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THE FREQUENCY OF ELECTIVE SURGICAL OPERATIONS CANCELLATION IN RIYADH, SAUDI ARABIA

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Abstract:

Background: *Cancellation of surgical operations on the proposed day is a significant problem worldwide, and this forms the major issue for the ineffective utilization of the operations room including all staff who contribute in the cancelled operations as physicians and other medical professionals. Despite that, the quality of any health care services can be measured by the cancellation rates of elective surgeries.*

Methods: *retrospective cross-sectional study for 10262 cases were collected from a tertiary medical hospital in which the surgery was cancelled, starting from January 2015and ending in December 2019, these cases were taken without selecting a specific specialization or type of operation. Data analysis done according to the age, gender, responsible side, and the reason and type of the Cancellation.*

Results: *About 10262 of medical records were selected and reviewed from January 2015 till December 2019 at a Tertiary medical hospital in Riyadh. This study showed that more than half of surgery cancellations from different departments were mostly caused by surgeons (56.5%), while (36%) were caused by admission offices, and (7.4%) were by other departments. The highest rate of cancellations was in 2018, while lowest was in 2019. The most common reasons for Cancellation were non-admitted patient (32.4%), medical reasons (24.9%), and booking-related reasons (18.2%), however, other findings showed that most of the cancellation reasons were patient-related (60.9%), administrative or booking related (21.2%), and facility or staff related (17.5%).*

Conclusion: *In order to minimize surgical operations cancellation, we strongly recommend creating a pre-admission unit and occupying it with competent nurses who are capable of raising patients' awareness, assess their co-morbidities, absorbing their worries and anxiety, and improving their satisfaction.*

Keywords*: Operation cancellation, elective surgery, tertiary medical hospital, electivesurgery, Riyadh*

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INTRODUCTION:

Surgery cancellation is defined as a scheduled surgery in the operative list that is not done on the intended date and time. Cancellation of surgical operations puts weight on hospitals in perspective of the increase costs. [1,2] It increases the patient's stay in the hospital along with the associated inconvenience, which can lead to the time wastage of surgeons and staff as well as the underutilization of the operation theatre. Therefore, Cancellation of operations on the proposed day of surgery is generally not desirable, where a family member(s) of the patients may miss more workdays when surgery is cancelled, leading to increase absenteeism and decrease productivity.[3]

Surgery cancellation is one of the undesirable occasions that should be studied by the hospital to identify the underlying reasons for Cancellation, whether it's due to physicians, patient, system, or procedures as it has adverse implications on the health system and patients. It is an issue of the healthcare efficiency, as well as a major contributor to the waste of health resources, thereby this eventually led to emotional trauma and decrease patients and their families' satisfaction.

The Cancellation of surgical operations leads to a significant load of the health budget. Major hospitals invested tidy resources in maintaining operation suites and having the surgeons and theatre workers accessible and available on a specific schedule. However, a persistent problem in most hospitals is the short-notice Cancellation of scheduled operations at the last minute, even up to the day of surgery. In some cases, patients are ready for surgery, and workers are assembled and expecting to work. In other cases, patients and staff might not be affected directly (e.g., when a doctor cancels an operation and patient is notified, but operation theatre booking is still retained). Late Cancellation of planned operations is a major issue that results in the improper utilization of operation theatre time and hence a waste of resources. It is additionally unpleasant andburden to patients in terms of working days missed out, and the disturbance of everyday life. Research reports have shown depression impacting the Cancellation of surgery on patients and of the high level of emotional involvement before the operation [4, 5].

Patient satisfaction, staff morale, hospital-patient relationships, and training account for the key affected proponents associated with repeated surgical cancellations. The lack of use of theatre time has self-evident repercussions for waiting lists. There is little literatureavailable on the reasons for elective surgical Cancellation, which is inevitably multifactorial [6]. In the UK for example, 8% of scheduled elective operations are cancelled nationally, within 24-hours of surgery [7]. Generally, in total 10% up to 40% of booked elective operations are cancelled before the surgery takes place [8]. The reasons incorporate Cancellation by the patient, Cancellation for ineffectively optimized therapeutic conditions, or cancellations due to the destitute organization, lack of coordination between the surgical group and the anesthetist, bed managers, and the surgical team, and poor coordination between the patient and the hospital admission [8]. The review commission has evaluated that in around 5% of clinics within the UK. Most of the surgeries' lists were consistently over-booked. Surgeries list may over-run because of delayed starts, slow turnover, unanticipated surgical/ anesthetic troubles, or staff deficiencies. many of these are hard to measure. However, one relatively easily measured factor is the possibility that some operating lists are predictably over-booked.

Between 10% and 40% of the booked elective operations may get cancelled even before the surgery takes place [9]. The most widely recognized reason for the rest of the cancellations was the absence of the theater time (i.e., over-booked operation records) [10]. A wide variety of reasons of Cancellation including patient factors, Cancellation for inadequately optimized medical conditions, or Cancellation because of regulatory reasons [11]. An operating list may over-run because of delayed starts, slow turnover, unanticipated surgical/anesthetic problems, or staff shortages.

All patients scheduled for surgery undergo a pre-anesthetic checkup well before the surgery. Last moment cancellations of scheduled surgeries are arguably an issue of health care quality as well as a major cause of waste of health resources [9].In addition, delayed hospitalization causes uneasiness, frustration, anger, emotional involvement and inconvenience to patients and their families, quite

apart from increasing the cost in terms of working days lost and disruption to daily life [9, 10]. The

oversimplified way to resolve the issue of late cancellations focuses on finding the reasons for these cancellations, and supply an arrangement for each cause separately, or collectively for all recognized causes. The rates and causes of cancellations are different and vary from onehospital to another [11].

Study Objectives

1. To determine the causes of elective operations Cancellation according to different specialties and departments in a tertiary medical hospital in Riyadh.
2. To highlight the most common reasons of elective operations Cancellation.
3. To highlight the different types of elective operations Cancellation.
4. To correlate the incidence of the type of Cancellation with the year.

SUBJECTS AND METHODS:

The study is retrospective cross-sectional, designed to assess the frequency of elective surgery cancellation and to measure the association between the frequency and various causes of elective surgery cancellations. The prospect entails techniques inclusive of thestudy period, area, sample size, inclusion criteria, exclusion criteria, and variable definitions. In Riyadh, Saudi Arabia, a tertiary medical hospital outlines the research study area, which shows the retrieved records for the research covered 5 years from January 2015 to December 2019. Additionally, the inclusion criteria involved assessing all patients who had appointments for surgical operations, while the exclusion criteria were based on patients who had no appointment for surgical operations within the research's outlined time frame. Following the inclusion criteria, the research acquired a total of 10262 medical records, which were at par with the recommended approaches.

Moreover, age in years, Gender: Male /Female, City: Riyadh, Hospital: A tertiary medical hospital in Riyadh, account for the variable definitions of the research. The study outlines that other files achieved Cancellation due to patient-related, facility or staff-related, administrative or booking related despite the collected medical records. The patient-related reason resulted from no show/ not admitted patients, the patient's death, or medical reason. On the other hand, facility or staff related reasons were due to either surgeon relation, anaesthesia relation, technician relation, or no bed availability in sectors such as ICU (Intensive Care Unit)/ HDU (high-dependency Unit)/ NCCU (Neurological Critical Care Unit)/ PICU (Pediatric Intensive Care Unit)/ NICU (Neonatal Intensive Care Unit). Other potential reasons included no implants, instruments, or equipment, cases needing further investigations, no blood products/donor availability, and prioritizing emergency cases over elective ones. Lastly, the administrative or booking related approaches resulted from patients on the waiting list or the surgery had already been done in the facility.

Methods of data collection and analysis

Data was collected and were analyzed by SPSS Ver. 24, where descriptive and analytical analysis where applicable and carried out.

Ethical consideration

The ethical approval for the study was granted by the Institutional Review Board (IRB) of King Fahad Medical City (KFMC) (IRB approval; 19-433E). The approval consideredall ethical issues by ensuring all the possible risks were considered, minimized and deemed acceptable.

RESULTS:

The Cancellation of medical surgery puts the weight on clinics in the perspective of the increase in hospital costs. In orderto study this problem and get deep to identify the underlying causes and which side being responsible most commonly. We have collected data for the years 2015 – 2019. Attribute included in the dataset years from 2015 till 2019 according to the age, gender, the responsible side, types and reasons of Cancellation.

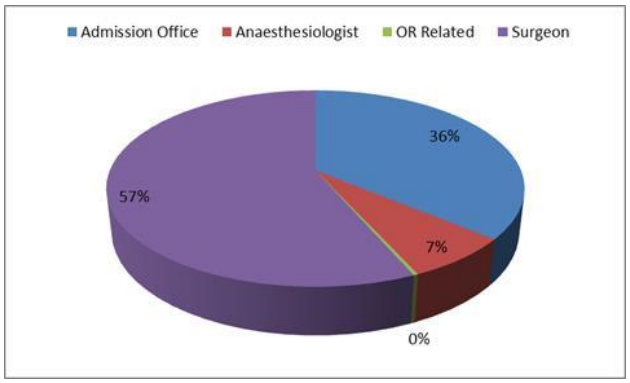

Figure 1: **More than half of the elective surgery cancellation in the past five years wasdone by surgeons (56.5%),**

The distribution of operation cancellation by different specialties and departments

(36.1%) was done by the admission office, (7.1%) by anesthesiologists and only (0.3%) was OR related.

Different cancellation types

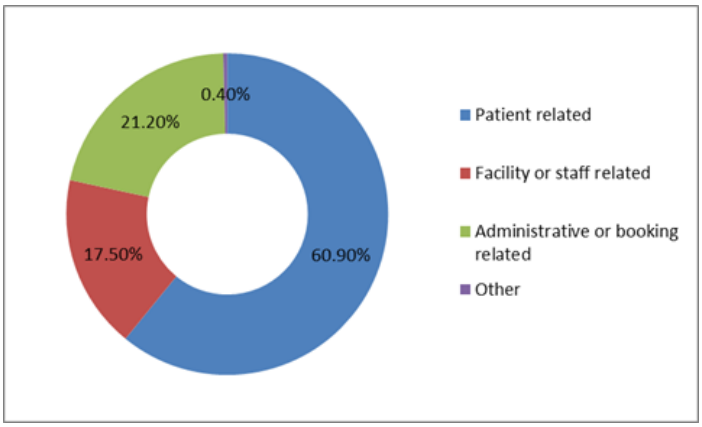

Figure 2: Most of the cancellation underlying cause is patient related (60.9%), administrative or booking related (21.2%) and facility or staff related (17.5%).

Table 1: Cancellation by year

Year	Frequency	Percent
2015	2036	19.8
2016	2239	21.8
2017	2385	23.2
2018	2411	23.5
2019	1191	11.6

Even though the year of 2018 has the highest rate of Cancellation (23.5%), the year after2019 had the lowest rate (11.6%), which means that the rate had dropped by almost (50%) in just a year!

Table 2: The most common reasons for Cancellation

Cancellation Reason	Frequency	Percent
Booking related	1868	18.2
No show/ non-admitted	3328	32.4
Medical reason	2556	24.9
No ICU/HDU/NCCU/PICU/NICU Bed	833	8.1
Patient-related	355	3.5
No Implants/ No Instruments/Equipment	102	1
OR related	587	5.7
Surgeon related	115	1.1
Anesthesia-related	46	0.4
No Blood Available/Donor	6	0.1
Patient died	14	0.1
Surgery already done	296	2.9
prioritize to an emergency case	53	0.5
Patient in the waiting list	12	0.1
Needs further investigation	21	0.2
Technician related	30	0.3
Others	40	0.4
Total	10262	100

Results showed that the most common reason for Cancellation in the past five years wasthe no show/ non-admitted (32.4%), Medical reason (24.9%), and Booking related (18.2%). Also, there were 296 cases (2.9%) cancelled because the surgery was already done. 587 (5.7%) was related to the OR.

Table 3: Cancellation by gender

Gender	Patient related	Facility or staff related	Administrative or booking related	Other
Female	51%	51%	59%	33%
Male	49%	49%	41%	68%

It seems gender has no effect on Cancellation for reasons that related to the patient (51% female, 49% male). However, when Cancellation is related to an administrative reason, a female has a higher rate than male (59% female, 41% male), which may indicate that women have difficulty reaching out hospitals in some cases or just administrative officerare more likely to cancel surgery if it for a woman comparing to a man.

Table 4: Comparing between cancellation type and year

Cancellation Type (categoric)	2015	2016	2017	2018	2019
Patient-related	1145	1253	1529	1539	787
Facility or staff related	187	274	468	526	338
Administrative or booking related	680	701	387	343	65
Other	24	11	1	3	1
Total	**2036**	**2239**	**2385**	**2411**	**1191**

Cancellation type related to booking was higher than facility or staff related at the beginning in the years 2015 and 2016, but was not in later in the years 2017, 2018, and 2019. Which might be associated with the improvements with automated systems in thetertiary medical hospital in Riyadh.

DISCUSSION:

This retrospective cross-sectional study was conducted in Riyadh city to assess the frequency of elective surgical operation cancellation and to measure the association between the frequency and various causes of the Cancellation. For the purpose of this study, about 10262 of medical records who fulfill the inclusion criteria were selected andreviewed from January 2015 till December 2019 at King Fahad Medical City in Riyadh, Saudi Arabia.

This study showed that more than half of cancellations of surgical operations according to the departments in the past five years were done by surgeons (56.5%), (36.1%) were done by the admission offices, and (7.4%) were done by other departments. The highest rate of cancellations was in 2018 and the lowest was in 2019. The most common reasons for cancellations in the past five years are non-admitted patient (32.4%), medical reasons (24.9%), and booking related reasons (18.2%), however, other findings showed that most of the cancellations underlying cause were patient related (60.9%), administrative or booking related (21.2%) and facility or staff related (17.5%).

A similar study conducted in Makkah in 2015 by Khalid O Dhafar and his colleagues [12]. Showed that most of the case cancellations were because of patient-related issues, mainly, patient failed to show up, it also showed that according to a category, (42.81%) rate of Cancellation was patients related, while (20.03%) was facility- related. Many other studies worldwide also support our results [13,14,15,16 and 17].

The cancellation factor is an effective reflector of operations rooms (ORs) services utilization. Macario A in 2006 mentioned that <5% case cancellation rate showed the optimal utilization of the ORs services [18], while the Australian health department set a benchmark of <2% for the rate of case cancellation for any reason and Cancellation because of medical conditions was set at <1% and patient failed to attend was <0.5% [19].

CONCLUSION:

In order to reduce surgical operations cancellation, we strongly recommend creating a pre-admission unit and occupying it with competent nurses who are capable of raising the patients' awareness, assessing

them for the co-morbidities, absorbing their worries and anxiety, and improving their satisfaction.

Conflict of interest

No conflict of interest.

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