

**A STUDY ON THE INCIDENCE OF POSTOPERATIVE SORE THROAT AND
EVALUATION OF PREVENTIVE MEASURES IN PATIENTS UNDERGOING
GENERAL ANAESTHESIA WITH ENDOTRACHEAL INTUBATION**

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ABSTRACT

Background:

Postoperative sore throat (POST) is a frequent minor complication following general anesthesia with endotracheal intubation, causing discomfort and potentially affecting patient satisfaction and recovery. Mechanical irritation, cuff pressure, tube size, duration of surgery, repeated intubation, and patient-related factors such as age, sex, and pre-existing respiratory conditions contribute to its occurrence. Preventive strategies, including topical lidocaine, have been suggested to reduce its incidence and severity.

Methods:

This observational study was conducted from January to June 2025 at the Department of Anaesthesiology, Mahatma Gandhi Medical College and Research Institute, Puducherry. Fifty patients aged 18–60 years (ASA Grade I–II) undergoing elective surgeries with endotracheal intubation were enrolled. Patients were monitored postoperatively for 24 hours, with sore throat severity assessed at 2, 6, 12, and 24 hours using a 4-point pain scale (0–3). Data on intubation techniques, tube size, cuff pressure, number of attempts, and preventive measures (e.g., lidocaine spray) were collected. Descriptive statistics were used to evaluate the incidence and severity of POST and the effectiveness of preventive interventions.

Results:

POST occurred in 32 patients (64%), most commonly in the 26–35-year age group. Female patients showed a slightly higher incidence than males. Surgeries lasting 2–3 hours were associated with greater POST occurrence. Among 35 patients who received lidocaine spray, most reported mild or no sore throat. Overall, 18 patients had no pain, 22 had mild pain, 4 had moderate pain, and 6 experienced severe pain.

Conclusion:

POST is a common complication following endotracheal intubation, with younger adults and females slightly more affected. Preventive measures, particularly topical lidocaine, significantly reduce its incidence and severity. Proper patient positioning and careful intubation further enhance patient comfort and satisfaction.

Keywords:

Postoperative sore throat, endotracheal intubation, lidocaine, elective surgery, general anesthesia, airway management, patient comfort.

INTRODUCTION

Postoperative sore throat (POST) is among the most frequent minor complications in patients after general anesthetic procedures with endotracheal intubation. It is referred to as ‘painful’ or ‘burning’ sensation in the throat, which can be mild to severe and last for few hours or days. While POST is not life-threatening, it can be highly distressing, influential in the patient’s perception of the success of his surgery, and sometimes delay oral intake and/or discharge. (1)

The cause of POST is generally multifactorial. It is mainly induced by mechanical irritation and mucosal trauma that occurs because of the presence of the endotracheal tube in the trachea, repeated intubation, overinflated cuff pressure, longer duration of surgery, and longer size of the tube. On top of those, patient related factors such as old age, female sex, smoking history, and pre-existing respiratory tract diseases have also been suggested as the risk factors for the development of Post (2)

Although self-limited, the relatively high prevalence of POST explains the continuing interest in research for its prevention. Several techniques have been recommended to reduce its incidence like use of lubricated/ softened endotracheal tubes, use of topical anaesthetics such as lidocaine spray, controlled cuff pressure monitoring, reduction in the number of intubation attempts (3).

For improving the quality of anesthetic care, understanding the incidence of postoperative sore throat (POST) and the effectiveness of preventive interventions is essential. This study aimed to determine the incidence of POST in patients undergoing elective surgeries under general anesthesia with endotracheal intubation and to evaluate the effectiveness of preventive measures, such as lidocaine spray, in reducing its occurrence [1–3].

Optimal patient positioning during laryngoscopy involves the supine “sniffing” position, achieved by placing a 6–8 cm pillow under the occiput to extend the atlanto-occipital joint and flex the lower cervical spine. The laryngoscope is inserted from the right side of the mouth, displacing the tongue to the left until the epiglottis is visible. Lifting the epiglottis allows visualization of the glottis, after which the endotracheal tube is advanced between the vocal cords. Cuff inflation ensures the tube is seated mid-tracheally and below the cords, with placement confirmed by capnography and auscultation, then secured at the mouth’s angle [4–6].

Laryngoscopy and intubation may induce reflex responses such as laryngospasm, bronchospasm, hypertension, tachycardia, and arrhythmias, particularly in hypertensive or cardiac patients. Blunting these responses can be achieved using adequate anesthesia depth, opioids like fentanyl, intravenous or topical lidocaine, and beta-blockers such as esmolol [7–9]. Cuff pressure should remain below 30 cm H₂O to prevent tracheal ischemia, noting that nitrous oxide can elevate pressure during inhalation. For laser or hyperbaric oxygen procedures, saline is preferred for cuff inflation, and the cuff should be positioned 2–2.5 cm below the vocal cords for safety and effectiveness [10–12].

A laryngoscope is an instrument used to visualize the glottis for intubation. Direct laryngoscopes allow direct visualization, while indirect laryngoscopes employ optical channels. They are classified as direct rigid, indirect fiberoptic rigid, or flexible fiberoptic. The main components include the handle (housing batteries and grip), blade (Macintosh or Miller, to lift the tongue and epiglottis), and light source [13–15].

The endotracheal tube (ETT) maintains the airway, delivers oxygen, and enables mechanical ventilation. Typically made of PVC, silicone, or rubber, it has a beveled tip, Murphy eye, cuff, pilot balloon, and radiopaque line. Tubes may be cuffed, uncuffed, reinforced, preformed (RAE), laser-resistant, or double-lumen. Tube size and length are chosen according to patient age and anatomy, ensuring placement above the carina. Devices like bougies and stylets assist

with difficult intubation: a bougie guides the ETT into the trachea, while a stylet provides shape and stiffness for smoother passage through the vocal cords [16–17].

METHODS AND METHODOLOGY

This observational study was conducted on 50 adult patients scheduled for elective surgeries at Mahatma Gandhi Medical College and Research Institute (MGMCRI), Puducherry, over a six-month period from January 2025 to June 2025. The study included patients aged 18–60 years, classified as American Society of Anaesthesiologists (ASA) physical status I or II, who were undergoing elective surgeries under general anesthesia with endotracheal intubation and were willing to participate. Patients with pre-existing sore throat or upper respiratory tract infections, those requiring reintubation or nasogastric tube insertion, individuals with significant comorbidities, and those with known allergies to lidocaine were excluded.

Data collection involved close postoperative observation for 24 hours to evaluate the occurrence and severity of postoperative sore throat (POST). Sore throat severity was assessed at 2, 6, 12, and 24 hours following extubation using a standard 4-point scale: 0 indicating no pain, 1 mild pain, 2 moderate pain, and 3 severe pain. Detailed information regarding intubation, including tube size, cuff pressure, number of attempts, and the use of adjuncts such as bougie or stylet, as well as preventive interventions like lidocaine spray or jelly, was recorded. Any airway-related complications, including cough, hoarseness, or trauma, were documented. Patient feedback on throat discomfort was collected verbally and analyzed descriptively to assess the effectiveness of preventive measures, particularly the use of lidocaine spray.

RESULT

Table 1: Age Distribution of Patients

AGE GROUP	NUMBER OF PATIENTS
18-25	13
26-35	17
36-45	8
46-55	7
56-60	5
TOTAL	50

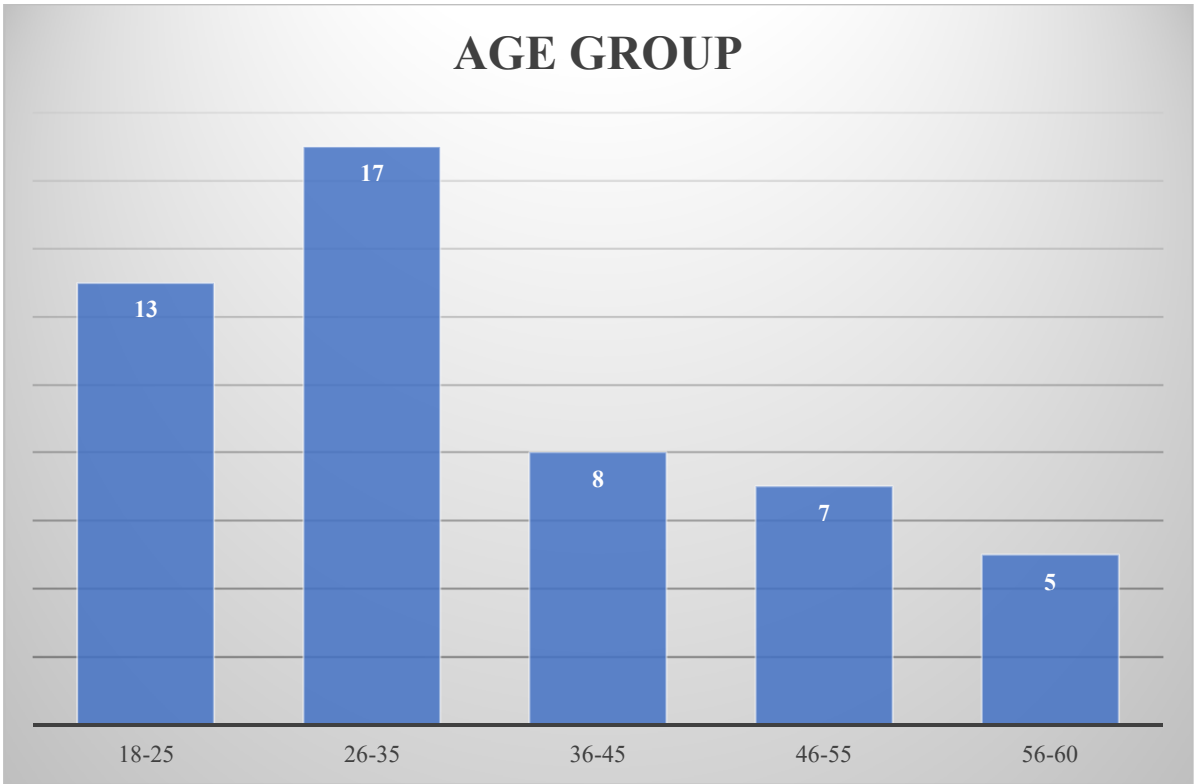


Chart 1: Age Distribution of Patients

The above table and bar chart shows the distribution of the 50 patients across different age groups. The highest number of patients belonged to the 26-35 age group, followed by 18-25 years.

Table 2: Gender Distribution of Patients

GENDER	NUMBER OF PATIENTS
MALE	22
FEMALE	28
TOTAL	50

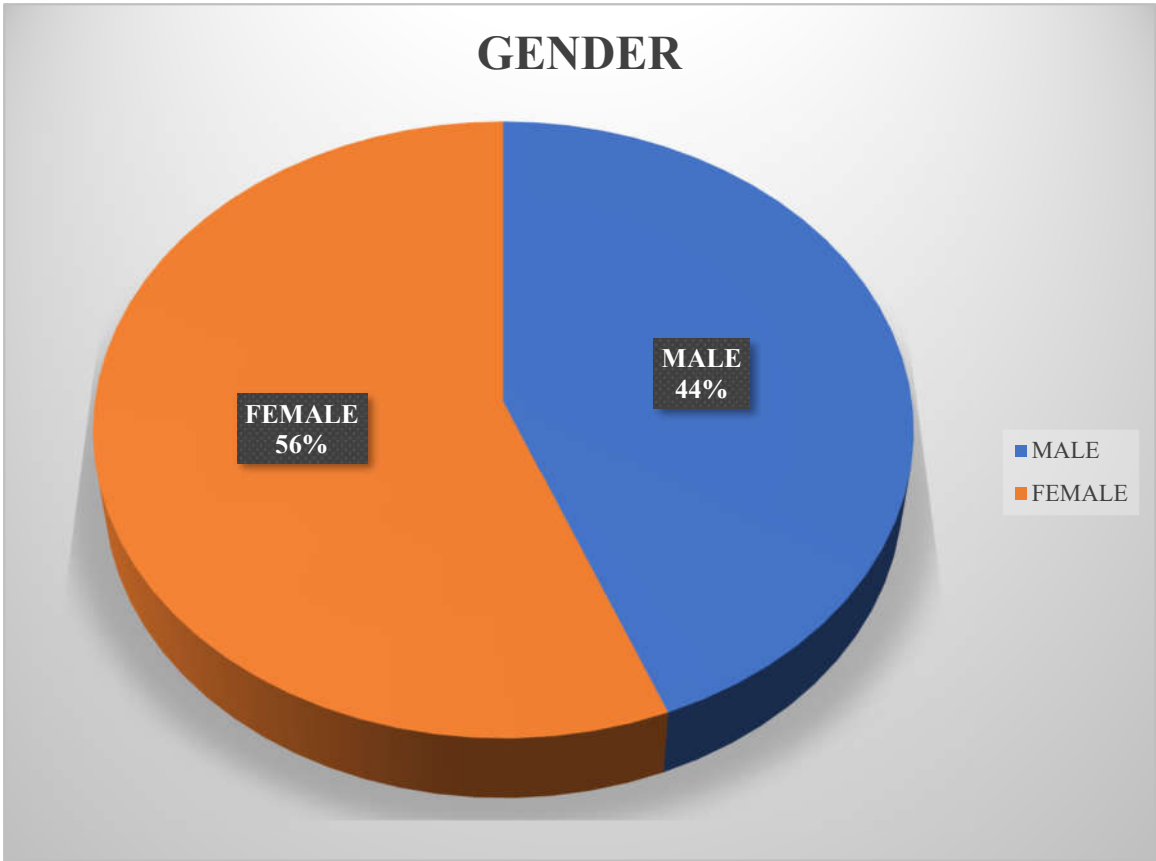


Chart 2: Gender Distribution of Patients

The above table and pie chart shows the gender distribution of the study population. A majority of the patients in the study were female.

Table 3: Distribution Based on Duration of Surgery

DURATION OF SURGERY (HOURS)	NUMBER OF PATIENT
<1hr	5
1-2hr	16
2-3hr	19
>3hrs	10
TOTAL	50

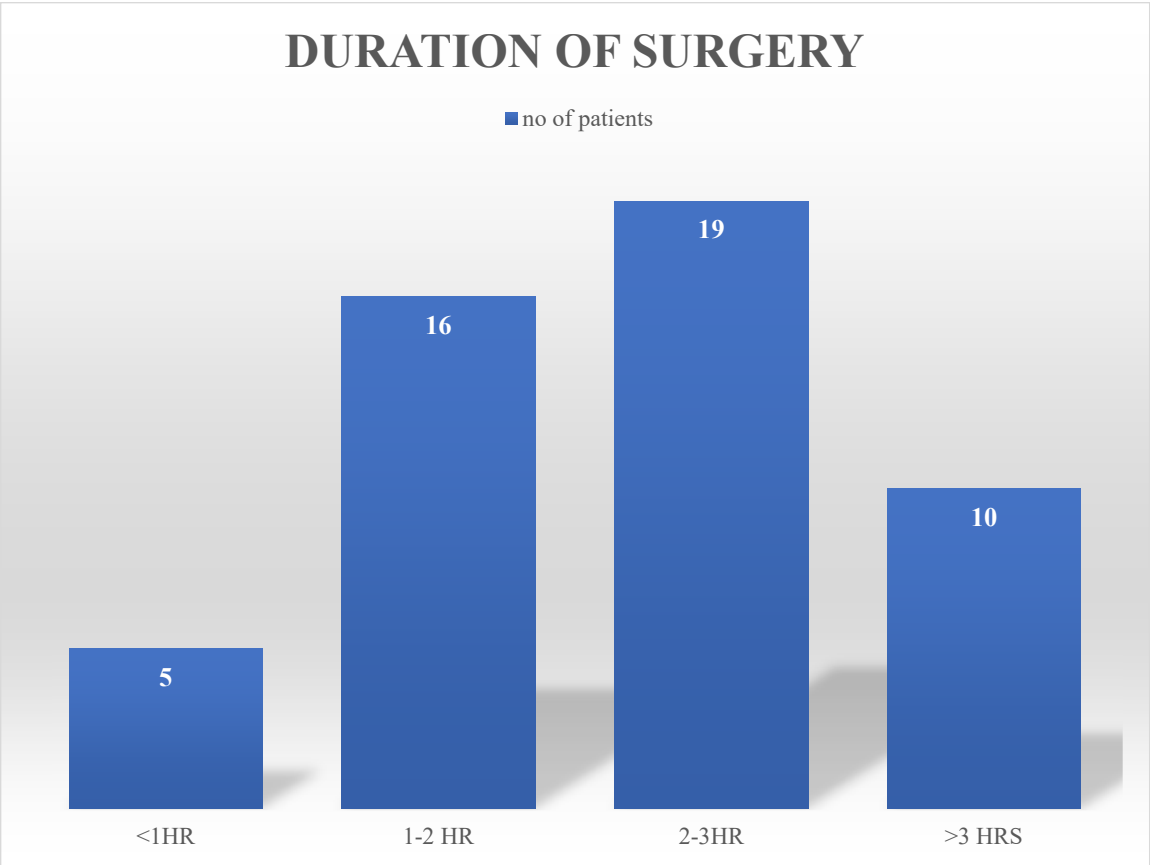


Chart 3: Distribution Based on Duration of Surgery

The above table and bar chart shows the number of patients grouped according to the duration of surgery. The majority of surgeries lasted between 2 to 3 hours

Table 4: Incidence of Post Operative Sore Throat

AGE	SORE THROAT	NO SORE THROAT
18-25	6	7
26-35	11	6
36-45	6	2
46-55	5	2
56-60	4	1
TOTAL	32	18

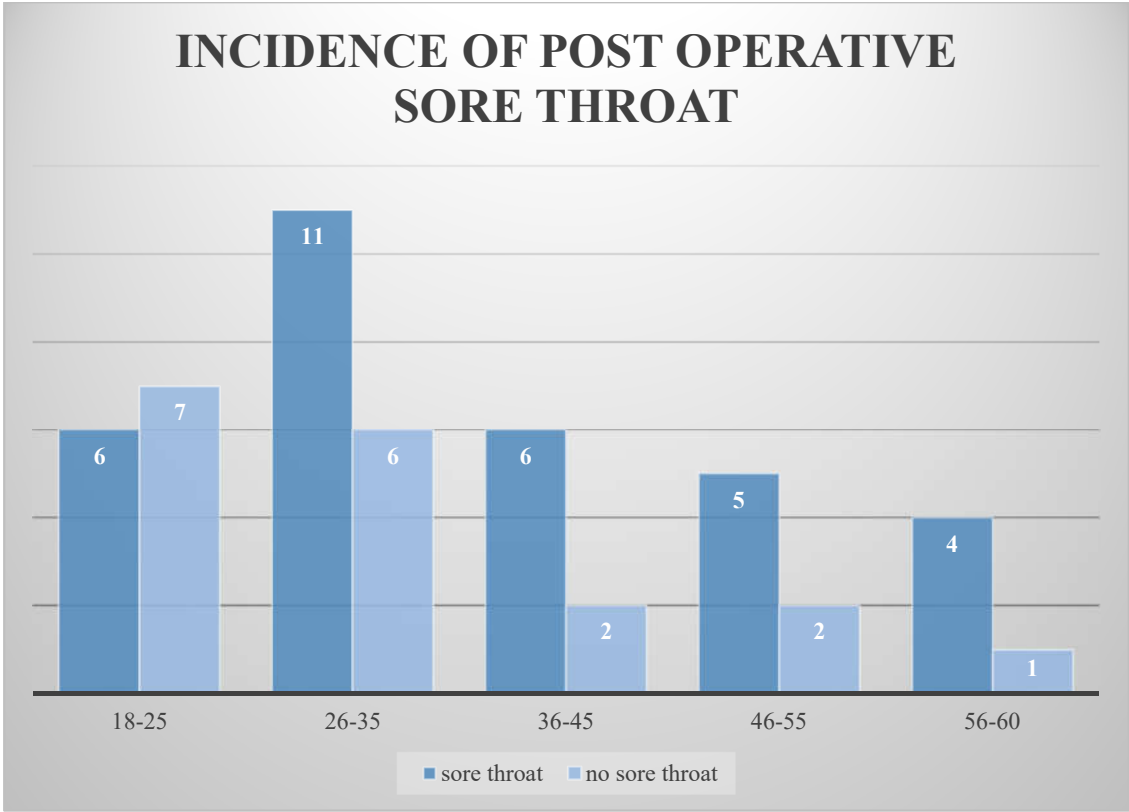


Chart 4: Incidence of Post Operative Sore Throat

The above table and bar chart compares the number of patients with and without postoperative sore throat across different age groups. The 26-35 (sore throat) and 18- 25 (no sore throat) year groups showed a higher number of POST cases.

Table 5: Lidocaine Spray Used

PREVENTIVE MEASURES	NUMBER OF PATIENT
LIDOCAINE SPRAY	35
NO MEASURES	15
TOTAL	50

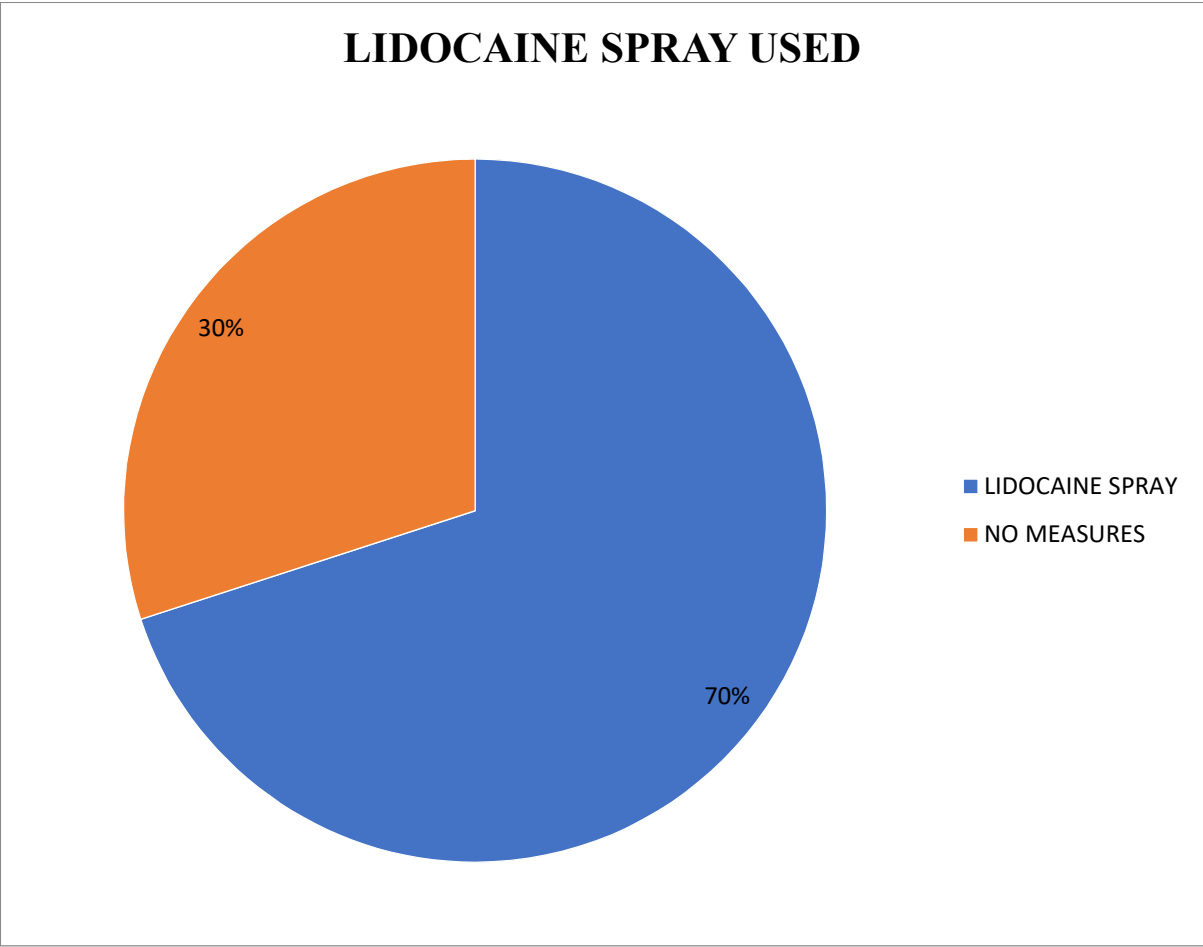


Chart 5: Lidocaine Spray Used

The above table and pie chart represent the distribution of patients based on the use of preventive measures. Out of 50 patients, 35 received lidocaine spray as preventive measures ,15 did not receive any preventive intervention.

Table 6: Pain Score Distribution

PAIN SCORE	NUMBER OF PATIENTS
0 (NO PAIN)	18
1(MILD)	22
2(MODERATE)	4
3 (SEVERE)	6
TOTAL	50

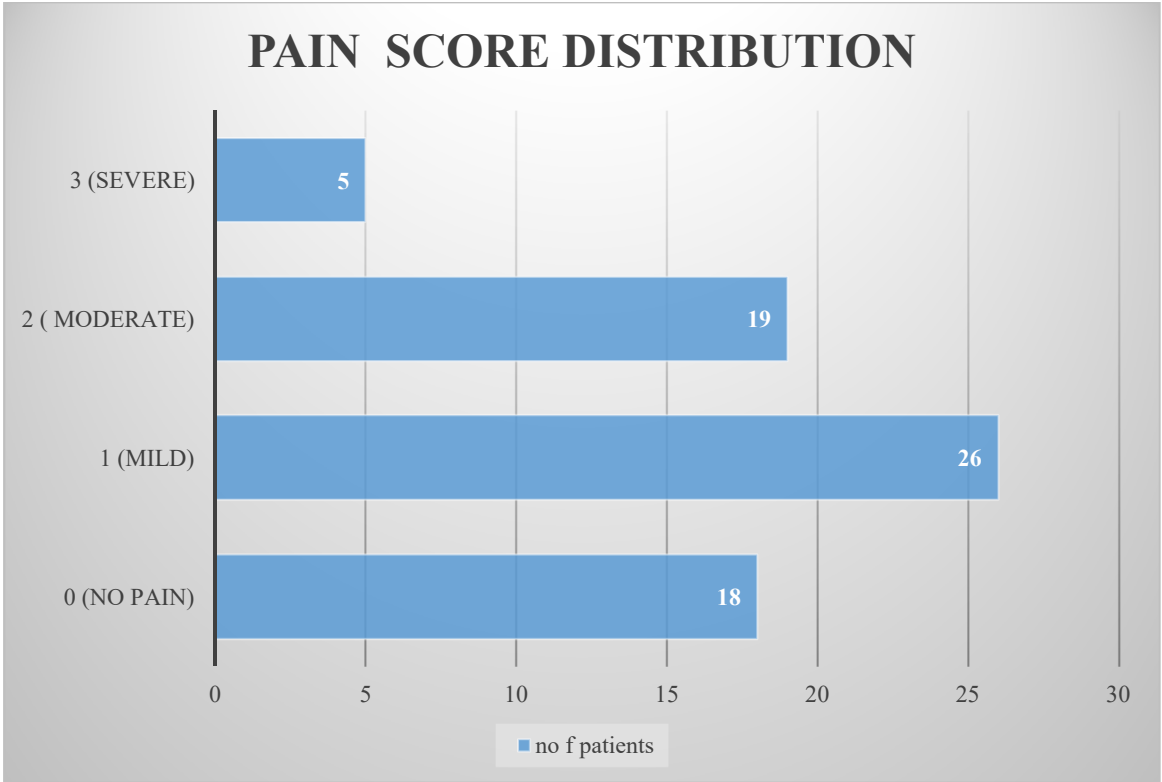


Chart 6: Pain Score Distribution

The above table and bar chart represent the pain score distribution of patients. Out of 50 patients, 18 reported no sore throat, 22 had mild pain, 4 had moderate pain, 6 had severe pain.

DISCUSSION

Postoperative sore throat (POST) is one of the most common complications following endotracheal intubation, affecting patient comfort and recovery. In the present study of 50 patients undergoing elective surgeries under general anesthesia, 32 patients experienced POST while 18 patients did not. The highest incidence was observed in the 26–35-year age group, which is consistent with findings reported by El-Boghdadly et al. (2016) and Mitobe et al. (2022), who noted that younger adults are more susceptible to POST due to increased airway sensitivity and more extensive manipulation during intubation.

The gender distribution revealed a slightly higher proportion of female patients. Previous research by Bekele and Melese (2023) has suggested that females may be at greater risk for POST, possibly due to anatomical factors such as smaller airway diameters. Regarding the duration of surgery, the majority of procedures lasted 2–3 hours, and studies by Azar Arabkhazaie et al. (2024) and Mohseni et al. (2022) have highlighted that prolonged intubation is associated with higher POST incidence. Preventive interventions were assessed, with 35 patients receiving lidocaine spray. Most of these patients reported mild or no sore throat, supporting the efficacy of topical lidocaine in reducing POST as described by Tanaka et al. (2015) and Cho et al. (2016).

Pain assessment showed that most patients experienced mild discomfort, while a smaller proportion reported moderate to severe pain. These observations align with systematic reviews

by Mazzotta et al. (2023) and Vaida and Prozesky (2020), indicating that preventive measures, careful intubation techniques, and appropriate airway management can minimize the severity of POST. Overall, this study underscores that proper patient positioning, meticulous intubation, and the use of preventive strategies such as lidocaine spray play a critical role in reducing POST, enhancing patient satisfaction and postoperative recovery.

CONCLUSION

The study demonstrated that postoperative sore throat (POST) is a common complication following endotracheal intubation, with an overall incidence of 64% in the study population. Younger adults, particularly those aged 26–35 years, showed a higher susceptibility to POST. Female patients appeared slightly more affected than males, although the difference was not pronounced. Most surgeries lasted between 2–3 hours, and longer intubation time may contribute to increased POST risk. Preventive measures, particularly the use of lidocaine spray, were effective in reducing both the incidence and severity of POST. Pain assessment revealed that the majority of patients experienced mild or no discomfort. Proper patient positioning in the sniffing position and careful intubation techniques are essential to minimize airway trauma. Blunting cardiovascular reflex responses during intubation further improves safety and patient comfort. The study supports the routine use of topical lidocaine as a preventive strategy for POST. Overall, attentive airway management and preventive interventions can significantly enhance postoperative patient satisfaction and recovery.

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