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Construction and analysis of a quality indicator related to surgical cancellation in a university hospital in times of COVID-19

Construcción y análisis de un indicador de calidad relacionado con la cancelación quirúrgica en un hospital universitario en tiempos de COVID-19

Construção e análise de indicador de qualidade relacionado ao cancelamento cirúrgico em um hospital universitário em tempos de COVID-19

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Abstract

The aim was to identify the rate of cancellation of surgeries in a university hospital, as well as the specialty with the highest rate and the main reasons at the time of data collection with the presence of COVID-19. This is an exploratory, prospective, documentary study with a quantitative approach. Data will be collected through the Google Forms® platform and, later, disposed in the Microsoft Excel® Program to be analyzed. The study was approved by the Research Ethics Committee of the institution in April 2019. The rates of cancellation of surgeries and the main reasons for optimizing the work process provided in the sector were identified, streamlining the routine based on the necessary changes at critical points.

Descriptors: Elective Surgical Procedures; Hospital Surgical Center; Health Quality Management; Perioperative Nursing, COVID-19.

Resumén

El objetivo fue identificar la tasa de cancelación de cirugías en un hospital universitario, así como la especialidad con mayor tasa y los principales motivos en el momento de la recolección de datos con presencia de COVID-19. Se trata de un estudio documental exploratorio, prospectivo, con enfoque cuantitativo. Los datos se recopilarán a través de la plataforma Google Forms® y, posteriormente, se eliminarán en el Programa Microsoft Excel® para su análisis. El estudio fue aprobado por el Comité de Ética en Investigación de la institución en abril de 2019.Se identificaron los índices de cancelación de cirugías y las principales razones para optimizar el proceso de trabajo brindado en el sector, agilizando la rutina en base a los cambios necesarios en puntos críticos.

Descriptores: Procedimientos Quirúrgicos Electivos; Centro Quirúrgico del Hospital; Gestión de la Calidad Sanitaria; Enfermería Perioperatoria, COVID-19.

Resumo

Objetivou-se identificar a taxa de cancelamento de cirurgias em um hospital universitário, bem como a especialidade com maior taxa e os principais motivos no momento vivenciado da coleta com a presença do COVID-19. Trata-se de um estudo exploratório, prospectivo, documental, com abordagem quantitativa. Os dados serão coletados por meio da plataforma Google Forms® e, posteriormente, dispostos no Programa Microsoft Excel® para serem analisados. O estudo foi aprovado pelo Comitê de Ética em Pesquisa da instituição em abril de 2019. Foram identificadas as taxas de cancelamento de cirurgias e os principais motivos para que se possa otimizar o processo de trabalho prestado no setor, dinamizando a rotina a partir das alterações necessárias nos pontos críticos.

Descritores: Procedimentos Cirúrgicos Eletivo; Centro Cirúrgico Hospitalar; Gestão da Qualidade em Saúde; Enfermagem Perioperatória, COVID-19.

Introduction

A surgery can happen for different reasons such as diagnostic, preventive, therapeutic or aesthetic, through techniques that allow small incisions to be made using video or robotic materials, or large incisions depending on the subject's needs. Surgeries are classified between emergency when there is an immediate risk of life; urgency when there is no risk to life, but there is a need for quick action; and elective being that surgery previously scheduled without the person being at risk of life. It is important to emphasize that regardless of the classification of the surgery, the patient undergoes a drastic change in his routine, of greater or lesser intensity. His entire life is changed, often requiring the support of family members, and loved ones to meet the needs arising from the procedure, either before during or after it[1].

Within the dynamics of a surgical center (SC), most nurses are responsible for scheduling elective surgeries. This schedule involves choosing the ideal operating rooms for each procedure, nursing room staff, reprocessed or special material (such as orthotics and prostheses (DMI – Implantable Medical Devices)) and communication with the anesthesiology and surgical team. When an aspect of this schedule ends up evading what was expected, or due to other factors, the surgery ends up being transferred and does not happen, which ends up establishing a rupture in the administrative planning. This gap over the years and not being a unique reality of a university hospital requires an analysis to elucidate and bring about improvement processes[2].

The cancellation of a surgery can be defined by the non-occurrence or suspension of a previously scheduled surgery on the day it would be performed. Elective surgeries are defined at least 24 hours in advance, leaving time for the sectors involved in the procedure such as the Surgical Center (SC), Material and Sterilization Center (MSC), laboratory, wards and other services that can be organized. Due to several factors, they can lead to cancellation, which we can hypothesize that they can be avoided, with the unfolding of this, it generates a stressful situation between the teams, which can have repercussions on the individual's clinical and surgical status[3,4].

Health indicators measure the degree of quality of care provided within an institution, whether public or private. Indicators vary according to the sector to be evaluated, analyzing each specificity of care, assessing the degree of productivity and adherence to protocols and guidelines. When trying to measure the quality of care in a SC, some possible indicators are "interval between surgeries", "stay time", "room occupancy percentage" and "surgery cancellation rate"[5]. By analyzing an institution's surgery cancellation rate (which is the number of suspended procedures divided by the total number of procedures, multiplying the result by one hundred) it is possible to assess the reasons that decrease this amount. Cancellation rates in the literature range from 5.1% to 33% without an acceptable rate pre-established by any protocol or guideline[5].

It is important to emphasize that a small cancellation rate indicates a high quality of service and good use of resources. Since the cancellation of a surgery has an average expense of R$29.54 per patient, this amount that seems little can cause a big difference in the institution in case of a high amount of cancellation[4].

From the identification of this rate, as an indicator of quality of care, this study can support improvements in the work process of the surgical center in question. Understanding the main reasons for cancellation, and aware of the number of suspensions, it is possible to calculate the financial expense generated, optimizing the service to minimize the number of cancellations, thus increasing the quality of care, patient safety and the confidence of the professionals involved. Thus, this study is relevant to the possibility of ensuring theoretical foundation for the unit's leaders to make the necessary adjustments to raise the quality of the service provided, minimizing expenses that can be reverted to investments for the sector. When observing the dynamics of the operating room of a university hospital daily, the present study's question arises: “What are the rates of surgical cancellation and the reason for suspending surgery in a university hospital?”.

This work contributes so that human and material resources are managed based on the need for procedures in a particular sector. In the surgical context, the need for these resources directly influences the performance of the procedure since the absence of a material or a team of professionals can justify the cancellation of the surgery. It is important to assess in advance the availability of supplies and staff, considering that the late cancellation of the procedure can be harmful to the patient who, in addition to being fasting, may end up staying longer in the hospital, increasing costs for the institution, and putting its credibility with the population[5,6].

The cancellation of surgeries has been studied around the world, as it becomes a possible indicator of quality of care. There is evidence in the literature that points to organizational problems at the institution as one of the reasons for cancellation, becoming a strong influencer in the relationship between the client and his family and the care professionals. However, the cancellation can occur due to other factors such as the patient's clinical condition or even his non-attendance on the appointed day, and it is necessary to identify in the institution the main reason that leads to the cancellation, seeking to improve this aspect of care[7].

In view of this scenario and in the literature search, surgical cancellation rates vary around 20%. And they can range from very low values, like less than 1% to values like 33%, but in most studies the rates range from 5% to 20%. When analyzing the specialties with the highest number of cancellations, orthopedics, general surgery and urology are specialties that present the highest rates. Among the various moments in which surgery can be canceled, from its determination or the patient's hospitalization, more than 50% of cases occur less than 24 hours before the surgical procedure, which directly influences the organization of human and material resources. The reason for the cancellation can be lack of resources or it can cause a need for reorganization, leaving the nurse's responsibility to deal with the cancellation[7].

And as a motivation for the need to seek the main reasons for canceling the surgical procedure, it is also necessary to assess which specialties have the highest percentage of cancellation so that one can act in a timely manner at the origin of the problem. Thus, organizational order cancellations can be corrected if they are identified from studies and research. In this context, nursing comes as an important ally in the search for these data, as it has the necessary skills to manage perioperative needs that are defined 24 hours before the procedure and can more easily identify which problems need to be resolved[8].

Given what has been exposed in the existing literature, the article is justified by the need to identify the cancellation rate and the main reasons and specialties. Thus, it is possible to analyze and promote the quality of care provided within a public health institution, evaluating this indicator looking for the origin of the problem. Thus, the objectives are to identify the rate of cancellation of surgeries in a university hospital during the time experienced with COVID-19 and identify which specialties have the highest rate of cancellation and the main reasons for the suspension of surgery in a university hospital.

With the advent of the pandemic by the new Coronavirus (SARS-CoV-2), the agent of the disease called COVID-19, it generated an exponential increase in information, doubts, fears and, with the advancement of research, the production of scientific articles was elaborated concurrently with the event, technical standards, manuals, and newsletters around the world[9].

This study aims to interpret the information about cancellation and to be able to compare the quantity and cancellations to transform them into operational and assistance actions, which has been a challenge for health services in pandemic times.

Health indicators are management tools to analyze the quality of a service provided, making management more objective, assertive, and grounded. They support decision making by analyzing a situation in the work process, the availability of human and material resources and the performance of the team involved, thus allowing to verify whether the established work process flow is efficient and safe for everyone involved. It is important to emphasize that within this form of management, the necessary data are those that truly reflect the situation of the institution so that the conclusion is effective[10].

The operating room of a hospital is a sector with a large amount of work processes and service flow to ensure the safety of the patient and the professionals involved in the care. As this sector is very critical, there must be an active monitoring of the indicators so that this analysis allows the review of the work processes established to identify the most effective flow for all involved. It is important to emphasize that the formulation of an indicator should ideally be carried out in a multidisciplinary way, as they will be used to support decision-making in favor of the quality of care provided by the team[10].

One of the impact indicators of the health work process for evaluating the quality of service provided in a surgical center is the surgery cancellation rate. Since this rate is a direct relationship between the number of scheduled surgeries and the number of suspended or canceled surgeries, a low surgical cancellation rate demonstrates a high level of quality of service provided with the correct and effective use of available resources. When it comes to public health institutions, the cancellation of surgeries implies an underutilization of resources and a loss in the number of procedures, which generates a loss of financial gains since the SUS receives funding for procedures performed. In addition, it causes an increase or delay in the waiting list, which can lead to increased morbidity and mortality[2].

According to the existing literature, a surgery is canceled when a procedure scheduled the day before and included in the surgery chart is suspended, that is, elective. Scheduling an elective surgery involves a range of professionals from nursing, medicine, hygiene, laboratory teams, as well as sectors other than the surgical center, such as wards, exam sectors, blood bank, material, and sterilization center, etc. When the surgical map is released, all these professionals organize themselves according to the planned surgeries, to provide the necessary inputs and assistance to the subject of care[5].

The reasons for cancellation are varied in the literature, being categorized as related to service administration, clinical conditions of the patient or related to the work process. The reasons related to organizational problems such as lack of beds, communication failure and scheduling errors appear routinely and can be avoidable, which favors an improvement in care and consequently increases the quality of the service provided by the institution[11].

Methodology

This is a prospective and exploratory study, with a quantitative approach, based on the analysis of documentary data from the operating room of a university hospital, from January to May of 2020, which is characterized by the pandemic period with COVID-19, and this being purchased with the same period last year.

This study was carried out in the operating room (SC) of a university hospital located in the city of Rio de Janeiro. The hospital has 525 beds available, including specialized units such as cardiac intensive unit (UI), surgical and urological intensive unit, obstetric center, outpatient clinics, clinical, surgical, cardiovascular, nephrology, ophthalmology, gynecology, neurology, thoracic wards, plastic, otolaryngology, pediatric surgery (CIPE) and orthopedics, totaling more than 60 subspecialties. The hospital is a reference for urological treatments, adolescent care with the Adolescent Health Study Center (NESA), sex reassignment surgeries, high-risk pregnancy, and transplanting organs such as kidney and heart. It is important to note that the hospital does not have an emergency, being restricted to referrals through the Regulation Centers System (SISREG).

The SC in question is located on the fifth floor, and consists of 20 operating rooms, only 13 of which are routinely used, plus an emergency room and a hybrid room exclusive to vascular surgery, distributed into two odd and

even wings. The specialties that perform surgical procedures are neurology, urology, orthopedics, otolaryngology, pediatrics (CIPE), thoracic, cardiac, vascular (outside the hybrid room), plastic, maxillofacial, proctology, gynecology, and craniofacial anomalies treatment center (CTAC). The surgical technique can be open or videolapascopic, and the surgeon, together with the anesthesiology, is responsible for defining the technique according to the patient's need and health status, and robotic surgery technology is also available. The sector also has a post-anesthetic recovery unit (RPA) with six monitors available for the postoperative period and space for up to 8 pre-operative beds. Thus, it was observed that this is a large and highly complex hospital with advanced technologies and a reference in several areas, guaranteeing the population of medium and high complexity care within the Unified Health System (UHS).

The surgeries for this study follow the process already defined by the unit and are scheduled 24 hours in advance. The specialties send the list of patients, surgery, size and time to the surgical department, which is divided into two groups: surgeries that will start at 8:00 am and those that will come after (A/S), starting after cleaning the room and preparation of the team. After the specialties send the model of the map, it is sent to the anesthesiology and nursing service, so that teams are allocated in each room according to the type of procedure and request necessary inputs, such as blood component, orthotics, prostheses, and special materials. After defining both services, the surgical map template returns to the secretariat where it was drawn up and printed, being sent to the SC, MSC, blood bank, RPA, wards, laboratories, and other services included in surgical dynamics. The distribution of the surgical map was carried out until 2 pm the day before, so that there was material checking, allowing the rooms to be ready for the next day's surgeries at the end of the night shift.

The unit of analysis that was used was the surgical map and forms containing the patient's name, type of surgery and reason for suspension. The inclusion criteria will be elective surgeries, that is, those that were described in the surgical map and that were canceled throughout the day. The profile of cancellations was drawn, and the age and gender of the patient were collected, since the hospital performs surgeries in patients of all ages. The exclusion criteria were surgeries added to the map as a matter of urgency, as although they may undergo a change in surgical need (cancellation), they were not established in the surgical map according to the flow of the unit.

For the organization of elective surgeries, a printed form with all surgical procedures proposed for the day was used, called “surgical map”. This map contains the patient's full name, hospital registration, age, proposed procedure (whether the technique is open or closed), type of anesthesia and anesthesiology team, room nursing staff, name of the responsible surgeon and request for a grant. blood component. This information was arranged in a sequence of order of procedures and agglutinated in the rooms where they occurred, being made available to the reception, RPA, pharmacy, boutique, team responsible for support materials such as videolaparoscopic, image intensifier and consigned materials, team of forwarders of the sector, MSC, anesthesiology team, blood bank and wards with patients who will undergo the procedure.

The other form that was used for the organization of the sector by the nurse on duty contains the patient's name and record, the clinic where he was admitted, bed, scheduled surgery and designated operating room. This form called “room sheet” was used when searching for the patient in the sector where he was designated by the medical specialty and followed in the patient's medical record throughout the perioperative period.

Patient identification data served to ensure patient safety, not having relevance for the development of this work, therefore, they were not collected. In addition to this patient identification and surgery information, there were 8 other items that could be filled: patient time in the SC, patient time in the operating room (OR), anesthesiology time in the operating room, beginning of anesthetic induction, time of surgical team in the operating room and surgery start time, with space for delay justification. The form has a space reserved for filling out in case the surgery is suspended, with the decision time and the reason. These data were used to prepare this study, and collected in three categories, as described:

a) Procedure cancellation time: before the patient enters the SC, before the patient enters the OR, after anesthetic induction.

b) Reason for canceling the surgery: from the description on the form. All answers that differ from the pre-established ones will be placed in the category "others" to be described later.

c) Team and specialty responsible for surgical cancellation: anesthesiology team, surgery team or nursing team.

At the end of the form, the items ending surgery, patient discharge from the operating room and patient leaving the operating room also have spaces for filling in the timetable. And, on the sheet space to fill in the employees who were involved in the procedure, the nursing, anesthesiology, and surgery staff. The reasons for surgical suspension can be defined by administrative, clinical, or material lack, described below:

a) In the item "administrative causes" the reasons are: lack of blood; lack of exams ("which ones?"); not admitted; lack of staff (surgeon); lack of staff (anesthesia); high by default; fed: others.

b) In the item "clinical causes" the reasons are: angina; SAH; DM; infection ("where?"); asthma; arrhythmia; others.

c) In the item "cause of material shortage" the reasons are: PPE ("which one?"); coat/field; thread ("which one?"); sterilized instrument box; anesthetic ("which one?"); broken autoclave; airway ("which one?"); vascular access ("which one?"); others.

The proposal for data collection was based on the institution's SC's own forms, seeking information about the procedure (size, scheduled time, specialty), cancellation (time of cancellation, responsible team, and reason) and the number of surgeries scheduled on the day. This information

was taken from the surgical map and the room sheet. The data collection period was from January to May 2020 for convenience of availability in the sector. The year 2018 was not accounted for because we do not have the same specialties that can serve as a comparative basis. The years 2019 and 2020 were used as a basis and the quantities and timing of the COVID-19 pandemic were analyzed.

Given the existence of Resolutions No. 466/2012 and 510/2016 that provide for ethical aspects in scientific research, this research was part of a research project and was previously submitted and approved by the research ethics committee of the study hospital, under CAAE Opinion No. 10521519.3.0000.5259, on April 29, 2019. Following the same ethical order of conducting research involving human beings and data from documents, the science of the immediate heads of nursing and medicine was requested, in addition to maintaining within the established confidentiality. The title of the research that originated this study is "Analysis of surgical care quality indicators" being carried out from the documents in the patients' medical records and the institution's own printed matter, with the objective of analyzing the quality indicators of surgical care within the operative context, with the approved CEP opinion number 3,292,606.

Results and Discussion

Before starting the discussion of the results, it is important to contextualize the situation faced not only in the studied institution, but worldwide. With the emergence of the new coronavirus, all health institutions underwent changes in their functioning. In the operating room of the hospital studied, there was a considerable reduction in the number of surgeries compared to the previous year. In view of this pandemic scenario, it is possible to observe some points that allowed the comparison between the years 2019 and 2020 to clarify the context of the numbers that will be presented through the graphs.

The period surveyed was from January to May 2020. However, to provide a better analysis of the data obtained, a comparison was made with the previous year. In 2019, 2,839 elective surgeries were scheduled, 2,117 in 2020. Although the difference is not large, when analyzing the months, the influence of the pandemic on the normal course of the institution is noted.

Table 1. Total elective surgeries. Rio de Janeiro, RJ, Brazil, 2019-2020

Year	Elective surgeries January to May	Representativeness in %
2019	2.839	100%
2020	2.117	74,57%
Difference	722	25,43%

Importantly, the determination of the Public Health Emergency of National Importance in response to the new coronavirus pandemic took place on February 3rd, but the adaptations at the institution began in March. The efforts of the federative administrations aimed to provide the necessary support to individuals affected by COVID-19, however, without the hospital failing to serve the referenced population. That said, it is necessary to emphasize that the rates found correspond to a portion of the total, since the number of scheduled surgeries is only a fragment of the institution's surgical potential.

Bringing the figures for the years 2019 and 2020 separately monthly, which corroborated with Table 1 in the sum of the surgical amount. In January 2020 there were 595 scheduled surgeries, in February 556 and in March 550, against 549, 579 and 509 in 2019, respectively. In April 2019, 569 procedures were scheduled and 633 in May against 186 and 230 surgeries in the same period in 2020.

Therefore, although the total number of surgeries in the above-mentioned five months does not have a considerable difference between 2019 and 2020, when analyzed individually there is a significant drop due to adaptations due to the new coronavirus, as shown in Table 1 of 25.43%, represented by 722 elective surgeries.

This decrease did not only affect the number of patients undergoing procedures, but also the routine and scale of the teams. As a limitation of the research, due to the incompatibility of schedules with the surgery department, which holds the data for analysis, it was not possible to collect every day, especially in April, where there was the greatest loss of data.

The institution's surgery department also surveyed the number of suspended surgeries. From January to May 2019, the sector recorded 820 suspended surgeries out of 2,839 in total. In the same period 2020, 586 surgeries were suspended in a total of 2,117 surgeries scheduled, as shown in table 2. However, in this study, 366 suspensions were analyzed, due to the limitation, leading to a loss of 220 (38%) of the data.

Table 2. Total suspended elective surgeries. Rio de Janeiro, RJ, Brazil, 2019-2020

Year	Cirurgias eletivas suspensas de janeiro a maio	Representativeness in %
2019	820	100%
2020	586	71,46%
Difference	234	28,54%

At the end of the collection, 366 surgical suspensions were identified (almost the total number of surgeries scheduled in January 2020). The month with the highest number of cancellations was January, which presented 29% of suspensions with 105 canceled procedures, followed by March with 25% (92), and May with 22% (80) of suspended procedures. The month with the fewest suspensions was February, with 16% and 60 cancellations. April had the lowest rate due to the previously explained limitation, with 29 cancellations (8%), as shown in Table 3.

Table 3. Total de suspensões por mês. Rio de Janeiro, RJ, Brasil, 2020

Month	Total	Percentage
January	105	29%
February	60	16%
March	92	25%
April	29	8%
May	80	22%

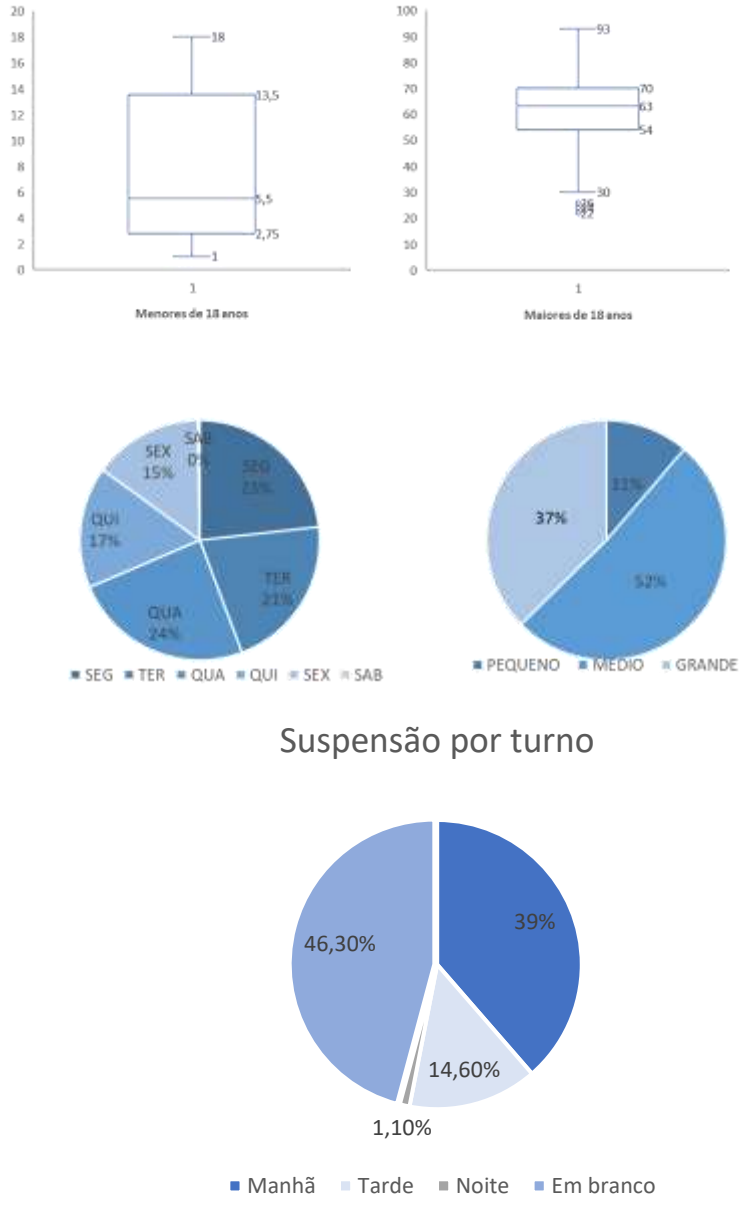
Elective procedures are scheduled from Monday to Saturday. The day with the highest number of suspensions is Wednesday, which presented 24% (89) of cancellations, followed by Monday with 23% (85) and Tuesday with 21% (77). The day with the fewest suspensions was Friday with 15% (54), followed by Thursday with 17% (60), and Saturday with only 1 suspension. This quantity refers to the total of the 5 months studied, since the daily number of appointments was not counted.

Medium-sized surgeries had the highest number of suspensions, with 51.4% (187), followed by major surgeries with 37.4% (137) and small surgeries with 11.3% (41) totaling 255 surgeries. Size is described in the surgical map of the day, but not all surgeries present this information, showing a deficit in filling out the organizational form for daily elective surgeries.

Analyzing the profile of patients who had their procedures suspended, 59.5% (217) are men and 40.5% (148) women. Ages range from 1 to 93 years, as the institution caters for all ages. For a better analysis, the data were separated between patients under and over 18 years of age. Among the first group, most suspensions occurred with patients between 2 and 13 years old. Among older patients, the age group with the highest number of suspensions is from 54 to 70 years, which suggests a likely profile of the institution's care.

Figure 1 presents graphs of the data. At the top, the two age groups, and at the bottom shows the number of suspensions per day of the week and the surgical size.

Figure 1. Profile of age groups, percentage of surgery suspensions by day of the week, surgical size and shifts. Rio de Janeiro, RJ, Brazil, 2020



When it comes to the period of the day with the highest number of suspensions, the morning shift (from 7 am to 12:59 pm) had 39% (142) of cancellations, the afternoon shift (from 1 pm to 5:59 pm) had 14 .6% (53) and only 1.1% (4) surgeries were canceled after 18 hours. This result corroborated the study that showed 54.13% of surgeries suspended in the morning[2], contrary to another study that served as the basis, which presented the afternoon period

with 54.95% of suspensions[3]. This difference can be explained by the functioning profile of each institution. Among the suspended procedures, 69.1% (253) were scheduled for the first time in the room, while 30.9% (113) were scheduled next.

Although the results of this research agree with the literature, it is important to highlight the failure to fill in the data. Of the 364 data collected regarding the cancellation shift, 46.3% (165) had no information regarding the suspension time. This demonstrates once again that the forms available to organize the work process were not filled out properly. One of the possible reasons for this difficulty is the printed format, which may be outdated and does not provide the options that would best suit the daily work process of the sector.

The moment of suspension in relation to the patient, that is, at which point in the perioperative period it was when the suspension occurred, is directly related to the patient's fasting time. Of the 366 suspended procedures, 340 occurred before the patient was admitted to the operating room, corresponding to 92.9% of the data. After the patient is admitted to the operating room of the institution studied, he/she waits in the anesthetic recovery room where the venipuncture is performed, and only then goes to the room.

This moment is identified in the data as "before the patient enters the operating room" and corresponded to 5.8% (21) of the result. During the anesthetic induction process, there were changes that made the procedure impossible, such as anaphylactic reactions or electrophysiological decompensation, which led to the suspension of surgery in 5 patients (1.3%). Some authors have shown in their studies that 53% of the procedures are performed in the 24 hours prior to surgery, in some cases even suspending 1 hour before the patient is admitted to the operating room[6]. The data found in this research corroborate what is described in the literature, since almost all procedures were suspended before the patient left the sector of origin to undergo the surgery.

The specialties that presented the highest rate of cancellation were cardiac surgery with 22.4% (81), followed by vascular surgery with 16.4% (60) and neurosurgery with 14.7% (54) of suspensions. Given the level of severity of patients undergoing cardiac procedures, around 2 patients were placed on hold per day, which brought an increase in the number of cancellations, since the specialty presented 3 to 4 elective surgeries per day. This dynamic led to a greater number of suspensions, and justified being the specialty with the highest rate, contrary to the literature that presents orthopedics, proctology, and urology as the specialties that most suspended surgeries. In this study, orthopedics presented 1.4% (5) and urology 13.3% (49) of the suspensions. Another important factor is that among the 19 specialties that performed procedures at the institution, 13 totaled 25.4% (93) of the suspensions, which was close to the total number of suspensions in cardiac surgery.

Below, in Table 4, the total of suspended procedures according to a survey by the sector's secretariat. Although the total is different, it is still possible to see that cardiac surgery remained the specialty with the highest number of suspensions, accounting for 20% (119) of them, followed by vascular surgery with 17.7% (104) and neurosurgery with 14.6% (86).

Table 4. Total suspensions by specialty in 2020 according to a survey by the department of surgery. Rio de Janeiro, RJ, Brazil, 2020

Specialty	Jan/20	Feb/20	Mar/20	Apr/20	May/20	Total
General surgery	12	10	5	1	3	31
Vascular surgery	24	23	22	19	16	104
Cardiac surgery	28	19	31	17	24	119
Proctological Surgery	4	0	7	4	4	19
Thoracic surgery	3	4	7	0	3	17
Plastic surgery	3	8	2	0	0	13
Pediatric Surgery (CIPE)	2	7	0	0	0	9
Neurosurgery	21	17	24	6	18	86
Urological Surgery	18	13	25	11	12	79
ENT surgery	14	5	13	4	6	42
Orthopedic Surgery	3	8	3	0	1	15
hand surgery	0	1	0	0	0	1
Gynecology Surgery	4	3	3	0	1	11
Maxillofacial Surgery	3	5	0	0	0	8
CTAC	0	0	1	0	0	1
gastric surgery	0	1	0	0	1	2
Dermatology	0	1	0	0	0	1
Others	8	9	9	1	1	28
Total	**147**	**134**	**152**	**63**	**90**	**586**

When it comes to the professional category that carried out the suspension, we have another limitation in the research. There is no option on the printout to describe who canceled the procedure (whether it was the surgeon, the anesthesiologist, or the nurse), which made it difficult to analyze this information. In addition, 14.3% of the suspensions were not signed by any professional. Among those who were, 78% (283) were suspended by the surgeons, 6.3% (23) by the anesthesiologists and only 1.4% (5) by the nurse on duty. Of the latter, suspensions were signed because the surgeon had communicated it verbally, without filling out the form, or the procedure in question was an imaging exam under anesthesia, performed outside the operating room. We also found authors who presented values in their studies where 35.8% of the suspensions performed by the surgeon, which suggested the data found in this research are in accordance with the literature[11].

When analyzing the reasons for suspension, it is important to note that not all forms were correctly filled out or had some specific reason. Of the 366 suspensions, only 268 were justified, since 17.7% (64) were completely blank, making it difficult to analyze the results.

Among the reasons found as justification, 52.8% (161) are of an administrative nature, with 16.1% (49) of patients who were "not hospitalized". This result is in line with that found in the literature, as absenteeism corresponded to 33.8% of suspensions in studies[4], while other authors presented 10.5% of suspensions for the same reason[11]. As for the clinical reasons for the cancellation of the procedure, 11.5% (35) were due to a "change of conduct", which is below that found in the same study that presented 24% of the cancellations[11], while other authors presented 14.4% of the suspensions as being "at the surgeon's discretion" and the lack of material occurred in 3.9% (12) of the suspensions [2].

Table 5 shows the causes of cancellation. It is noteworthy that among the 9 patients who had the procedure suspended due to respiratory complications, 3 had COVID-19 confirmation. It is not possible, however, to certify that only 3 of the suspensions were due to coronavirus infection, since data were collected only until May, before the peak of the pandemic and clinical complications, which were not all specified.

Table 5. Reasons for cancellation. Rio de Janeiro, RJ, Brazil, 2020

Reason	Cause	Total	
Administrative 52.8% (161)	Not admitted	16.1% (49)	
	Stand by	9.8% (30)	
	In advance of the hour	5.9% (18)	
	Ate	4.3% (16)	
	Missing exam	3.9% (13)	
	Lack of material	3.9% (12)	
	Rescheduled/Already performed	3.6% (11)	
	Outside the sector	3% (9)	
	High	0.7% (2)	
	Lack of signed term	0.3% (1)	
Clinicians 27.9% (85)	Change of conduct	11.5% (35)	
	cCinical complication	9.5% (29)	
	Urgency	3.9% (12)	
	Respiratory complication	3% (9)	**3 Covid-19**
Miscellaneous 19.3% (59)	Others	6.6% (20)	
	Unreadable	5.2% (16)	
	Lack of blood	3.6% (11)	
	Lack of vacancy in UI	3% (9)	
	Refused procedure	1% (3)	

When calculating the suspension rate (No. of suspensions/No. of schedules = multiplied by 100), we have two different results caused by the limitation of the data collection process. Based on the results found in the research, the suspension rate corresponds to 17.2%, being within the literature that presents values between 6% and 20%[11]. However, when evaluating the rate from data collected by the department of surgery, we have a jump to 27.9% of canceled surgeries, presenting a considerable clinical profile of more than a quarter of all surgeries scheduled in the first five months of 2020.

The theme has been addressed in research in the health area and thus the importance of projecting the factors, whether caused by administrative, clinical, or other reasons, which result in suspensions, was verified. This raises several discussions regarding the administrative organization of institutions, the management in the CC, the reassessment of processes. After knowing the suspension rate, it is possible to optimize the use of operating rooms and thus contribute to the performance of a greater number of surgeries, benefiting users of these services[12,13].

Final Considerations

In view of the above, we have, as the institution's surgical suspension profile, male patients, aged 54 to 70 years, who had their procedures suspended in the morning, although 49% of suspensions do not have the cancellation time identified in the printed.

Of the total number of patients with suspended surgery, 69.1% were scheduled for the first procedure in the room on the day, and had their suspension performed before entering the operating room (92%). As almost half of the results did not have the suspension time, even though most patients have their procedure suspended before

entering the operating room, it is not possible to assess the time of fasting that this patient was submitted to. As a result, there is no guarantee that these procedures are suspended before lunchtime, allowing the patient's diet to be released and allowing the end of fasting.

The most suspended surgeries were cardiac, due to the dynamics of the specialty, followed by vascular surgery and neurology patients. Almost 80% of the procedures were suspended by the surgeon who presented administrative reasons as the main cause of suspension, since of the 63% of procedures suspended for this reason, 16% corresponded to patients who were not hospitalized on the day of the scheduled surgery.

The cancellation rate ranged between 17.2% and 27.6%, being high when compared to the literature. It is a worrying value, since the cancellation of surgeries is directly related to the quality of care provided, leading to increased fasting, loss of credibility of the service and reformulation of the organization of the sector. In addition, the cancellation of the scheduled procedure causes negative feelings of frustration and sadness in patients, increasing the length of hospital stay and, consequently, the risk of hospital infections and the expense of the institution.

Understanding that 80% of cancellations can be reversed, especially when it comes to administrative suspensions, the results of this research show the need and reformulation of work processes, aiming at improving quality. If of the total suspended procedures, 16% were non-hospitalized patients, this suggests a need for improvement in the team's communication with the subject of care. Another aspect that needs to be reversed is the failure to complete the form properly, as several crucial points of analysis such as time and reason for suspension were blank, making it difficult to identify the main problems and consequently to resolve and improve the quality of care.

As a suggestion of the research, there is the reformulation of the form that organizes the daily procedures, as well as the awareness of professionals involved in the transoperative period. This awareness will occur not only about the correct filling out of the form, but also about the direct implications for the institution and the patient after the suspension of a scheduled procedure. In this way, it will be possible to evaluate in the future in a more reliable way the errors in the daily work process of the operating room, increasing the quality of care and mainly optimizing the service time and consequently the financial, human, and material resources involved.

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