



# The Incidence and Associated Factors of Patient Cancellation Scheduled for Elective Surgery from February to May at Debremarkos Comprehensive Spetialized Hospital, Debremarkos, Northwest Ethiopia, 2022gc

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**Keywords:** Cancellation; Elective surgery; Debremarkos comprehensive specialized hospital; Ethiopia.

**Abbreviations:** ASA: American society of anesthesiologist; DMU: Debre Markos University; DMCSH: Debre Markos Comprehensive Specialized Hospital; OR: Operation Room; OT: Operation Theatre.

## Abstract

**Background:** High rates of cancellation of surgical procedures are common in hospital settings which may subsequently lead to economic loss to hospital besides burden given to patients, their families and medical teams. It is well recognized that cancellation of patients from elective theatre operating lists increases cost, decreases efficiency, duplicates workload and wastes operating room time. Cancellation of elective surgical procedures also causes significantly emotional trauma to the patients as well as their families and the community in general, and its impact on hospital resources is great due to prolonged hospitalization and high cost of health care [1]. This study aimed to assess the incidence and causes of patient cancellation scheduled for elective surgery in Debre Markos Comprehensive Specialized Hospital., Debremarkos, Northwest Ethiopia, 2022 GC.

**Methods:** A prospective cross sectional study was conducted on cancellation of scheduled surgery at Debremarkos comprehensive specialized hospital with total of 282 sample size from February-01-May-13 consecutive months of 2022 GC. The data was collected from operating room daily surgical schedule, preoperative anesthesia record sheet, primary physicians, and the anesthetist responsible for the preoperative assessment and conducting the case and by communicating patients if required. Analysis will be done by using SPSS (Version 20). Descriptive as well as analytic statistics are used for variables and data will present by tables, graphs, charts, and texts.



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**Result:** A total of 1055 patients were scheduled for elective Surgery in DebreMarkos comprehensive specialized hospital. During the study period while 282(26.7%) of the patients had their surgery cancelled for various reasons in DebreMarkos comprehensive specialized hospital. The two most frequent reasons for cancellation were lack of bed (50.0%) and unfit for anesthesia (15.2%) in DMCSH.

**Conclusion and recommendation:** In conclusion, the cancellation rate of scheduled surgeries is high in the general adult surgery in DebreMarkos comprehensive specialized hospital. The majority of causes are foreseeable, avoidable and many are related to the hospital itself. We recommend that a facility for hospital preadmission be created.

## Introduction

The advantages of preoperative patient assessment prior to the surgery are to optimize medical condition of the patient before surgical procedure, improved patient safety and satisfaction, reduction of resources in terms of preoperative medical consultation, laboratory investigations and reduced length of hospital stay [2]. Cancellation of elective operation on the intended day of surgery is considered when the patient's name has appeared on the list for surgical operations but the operation was not done on the intended scheduled date [3]. The Operation Theatre (OT) has been reported to be the heart of a hospital requiring considerable human resources and expenditure from the hospital budget [4]. Most hospitals in developed countries invest considerable resources in maintaining operating suites and having surgeons and theatre staff available on an agreed schedule. However, in developing countries where resources are limited, cancellation of elective surgical operations due to various preventable reasons is a common phenomenon in most hospitals. It is well recognized that cancellation of patients from elective theatre operating lists increases cost, decreases efficiency, duplicates workload and wastes operating room time [5].

Cancellation of elective surgical procedure causes significant emotional trauma to the patient as well as their families and the community. It is recognized that cancellation of patients from elective operation increase cost, decrease efficiency, duplicates work load and wastes operating room time [6]. Elective surgery cancellation always lead to insufficient utilization of man power and hospital resource and can also lead to an increase in patients treatment expenses due to prolonged hospital stay and in many cases, repetition of preoperative preparation and management [7]. The incidence of cancellation of elective surgical operations has been reported in literature to range from 20–40%. The causes of cancellation of elective surgical procedures are multifactorial and they tend to vary from one hospital to another [8]. In general, its impact on hospital resource is great due to prolonged hospitalization and high cost of health care [9]. Generally, the aim of this study was to analyze the frequency, associated factor and trend of cancellation of elective surgery operations in our environment and to identify the appropriate solutions for better patient management.

## Methods and Materials

### Study area, design and study period

A hospital-based Prospective cross-sectional study was conducted in Amhara region, East Gojam Debre Markos Comprehensive Specialized Hospital on patients who were scheduled

for elective surgery from February 01 to April 30, 2022 GC.

### Source and study of populations

All elective patients appointed for major surgery at DMCSH from February 01 – May 13, 2022 GC and all patients cancelled from their elective surgery in surgical, obstetrics and gynecology, pediatrics and child health, and ophthalmic ward at DMCSH from February 01 – May 13, 2022 GC.

### Inclusion criteria and exclusion criteria

All Patients scheduled for elective surgery at DMCSH from February 01 – May 13, 2022 GC and data without full information, Patient scheduled in minor OR and Patients who are operated on emergency.

### Sample size determination and sampling procedure

A single population proportion formula,  $[n = (Z_{\alpha/2})^2 p(1-p)/W^2]$ , is used to estimate the sample size to be included in the study. Due to lack of similar study about the cause and incidence of patient cancellation scheduled for elective surgery, a 50% is used for sample size determination by considering the following assumptions; 95% confidence interval, Marginal error of 5%.

The sample size is determined by using 95 % level of confidence ( $z = 1.96$ ), 50% as probability of success ( $p = 0.5$ ), 50% probability of failure ( $q = 1 - p = 0.5$ ), and 0.05 as margin error i.e  $d = 0.05$

$$d = Z_{\alpha/2} (p q/n)^{1/2}$$

$$n = (Z_{\alpha/2})^2 * (p q)/d^2$$

$$n = (1.96)^2 * (0.5 * 0.5)/(0.05)^2$$

$n = 384$ , since  $N < 10,000$ , Where  $N =$  study population (Biostatistics, eighth edition, page 194).

$$nf = ni/1 + (ni/N)$$

$$nf = 384/1 + (384/1055) = 282$$

### Study variables

The dependent variable is those patients cancelled from elective surgery and the independent variable is Socio-demographic factors, planned procedure, Availability of surgical equipment.

### Data collection tool and procedures

The data were collected using a structured questionnaire. The questionnaire is developed in English version by revising literature from previous similar studies and a number of questions that address the objective of the study were developed. The data had been collected by three-fourth and two third-year anaesthesia students after being given adequate training.

### Data quality assurance and data management

The two-day training was given about data collection procedure for those data collectors and supervisors regarding the study purpose, how to conduct the interview, how to administer the questionnaire, how to take consent, keep confidentiality and respect the right of the participant.

### Data processing and analysis

The data was processed and analyzed using SPSS version 20. The data was interpreted using descriptive statistics computed

to determine frequency and percentage. The result will be presented by tables, bar graph and pie-charts.

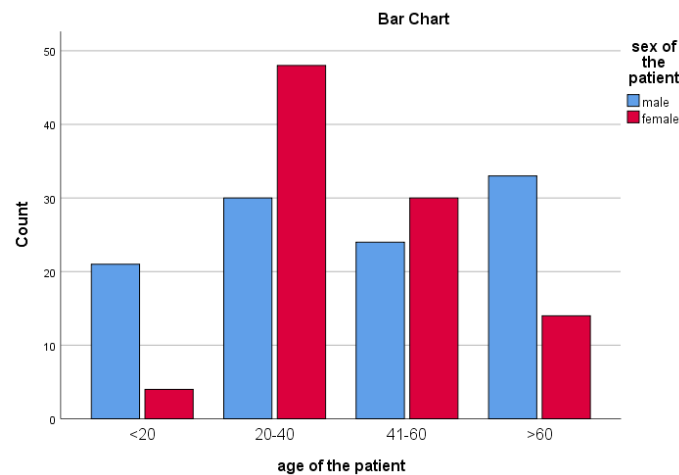
**Result**

During the study period while 204 of the patients had their surgery cancelled for various reasons in Debre Markos Comprehensive Specialized Hospital. Reasons for cancellation are summarized in (Table 2) for DMCSH. The two most frequent reasons for cancellation were lack of bed (50.0%) and patient unfit for anesthesia (15.2%) in DMCSH. The rest (34.8%) causes of cancellation in DMCSH included NPO time of the patient, no availability of surgical equipment, delayed lab result, surgeon not available, patient refusal, patient on medication, no need of surgery, acute medical illness, patient requires other surgical work up, no availability of OR time, anesthetist not available and others.

General surgery had the highest number, 100 (49.0%) of cancelled cases in DMCSH (Table 2) However, ENT surgery had the lowest 2 (1.0%) cancellation rate in DMCSH. The most common reason for cancellation of elective General surgical cases was lack of bed in DMCSH.

**Table 1:** The percent of operation cancellation by age and sex at, Debre Markos Comprehensive Specialized Hospital, Debre Markos , Ethiopia, 2022GC.

		Sex of the patient		Total
		Male	Female	
Age of the patient	<20	21	4	25
	20-40	30	48	78
	41-60	24	30	54
	>60	33	14	47

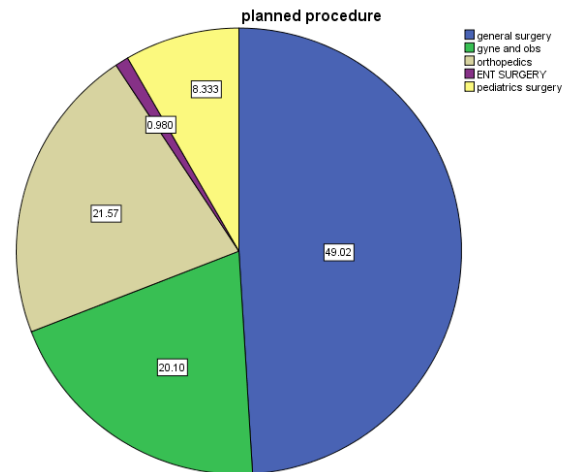


**Figure 1:** Bar graph of age and sex of rate of cancellation at Debre Markos Comprehensive Specialized Hospital, Debre Markos, Ethiopia, 2022GC.

General surgery had the highest number, 100 (49.0%) of cancelled cases, however, ENT surgery had the lowest 2 (1.0%) cancellation rate in DMCSH (Table 2).

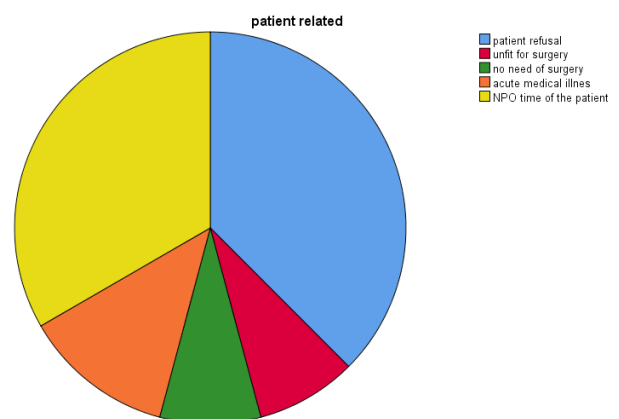
**Table 2:** Distribution of cancelled patients by planned procedure of elective surgery in Debre Markos Comprehensive Specialized Hospital, Debress Markos, Ethiopia, 2022GC.

Valid	Frequency	Percent
General surgery	100	49.0
Gyne and Obs	41	20.1
Orthopedics	44	21.6
ENT SURGERY	2	1.0
Pediatrics Surgery	17	8.3
Total	204	100.0



**Figure 2:** Distribution of cancelled patients in Debre Markos Comprehensive Specialized Hospital, Debre Markos, Ethiopia, 2022 GC.

The rest (34.8%) causes of cancellation in DMCSH included NPO time of the patient, no availability of surgical equipment, delayed lab result, surgeon not available, patient refusal, patient on medication, no need of surgery, acute medical illness, patient requires other surgical work up, no availability of OR time, anesthetist not available and others in (Table 3).



**Figure 3:** Patient related cause of cancellation in Debre Markos Comprehensive Specialized Hospital, Debre Markos, Ethiopia, 2022GC.

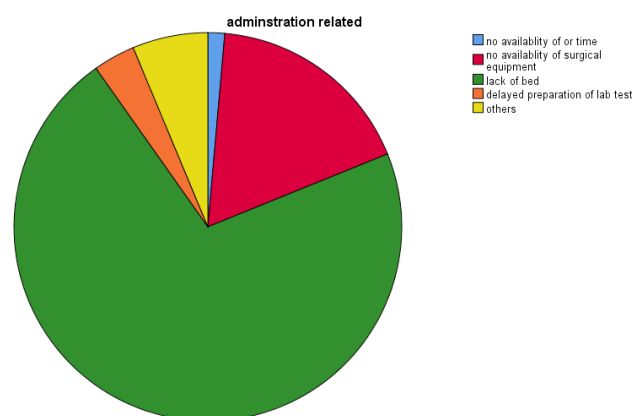
**Table 3:** Reasons for cancellations of Scheduled elective surgical cases in Debre Markos Comprehensive Specialized Hospital, Debre Markos, Ethiopia, 2022 GC.

Patient related	Frequency	Percent
Patient refusal	9	4.4
Unfit for surgery	2	1.0
No need of surgery	2	1.0
Acute medical illness	3	1.5
NPO time of the patient	8	3.9
Total	24	11.8

The most common reason for cancellation of elective General surgical cases was lack of bed in DMCSH.

**Table 4:** Administration related of patient cancellation in Debre Markos Comprehensive Specialized Hospital, Debre Markos, Ethiopia, 2022 G C.

Administration related	Frequency	Percent
No availability of or time	2	1.0
No availability of surgical equipment	25	12.3
Lack of bed	102	50.0
Delayed preparation of lab test	5	2.5
Others	9	4.4
Total	143	70.1



**Figure 4:** Administrative factor of patient cancellation in Debre Markos Comprehensive Specialized Hospital, Debre Markos, Ethiopia, 2022G C.

Patient unfit for anesthesia was (15.2%) in (Table 5).

**Table 5:** Administration related of patient cancellation in Debre Markos Comprehensive Specialized Hospital, Debre Markos, Ethiopia, 2022 G C.

Administration related	Frequency	Percent
Patient unfit for anesthesia	31	15

**Discussion**

In this four month hospital based prospective study showed that about 26.7% of elective surgical cases were cancelled in Debre Markos Comprehensive Specialized Hospital, Debre Markos, Ethiopia, 2022 G C. The most frequent reason for cancellation of these elective surgical cases was lack of bed. Cancellation rate of 26.7% for elective surgery found in DMCSH was very high. The reasons for cancellation were lack of bed (50.0%)

and patient unfit for anesthesia (15.2%) in DMCSH were the most frequent reasons for cancellation of these elective surgical procedures. In this research, we found that most cancellations were followed by general surgery (49.0%) and orthopedic surgery (21.6 %) in DMCSH.

Our study result is similar with the followings; Study conducted in Saudi Arabia the most common cause of patient cancellation was surgery related factors and administrative factors with similar percentage rate (34%) and the least factor was anesthesia related (0%) [10]. A study was conducted in South Africa cancellations were related to equipment (47.4%), 2.8% of cancellations were due to a long preceding surgical procedure [11].

In this study similar to a retrospective cross sectional observational study, selecting all patients scheduled for surgery at the hospital institution in Colombia the causes of cancellation, 93 (38.1%) were attributable to the institution, 99 (40.6) to patients, and 52 (21.3%) to medical orders [12] cancellation records of all elective surgeries scheduled between June 1, 2012, and Jan. 31, 2016, at a medium-sized, tertiary care, academic center in Malawi were retrospectively reviewed. Across 11 surgical specialties, 2933 of 20 881 surgeries (14.0%) were cancelled and of these, 2448 (83.5%) were for administrative or structural reasons [13].

Our study finding similar to a prospective cross sectional study which was conducted at Jimma university medical center a total of 454 patients were scheduled to undergo elective surgical procedures, of this 92 patients' procedures were cancelled. The majority of causes of cancellation of surgical operations were related to hospital administration in 47.83% [14].

In this study contrast to the studies conducted in Nigeria [15], Uganda [16], Brazil [17] and University of Gondar [18] were contrast with the result of our study. This reason may be infera structure recourses available and good administrative in those hospitals set up.

**Conclusion and recommendation**

The cancellation rate of scheduled surgeries is high in general adult surgery in DMCSH. The majority of causes are foreseeable and avoidable and many are related to the hospital itself.

We recommend that a facility for hospital preadmission be created. There are some measures that are needed to reduce the case cancellation rate and to improve operation theatre utilization, including comprehensive preoperative assessment of patients prior to scheduling, making patients more aware of the planned surgical procedure, and preparing them prior to operation.

**Data availability**

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

**Ethical approval and consent**

Ethical clearance was obtained from the department ethical clearance committee college of health science department of anesthesia Debre Markos University before the start of the study. Get permission from DMCSH clinical director's office after submission of an official letter. The importance of the study was explained and written informed consent was obtained from

each participant relative by the data collector. Participant's involvement in the study was on voluntary bases, participants who were not willing to participate in the study & those who wish to quit their participation at any stage were informed to do so without any restriction.

### Conflicts of interest

The authors declare no conflicts of interest.

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### Authors' contributions

All authors should have made substantial contributions to all of the following: the conception and design of the study, or acquisition of data, drafting the article or revising it critically for important intellectual content, final approval of the version to be submitted.

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