

A Retrospective Study on Utilization of Operation Theaters In A Tertiary Care Teaching Hospital

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Abstract: The study of utilization of operating theatre (OT) Time has always been a priority for hospital administrators. The present study was conducted in Osmania General Hospital (OGH), Hyderabad a tertiary care teaching hospital for a period of 3 months from October 2016 to December 2016. Average utilization of OT complexes in OGH was 85% which was found to be optimum. The study helps us to know the existing work load as well as improving the patient care and the utilization of the facilities of OT's as the activities carried out in OT complexes can make or break the reputation of the hospital.

Keywords: Operation theatres, Operating Time, Utilization

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I. Introduction

There is an urgent need in the acute health system to use resources as efficiently as possible. One such group of resources is operating theatres, which have an important impact on patient flow through the hospital. Data driven insights into the use of operating theatres can suggest improvements to minimize wastage and improve theatres availability. The operating room is a home for both lifesaving and quality of life saving intervention. Operating Room involves team effort of different disciplines and is a true test of acronym "TEAM" which means "Together Everybody Achieve the Maximum". Good rapport, good communication skills of OT in charge, dedicated, professionally trained staff, appropriate services equipment's and layout are the crucial elements in the efficient use of OT's. The classical definition of operating room utilization encountered in the literature is the ratio of the total OR Time used to the total or allotted. Donham and colleagues defined OT utilization as the quotient of hours of OT time actually used during elective resource hours available for use. Baker had opined that accurate records, weekly analysis of recorded data, establishment of operating room rules and regulations and strict adherence to and enforcement of approved policies and procedures are essential ingredients for an efficient operating of an operating room³

II. AIMS And Objectives

To study the utilization of operation theatres in various surgical specialty and super specialty in relation to workload and to suggest remedial measures for improving the operating theatre utilization where improvements are feasible.

III. Methodology

A retrospective study of the utilization of OT in OGH, Hyderabad for a period of 3 months from October 2016 to december 2016 was done. The institute is a well-known tertiary care teaching hospital with around 1380 beds, rendering super-specialty services among various medical and surgical specialties.

Six theatre complexes where elective cases are done were selected for the study excluding 2 theatre complexes MOT and EOT where emergency surgical services were given. The date taken was from the records maintained in OT. Number of surgeries per month along with the time taken was noted. Each OT works 6 days a week throughout the year except on public holidays and Sundays. The elective theatre timings are 9:00 AM to 3:00PM. Surgical specialties like urology and surgical gastroenterology OT work even in unscheduled timings when there are transplant surgeries. All surgical units perform general surgical and laparoscopic procedures.

Each OT complex is equipped with 3 operating tables, 2 tables for major cases and 1 for minor cases.

However at the end of major surgeries performed under general anaesthesia minor operations under local anaesthesia continue to be performing till the list is completed.

Utilization index (V) or coefficient for OT is calculated in the given formula⁴

$$V = N / M \times 100$$

Where N: Total number of hours the OT table was used per periodM: maximum number of hours the OT table can be used in the same period ⁷

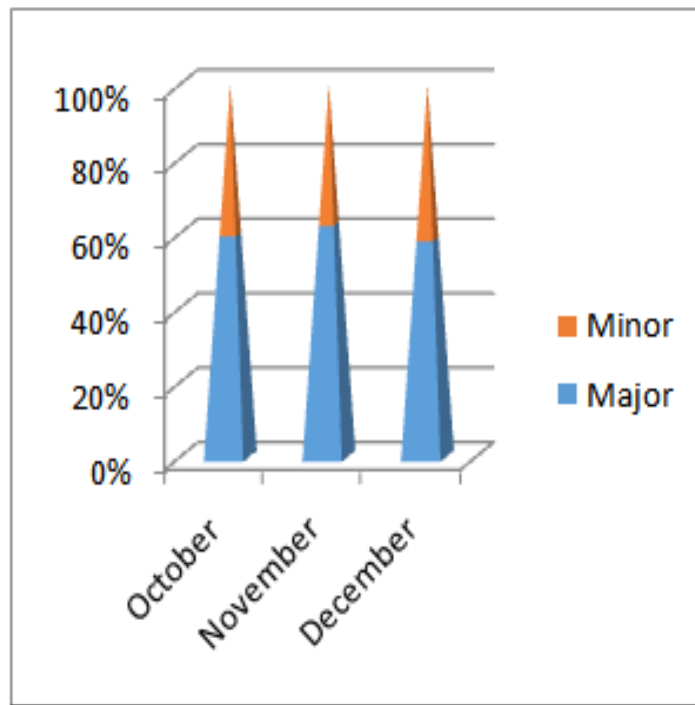
IV. Observations And Results

Utilization of OT by individual departments was calculated:

4.1 OT1 complex ----- General surgery cases are done

Number of cases done in OT1:

| Month | Major | Minor | Total |
|----------|-------|-------|-------|
| October | 125 | 85 | 210 |
| November | 139 | 84 | 223 |
| December | 135 | 97 | 232 |



V1= 83%

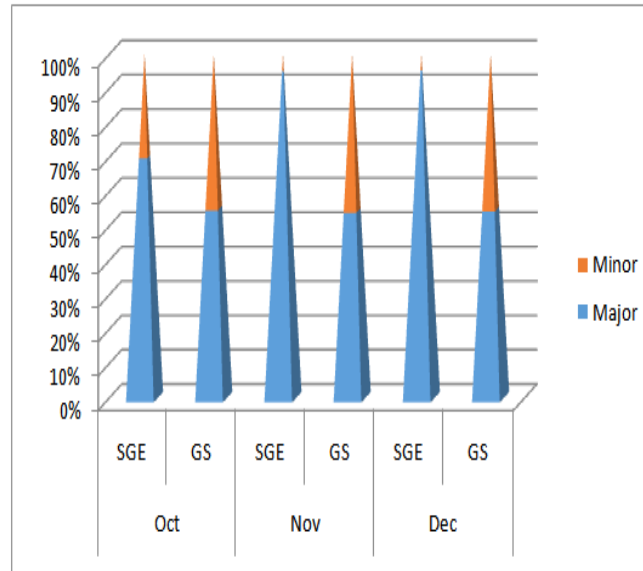
The average utilization (V1) is 83% in the OT1. There are 8 surgical units out of which 6 units use OT1 complex. Each unit gets 2 OT days per week. Out of 3 tables, 2 tables were given to one unit and 1 table to the other unit.

4.2 OT2 complex Surgical Gastroenterology and General Surgery units 7&8 cases are done

Number of cases done in OT2:

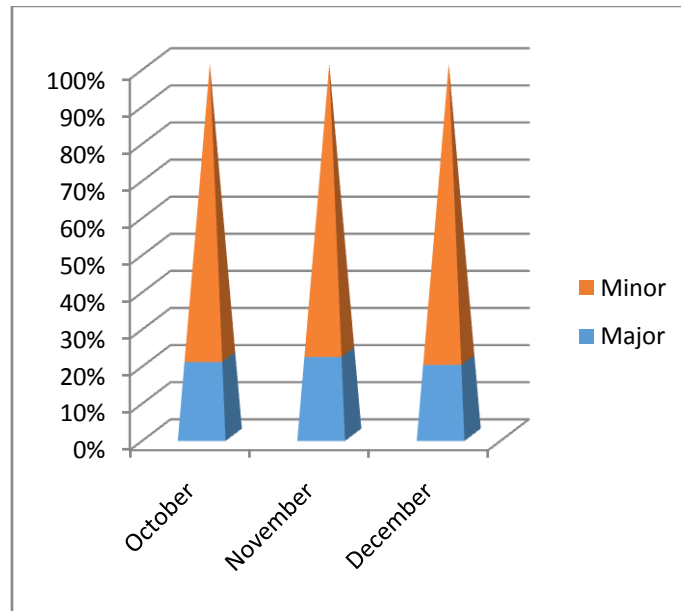
| Month | | Major | Minor | Total |
|-------|-----|-------|-------|-------|
| Oct | SGE | 14 | 6 | 20 |
| | GS | 22 | 18 | 40 |
| Nov | SGE | 19 | 1 | 20 |
| | GS | 25 | 21 | 46 |
| Dec | SGE | 20 | 1 | 21 |
| | GS | 35 | 29 | 64 |

V2 = 86.3% Liver transplants are done in unscheduled hours depending on availability of the donor organs



4.3 OT3 complex Urology: Number of cases done:

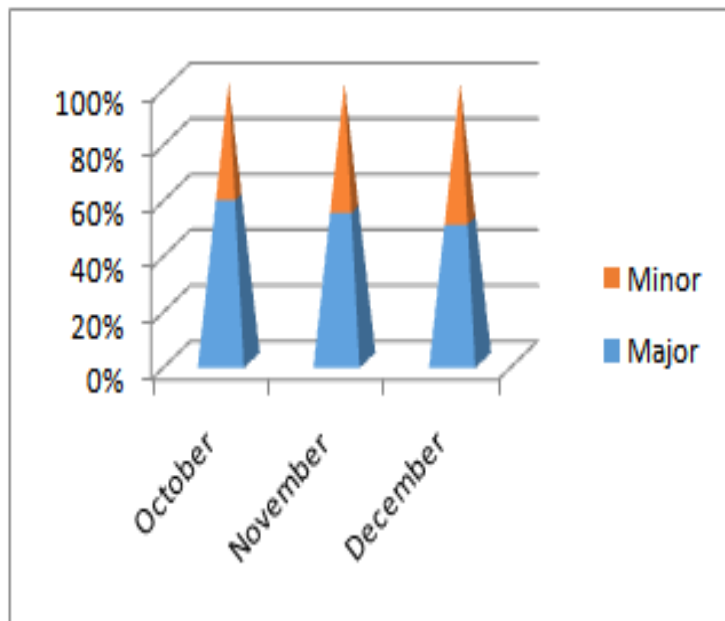
| Month | Major | Minor | Total |
|----------|-------|-------|-------|
| October | 81 | 306 | 387 |
| November | 83 | 290 | 373 |
| December | 92 | 365 | 457 |



V3 = 85.7%

OT4 complex Orthopedics:

| Month | Major | Minor | Total |
|----------|-------|-------|-------|
| October | 108 | 76 | 184 |
| November | 89 | 75 | 164 |
| December | 102 | 101 | 203 |

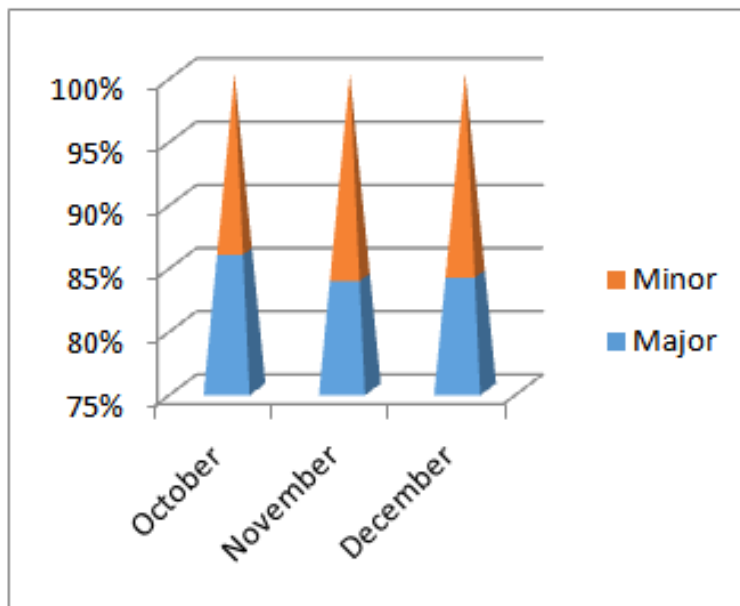


V4 = 84.2%

OT5 complex Neurosurgery:

| Month | Major | Minor | Total |
|----------|-------|-------|-------|
| October | 61 | 10 | 71 |
| November | 52 | 10 | 62 |
| December | 53 | 10 | 63 |

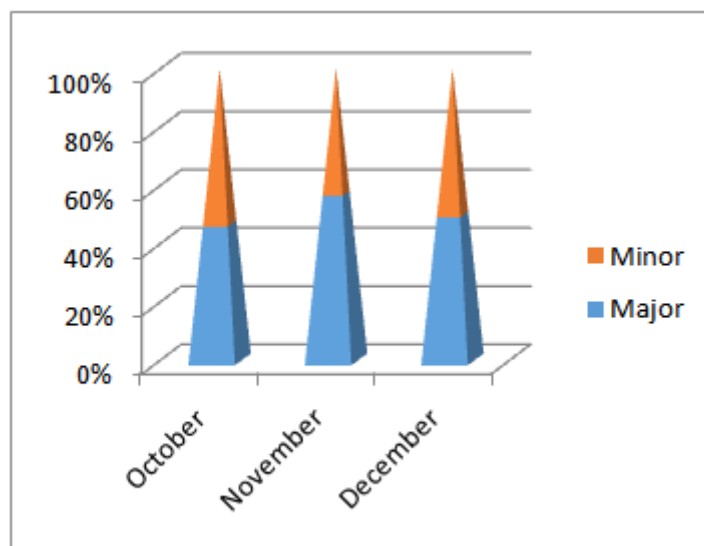
V5 = 86%



OT6 Plastic Surgery:

| Month | Major | Minor | Total |
|----------|-------|-------|-------|
| October | 83 | 95 | 181 |
| November | 118 | 89 | 207 |
| December | 125 | 126 | 205 |

V6 = 84%



V. Discussion

The average utilization of all OT's in the institute for the time period was found to be 85% ranging between which reveals the all OT's are adequately utilized and OT utilization time was found to be optimum. Utilization of 100% is unattainable due to untoward complications in procedures and loading. Surgical departments are increasingly put under pressure to improve services cut waiting list and increase efficiency. There was no delay in the start of OT's. Delay in starting OT's was as such yet, was rare, except from the infrastructural problems, I.E CSSD, power supply, water supply, laundry, linen and staff on contractual basis, sanitation staff, nursing staff who went on strike. Turnaround Times were shorter if surgeons were present. Shorter clean up time may compromise on cleanliness of the theatre. Cancellation of the list was done when patient fitness was not available and required investigations and blood was not available. Cancellation of Surgeries posted as last in list occurs due to underestimate of time consumed by each surgery and intra operative complications that may arise cannot be predicted. Most of the cancellation can be avoided by improving pre-operative evaluation, and improved communication between surgeons and patients. Most of the days in a month OT time were extended till the list is complete. There was long wait list in all departments. Not much time is wasted in clean up. Average clean up time of all OT ranged between 10-17 minutes which is within acceptable range. One of the difficulties faced was recording of information was not accurate and complete. Data in OT complex were entered in a paper register and particulars of surgery were not properly entered.

VI. Conclusion

The OT utilization of all OT complexes were optimum. However to cut the long waiting list which includes recruitment of considerable number, I.E nursing and faculty and doctors, increasing the number of Units in surgical disciplines, providing extra OT table in OT complex increase in the amount of budget allocation for purchase of equipments. Data was maintained in a paper register which can be easily faded with time. Properly entered computerized data entry is needed to record whatever was done in the operation theatres. It's necessary to educate the staff and junior doctors regarding the importance of record maintenance.

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