

Oxygen Desaturation In Post-Anesthesia Care Unit.

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ABSTRACT:

Background – Rationale for Clinical Audit Project:

- Hypoxemia is a major problem in the immediate post-operative and during the transport period from Operation theatre to Post-anesthesia care unit (PACU).
- Effective and early management can reduce morbidity and mortality.
- We have witnessed few cases of desaturation in our PACU and hence the interest in this topic. (25 files were reviewed and 4 patients developed desaturation in the PACU – managed by oxygen therapy and monitoring in high dependency unit.)
- To identify the contributing factors, provide early treatment to patients with risk factors, provide recommendations for oxygen therapy, monitoring and to implement a protocol for management of hypoxemia.

Overall Aim includes:

To improve:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Patient health outcome | <input checked="" type="checkbox"/> Patient satisfaction |
| <input type="checkbox"/> Staff satisfaction | <input checked="" type="checkbox"/> Delivery of care |
| <input checked="" type="checkbox"/> Use of resources | <input type="checkbox"/> Others: please specify |

Source of Standards

- | | |
|--|---|
| <input checked="" type="checkbox"/> Professional organizations' guidelines | <input type="checkbox"/> Local guidelines/protocols |
| <input type="checkbox"/> National standards | |
| <input checked="" type="checkbox"/> Observation of current practices | |

Standard Sets:

100% of all patients who developed desaturation in PACU will be detected immediately and appropriate action will be carried out to prevent morbidity and mortality.

Data collection:

Source of data: Patients Anesthesia record.(Preoperative, intraoperative and postoperative anesthesia record)

Sample: Randomized retrospective analysis.

Type of population: ASA 1-3 patients.

Age group: 14 yrs to 65yrs. Period of audit: 6months. Size: 150.

Sample selection: Random selection for a period of 6 months.

Data Analysis:

All data entered in a Microsoft excel sheet (designed masterchart)and analysis done by descriptive analysis (multivariable) and incidence of desaturation done by percentage method.

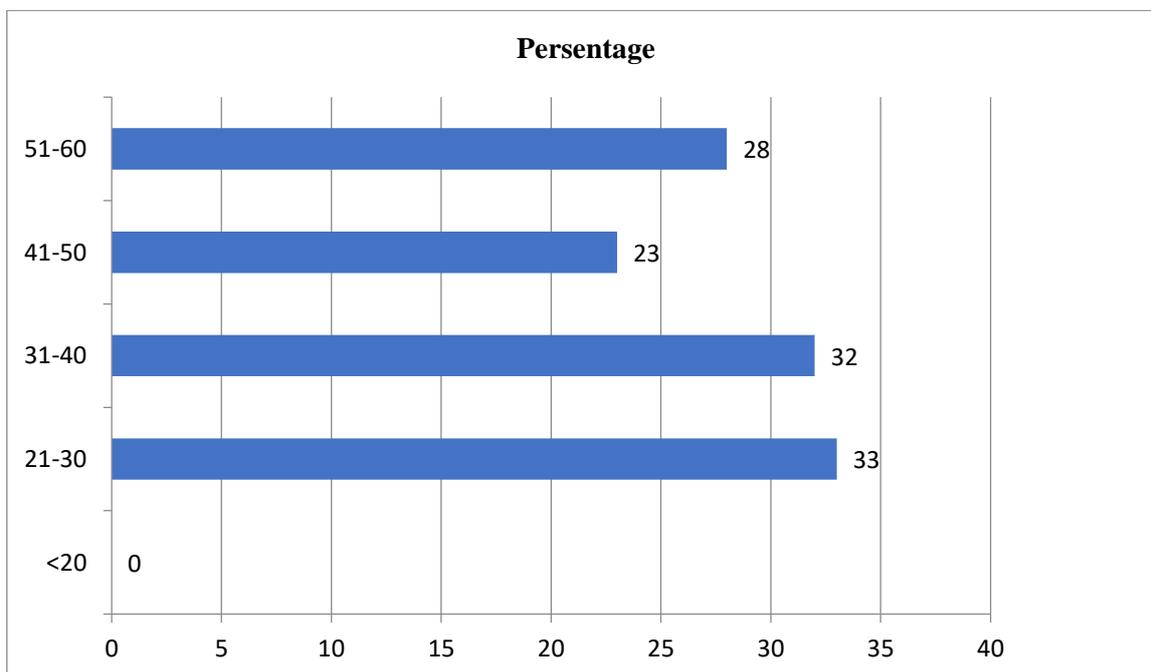
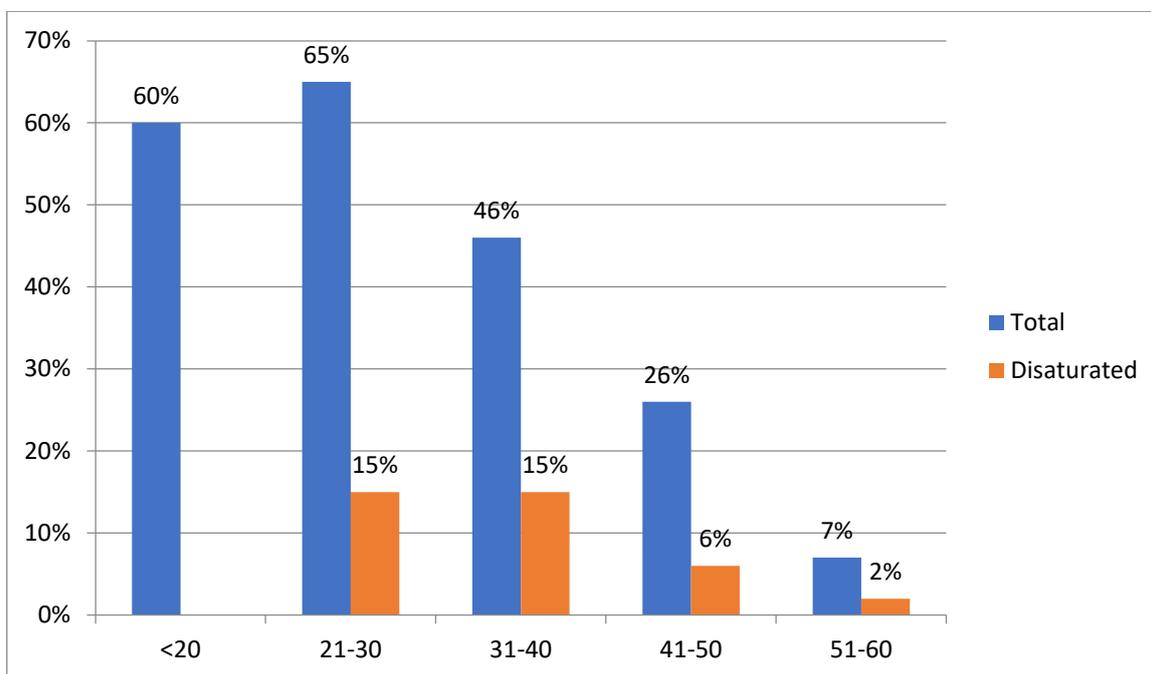
Key Findings:

Incidence of desaturation - 25.33%.(level considered as desaturation was $\leq 94\%$.)

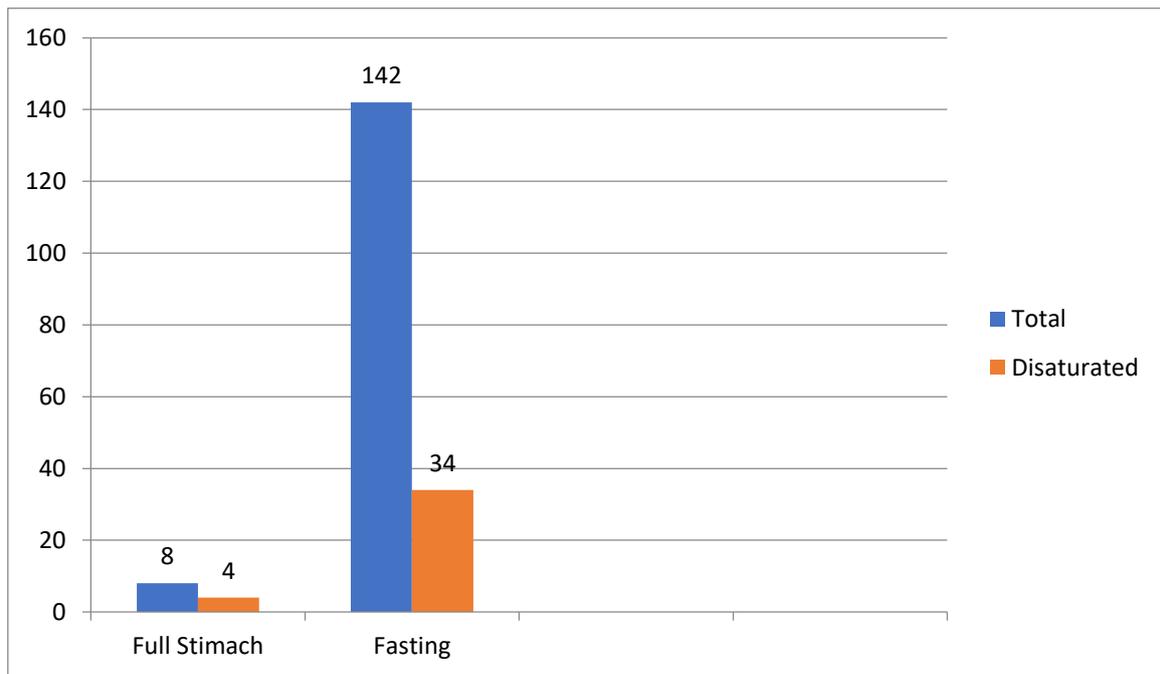
Contributing factors in our PACU –

1. Emergency cases.
2. No anti- aspiration prophylaxis.
3. Long duration of surgery >90 mins .
4. Use of muscle relaxants.
5. Use of post -operative narcotics.
6. Smokers.

Age Distribution:

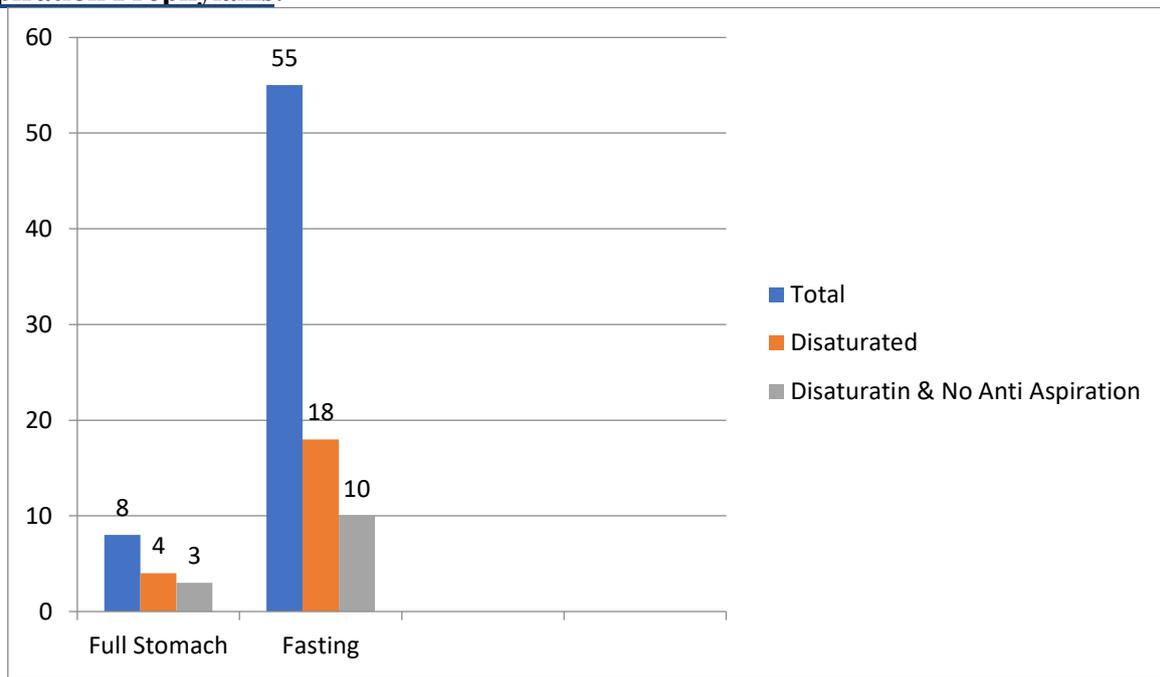


Fasting Status:



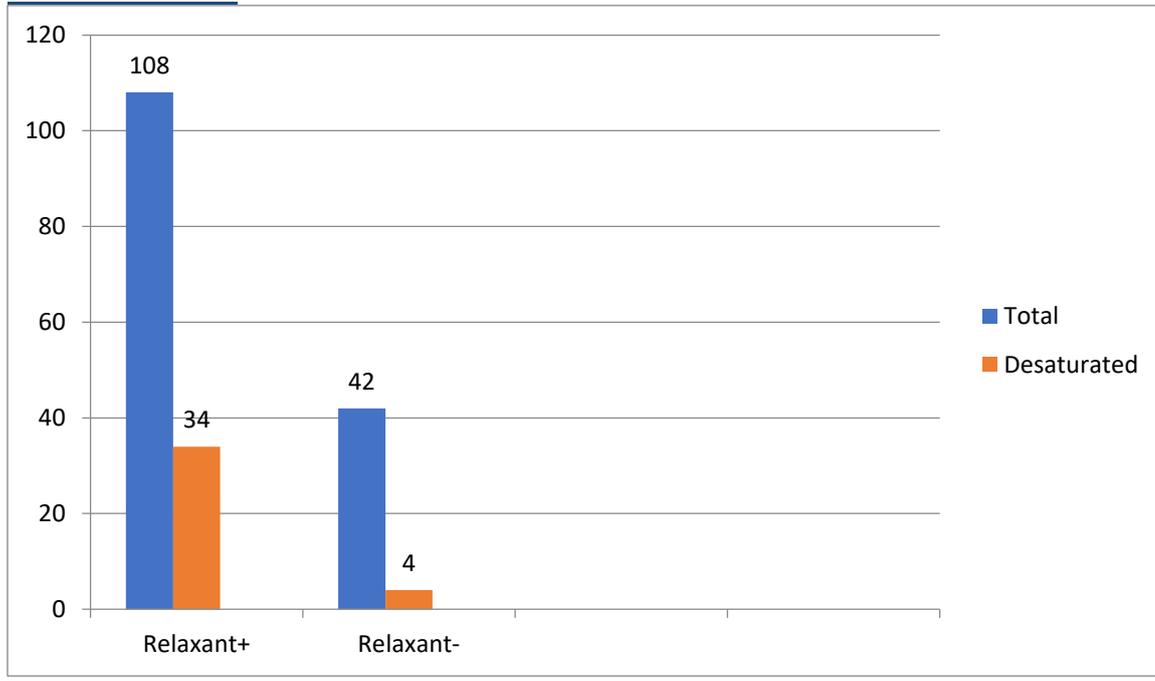
63 patients were emergency cases, 22 patients desaturated but only 8 pts were full stomach of which 4 cases desaturated (50% desaturation) and the remaining 14 pts were fasting more than 8hrs (even though they were emergency cases) but they too desaturated. Therefore we need to understand that most of our patients are trauma and general surgery cases and should be considered as full stomach, due to delayed gastric emptying.

Anti-Aspiration Prophylaxis:



Of the 63 emergency cases, 8 pts were full stomach, of which 4 desaturated and of these 4 pts, 3 patients did not receive anti-aspiration prophylaxis. Of the 55 pts who were fasting, 18 pts desaturated and 10 patients did not receive anti-aspiration prophylaxis. Anti-aspiration prophylaxis should be considered in all emergency cases.

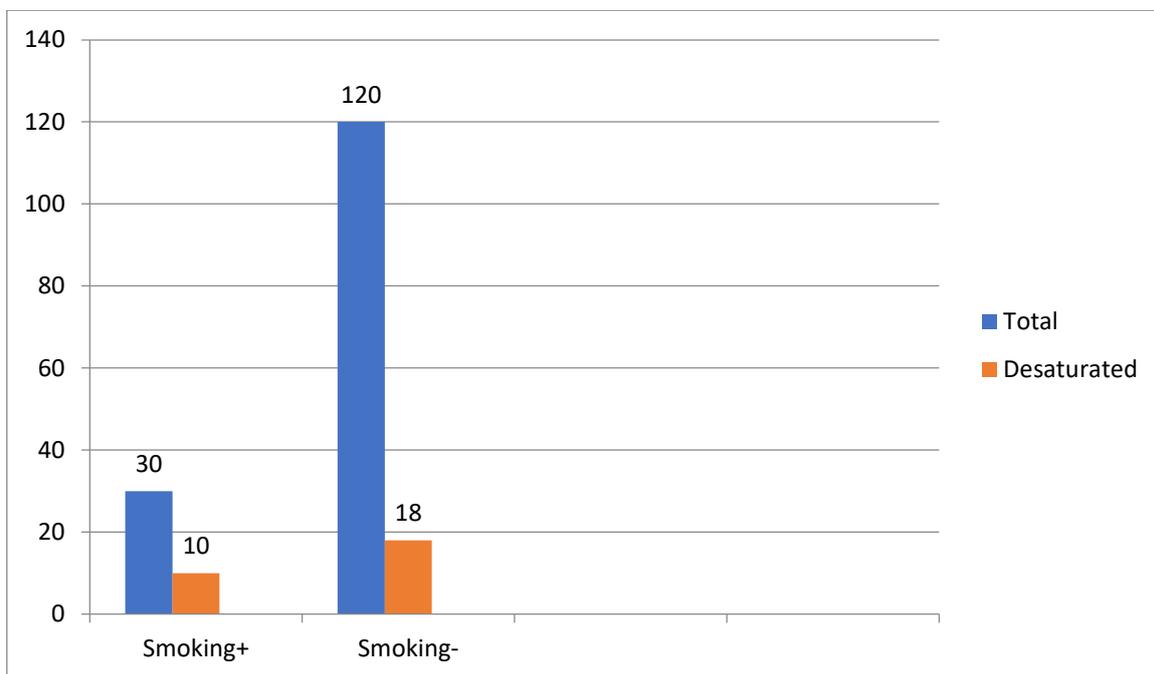
Muscle Relaxant:



Muscle relaxant group 31% desaturation. No muscle relaxant group 9.5% desaturation. **TOF Monitor was used for only 2 cases.**

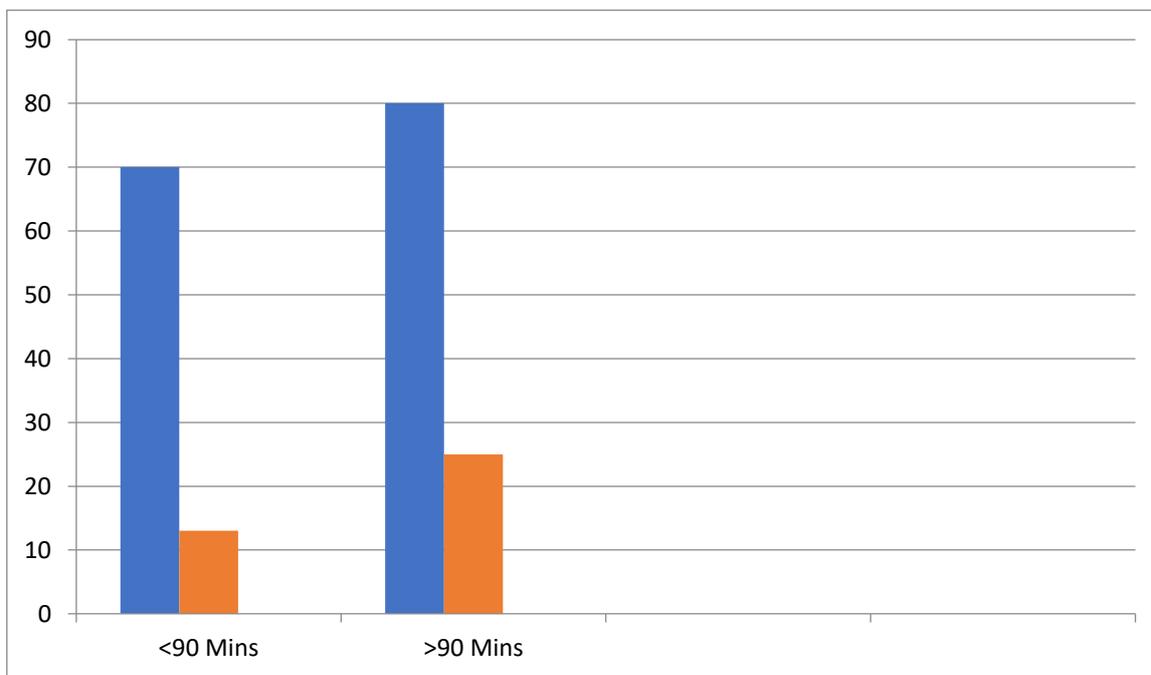
TOF(train of four) monitoring should be done in all cases where muscle relaxant is used and a TOF ≥ 0.9 is when the patient should be extubated to avoid residual muscle paralysis which can be a cause of destauration in PACU.

Smokers:



33% desaturation in smokers group. Patients should be educated to stop smoking at least 12-24hours prior to surgery in emergency cases and 8 weeks in elective surgeries.

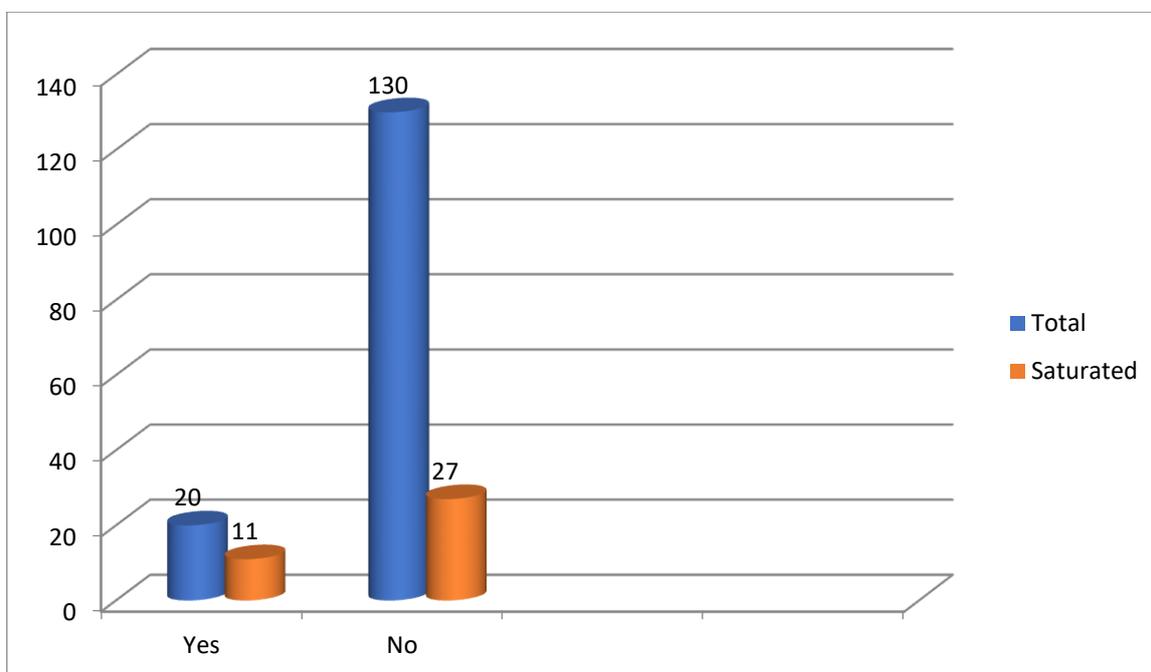
Duration of Surgery:



Surgeries less than 90mins - 18% desaturation . Surgeries more than 90mins - 31% desaturation . **None of the patients had temperature monitoring.** Patients should be extubated at temperature of 36°C and above.

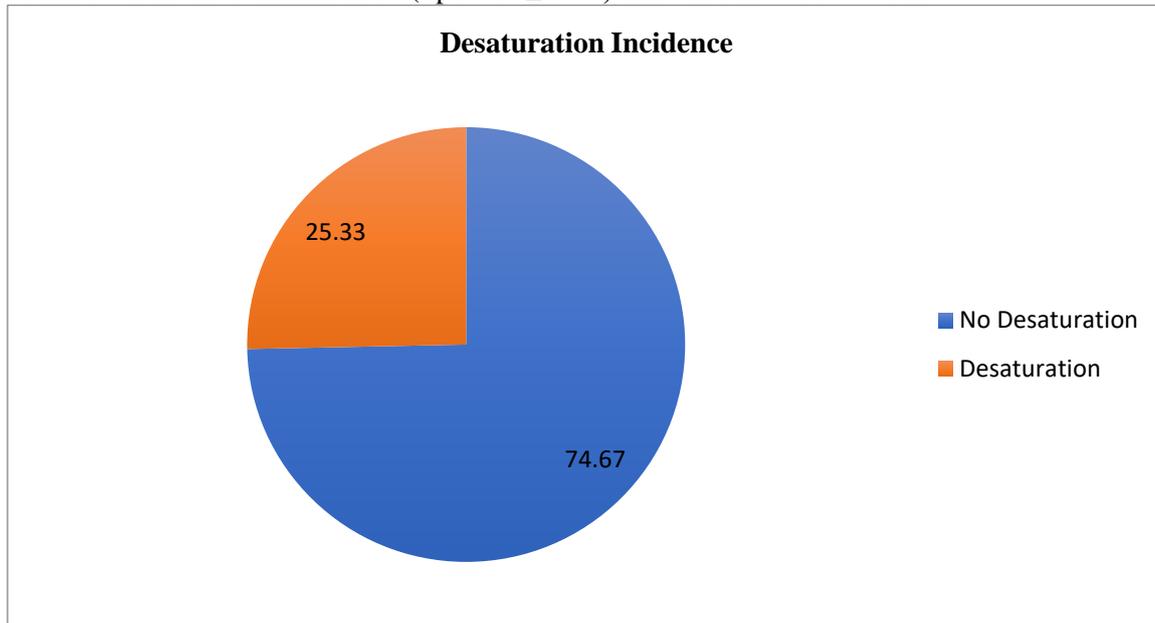
Post- operative opioid :

We are following a good practice of giving nasal cannula for patients receiving opioids via Patient Controlled Analgesia who drop SpO2 less than 95%,but patients who receive bolus dose of opioids,get sedated and desaturate due to hypoventilation. Hence we need to titrate the dose of narcotic and more so consider nasal cannula in these group of patients.



Data Analysis:

25.33% incidence of desaturation (SpO₂ of ≤ 94%) was noticed in our PACU.



Suggestions/ Recommendations for change:

What suggestions for changes in practice you would like to make based on the results of the clinical audit?

- All patients undergoing GA should be shifted with oxygen from operation theatre to PACU.
- All patients undergoing GA with muscle relaxant should have neuromuscular monitoring.
- For surgeries more than 90 minutes duration, temperature monitoring should be done.
- All emergency cases should get anti-aspiration prophylaxis.
- SpO₂ of 94% should be considered as the cut off range for oxygen therapy.
- Inform all patients to stop smoking 12-24 hours prior to surgery and for elective cases 8weeks prior to surgery.