

## SURGICAL CANCELLATION RATE: QUALITY INDICATOR AT A PUBLIC UNIVERSITY HOSPITAL

### TAXA DE CANCELAMENTO CIRÚRGICO: INDICADOR DE QUALIDADE EM HOSPITAL UNIVERSITÁRIO PÚBLICO

### TASA DE CANCELACIONES QUIRÚRGICAS: INDICADOR DE CALIDAD EN UN HOSPITAL UNIVERSITARIO PÚBLICO

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## ABSTRACT

The objective of the study was to identify the surgical cancellation rate in a public university hospital, as well as characterize the surgeries and the reasons for suspension. This is a descriptive, cross-sectional, retrospective and documentary research. The study was based on surgical schedules and medical records of patients assisted at the Surgical Center Unit of a public teaching hospital in the countryside of Paraná, Brazil. The population came from the total number (n = 2828) of surgical procedures scheduled between April and November 2013 and the sample analyzed corresponded to all interventions that were canceled (n = 522), regardless of the reason. Data were tabulated and analyzed through descriptive statistics, using percentage values. An overall rate of surgical cancellation of 18.45% was obtained through an equation of a hospital quality/productivity program. Prevalence of cancellations General Surgery (25.48%); Orthopedics (23.57%); and Neurosurgery (20.11%) were observed. The most frequent reasons for suspension were related to those inherent to human resources (61.38%) and inefficient surgical planning (21.45%). We conclude that the identified rate was discreetly high. It is necessary to monitor the human capital responsible for the planning and realization of surgeries.

**Keywords:** Surgical Procedures Operative; Surgicenters; Quality Indicators Health Care; Quality Management; Perioperative Nursing.

## RESUMO

Objetivou-se identificar a taxa de cancelamento cirúrgico em um hospital universitário público, bem como caracterizar as cirurgias e os motivos à sua suspensão. Trata-se de pesquisa descritiva, transversal, retrospectiva e documental. Foi realizada com base nos agendamentos cirúrgicos e prontuários de pacientes a serem atendidos na Unidade de Centro Cirúrgico de um hospital de ensino público do interior do Paraná, Brasil. A população foi oriunda do total (n=2828) de procedimentos cirúrgicos agendados entre abril e novembro de 2013 e a amostra analisada foram todas aquelas intervenções que foram canceladas (n=522), independentemente do motivo. Com os dados tabulados, procedeu-se à análise estatística descritiva, em percentual. A taxa geral de cancelamento cirúrgico foi obtida a partir da fórmula de um programa de qualidade/productividade hospitalar, determinada em 18,45%. Ainda, constatou-se prevalência de cancelamentos oriundos das especialidades de Cirurgia Geral (25,48%); Ortopedia (23,57%); e Neurocirurgia (20,11%). Os motivos mais frequentes para suspensão operatória foram vinculados àqueles inerentes aos recursos humanos (61,38%) e à ineficiência do planejamento cirúrgico (21,45%). Concluiu-se que a taxa identificada foi discretamente alta. Ressalta-se a necessidade de monitoramento do capital humano responsável pelo planejamento e execução de cirurgias.

**Palavras-chave:** Procedimentos Cirúrgicos Operatórios; Centro Cirúrgico Hospitalar; Indicadores de Qualidade em Assistência à Saúde; Gestão da Qualidade; Enfermagem Perioperatória.

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## RESUMEN

*El objetivo de esta investigación fue identificar la tasa de cancelaciones quirúrgicas en un hospital universitario público y caracterizar las cirugías y los motivos de la suspensión. Se trata de un estudio descriptivo, transversal, retrospectivo y documental basado en la programación quirúrgica y en los expedientes clínicos de los pacientes atendidos en la unidad del centro quirúrgico de un hospital público de enseñanza del Estado de Paraná, Brasil. La población deriva del total (n=2828) de los procedimientos quirúrgicos programados entre abril y noviembre de 2013 y la muestra analizada consistió en todas aquellas intervenciones que habían sido canceladas (n=522), independientemente del motivo. Con los datos tabulados se realizó el análisis estadístico descriptivo, en porcentaje. La tasa global de cancelaciones quirúrgicas se obtuvo mediante la fórmula de un programa de calidad y productividad hospitalaria, determinada en 18,45%. Se constató la prevalencia de cancelaciones de las siguientes áreas: cirugía general (25,48%); ortopedia (23,57%); y neurocirugía (20,11%). Las motivos más comunes estaban vinculados con recursos humanos (61,38%) e ineficiencia en la planificación quirúrgica (21,45%). Se llegó a la conclusión que la tasa global identificada fue ligeramente más alta. Se apunta a la necesidad de un seguimiento de los recursos humanos responsables de la planificación y ejecución de cirugías.*

**Palabras clave:** Procedimientos Quirúrgicos Operativos; Centros Quirúrgicos; Indicadores de Calidad de la Atención de Salud; Gestión de la Calidad; Enfermería Perioperatoria.

## INTRODUCTION

Constant socioeconomic, demographic and epidemiological changes have driven dynamic movements in the supply and demand for health services and, consequently, in the organization and management of this peculiar production sector. In this sense, management grounded on the quality of care seems to have the potential to leverage the strategic positioning of institutions in the competitive world of service provider organizations, as well as serves as a valuable tool to enable better and safer care to users.<sup>1</sup>

It is known that health quality management tools - based on administrative/strategic thinking from the industrial area - are diverse and permeate the statistical control of the work process; the rational identification of causes of problems; the management of customer satisfaction and the rational use of resources.<sup>1,2</sup> Despite the range of tools and instruments, it is postulated that assessments represent an indispensable and indissociable tool from the quest for qualification of health services through management, because they are a continuous and systematic mechanism of identification of factors that support decision-making for improvements.<sup>2,3</sup>

The use of indicators in assessments aimed at improving the quality of health services has been widely emphasized as measurement units of activities to which they are related.<sup>4</sup> They also serve as qualitative or quantitative measures to guide the monitoring and evaluation of the quality of care and the activities carried out in a service.<sup>4,5</sup> Thus, indicators should be monitored, analyzed over a period of time and compared to the internal and external reality of health organizations to fulfill their role as objective means of envisaging a given reality.<sup>1,4,5</sup>

It should be emphasized that quality indicators need to have important characteristics, such as causal validity, pertinence, feasibility of calculation, simplicity and also specificity.<sup>4</sup> In this aspect, it is postulated in Surgical Center (SC) that the main (or more specific) indicators to determine quality and productivity are: time of surgical delay; mortality rate during

the stay in the surgical center; time of anesthesia recovery; rate of falls in the operative block; number of reoperations; bank hours of employees related to the inadequate number of workers, and surgical cancellation or suspension rate.<sup>6</sup>

Surgical cancellation is defined as the disruption/suspension of any operation that was scheduled and that was not performed in the scheduled day, with reasons usually identified on the next business day.<sup>7</sup> Internationally, measures of surgical cancellation have gained relevance in the management of surgical services because of their potential to conserve resources used in commonly expensive procedures, as well as to alleviate the burden of cancellations through the rational allocation of schedules of surgeries.<sup>8</sup>

Better management of flow, information and procedure scheduling at the SC will contribute to the reduction of the surgical cancellation rates and consequently improve hospital quality indicators related to perioperative patient health.<sup>7</sup> For this to be possible, an elementary action to be considered in the management of SC information is the identification of surgical cancellation rates and the characteristics around this quality indicator.<sup>6-8</sup>

Concerning the clients/users/patients, once the problems pertaining to surgical cancellation are identified, sometimes simple but effective attitudes can be taken to guarantee an improvement in the care system and, consequently, more satisfaction among patients.<sup>9</sup> This is important because it is known that surgical patients often manifest feelings of fear, anxiety and insecurity related to the anesthetic-operative procedure, and the suspension of the surgery may negatively interfere in this aspect, besides those inherent in the organizational performance, including increased costs.<sup>10,11</sup>

In light of what has been explained, we believe that the social and scientific relevance of studies dedicated to the topic of surgical cancellation is evident. They have a dual possible contribution: to support assertiveness in decision making by managers and health professionals in the redirection of practices aimed at reducing cancellation rates, and, in parallel, to serve

as a means of disseminating direct strategies to the clientele to contribute to the management of possible negative feelings by the time of suspension of surgeries, through the situational diagnosis of reality and frank communication.

Reinforcing the justification of this research, it is worth mentioning that the teaching and research experience and the practice of the authors in the scope of perioperative nursing and hospital quality management also help the study presented herein, since surgical cancellation is recurrent and a problem to be handled by nurses. Based on this, the question raised was: what is the surgical cancellation rate in a public university hospital? What are the characteristics of the cancelled surgeries and reasons led to cancellation? Therefore, the objective was to identify the surgical cancellation rate in a public university hospital, as well as to characterize the surgeries and the reasons for their suspension.

## MATERIAL AND METHOD

This is a descriptive, cross-sectional, documentary, retrospective, quantitative study. The study was conducted at the SC of a university hospital located in the countryside of the state of Paraná, Brazil, whose purpose is to promote teaching, research and care.

The hospital has 210 beds exclusively used for the Unified Health System, covering a population of approximately two million inhabitants. It is a reference for the West and South-west regions of the state of Paraná, with a focus on medium and high complexity care, providing assistance to traumatized patients, neurosurgery, and care for HIV patients.

The investigated SC has five operating rooms and a post-anesthetic recovery room for inpatient and outpatient care. The surgical schedule is developed from 7:00 am to 5:00 pm daily, Monday through Friday. The nights, weekends and holiday periods are preferably assigned to situations of surgical urgency and emergency.

The study universe consisted of all elective surgeries scheduled from April to November 2013. The sample to be analyzed, in turn, included the total number of procedures that were canceled in the studied period, regardless of the reason, provided the suspension was documented in medical records or surgical scheduling, which was the only exclusion criterion adopted in the study. Thus, the patients' electronic medical record and the SC's surgical agenda, including the monthly operative schedule, were used to verify the occurrence of cancellations.

Data collection took place between December 2013 and January 2014. To determine the characteristics of the surgical cancellations, a specific form was developed for the purpose of the research, containing the following variables: patient's gender, medical specialty, surgery period, magnitude of the surgery

and causes of cancellation. Surgical cancellations were classified into three periods: before the preparation of the operating room (OR); during the anesthetic-surgical procedure; and after the preparation of the OR. The shift in which the surgery would proceed (morning and afternoon) was noted, as suggested by the literature.<sup>12</sup> The medical specialty was defined according to the notes of the surgeon responsible for the canceled operation.

The causes/reasons for cancellation of surgeries were classified into three categories, adapted from the literature<sup>11</sup>: a) related to the patient, which corresponds to their non-attendance, clinical condition unfavorable to the surgical procedure and lack of fasting; b) related to surgical planning, which refers to any organization/management aspect of the procedure and of the SC, e.g. emergency priority; inversion of surgical order; error in surgical programming; lack of beds in the Intensive Care Unit (ICU) for the postoperative period; lack of exams and/or documents; lack of time and lack of equipment; c) related to human resources, corresponding to the change of medical conduct, lack of anesthesiologist, cancellation by the responsible surgeon, and lack of preoperative preparation by the surgical team.

Data were extracted from the forms and hand-typed in a *Microsoft Office Excel* 2010 spreadsheet. The tabulated data were subjected to descriptive statistical analysis, in percentage, with the use of the same technological apparatus. The overall rate of surgical cancellation was based on the ratio between scheduled and canceled surgeries, in percentage, according to the indicator formula of the Hospital Quality and Productivity Program of the state of São Paulo.<sup>5</sup>

This study fully respected the ethical precepts that rule research with human beings established by Resolution 466/2012 of the National Health Council. Furthermore, the research project was submitted to the Research Ethics Committee of the State University of Western Paraná, receiving a favorable Opinion filed under nº 029/2013.

## RESULTS

There were 2,828 scheduled surgical procedures in the selected time period. Of these, 522 were canceled, resulting in an overall surgical cancellation rate of 18.45%. Regarding sex, 298 surgeries of men (57.09%) and 224 surgeries of women (42.91%) were canceled. Table 1 shows the frequency of surgical cancellation per month, with emphasis on October, when 391 surgeries were scheduled and 97 (18.59%) were suspended, followed by May, with 73 (13.98%) cancellations.

Table 2 summarizes the findings related to surgical cancellations according to medical specialty and reference month for analysis. The areas of General Surgery, Orthopedics, and Neurosurgery stood out in cancellations, corresponding to more than half of the cases.

Table 1 - Distribution of surgical cancellation per month – Cascavel, 2013

Month	Total number of scheduled surgeries (n = 2828)	%	Total number of surgeries canceled (n = 522)	%
April	312	11.03	52	9.97
May	470	16.62	73	13.98
June	349	12.35	50	9.58
July	197	6.97	46	8.81
August	417	14.75	63	12.07
September	346	12.23	70	13.40
October	391	13.82	97	18.59
November	346	12.23	71	13.60

In addition to the prevalent medical specialties, surgeries of medium magnitude, the morning shift and the surgical suspension prior to the preparation of the operating room also stood out as characteristics related to surgical cancellation in the present sample. Table 3 summarizes the findings about the surgical cancellation according to the shift, moment of the surgical suspension, and magnitude of the canceled surgery.

The reason for suspension was not reported in 36 out of the total of canceled surgeries (n = 522). Table 4 illustrates the findings regarding the causes of surgical cancellation, according to the categories of relationship with the patient, the surgical planning and the human resources responsible for surgery, the latter category constituting the main reason for surgical suspension.

Table 3 - Distribution of surgical cancellation (N = 522) according to shift, moment of suspension, and size of the surgery – Cascavel, 2013

Canceled Surgeries	N	%
<b>Shift</b>		
Morning	167	32.00
Afternoon	266	50.95
Non-specified	89	17.05
<b>Moment</b>		
Before preparation of the OR*	367	70.30
During the surgery	3	0.58
After preparation of the OR*	5	0.96
Non-specified	147	28.16
<b>Magnitude</b>		
Small	75	14.36
Medium	256	49.04
Large	191	36.60

\*OR - Operating Room.

## DISCUSSION

We found a cancellation rate of elective surgeries of 18.45%. This finding, by itself, is certainly much valuable for SC and hospital managers, provided it is rationally used for analysis, comparisons, and strategic planning aimed at reducing the indicator. Furthermore, the data show that the last quarter of the analyzed period had the largest portion of cancellations, around 45% of the total, suggesting that the months approaching the end of the year are more likely problematic and must be seen with higher priority by managers.

Table 2 - Distribution of canceled surgeries (N = 522) according to medical specialty and reference month – Cascavel, 2013

Medical specialty	Apr	May	Jun	Jul	Aug	Set	Oct	Nov	Total	%
General surgery	9	15	18	9	20	19	28	15	133	25.48
Orthopedics	10	24	9	11	17	9	22	21	123	23.57
Neurosurgery	14	8	11	11	12	15	20	14	105	20.11
Plastic surgery	2	7	2	5	1	7	1	0	25	4.79
Gynecology	3	3	5	0	4	8	7	7	37	7.09
Oral and Maxilo Facial Surgery	6	5	1	4	3	3	2	1	25	4.79
Urology	4	1	1	1	2	1	4	7	21	4.02
Pediatrics	2	0	0	3	1	6	2	3	17	3.26
Vascular	0	3	0	2	0	1	3	2	11	2.10
Pneumology	2	3	1	0	1	0	2	1	10	1.91
Endoscopy	0	1	0	0	1	0	2	2	6	1.14
Otolaryngology	0	0	0	0	1	1	2	0	4	0.77
Ophthalmology	0	1	0	0	0	0	1	0	2	0.39
Oncology	0	2	0	0	0	0	0	0	2	0.39
Cardiology	0	0	0	0	0	0	1	0	1	0.19

Table 4 - Distribution of canceled surgeries (n = 466) according to causes related to the patient, the surgical planning and human resources – Cascavel, 2013

Causes of surgical cancellation	N	%
<b>Related to the patient</b>	<b>80</b>	<b>17.17</b>
Non-attendance	49	10.51
Clinical state of the patient	20	4.29
Lack of fasting	11	2.37
<b>Related to surgical planning</b>	<b>100</b>	<b>21.45</b>
Error in surgical programming	29	6.22
Inversion of surgical order	28	6.00
Lack of available beds in the Intensive Care Unit	18	3.87
Lack of time	12	2.57
Lack of equipment	11	2.37
Lack of exams and documents	2	0.42
<b>Related to human resources</b>	<b>286</b>	<b>61.38</b>
Cancellation by the responsible surgeon	167	35.83
Change of medical conduct	112	24.03
Lack of anesthesiologist	5	1.08
Lack of preoperative preparation by the surgical team	2	0.44

The contrast of the overall surgical cancellation rate with the literature is difficult because there is no acceptable standard for the indicator. The cancellation rate found in this study was higher than that of two other public hospitals with the same type of care, determined in 17.3% in the countryside of São Paulo, also linked to the university,<sup>12</sup> and 13.6% in a municipal hospital in the capital of São Paulo.<sup>7</sup>

The rate found in the present study was much higher than that of another large public teaching hospital in the city of Rio Preto (state of São Paulo), which had a rate as low as 5.1% of a total of 4,870 scheduled surgeries.<sup>11</sup> Based on international scientific production, the results found here can be interpreted as unfavorable to the quality of the service in the SC investigated. We found in the literature rates of 7.6% suspension in a multicenter study with 25 hospitals in Saudi Arabia<sup>13</sup>; 11.1% of more than 50 thousand surgeries scheduled also in that country<sup>14</sup>; and only 4.4% in Lebanon.<sup>15</sup>

In contrast to the above, another study carried out also in a public university hospital in the state of Rio de Janeiro had a higher rate of cancellation of elective surgeries, determined in 27.4%.<sup>16</sup> Yet, a rate of 21.2% was recently reported for the state of Rio de Janeiro, but without mention to the type and size of the hospital<sup>9</sup>, and 26% in Oman, in the Arab region.<sup>8</sup> Although these rates are higher than the one described in the present study, comparing the results with the general literature, it can be argued that the surgical cancellation rate was slightly high.

In order to reach a more assertive interpretation of the findings, the results of the indicator of general hospital surgical

suspension rate (likewise in the present this study) with more than 50 beds sealed by the Hospital Quality Commitment Program (HQC), headquartered in São Paulo, were consulted.<sup>5</sup> In this aspect, it was noticed that, for the month of November 2013, the year of the data collection of the present study, the results of the indicator had a maximum value of 17.88 in a participating hospital, but the median of the indicator was very low in comparison with the present study, estimated at 3.73%.<sup>17</sup>

The control of quality indicators, such as the surgical cancellation rate, may be a contributing factor to reduce the undesirable event.<sup>5-8</sup> In these terms, the data described in this study are not as disparate in comparison with other surveys, particularly the national ones. They clearly demonstrate that managerial actions must be strategic and systematic in order to reduce the rates. We must go beyond mathematical monitoring of the indicator, but also aim at increasing the initiatives to improve it.

The cancellation of elective surgeries in a hospital institution acts as an indicator of the quality and productivity of the actions developed by the SC, corroborating the service's planning and reducing avoidable costs to the organization.<sup>10</sup> High rates of this indicator as understood to have a negative effect, as they hamper the patient-professional-institution bond, reduce service efficiency and increase operational and financial costs.<sup>10,11</sup> Given this, a favorable perspective of the findings is appreciated, since at least most of the cancellations (70.30%) occurred prior to the preparation of the operating room. Thus, suspensions probably did not entail a higher direct cost to the organization as if they had occurred after or during the surgery.

In the present study, the specialties that most contributed to the increase in surgical cancellations were general surgeries (25.48%), followed by orthopedic surgeries (23.57%) and neurological surgeries (20.11%). These are data that clearly reflect the profile of the investigated organization. The studied hospital is a reference in care to traumas, which, of course, can be frequently accompanied by orthopedic and neurological surgical interventions.

The aforementioned findings are also largely equivalent to another study in which the medical specialties that had their surgical procedures more frequently canceled were general surgery (20.7%), followed by otorhinolaryngologic surgery (19.0%) and orthopedic surgery (13.8%).<sup>10</sup> Therefore, surgical cancellation rates clearly need to be seen as indicators under a proactive managerial perspective, incorporating the principles and the profile of the organization; otherwise, the measure of this and other indicators may result in a bureaucratic and not strategic contribution.

In view of the above, we suggest that the hospital management determine austere measures of reduction of the surgical cancellation rate, but sharing these decisions with the body of medical surgeons, focusing on those that contribute more fre-

quently for the increase of surgical cancellation rates. This may be possible by giving priority to scheduling of surgeries of teams that have the lowest indicator in daily care, which, to the researchers' experience, has already been observed in hospitals that adhere to more robust models of quality management, such as hospital accreditation, contributing to a competitive but also educational climate. This can be a challenge to public services because of the archaic, non-strategic and collegial management models, which are still widely adopted in these institutions.

It is clear that the largest portion of cancellations of surgeries occurred for reasons unrelated to the patient; they were rather related to medical decisions and inefficient surgical planning. This is worrying and contributes to the negative appreciation of the facts. Perhaps, if communication between sectors and professionals were better, by adopting simple measures, the indicator could be more favorable to the quality of the service. Furthermore, it is known that patients can expect to wait from one to more than 30 days for a new surgical procedure for reasons often unrelated to their decision, as shown in this study.<sup>12</sup> This, in turn, results in "idle" beds in the hospital for low turnover of hospitalization rates, increased costs, risks to patient safety, and dissatisfaction among patients and professionals.

A study carried out in a teaching hospital in the countryside of São Paulo revealed that 56.3% of the patients did not attend the hospital to perform the surgery<sup>11</sup>. And another study carried out in the capital of the same state showed that this was the most prevalent reason for 33.8% of the surgical suspensions.<sup>7</sup> This can be interpreted as a favorable point of the quality of the SC investigated, in which there was a low proportion of missing patients (10.51%) compared to the literature, perhaps even due to the nature of surgeries, which were usually of large or medium magnitude. Thus, most of the patients were possibly already hospitalized. This reinforces that surgical planning and communication between professionals, especially with physicians, undoubtedly represents a key point for improvements of the indicator studied.

An alternative to minimize surgical cancellations, especially those associated to causes inherent to the patients, may be in the preoperative consultations. In these occasions, more effective guidance can be given leading to less suspensions of operative procedures.<sup>11</sup> Moreover, the use of surgical risk assessment scales, especially by nurses, can also be seen as an effective strategy to qualify the care and perhaps contribute to more rational planning aimed at reducing surgical cancellations.<sup>18</sup>

Although the causes of surgical cancellations vary, these are frequent in hospitals, especially in public institutions, due to deficiencies in the physical structure of these health services.<sup>7,19</sup> Despite this, it is necessary to reflect that the causes related to the lack of time, non-preparation of the operative room, lack of beds in the ICU, reversal of the surgical order, error in the surgical programming, lack of exams and/or documents and lack of

equipment are most likely products of the troubled dynamic commonly experienced in public hospitals.

Even though the causes for surgical cancellation are recognized as complex, they may be avoidable with the use of traditional management tools and means, such as planning, evaluation and control, allied to the competencies of the work organization by the professionals, becoming more critical and resolute.<sup>20</sup> This is even more important when cancellation rates are high (21.45%) due to surgical planning.

Given the above, emphasis is placed on nurses, the professionals historically recognized as best adhering to the principles of quality management.<sup>1</sup> However, it is also valid to reflect that nurses may need governability to control work processes in order to reduce surgical cancellation rates, as well as extensive leadership and communication skills<sup>20</sup>, especially with the medical team and with hospital quality managers.

Alternatives to reducing cancellation rates may be essentially grounded in effective communication through more rational use of data controlled by the SC; mapping the profile of surgeries and operative teams; more rational scheduling of surgical rooms through the control of the time spent in surgeries and the need for reference beds in other units; use of resources and instruments to better plan resources<sup>15</sup>; and professional commitment that, in reality investigated, clearly deserves to be monitored by the middle and high hospital management.

It is worth mentioning that the absence of inferential statistical analysis and the lack of knowledge about a standard for the studied indicator are inherent limitations to the research described here. However, we believe that the study is a great contribution to the hospital management, especially the to the SC, to guide corrective actions dedicated to reduce surgical cancellation rates, besides serving as a theoretical contribution to the construction of more robust parameters for interpretation of the indicator in question.

## CONCLUSIONS

Based on the findings and their extensive comparison with the national and international literature, we can conclude that the surgical cancellation rate was slightly high. The more prominent characteristics inherent to the indicator were: General Surgery, Orthopedic and Neurosurgery specialties; procedures of medium magnitude; cancellation before preparation of the operating room; and suspensions related to deficient surgical planning and human resources involved in the procedures.

It is postulated that the measures to improve the surgical cancellation indicator in the context investigated must be based on most effective communication between sectors and professionals, as well as on the monitoring of clinical management and hospital quality regarding the human capital.

Finally, the study is expected to foster new investigations, such as qualitative research with medical professionals as participants to better understand the phenomenon still under construction of understanding, as well as the approximation of the numerical definition of standards for the better interpretation and benchmarking of surgical cancellation rates as quality indicators.

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