A STUDY ON THE PROCESS FLOW AND UTILIZATION EFFECTIVENESS OF OPERATION THEATRE

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INTRODUCTION

- The surgical suite typically consumes 9-10% of the hospital budget. Surgical suites once needed only 20% utilization to produce a positive bottom line. However, economics of the OR environment have changed dramatically in the past 25 years. Technological advances like minimally invasive surgery which need costly equipment, payments based on diagnosis related groups, captivated payment and discounted fee-for service have all significantly reduced margins in the surgical business. It is therefore, not surprising that this area is earmarked by many hospitals as a place to reduce expenses.

- 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 room. Thus it is clear that study of operating room records can provide means of assessment of the degree of utilization of operation theatres.
- Improving cost effectiveness, while maintaining a quality of care, is a universal objective. These goals imply an optimization of planning and a scheduling of the activities involved. This is highly challenging due to the inherent variable and unpredictable nature of surgery.

LITERATURE REVIEW

- This study was conducted to determine the main factors hindering maximum utilization of the theatre, with a view to improve efficiency and effectiveness of the operating theatre team. Data was collected prospectively over a period of 3 months (16th May - 22nd August 2005). A total of 28 elective operation lists consisting of 47 eye surgeries was surveyed.
- A total of 57 hrs 5 mins (46.8% of total theatre time used) was spent on doing the actual surgeries and the turnover activities between cases. The total amount of time lost before the commencement of the lists was 64 hrs 50 mins (53.2% of total theatre time surveyed). Late arrival of operating theatre team personnel was noted to be the main single contributory cause of start delays, accounting for 32 hrs 35 mins of lost time. He concluded that the ophthalmic theatre time at centre is grossly underutilized and measures aimed at reducing start delays and the logistic problems would help ensure optimal utilization of time and other resources. (2)

- In spite of optimum utilization MOTC, there exists long waiting lists in every surgical discipline leading to dissatisfaction and discontentment among patients as well as doctors. Even with the existing bed strength and number of OTs, one way of solving this problem is running the OTs in two shifts or increasing the OT time. This would mean extra manpower, supplies and costs. Restructuring the reorganization of O.T. personnel should be done so that adequate number of staff are available in each shift. It also needs to be ensured that this step would not in any way downgrade the academic standards in the undergraduate and postgraduate teaching which is of prime importance. This system can be tried on experimental basis for a short period to test its feasibility.**(3)**

AIM

- Measuring the time utilization effectiveness of OT at Dr. Virendra Laser Phaco Surgery Centre , Jaipur
- Specific aim of the study are to map process flow in OT and then find out the time spent on actual surgery ,time spent on supportive services and time waiting while operating room was being made for the surgery. The average idle time (unproductive time) needs to be calculated. Reasons for under utilization of operating rooms, if any need to be identified to improve its efficiency.

OBJECTIVES

- To map the process flow of OT
- To evaluate the time utilization of OT
- To identify bottlenecks, if any , in efficient and effective utilization of OT and to suggest corrective actions for the same

PURPOSE OF THE STUDY

- This study was planned to evaluate the current status of utilization of time at the operation theatres in Dr. Virendra Laser, Phaco Surgery Centre, Jaipur which would go a long way in improving the utilization of operating room. This will also assist and facilitate the OT personnel to identify the time specific problems and overall gaps for further improvement in the operation theatre functioning

PROBLEM IDENTIFICATION

- The operation theatre complex of a hospital represents an area of considerable expenditure in a hospital budget and requires maximal utilization to ensure optimum cost-benefit. Over time in OT leads to less of OPD time for surgeons which leads to long waiting time in OPD. Delay in start of OPD effects the whole functioning of the peripheral hospital. Hence proper scheduling and time utilization of OT is of utmost importance for smooth functioning of the hospital. In order to improve the utilization of operating room it is essential to know how much time is spent on which activity.

JUSTIFICATION

- Workload at operation theatres in DRVLPSC is high and no proper scheduling of the operative cases has been noted and there was no activity wise checklist found and filled during surgery so, it is essential to know how much time is spent on which activity. To maximize/improve the utilization of operation theatre it is essential to know how much time is spent on which activity and there by identify the factors resulting in under utilization or over utilization of the facility. Optimum utilization of the OT time has always been a priority area for hospital administrations.

❑Delivery of services: -

- The delivery of care in the operating room is a functional team concept. The doctors and nurses use many interventions when caring for the patient having surgery, including proper identification and collecting pertinent data using appropriate assessment to develop a plan of care for the patient.

❑Governing principles of OT management managers are to

✓Ensure patient safety and the highest quality of care

✓Provide surgeons with appropriate access to the OT

✓Maximize the efficiency of operating room utilization, staff, and materials to reduce costs

✓Decrease patient delays

✓Enhance satisfaction among patients, staff and physicians.

METHODOLOGY

- Type of study – DESCRIPTIVE CROSS SECTIONAL STUDY
- Setting – Dr. Virendra Laser & Phaco Surgery Centre, Jaipur
- Duration – 3 months, 1st February 2018 to 30th April 2018
- Source of data –

1) Primary data: -

1) By visiting individual operation theatres to observe directly
2) Records from registers already maintained
3) Discussion with the management staff, and other clinical and paraclinical staff of the OT.

Secondary data: -

1. Internet search engines
2. Hospital management information system : Netram was also used to get information regarding patients

- Sample Selection: have included all the surgical patients of DRVLPSC as samples from 1st feb 2018 to 30th april 2018.

  Inclusion Criteria : All the surgical patients of cataract, injections, VR, pterygium, squint of DRVLPSC

  Exclusion Criteria : All the surgical patients of Lasik, Epilasik, Smile of DRVLPSC

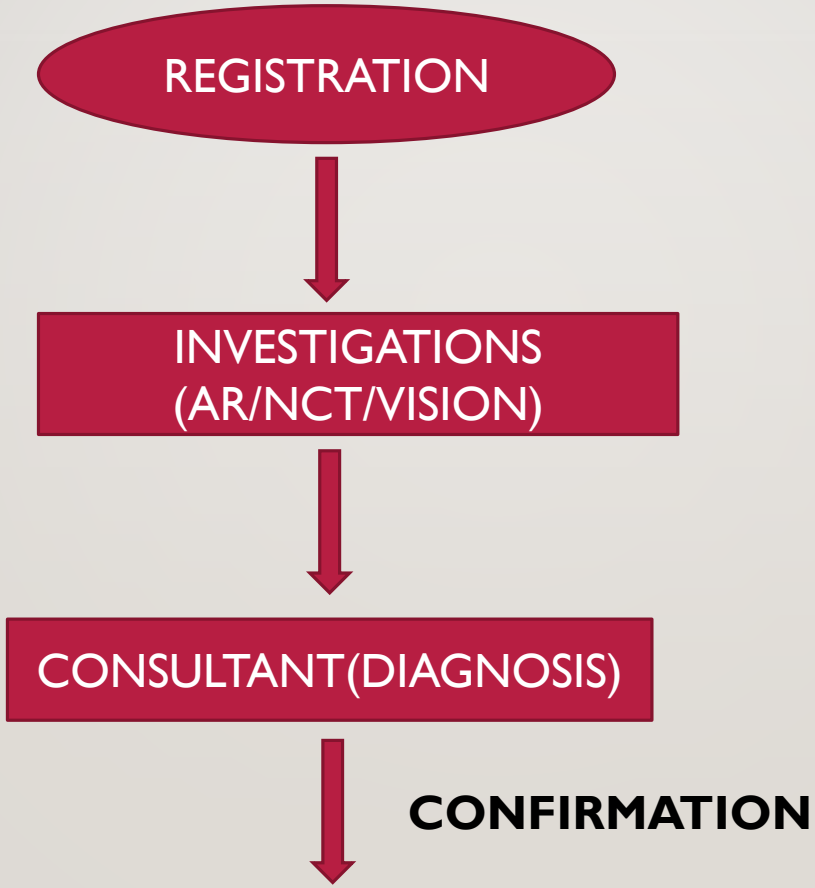
- Data Collection Procedure: The technique will be used for conducting the study will be non random convenience sampling technique as sample of respondents will be chosen according to convenience

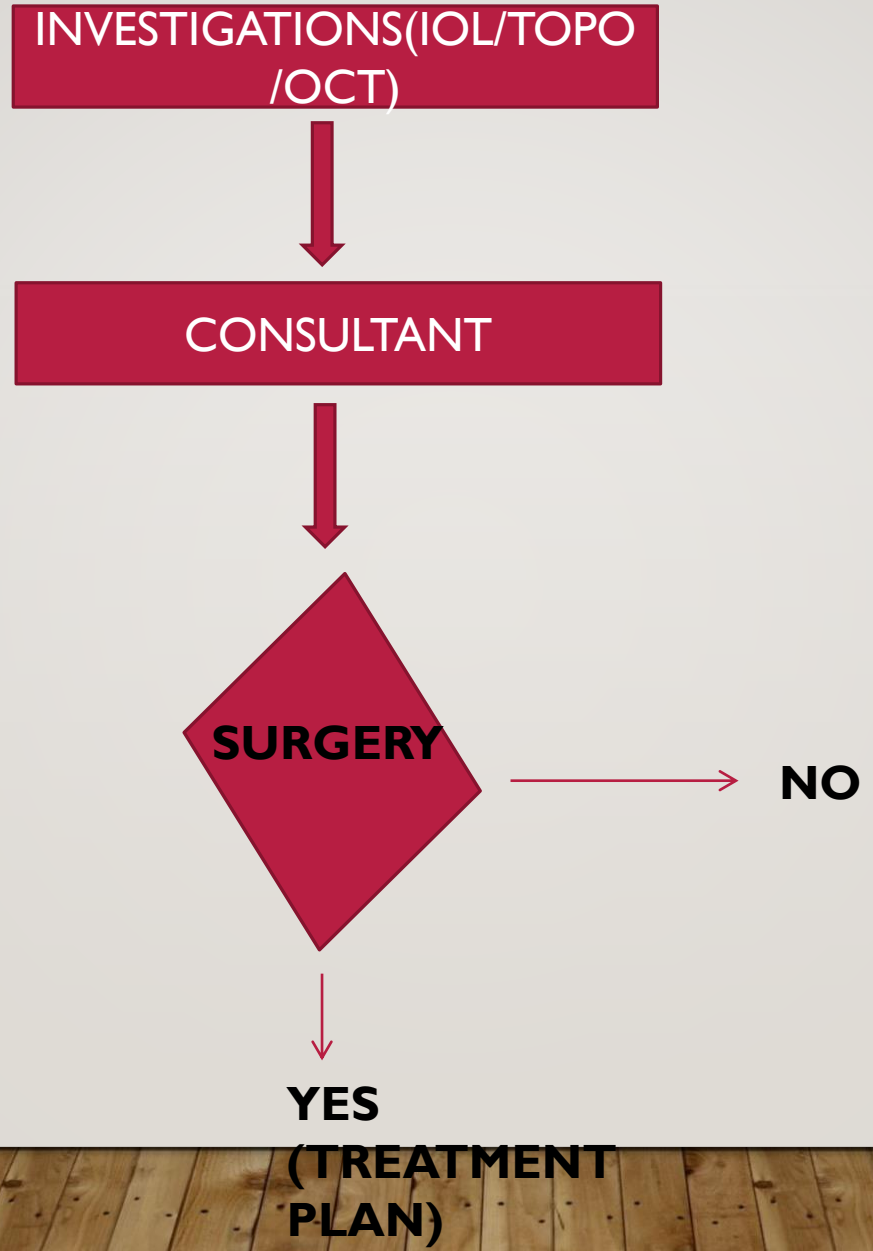
- **Data Analysis Procedure**

- A self-developed excel sheet for the analysis.
- Format for recording the turn around time.
- Graphical representation of data analysis.
- Interpretation of the data in detail

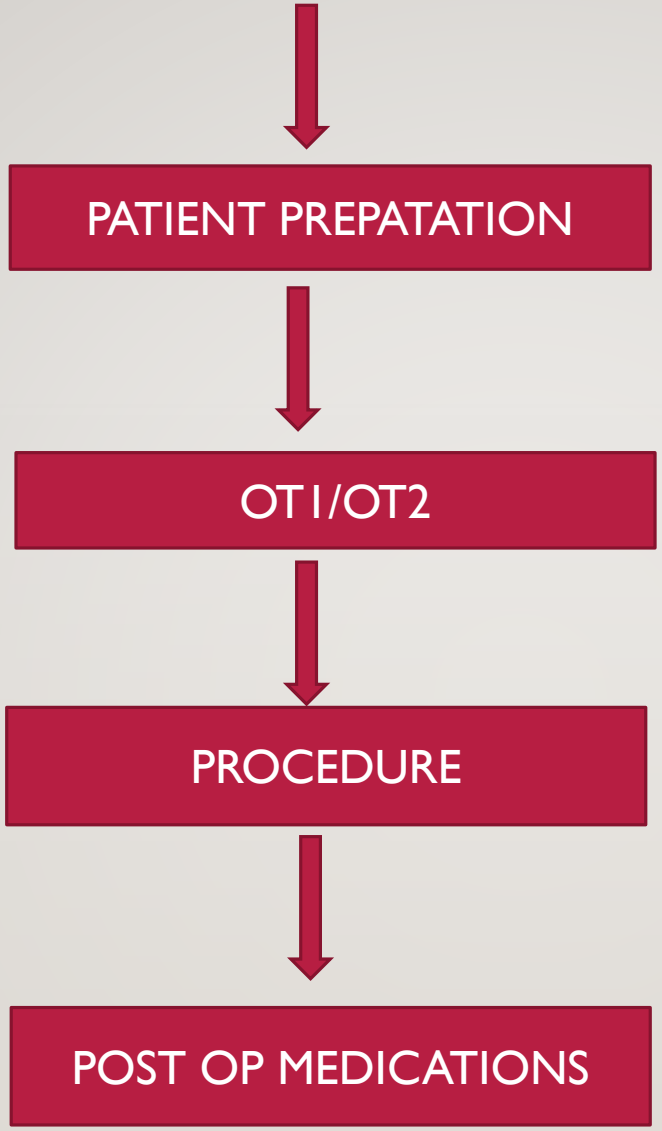
OBJECTIVE 1:

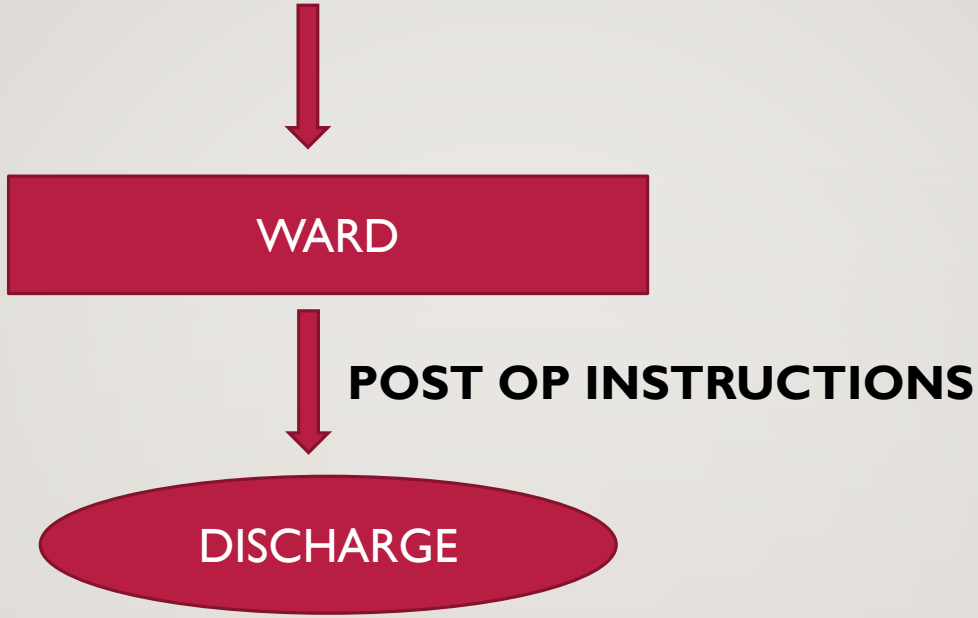
To map the process flow in OT :




INVESTIGATIONS(IOL/TOPO /OCT)
CONSULTANT
SURGERY
NO
YES (TREATMENT PLAN)


COUNSELLING (PACKAGE, SURGERY DATE, POST OP PREACUATIONS)
IPD REGISTRATION
NURSING STATION (3rd FLOOR)
OT


PATIENT PREPATATION
OT1/OT2
PROCEDURE
POST OP MEDICATIONS


WARD
POST OP INSTRUCTIONS
DISCHARGE

OBJECTIVE 2:

To evaluate the time utilization of OT

Workload at operation theatres in DVLPSC hospital is high and no proper scheduling of the operative cases has been noted and tere were no activity wise checklist found and filed during surgery so it is essential to know how much time is spent on which activity. In order to maximize/improve the utilization of operation theatre it is essential to know how much time is spent on which activity and there by identify the factors resulting in under utilization or over utilization of the facility.

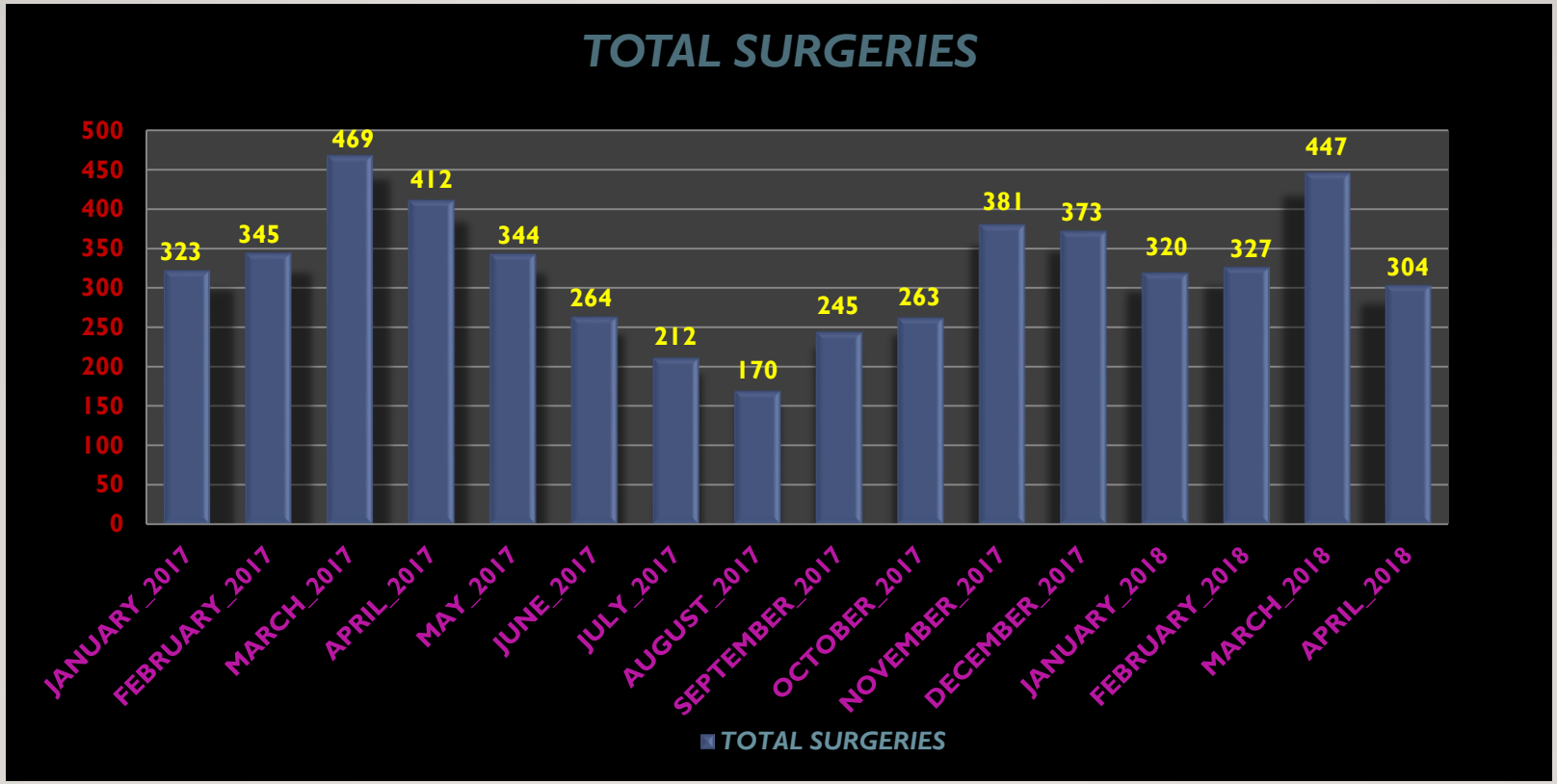
OPERATING ROOM UTILIZATION

OT Utilization is a measure of the use of an operating room that is properly staffed with people needed to successfully deliver a surgical procedure to a patient

Raw utilization is the total hours of elective cases performed within OT time divided by the hours of allocated block time.

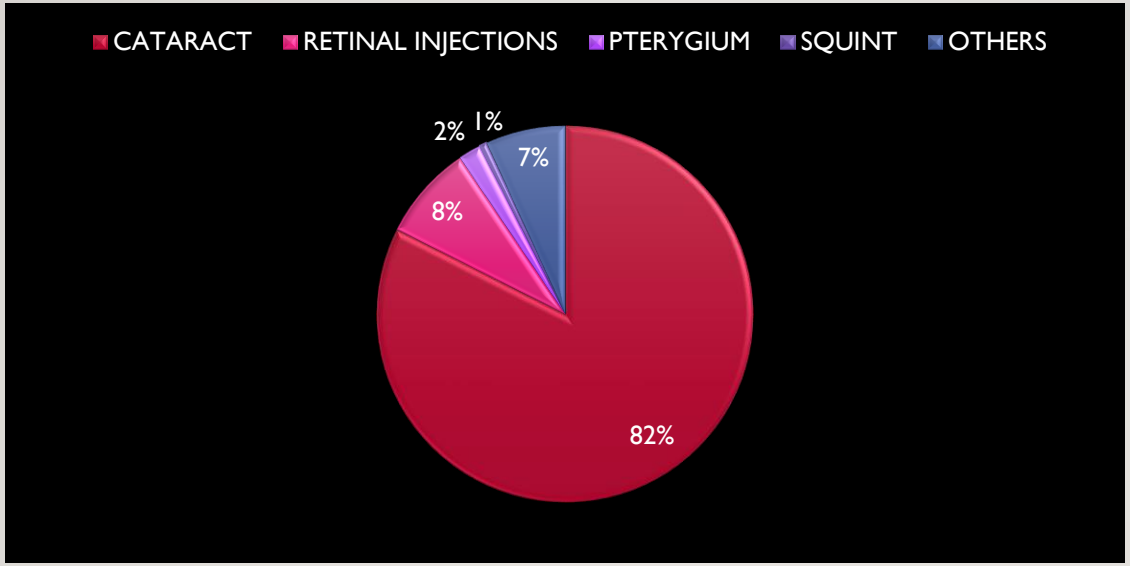
Raw utilization= (total hours of cases performed / total hours of OT time allocated)*100

GRAPH 1: Total surgeries in last 1 year



INFERENCE : From above data it is clear that maximum surgeries took place in the months of **March, April, November, December**

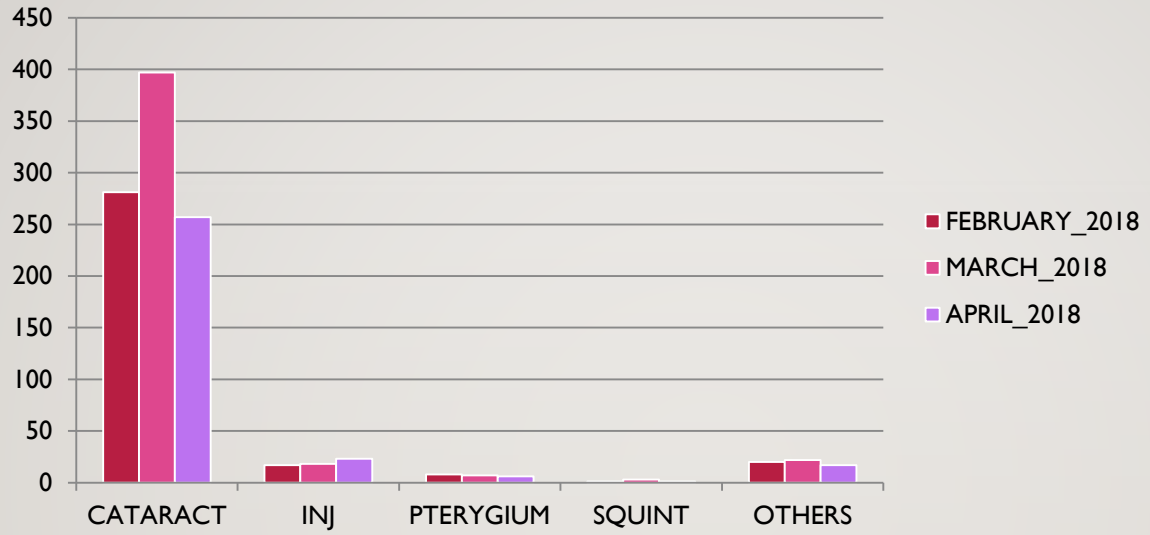
GRAPH NO 2: BREAK UP OF TOTAL SURGERIES



INFERENCE : From the above graph it is clear that cataract surgeries are higher in no i.e., 82%, retinal injections account for 8%,other surgeries like SOR, C3R, Tear repair, VR, syringing and probing, air wash, suture removal, chalazian holds for 7% ,pterygium and squint are 2% and 1% respectively.

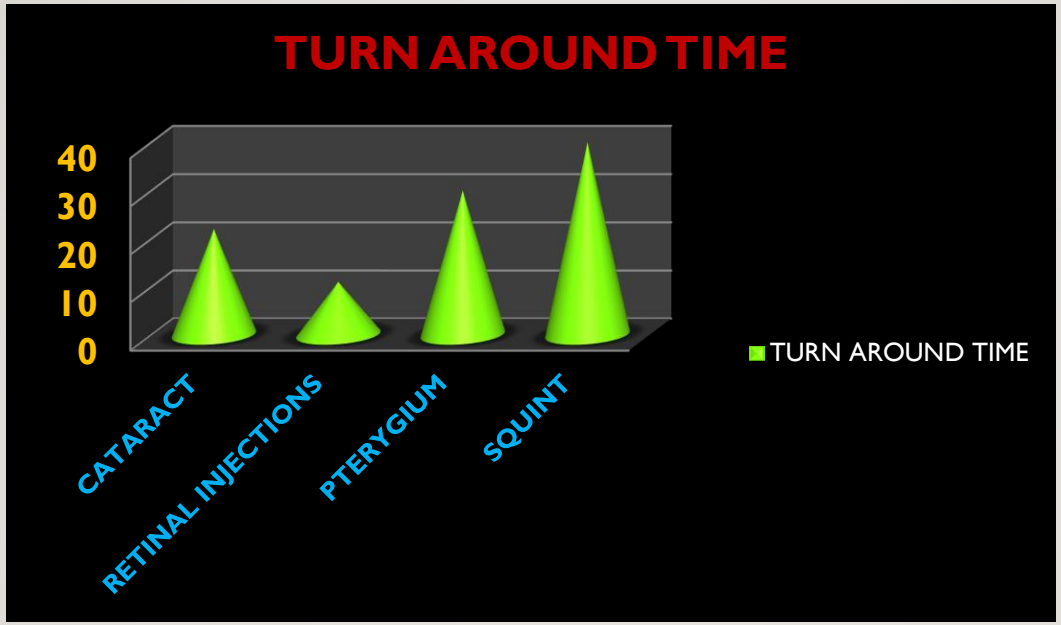
Cataract surgeries are curative surgeries which are done at higher no in this centre and no of these surgeries are increasing gradually with time.

GRAPH 3: SURGERIES IN THE MONTH OF FEBRUARY, MARCH, APRIL



INFERENCE : During the study period of three months maximum surgeries took place in the month of march and cataract account for almost 86% of total surgeries.

GRAPH 4: TURN AROUND TIME OF DIFFERENT SURGERIES



INFERENCE: Above graph depicts that average time taken for cataract, retinal injections, pterygium and squint are 22mins, 11mins, 30mins and 40mins respectively. Squint is a complex procedure so it consumes more time compared to other surgeries.

CALCULATIONS

Time Spent On Supportive Services
Average time for fumigation : 60 mins
Average time for autoclaving : 90 mins
Average time for making operating room ready : 20 mins
Average time for making patient ready : 10 mins
Average time for cleaning OT: 45 mins

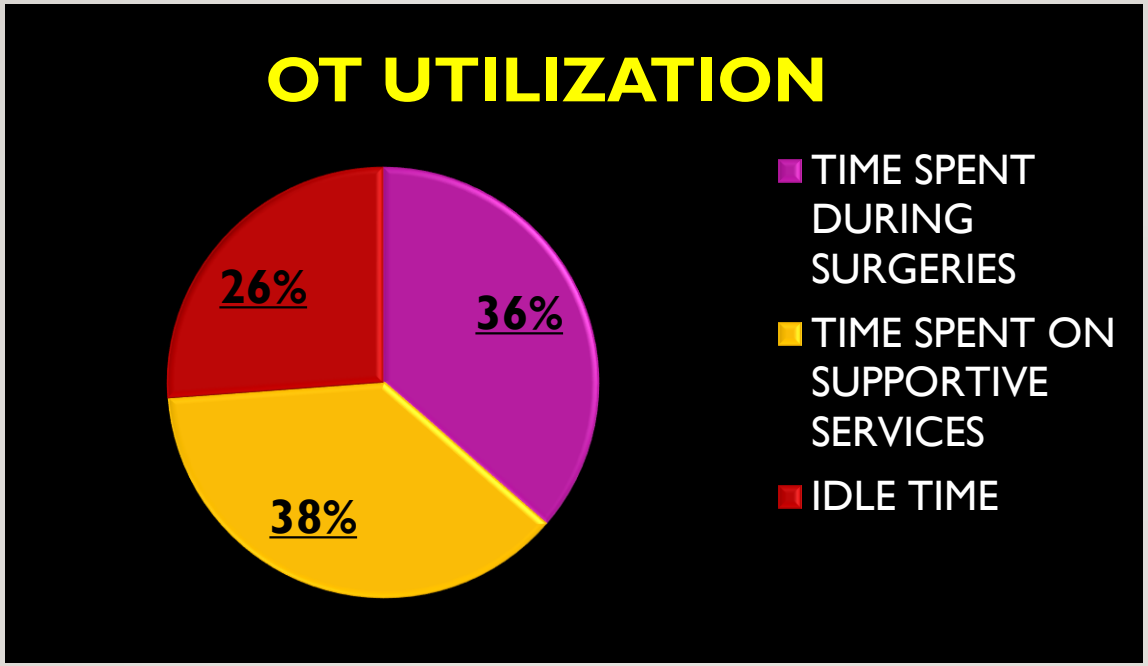
Therefore average time spend on supportive services = 3hrs 45 mins

Total hours of time allocated for surgeries = 6 hrs 15 mins
(10hrs – 3hrs45mins = 6hrs15mins)
(Calculated as total working hours- time spent on supportive services)
No of working days (OT) = 74 days
Total working hours of OT = 10 hrs
Total available OT hours = 74*6.15hrs = 462.5hrs
OT utilized per day during study = 16132/74= 218mins = 3.6Hrs
Average cases per day during study = 1078÷74 = 14.56 = 15cases/ day

RESULTS:

- Time Spent During Surgeries: 16132 Mins
- Time Spent On Supportive Services: 16650 Mins
- Idle Time: 11618 Mins

GRAPH 5: OT UTILIZATION



INFERENCE: "The operation theatre was functional for 74 days during the study and **1078** cases were operated (15 Cases per day). Operating time utilization is 58%. Average time spent on supportive services is 3hrs45mins."

OBJECTIVE 3:

To identify bottlenecks, if any , in efficient and effective utilization of OT and suggest corrective measures for the same

1 LOW OT UTILIZATION :

Average OT time for a cataract surgery is around 22 mins. This itself yields low OT time utilization. The main reason is delay in OT cases

Reason for delay or cancellation

Patient pupil not dilated
Patients did not arrives on time
Doctors not intimated on time
Doctors attending OPD patients
Staff not reporting on time
Patient reports not okay
Patient not accompanied by attendant
Sometimes delay in arrangement of lenses

2 . HIGH IDLE TIME :

Under scheduling is the basic cause of high idle time

3. DELAYED CASES LEADING TO LOSS OF REVENUES

There are multiple direct and indirect costs involved in OT management

Delay in starting lists, under-scheduling, interruption due to lack of materials, administrative reasons, delay in pupil dilation are the main factors that account for inefficient use of operating facilities. The correction of these factors would increase the available operating time.

CONCLUSION

Following problems emerge from the study:

1) Low OT utilization
2) High idle time
3) Delayed cases leading to loss of revenues

- The problem listed above are to be solved by strict adherence to OT protocols. The reason for low OT utilization can be grouped into patient related factors, staff related factors. Factors like late arrivals, and delay in dilation can be solved by strictly following OT protocols. Some factors like patient reports not ok (blood sugar levels high on the day of surgery) cannot be avoided.

- The study shows high idle time which could easily have been avoided. Under scheduling the no. of cases is the basic cause. Main reasons are delay in authorization of insurance claims, issues of permission letters for panel patients and cancellation of surgeries due to unavoidable reasons fixing the no. of surgeries for each day for particular consultants has to be done to avoid under scheduling or over scheduling

- Delayed and cancelled cases lead to loss of revenues for the hospital. Delays due to mismanagement have to be decreased by planning the surgeries and cross checking the preparation on the day prior to surgery. Cancelled cases have to be followed up by the counselor at least twice in order to reschedule cancelled cases.

SUGGESTIONS

1) The OT and OPD days for doctors has to be segregated so that the doctor is available for OT the whole day. Handling both OT and OPD together every day either leads to long waiting in OT start or long OPD waiting hours. Long waiting hours either in OT or OPD also leads to dissatisfaction among patients.

2) The staff has to be trained on the protocols to be followed in OT strict adherence to OT protocols by the staff has to be implemented

3) Manpower required

OT staff to simultaneously assist in OT supportive services. Supportive services consumes major part of the total working ours of OT. Decreasing the time taken in doing supportive services will increases the total time allocated for surgeries, which can be used for scheduling more cases. Hence an OT staff to simultaneously assist in supportive services is required. Part time anesthetist to fill in when needed. Delays due to unavailability of anesthetist are a common cause of delay in OT cases.

More effective use of theatre time is possible if delays in starting lists are minimized, proper scheduling of surgical lists is done if more detailed preparation was undertaken by the anesthetic theatre and surgical staff, patients on long waiting lists are reassessed before admission to avoid cancellation of cases. The time spent on making room ready has be reduced but at the same time proper attention needs to be given to the aseptic precautions both at the start of day and in between cases.

Establishment of operating room rules and regulations, strict adherence to and enforcement of approved policies and procedures along with continuous monitoring has to be followed

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THANK YOU