of evidence.

Ninety-one terms were identified to refer to the reasons for surgery cancellation related to the patients. These terms were interpreted and mapped as to their definition, and then they were categorized in 11 groups according to thematic approximation.

For better visualization, the groups are presented in Figure 2 according to the frequency in which the articles appeared, being: patient did not have clinical conditions (n=26); patient not attending or being late (n=23); patient did not respect the fasting period (n=19); patient refused to undergo surgery (n=18); patient did not present results for preoperative examinations (n=16); patient died (n=5); patient did not pay attention to preparation (n=4); patient did not have a companion (n=3); patient did not discontinue contraindicated medicines (n=2); and patient refused blood transfusion (n=1).

This organization allowed to analyze the applicability of the reasons for cancellation, segregating them in corresponding subcategories, presenting them by unified nomenclature followed by its definition (Chart 3).

DISCUSSION

The reasons for surgery cancellation related to the patients were interpreted and mapped as to their definition and categorized in 11 groups, among which the following are prevalent: "patient was not in clinical conditions", "patient's unattendance or delay", "patient did not respect the fasting period", "patient refused to undergo surgery", and "patient did not present preoperative examinations".

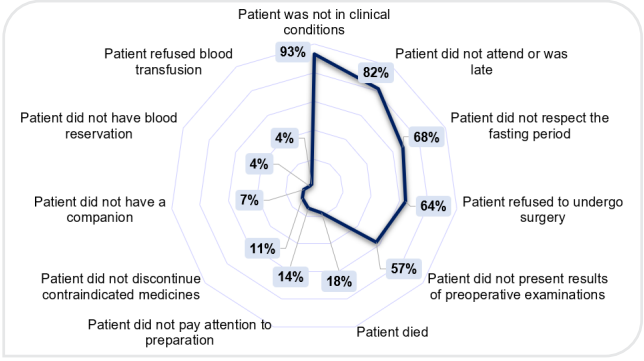


Figure 2. Radar graph of the theme groups about the reasons for surgery cancellation related to the patient.

These 11 groups of reasons for surgery cancellation related to the patient can be divided in two main categories: the first one includes preoperative instructions that were not followed/understood, whereas the second one includes problems related to the patient's health, corroborating data from a previous study[5].

In the category of preoperative instructions that were not followed/understood, "patient's unattendance or delay" can be related to flawed communication between users and professionals, as well as the feeling of improvement in the patient's clinical status[2,24]. In this case, the implementation of an active search service to confirm date and time of procedure with the patient could be an interesting alternative to minimize this problem[5,30,31].

The reason "patient did not respect the fasting period" is also related to information that is wrong or incomplete, or the mistaken understanding of the patient. It is common for patients to understand that fast only refers to solid foods, being free to consume liquids; therefore, not respecting the preoperative fasting protocol[3,6,9,22,27,34].

The "patient refused to undergo surgery" is usually associated with doubt or fear[2,3,6-8,10,11,16-18,21-24,28,30-32]. The nursing team's work to reduce anxiety, fear and doubts of patients and relatives in the preoperative period can be intensified to solve this problem[6,7,11,16].

The cause "patient does not have preoperative examinations" is related to the total or partial absence of imaging, laboratory examinations or other clinical documents that are important for the surgery[3,7,12,16-22,25,26,31-33]. The availability of essential imaging examinations at the time of surgery is important for the security of the patient, since it provides the confirmation of the surgery site and transoperative decision making[35].

Cancellations owed to "patient not having a companion" are associated with elders and teenagers. Among others, having a companion during hospital stay is a right ensured by law[36,37]. Added to that, as a way to guarantee the safety of patients, hospitals implement protocols that require the presence of a companion in surgery cases[3,34].

However, certain reasons are difficult to control, considering they are related to the patient health status[5]. Thus, the reason "patient was not in clinical conditions" was present in nearly all of the identified studies (89%) and presents

Chart 3. Attributes of the reasons for surgery cancellation related to the patient.

Unified nomenclature	Definition	Applicability
Patient was not in clinical conditions[2,6-12,16-24,26,27,28,29,31-35]	The patient does not present favorable clinical conditions for surgery, according to medical evaluation.	Patient presents uncontrolled chronic comorbidities (arterial hypertension, hyperglycemia...); Patient presents signs and symptoms of infection or other non-chronic changes (pulmonary, urology...); Patient presentes major changes in laboratory examinations.
Patient's unattendance or delay[2,6-12,16-21,23-25,27,29,31,33,34]	The patient did not attend on the day and time scheduled for surgery.	The patient was not aware of the date and time of the procedure; Inability to be absent from work; Patient's personal problems; Unfavorable climate conditions; Feeling of improvement in clinical status perceived by the patient; Improved clinical condition perceived by the physician, without indication for surgery; Patient already underwent surgery in a different institution; Patient cannot afford the surgery.
Patient did not respect the fasting per iod[2,6,7,10,11,16,17,19,21-26-28,30,32,33]	Patient did not fast (water or food) in the predetermined period.	Patient was not aware of the need for fasting; Patient did not eat solid foods, but consumed liquids; Patient did not respect the pre-determined fasting period.
Patient refused to undergo surgery[2,3,6-8,10,11,16-18,21-24,28,30,31,32]	Patient or relatives felt insecure about the surgery.	Patient/family was afraid; Patient/family had doubts about the surgery and the subsequent treatment; Family does not authorize the procedure.
Patient did not presente preoperative examinations[3,7,12,16-22,25,26,31-33]	The patient did not have the essential preoperative tests for surgery.	Patient did not have all preoperative examinations; Patient forgot to bring the results of preoperative examinations; Patient presented old preoperative examinations.
Patient died[6,10,28,30,31]	Patient died before the date of surgery, due to his/her clinical condition or casual mischance.	—
Patient did not prepare[3,6,30,31]	Patient did not prepare the organ to be operated.	Patient was not aware of the need for preparation; Patient had doubts about preparation.
Patient did not discontinue contraindicated medicines[12,24,32]	Patient did not discontinue medicines that were contraindicated by the surgeron and anesthesiologist in the necessary period.	Patient was not aware of the need to discontinue specific medicines; Patient did not discontinue medicines in the necessary period.
Patient did not have a companion[3,34]	Patient did not obbey hospital policy regarding the obligatoriness of having an adult companion.	Patient was not aware of the need of a companion; Patient did not have a social support network; The age group of the companion was not compatible with hospital policy.
Patient did not have a blood reservation[26]	Patient was not present in advance to provide the reservation of blood and blood derivatives.	Patient was not aware of the need for blood reservation; Patient did not go to the blood bank in the period established by the hospital.
Patient refused blood transfusion[6]	For personal reasons, patient refused blood transfusion during hospital stay.	Patient did not previously inform the hospital about the refusal of blood transfusion, so there was no time to provide resources to replace it.

margin for different interpretations. Clinical signs related to systemic changes, as well as infections, were pointed out as justifications for this reason. However, hyperglycemia and hypertension were described separately[3,20,26,32]. This segregation represents decompensated chronic conditions, such as hypertension and diabetes mellitus, or even the discontinuation of medicines to control these chronic conditions due to fast for surgery[3,20,26,32].

Therefore, the review shows a variety of used terms, in a non-standardized manner, to justify for surgery

cancellations inherent to the patient's clinical conditions. So, it is necessary to standardize the terms to register surgery cancellations, which would facilitate a situation diagnosis and a comparison of indicators in different institutions. Facing the plurality of terms and variables, it is important to be careful when assessing data in publications about this subject[4,5].

Besides the reasons pointed out by the review, the place where the patient waits for surgery — household or hospital bed — can impact surgery cancellation, considering that preoperative instructions that are not followed or understood connect to lack of self-care of the patient, in case he/she was waiting for the date of surgery in his/her household.

However, if the patient is already hospitalized, the lack of preoperative care follow-up concerns the barriers of medical and nursing prescription or the fulfillment of prescriptions from the multiprofessional team, in which case the patient cannot be made responsible for surgery cancellation.

As study limitations, we understand that it was not restricted to the patients' age group, surgical specialty or types of surgery, such as outpatient surgeries, and these variables can generate general interpretations about situations that should have been assessed in their specificities.

It is worth to mention that, due to the limited number of studies in the review, controlling these variables would restrict the number of interpreted studies even more, and, consequently, the generation of data. Finally, it is important to state that the interpretation of the surgery cancellation related to the patient indicator mentioned in this study was not accurate for all publications; therefore, variations as to understanding may occur.

CONCLUSION

The study found 91 reasons for surgery cancellation related to the patient, which were unified in 11 groups by thematic approximation. This approximation allowed an unified interpretation and pointed to situations in which they were applicable.

The information highlighted here can assist the construction of institutional protocols regarding surgery cancellations, thus contributing with a more assertive preoperative nursing action considering the preventable reasons, and, consequently, reducing cancellation levels.

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CONFLICT OF INTERESTS

The authors declare no conflict of interests.

AUTHORS' CONTRIBUTION

CANM: Data curation, Methodology, Writing – review & editing. JCG: Data curation, Writing – review & editing. LSS: Writing – review & editing. LBF: Concept, Methodology, Writing – review & editing. MF: Concept, Methodology, Supervision, Writing – review & editing.

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