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FREQUENCY OF LARYNGOSPASM AND ASSOCIATED RISK FACTOR AMONG PEDIATRIC PATIENTS UNDER GENERAL ANESTHESIA DURING EXTUBATION AT LADY READING HOSPITAL PESHAWAR

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ABSTRACT

Noted complication of anesthesia for children is laryngospasm. This is when someone closing their vocal cords, thus obstructing the airway, which is particularly troublesome when it occurs during the anesthesia recovery phase. The goal of this study was to determine the prevalence of laryngospasm for children undergoing general anesthesia, as well as determine the risk factors associated with it. This was a descriptive study with a target group of 281 individuals under 15 years which was conducted in tertiary level hospitals in Peshawar, Pakistan, and these patients were

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undergoing general anesthesia for elective surgical procedures. Information was gathered by means of a predetermined survey and it was analyzed using the 22nd version of SPSS. Results showed that laryngospasm occurs with the frequency of 53.3%, with the principal risk factors being too light anesthesia, airway blockage, and airway injury, as well as respiratory infection. Sevoflurane was the most commonly used induction and mask anesthesia. Problems that were described included difficult intubation and multiple maneuvers for airway obstruction and ventilation. More experienced anesthetists, with few in number, caused less complications on patients. The results of this study advocate the need for systematic investigation when deciding the anesthetic technique for children, as well as their careful monitoring, in addition to prompt treatment to laryngospasm which deals with improving the safety of children in the peri anesthesia period.

KEY WORDS
Laryngoscopy, Pediatric, General Anesthesia, Risk factors

INTRODUCTION

Laryngospasm refers to the involuntary spasmodic closure of the vocal cords, resulting in a significant degree of airway obstruction and respiratory distress. Pediatric patients are particularly prone to laryngospasm arising from a smaller airway size and immature reflex control, both of which are more sensitive to airway irritants. Spontaneously resolving in nature, laryngospasm can turn serious and thus require immediate interventions for fear of hypoxia and other complications. Understanding the risk factors that govern the occurrence of laryngospasm in pediatric cases is important in the pursuit of enhanced safety during anesthesia (Olsson and Hallen 1984).

When it comes to paediatric patients, this condition is especially concerning, especially during anaesthesia and the extubation procedure. Because children's airway reflexes are more sensitive in this situation, laryngospasm is a well-known consequence. Because of their smaller airways and their vocal cords' increased sensitivity to irritation, paediatric patients are more likely to experience laryngospasm. This complication may be more likely if there is blood, mucus, or volatile anaesthetics used. To stop it from happening during anaesthesia, proper airway management and avoiding known triggers are crucial (Suzuki and Sasaki 2005).

In the case of laryngospasm, the first course of action is the restoration of airway patency, which may include positive pressure ventilation of 100% oxygen or muscle relaxants in extreme circumstances. Preventive ventilation is also crucial parts of the anesthetic technique including the intubation and extubation, especially with ankle minimization of airway irritability. The risk factors and effectively working counteractions appear to be crucial to anesthetists, especially pediatric ones, because rapid measures can mitigate the laryngospasm morbidity (Staffel, Weissler et al. 1991).

One of the complications in the perioperative period during the induction of anesthesia, or during the perioperative period, which is characterized by the emergence of the dorsal glottic closure, is laryngospasm. The laryngospasm is predominantly of the laryngical type, and the incidence is higher in children, especially in the first 1 to 3 months of life. The most common triggers are

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hyperactive airways, which is the case with infections such as those of the upper respiratory tract. Painful stimulation and insufficient anesthesia are also common triggering factors.

Among the inhalational agents isoflurane showed greater incidence of laryngospasm than halothan, enflurane and sevoflurane. Laryngospasm is a protective reflex that acts to prevent foreign material entering the tracheobronchial tree. The exaggeration of this reflex may result in partial or complete glottis closure and consequently amending respiration .If laryngospasm persists,it may cause hypoxia and hypercapnia. Most of the time, the resulting hypoxia abolished the reflex and the spasm tends to be self-limited . According to Haile et al.'s report, the incidence of laryngospasm on pediatric patients who underwent surgery under GA was 28.3% [6]. However in rare occasions, serious morbidity and mortality from immediate (hypoxia and hypoxemia) such as cardiac arrest, arrhythmia, delayed("negative-pressure pulmonary edema")Consequences of upper airway or lower airway spasm or aspiration may occur.Thus every effort should be made to rapidly relieve the airway obstruction caused by laryngospasm (Mevorach 1996).

The treatment success mainly depends on the experience of the anesthesia provider. The treatment different for each type.If there is incomplete airway obstruction, remove irritant stimulus, deepen anesthetic plane, apply jaw thrust maneuver, insert guedel airway and provide gentle continuous positive airway pressure with 100%oxygen.pressing firmly at the laryngospasm notch' helps to relieve the spasm as advocated by guadagni and larson.

In case of complete airway obstruction suxamethonium is given intravenous. If no intravenous access intramuscular 4mg/kg is given. On becoming hypoxic and having hemodynamic drain manage the child may need to be intubated without muscle relaxation, than to wait for the effects of succinylcholine . The vocal cords can be sprayed with lidocaine, in order to bring relaxation and facilitate intubation . If these methods fail; emergency cricothyrotomy or emergency tracheostomy may be required. However, recent reviews . Derived from endoscopy studies showed that partial laryngospasm does not exist and laryngospasm is complete; thus treatment should be the same. Patients with laryngospasm can deteriorate rapidly and help should be sought early; three incidents were reported in which the patient suffered, morbidity because of a lack of skilled assistance. It is well recognized from the AIMS detabase that only does a lack of skilled anesthetic assistance contribute to adverse events, but that inadequately trained assistants may actually make an adverse event worse (BARRON and DUNDEE 1967).

BACKGROUND OF THE STUDY

Laryngospasm refers to the involuntary spasmodic closure of the vocal cords, resulting in a significant degree of airway obstruction and respiratory distress. Pediatric patients are particularly prone to laryngospasm arising from a smaller airway size and immature reflex control, both of which are more sensitive to airway irritants. Spontaneously resolving in nature, laryngospasm can turn serious and thus require immediate interventions for fear of hypoxia and other complications. Understanding the risk factors that govern the occurrence of laryngospasm in pediatric cases is important in the pursuit of enhanced safety during anesthesia.

There are a number of risk factors that have been found to raise the possibility of

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laryngospasm in children receiving general anaesthesia. These include age, with younger children—especially infants—being more vulnerable because of their smaller airways and increased sensitivity to reflexes. Laryngospasm is also more common in children who have a history of reactive airway conditions like asthma, respiratory infections, or irritations of the upper respiratory tract. By raising airway reactivity, environmental factors like seasonal allergies and secondhand smoke exposure may also raise the risk. The kind of surgery being done can also increase the risk of laryngospasm during anaesthesia, particularly if it involves the airway, like tonsillectomies or adenoidectomies (Cook, Westman et al. 1981).

The administration of anaesthesia itself is a major contributing factor to the risk of laryngospasm. Using volatile anaesthetics like desflurane, sevoflurane, or halothane has been linked to a higher risk of airway irritation and, ultimately, laryngospasm. This reflex may also be triggered by inadequate depth of anaesthesia during airway manipulation, such as intubation or extubation, particularly if the patient is not completely unconscious or is in the lighter stages of anaesthesia. Furthermore, secretions, blood, or foreign objects in the airway can irritate the airway and raise the risk of laryngospasm.

Careful preoperative evaluation is necessary to identify at-risk individuals, such as those with respiratory disorders or airway irritability, in order to prevent laryngospasm in paediatric patients. The incidence of laryngospasm can be decreased by using specific techniques, such as extubating the patient in a deep or fully awake state, and by providing an adequate depth of anaesthesia during crucial airway manipulation periods. Additionally, the risk can be reduced by making sure the airway is free of irritants like blood or secretions during anaesthesia and by providing sufficient humidification to avoid dryness. These preventative measures are essential for reducing complications in paediatric anaesthesia, as is quick detection and treatment of laryngospasm when it happens (Fink 1956).

RESEARCH METHADOLOGY:

Study Design.

Descriptive cross sectional study.

Study Setting.

Tertiary care hospital Peshawar
(LRH) Lady Reading Hospital peshawar

Study Duration.

4 months

Sample Size.

Cochran Formula Steps 1.
$n_o = Z^2.p(1-p)/E^2$ n_O = Simple size
Z= Confidence level= 95% = 1.96.
P=Estimated prevalence of diseases =28.3% (0.283). q=(1—p).
e=margin of error = 5% = 0.05 $n_o = 1.96^2.0.283(1-0.283)/(0.05)2$
$n_o = 311$
Steps 2.
Final Sample size: N(n)/(n+N-1) Population Size (N)= 3000 Sample size (n)= 311
Final Sample size= 3000(311)/(311+3000-1) Final Sample Size= 281
The final Sample Size to the corresponding population is approximately n= 281

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Sampling Technique.

Non probability convenient sampling Technique was applied.

Sample Selection.

a. Inclusion Criteria.

a) Those patients was included who are willing involve in this study.
b) ASA physical status class I and II patients
c) Gender: Both male and female.
d) Age <15 years
e) Elective surgeries

b. Exclusion Criteria.

a) ASA physical status greater than class III patients.
b) Age >15 years
c) Emergency surgery

DATA COLLECTION PROCEDURE.

A questionnaire was used to collect the data from participants "to determine the frequency of laryngospasm and risk factors among pediatric patients under general anesthesia after approval from the ethical research committee of Ahmad Medical Institute Peshawar. International standard questionnaire is developed for this study. The questions was a simple and easily understandable to participants. All the participant are willingly participating in the study. Before filling the questionnaire the participants are be briefly explain about the purpose benefits and risks of the study. The collected data are analyzed through SPSS 22.

DATA ANALYSIS PROCEDURE

The statistical package for social science [SPSS version 22] was used for data analysis. We used the statistical text percentage Mean+- SD_2 categorial and Continuous test.

RESULTS

This chapter presents the findings of this descriptive cross-sectional study, conducted over a four-month period in lady reading hospital Peshawar. A total of 311 participants were initially selected, with the final sample size adjusted to 281 based on the Cochran formula and population size. Data was collected using a standardized questionnaire and analyzed through SPSS 22. The results from this analysis provide valuable insights into the prevalence and risk factors of laryngospasm in pediatric anesthesia.

Table 3.1 presents the gender distribution of the respondents in the study. Out of the total 311 participants, 121 were male, accounting for 38.9% of the sample. The remaining 190 participants were female, representing 61.1% of the total sample. The valid percent reflects the same distribution, with males comprising 38.9% and females 61.1%. The cumulative percent reaches 100.0%, indicating that all respondents are accounted for, with no missing data in terms of gender. This distribution shows a higher proportion of female respondents compared to males in the study.

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DATA ANALYSIS

Table 3.1: Gender of the respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	121	38.9	38.9	38.9
Female	190	61.1	61.1	100.0
Total	**311**	**100.0**	**100.0**	

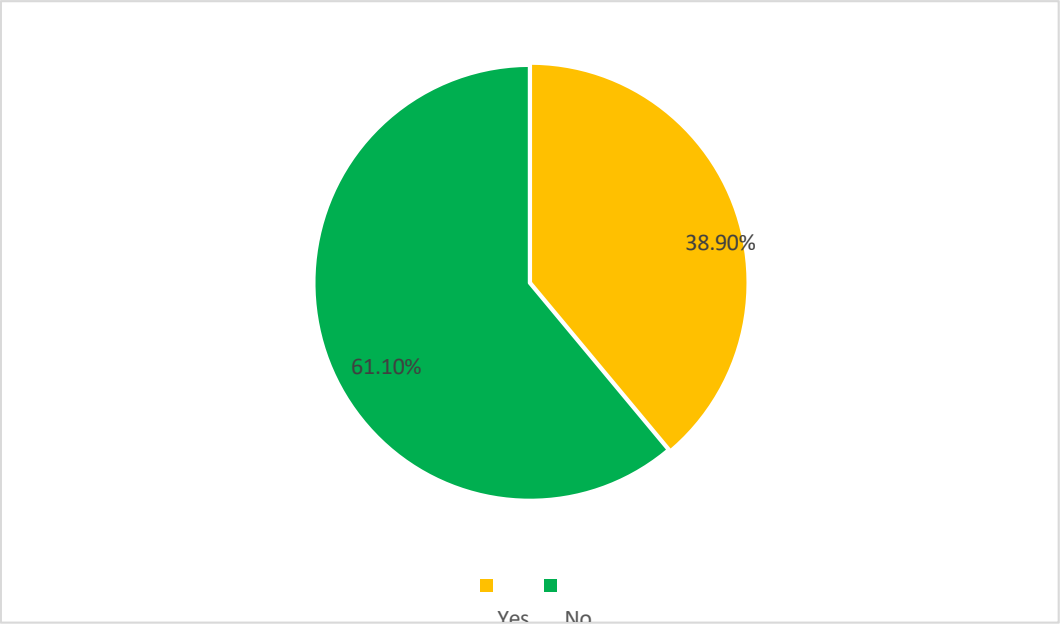


Table 3.2 displays the age distribution of the respondents. Among the 311 participants, the majority were in the 1-5 years age group, comprising 149 participants, or 47.9% of the total sample. The 6-10 years age group followed with 117 participants, representing 37.6%. A smaller portion, 45 respondents, were in the 11-15 years age group, accounting for 13.5% of the sample. The valid percent aligns with the frequency distribution, and the cumulative percent reaches 100.0%, signifying that all age categories are included in the data. The data shows that the younger age groups, particularly 1-5 years, make up the majority of the respondents in this study.

Table 3.2: Age of the respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
1-5 Years	149	47.9	47.9	47.9
6-10 years	117	37.6	37.6	85.5
11-15 years	45	14.5	14.5	100.0

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Total	**311**	**100.0**	**100.0**	

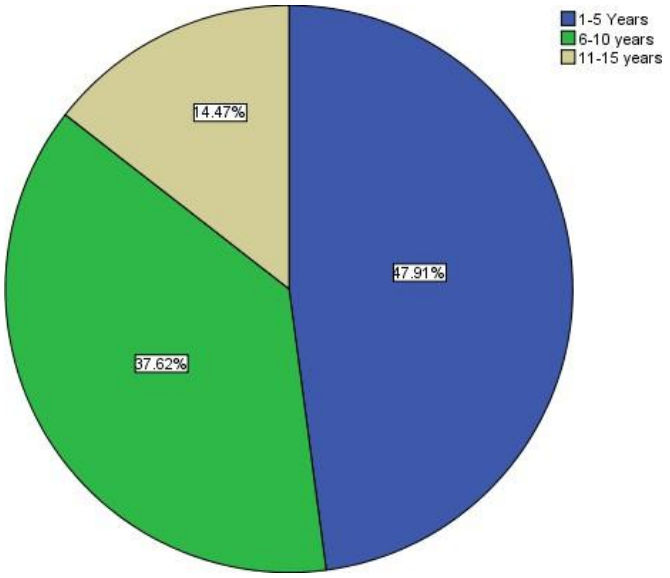


Figure 3.2: Age of the respondents

Table 3.3 presents the responses regarding whether the respondents observed patient induction with sevoflurane. Out of the 311 participants, 163 (52.4%) indicated that they observed the patient induction with sevoflurane, while 148 (47.6%) reported that they did not. The valid percent confirms this distribution, with 52.4% of the respondents observing sevoflurane induction and 47.6% not observing it. The cumulative percent reaches 100.0%, indicating complete data for this question. The results show a slightly higher number of respondents who observed the use of sevoflurane during induction

Table 3.3: Did you observed the patient induction with soveflurane?

	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	163	52.4	52.4	52.4
No	148	47.6	47.6	100.0
Total	**311**	**100.0**	**100.0**	

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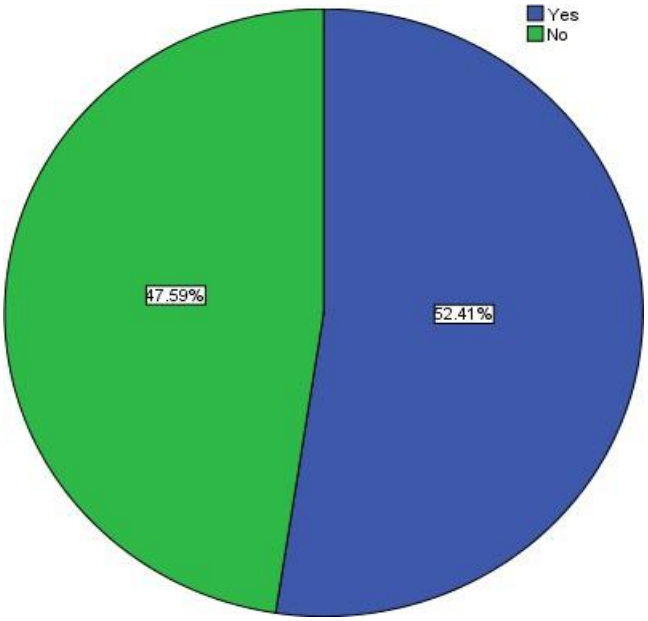


Figure 3.4: Did you observed the airway irritation with inhalational agent?

Table 3.4 presents the responses regarding whether the respondents observed airway irritation with the use of inhalational agents. Among the 311 participants, 100 (32.2%) reported observing airway irritation, while the remaining 211 (67.8%) indicated that they did not observe any airway irritation. The valid percent reflects the same distribution, with 32.2% observing airway irritation and 67.8% not observing it. The cumulative percent reaches 100.0%, confirming complete data for this question. The results indicate that a majority of respondents did not observe airway irritation with inhalational agents, with a smaller proportion reporting such an observation.

Table 3.4: Did you observed the airway irritation with inhalational agent?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	100	32.2	32.2	32.2
No	211	67.8	67.8	100.0
Total	**311**	**100.0**	**100.0**	

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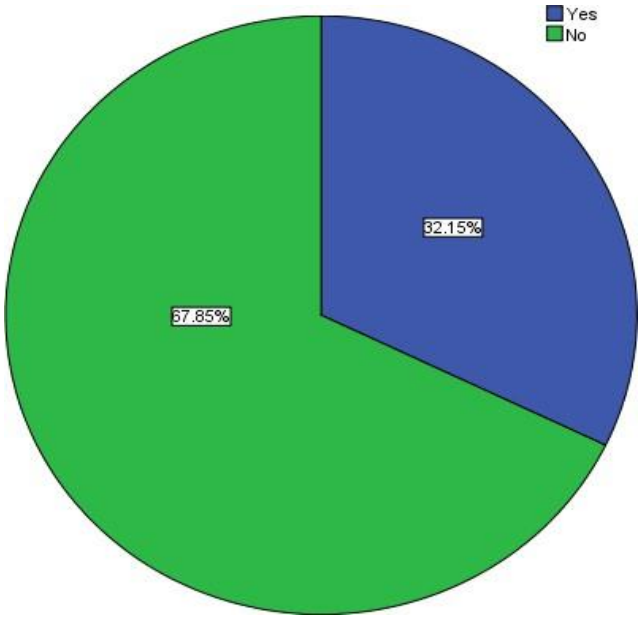


Figure 3.5: Did you observed the patient induction with sodium thiopentone?

Table 3.5 shows the responses regarding whether the respondents observed patient induction with sodium thiopentone. Out of the 311 participants, 102 (32.8%) reported that they observed patient induction with sodium thiopentone, while 209 (67.2%) did not observe its use. The valid percent mirrors this distribution, with 32.8% observing the use of sodium thiopentone and 67.2% not. The cumulative percent reaches 100.0%, indicating complete data for this question. The results suggest that a smaller proportion of respondents observed the use of sodium thiopentone during patient induction.

Table 3.5: Did you observed the patient induction with sodium thiopentone?

	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	102	32.8	32.8	32.8
No	209	67.2	67.2	100.0
Total	**311**	**100.0**	**100.0**	

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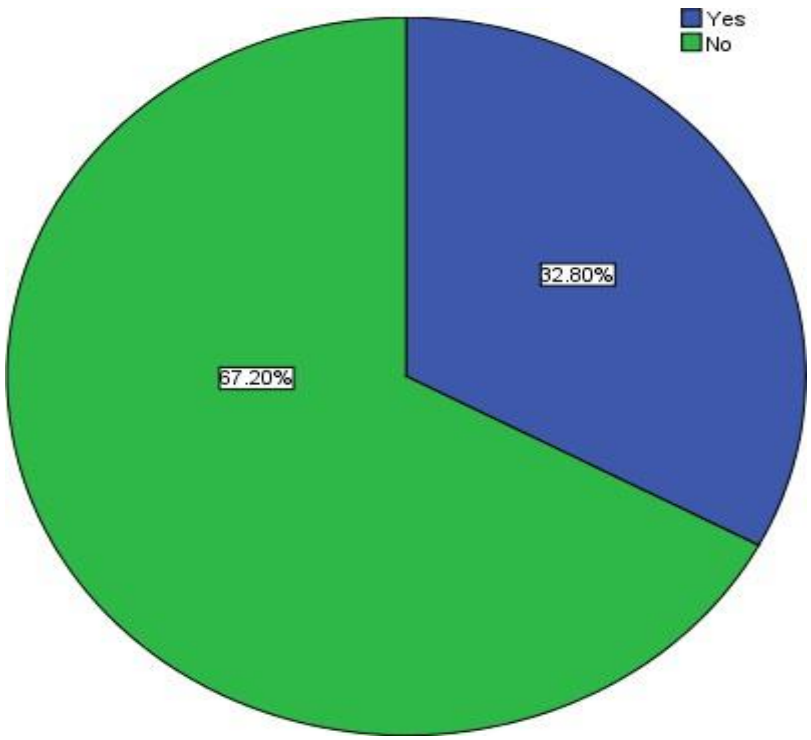


Figure 3.6: Did you observed the patient induction with ketamine?

Table 3.6 highlights the responses regarding whether the respondents observed patient induction with ketamine. Among the 311 participants, 132 (42.4%) reported that they observed patient induction with ketamine, while 179 (57.6%) did not observe its use. The valid percent shows the same distribution, with 42.4% observing the use of ketamine and 57.6% not. The cumulative percent reaches 100.0%, indicating complete data for this question. The results show that a slightly smaller proportion of respondents observed the use of ketamine during patient induction compared to those who did not.

Table 3.6: Did you observed the patient induction with ketamine?

	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Yes	132	42.4	42.4	42.4
No	179	57.6	57.6	100.0
Total	**311**	**100.0**	**100.0**	

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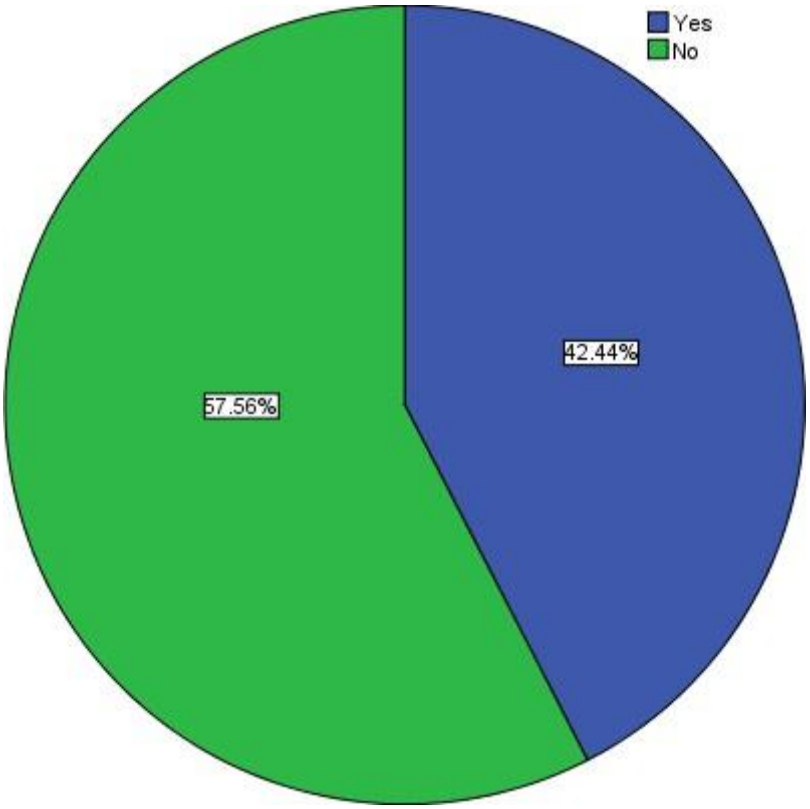


Figure 3.7: Did you experienced the patient was difficult airway intubated with ETT?

Table 3.7 indicates responses regarding whether the respondents experienced difficulty in intubating a patient with an endotracheal tube (ETT). Among the 311 participants, 171 (55.0%) reported that they experienced difficulty in intubating the patient with an ETT, while 140 (45.0%) did not. The valid percent shows a similar distribution, with 55.0% experiencing difficulty and 45.0% not experiencing it. The cumulative percent reaches 100.0%, indicating complete data for this question. These results suggest that more than half of the respondents encountered challenges in intubating patients with an ETT.

Table 3.7: Did you experienced the patient was difficult airway intubated with ETT?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	171	55.0	55.0	55.0
No	140	45.0	45.0	100.0
Total	**311**	**100.0**	**100.0**	

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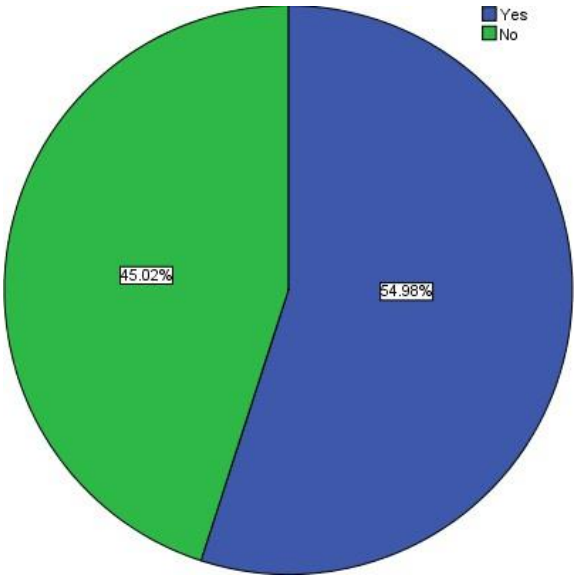


Figure 3.8: Did you experienced the patient was deep during anesthesia?

Table 3.8 presents the responses regarding whether the respondents experienced the patient being deep under anesthesia. Out of the 311 participants, 239 (76.8%) reported that the patient was deep under anesthesia, while 72 (23.2%) indicated that the patient was not deep. The valid percent reflects the same distribution, with 76.8% of respondents experiencing the patient being deep under anesthesia and 23.2% not. The cumulative percent reaches 100.0%, confirming complete data for this question. These results indicate that the majority of respondents observed patients being deep under anesthesia during the procedure.

Table 3.8: Did you experienced the patient was deep during anesthesia?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	239	76.8	76.8	76.8
No	72	23.2	23.2	100.0
Total	**311**	**100.0**	**100.0**	

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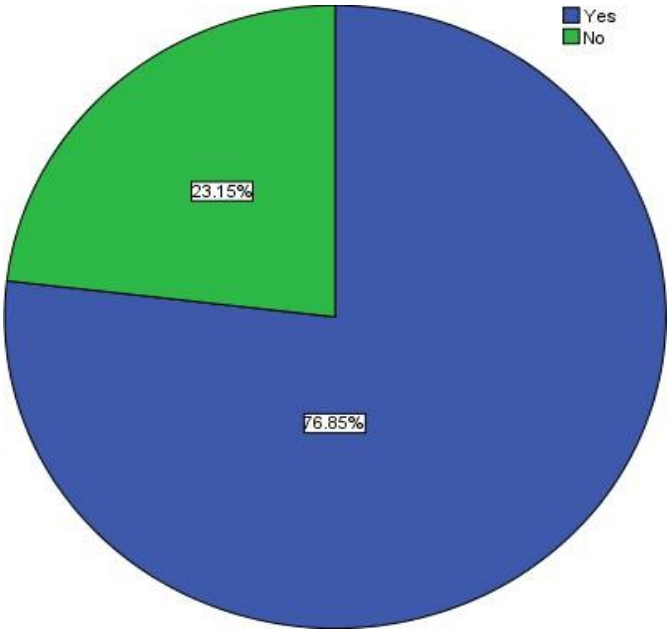


Figure 3.9: Was the patient extubated with difficult airway in light anesthesia?

Table 3.9 shows results regarding whether the patient was extubated with a difficult airway under light anesthesia. Among the 311 participants, 102 (32.8%) reported that the patient was extubated with a difficult airway in light anesthesia, while 209 (67.2%) indicated that the patient was not extubated with a difficult airway under light anesthesia. The valid percent reflects the same distribution, with 32.8% experiencing difficult airway extubation under light anesthesia and 67.2% not. The cumulative percent reaches 100.0%, indicating complete data for this question. These results suggest that a smaller proportion of respondents observed difficulty during extubation with a difficult airway under light anesthesia.

Table 3.9: Was the patient extubated with difficult airway in light anesthesia?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	102	32.8	32.8	32.8
No	209	67.2	67.2	100.0
Total	**311**	**100.0**	**100.0**	

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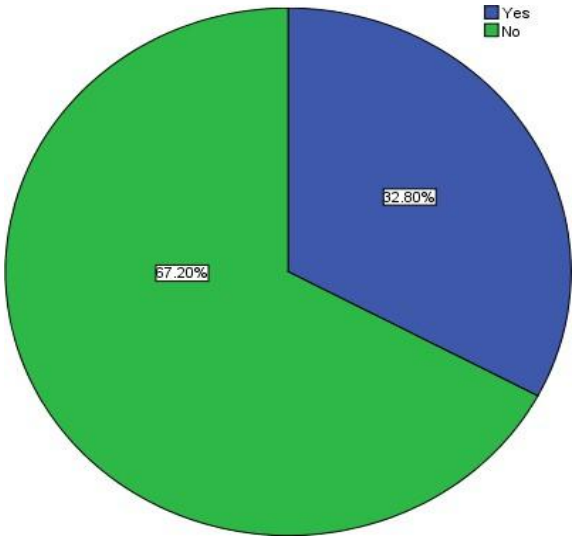


Figure 3.9: Was the patient extubated with difficult airway in light anesthesia?

Table 3.9 shows results regarding whether the patient was extubated with a difficult airway under light anesthesia. Among the 311 participants, 102 (32.8%) reported that the patient was extubated with a difficult airway in light anesthesia, while 209 (67.2%) indicated that the patient was not extubated with a difficult airway under light anesthesia. The valid percent reflects the same distribution, with 32.8% experiencing difficult airway extubation under light anesthesia and 67.2% not. The cumulative percent reaches 100.0%, indicating complete data for this question. These results suggest that a smaller proportion of respondents observed difficulty during extubation with a difficult airway under light anesthesia.

Table 3.10: Did you observed the patient airway was frequently manupulated during light anesthesia?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	119	38.3	38.3	38.3
No	192	61.7	61.7	100.0
Total	**311**	**100.0**	**100.0**	

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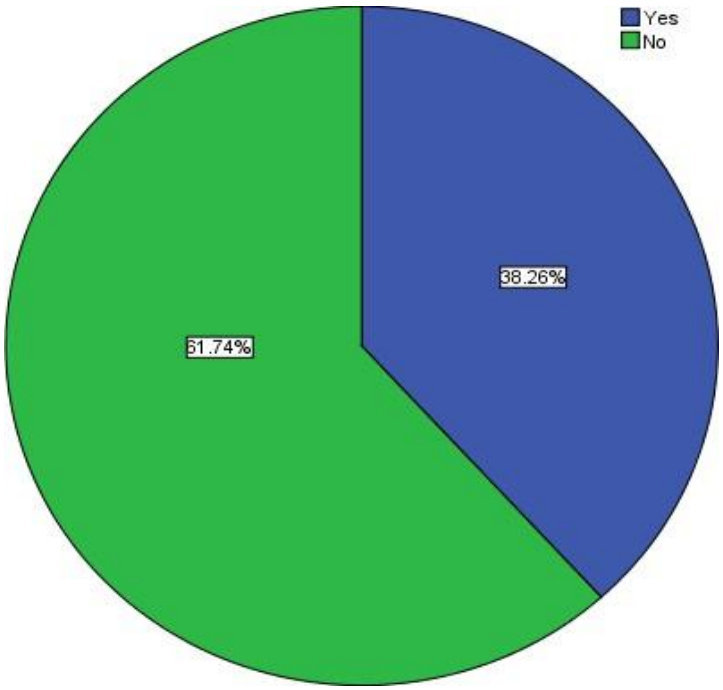


Figure 3.11: Did you observed the patient was extubated by an experience anesthetist?

Table 3.11 presents the responses regarding whether the respondents observed the patient being extubated by an experienced anesthetist. Out of the 311 participants, 219 (70.4%) reported that the patient was extubated by an experienced anesthetist, while 92 (29.6%) stated that the extubation was not performed by an experienced anesthetist. The valid percent aligns with the frequency distribution, with 70.4% indicating extubation by an experienced anesthetist and 29.6% indicating otherwise. The cumulative percent reaches 100.0%, indicating complete data for this question. The results show that a significant majority of respondents observed extubation performed by an experienced anesthetist.

Table 3.11: Did you observed the patient was extubated by an experience anesthetist?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	219	70.4	70.4	70.4
No	92	29.6	29.6	100.0
Total	**311**	**100.0**	**100.0**	

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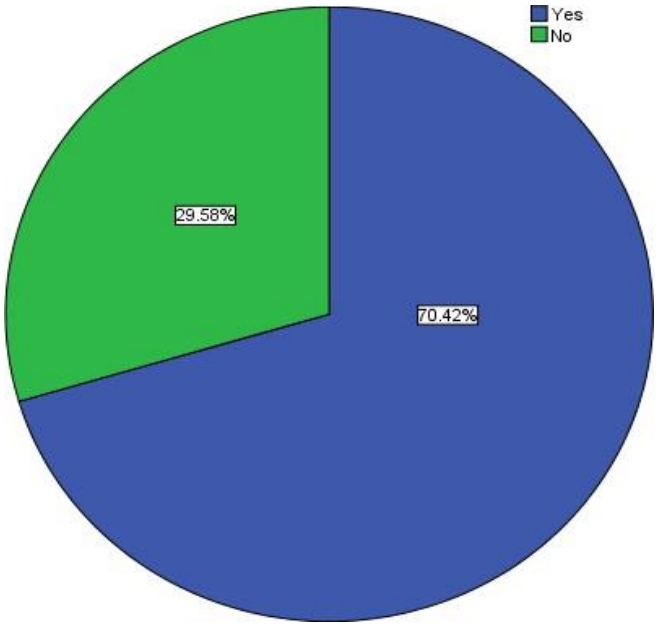


Figure 3.12: Did you observed the patient was frequently suctioning with suction tube during extubation?

Table 3.12 presents the responses regarding whether the respondents observed frequent suctioning of the patient with a suction tube during extubation. Among the 311 participants, 234 (75.2%) reported that the patient was frequently suctioned during extubation, while 77 (23.8%) indicated that suctioning was not frequently performed. The valid percent reflects the same distribution, with 75.2% observing frequent suctioning and 23.8% not. The cumulative percent reaches 100.0%, confirming complete data for this question. These findings suggest that the majority of respondents observed frequent suctioning during the extubation process.

Table 3.12: Did you observed the patient was frequently suctioning with suction tube during extubation?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	234	75.2	75.2	75.2
No	77	23.8	23.8	100.0
Total	**311**	**100.0**	**100.0**	

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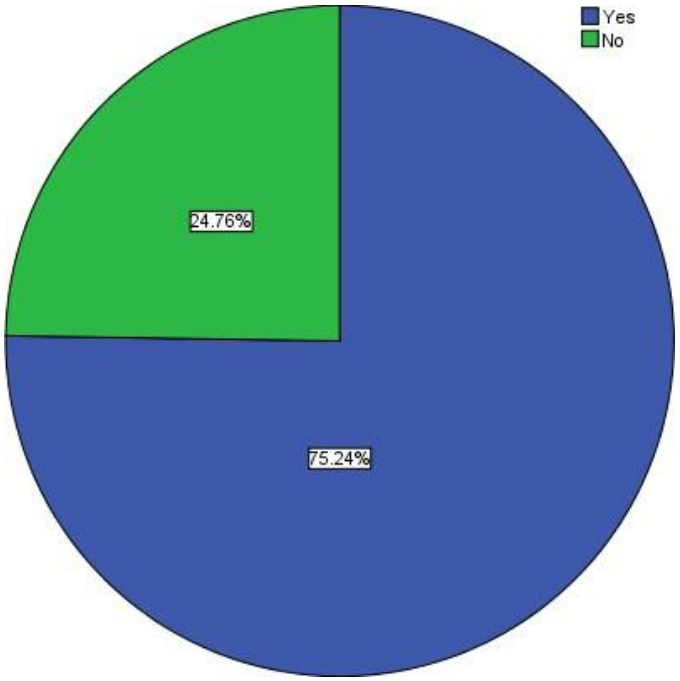


Figure 3.13: Did you observed the patient airway was secured with LMA during anesthesia?

Table 3.13 presents the responses regarding whether the respondents observed the patient's airway being secured with a laryngeal mask airway (LMA) during anesthesia. Out of the 311 participants, 58 (18.6%) reported that the patient's airway was secured with an LMA, while 253 (81.4%) indicated that the airway was not secured with an LMA. The valid percent aligns with the frequency distribution, with 18.6% observing the use of an LMA and 81.4% not. The cumulative percent reaches 100.0%, indicating complete data for this question. These results show that the majority of respondents did not observe the use of an LMA for securing the patient's airway during anesthesia.

Table 3.13: Did you observed the patient airway was secured with LMA during anesthesia?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	58	18.6	18.6	18.6
No	253	81.4	81.4	100.0
Total	**311**	**100.0**	**100.0**	

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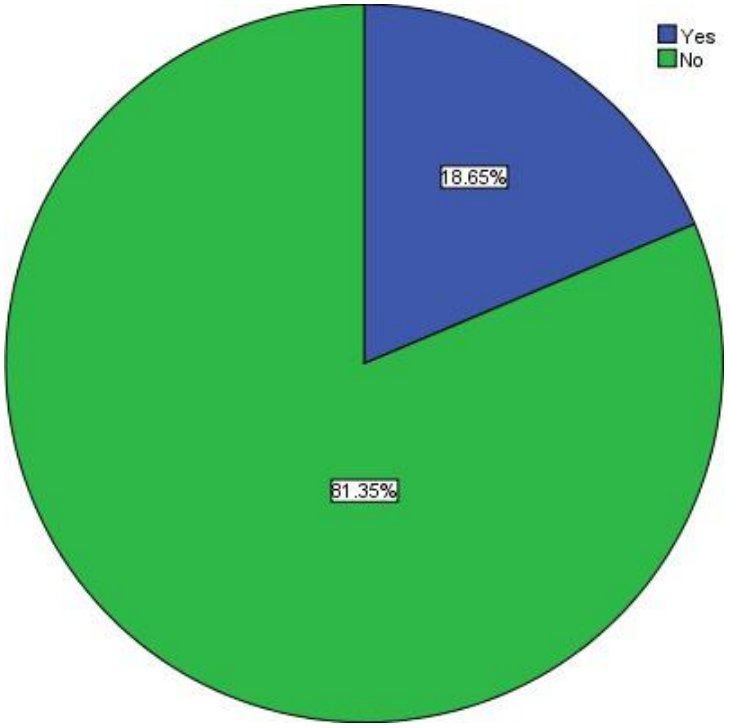


Figure 3.14: Did you observed the laryngospasm events occurred during extubation?

Table 3.14 highlights results about responses regarding whether the respondents observed laryngospasm events occurring during extubation. Among the 311 participants, 169 (53.3%) reported observing laryngospasm events during extubation, while 142 (45.7%) did not observe such events. The valid percent reflects the same distribution, with 53.3% indicating the occurrence of laryngospasm and 45.7% indicating no occurrence. The cumulative percent reaches 100.0%, confirming complete data for this question. These results suggest that just over half of the respondents observed laryngospasm events during extubation.

Table 3.14: Did you observed the laryngospasm events occurred during extubation?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	169	53.3	53.3	53.3
No	142	45.7	45.7	100.0
Total	**311**	**100.0**	**100.0**	

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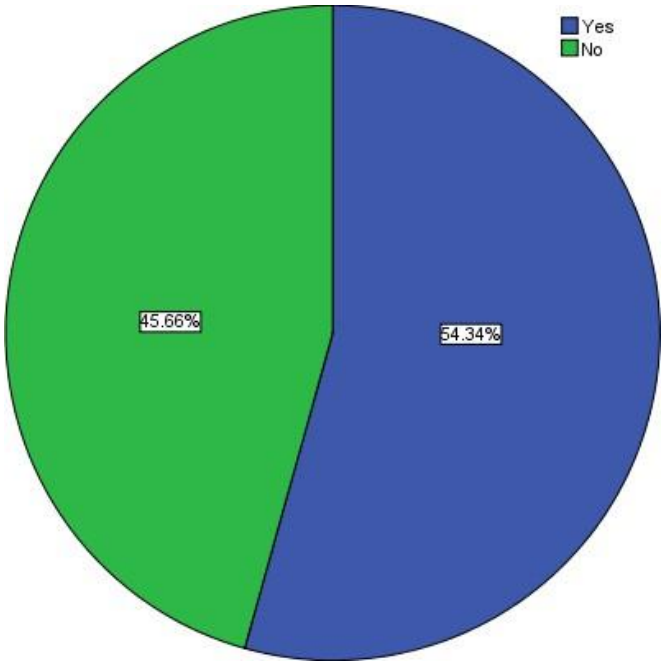


Figure 3.15: Did you observed the patient surgical procedure was Tonsillectomy?

Table 3.15 presents the responses regarding whether the respondents observed a patient undergoing a tonsillectomy. Out of the 311 participants, only 18 (5.8%) reported observing a tonsillectomy, while the majority, 293 (93.2%), did not observe this surgical procedure. The valid percent confirms this distribution, with 5.8% of respondents observing tonsillectomy and 93.2% not. The cumulative percent reaches 100.0%, indicating complete data for this question. These results show that tonsillectomy was observed by a very small proportion of the respondents in this study.

Table 3.15: Did you observed the patient surgical procedure was Tonsillectomy?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	18	5.8	5.8	5.8
No	293	93.2	93.2	100.0
Total	**311**	**100.0**	**100.0**	

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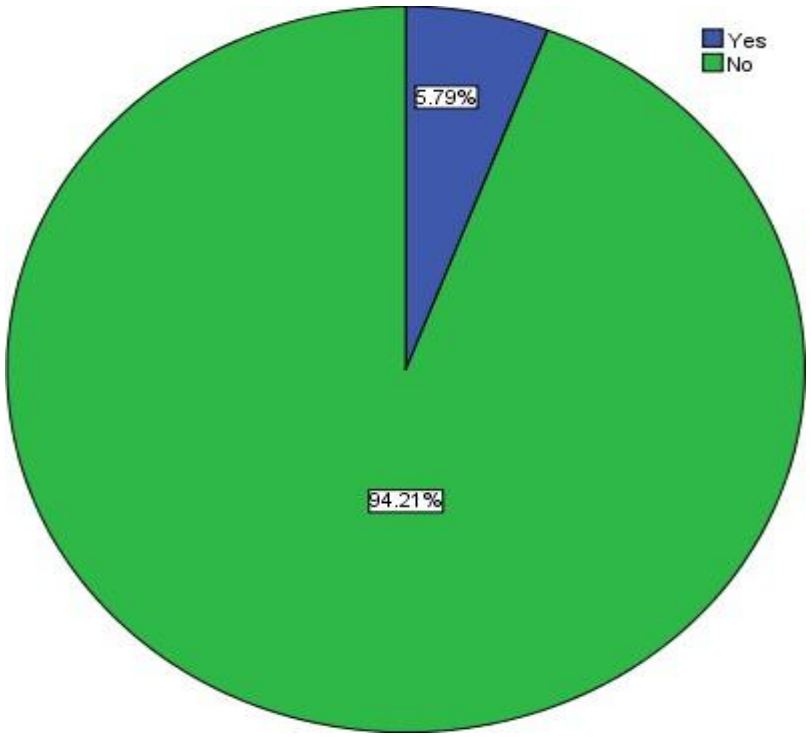


Figure 3.15: Did you observed the patient surgical procedure was Tonsillectomy?

Table 3.15 presents the responses regarding whether the respondents observed a patient undergoing a tonsillectomy. Out of the 311 participants, only 18 (5.8%) reported observing a tonsillectomy, while the majority, 293 (93.2%), did not observe this surgical procedure. The valid percent confirms this distribution, with 5.8% of respondents observing tonsillectomy and 93.2% not. The cumulative percent reaches 100.0%, indicating complete data for this question. These results show that tonsillectomy was observed by a very small proportion of the respondents in this study.

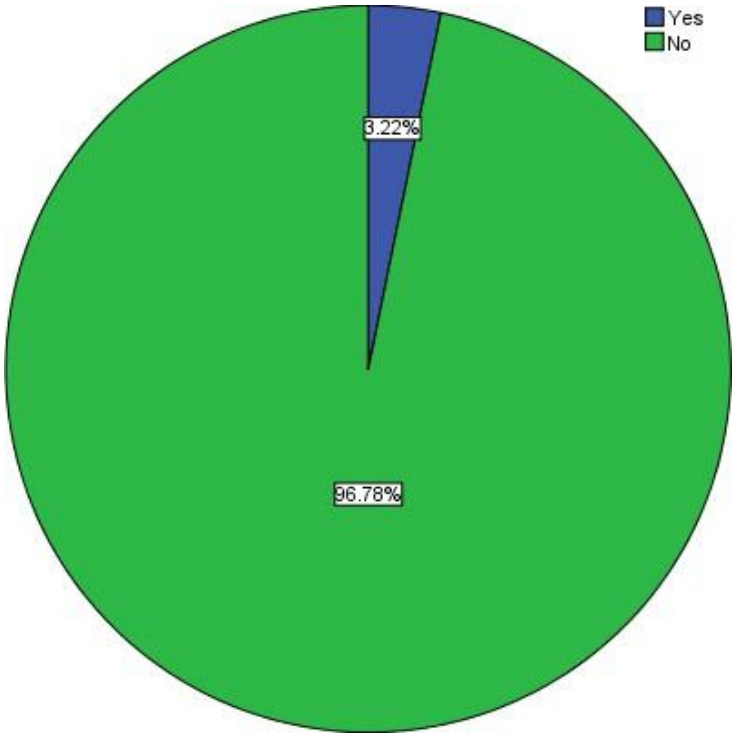
Table 3.16: Did you observed the patient surgical procedure was Adeniodectomy?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	10	3.2	3.2	3.2
No	301	96.8	96.8	100.0
Total	**311**	**100.0**	**100.0**	

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DISCUSSION

The study findings shed light on the practices of pediatric anesthesia, particularly pulse laryngospasm, airway management, and the anesthesia monitoring intervals. The study sample included 311 subjects, mostly females (61.1%), and 1-5 year old children (47.9%). The findings highlight the varying anesthetic practices pertaining to induction, airway control, and extubation.

Male respondents were 38.9% while female respondents were 61.1%. This shows a greater proportion of females were recipients of the questionnaires. This optometric inequality in anesthesia could well depend on the findings of other researches that equally assert there is a greater number of females as health care providers. Take for instance the work of Haile et al. (2018) which points to the greater numbers of female anesthesiologist in practice, which could in part be responsible for the noted skew in respondents in this work. Moreover, other authors such as Chekol et al. (2020) point to their findings which assert there. Gender differs in a number of domains which include perception and experience in the health care sector. Most respondents clustered within the ages of 1 - 5 years (47.9%), with the 6 - 10 years age group capturing 37.6%, and 11 - 15 years accounting for 13.5%. This supports the age distribution of populations undergoing studies on anesthesia, with the younger age groups being the most common because of the higher risk of complications associated with anesthesia. This is similar to the findings of Cosgrove et al. (2022), on complications of anesthesia in children, which showed the highest complication rates among the very young, especially those below five. Most of the respondents (52.4%) saw patients being induced with sevoflurane, which is an

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inhaled anesthetic used for children because of the anesthetic's low adverse effect profile and quick activity. Sevoflurane is the most commonly used agent for inhalational induction anesthesia, as reviewed by Gunter et al. (2015) in their analysis of the safety and effectiveness of sevoflurane in pediatric anesthesia. Moreover, Zhou et al. (2023) states that sevoflurane is preferred in children because it is simpler to administer, and generates less airway irritability, an important consideration in pediatric anesthesia. In response to the question regarding whether airway irritation occurred with the administration of anesthesia, 32.2% airway irritation, and this is in line with some of the clinical investigations that report airway obstruction complications during the induction of anesthesia. Hailu et al. (2023) states that airway irritation associated with inhaled anesthetics, like sevoflurane, which children are especially responsive to, results in side effects such as coughing and bronchospasm. Likewise, Woldegerima et al. (2021) pointed out that pediatric anesthesia laryngospasm and failure to control the airway are some of the numerous anesthesia complications attributed to poor monitoring of airway management. of respondents observed the use of sodium thiopentone for induction, which is lower than expected given its historical use as an induction agent. The preference for alternative agents like sevoflurane and propofol has been documented in various studies, such as those by Kim et al. (2013), which highlight a trend toward using less irritating and more rapidly acting agents. Moreover, research by Bezerra et al. (2024) notes that while thiopental has been largely replaced by newer agents in pediatric anesthesia, it is still used in specific cases due to its deep induction propertie. Use of ketamine for induction was noted by 42.4% of the respondents and corresponds with findings of studies that examined use of ketamine in anesthesia for children. Ketamine is often liked due to its analgesic and dissociative properties in children with previous airway problems as well as children in need of emergency procedures. Hernández et al. (2018) have pointed out that ketamine is useful in stabilizing hemodynamics and in preventing respiratory depression in children. More than half of the respondents (55%) reported problems with endotracheal intubation which is a problem and a well-known issue in anesthesia for children. Children have a smaller airway with greater chances of problems which makes intubation a problem and a very important part of the management of anesthesia. This finding is supported by studies like that of Kigayi et al. (2022) where difficult intubation in children is shown to be common especially in those with certain anatomical features or increased resistance to airflow.

RthermoreFurthermore, research by Iqbal et al. (2017) suggests that early identification of difficult airways can reduce complications during anesthesia. A majority of respondents (76.8%) reported observing patients being deep under anesthesia, reflecting the standard practice of ensuring adequate depth for various surgical procedures. This aligns with guidelines from the American Society of Anesthesiologists (2015), which recommend ensuring sufficient anesthetic depth to minimize the risk of intraoperative awareness or movement. Additionally, studies by Igarashi et al. (2024) suggest that maintaining an appropriate depth of anesthesia is crucial for both patient safety and successful surgical outcomes in pediatric patients

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The respondents in Juang (2020) pointed out complications associated with the management of the airway including laryngospasm and airway obstruction during extubation in children the most. Juang (2020) describes the importance of the airway in relation to the breathing when it comes to extubation also describes the importance of not allowing airway obstruction to occur in relation to laryngospasm.
'61.7% of the respondents saying that they did not see persistence in airway management throughout the surgery supports the the thesis by fisher et al. that airway manipulation during light anesthesia is often not needed (2017). The respondents who claim to have seen airway obstruction are likely to have varied cases as there is little in the literature to suggest that airway obstruction is common during light anesthesia which is rapidly becoming the standard.
The majority of respondents (70.4%) observed an experienced anesthetist performing extubation, which aligns with best practice guidelines in anesthesia. Experienced personnel are critical in managing complex airway situations, as indicated by studies such as those by Cosgrove et al. (2022), which stress the importance of skill and experience in preventing complications during extubation.
A significant majority (75.2%) of respondents observed frequent suctioning during extubation, which is a standard procedure to clear the airway and prevent respiratory complication
This is consistent with findings from research by Zhou et al. (2023), which found that suctioning is essential during extubation, particularly in pediatric patients, to ensure clear airways and prevent aspiration.
The number of respondents who saw the use of a laryngeal mask airway (LMA) to secure the airway, 18.6%, is quite low compared to the use of endotracheal tubes (ETT). Nevertheless, the ease of insertion and lower risk of airway trauma attendant to LMA of Laryngeal Mask Airway use has seen them being adopted more and more in pediatric anesthesia. Hailu et al. (2023) suggest that LMA is a viable option when ETT is difficult to place or counter indicated.
Of the respondents, 53.3% reported laryngospasm during extubation, which underscores a frequent complication of anesthesia in children. Laryngospasm is possible due to irritation of the airway or the depth of anesthesia being inadequate. This confirms the findings of Woldegerima et al. (2021), who found laryngospasm during extubation to be a common complication requiring timely remedial action to avert respiratory distress.
Respondents observing a tonsillectomy particularly when done on children was way below the expected figures at only 5.8%. This number would be expected to be above the average but the specific sample population under study or the types of surgeries performed during the study would explain the figures. Research conducted by Kim et al (2013) suggests that while tonsillectomies are a common surgery, they are not the center of focus in studies surrounding anesthesia. In the same way, only3.2% of respondents.

CONCLUSIONS

This research is critical in understanding the practices in pediatric anesthesia, in particular the incidence of laryngospasm, airway management, and the various classes of anesthetic agents and methods. The data suggests that sevoflurane is the inhalational agent that is most frequently observed used for induction, while sodium

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thiopentone and ketamine is used much less. The procedures involving the anesthetic management of children are complex, and most respondents describe problems during management like difficult intubation and the need for aggressive suctioning during extubation. Laryngospasm during extubation is a common complication which should be detected during the anesthetic procedure, monitored closely, and acted upon. Most respondents reported that extubation is performed by ABA-approved anesthetists, which is a reassurance of the customary practices in the area. From the available data, it can also be suggested that most pediatric patients were kept at sufficient anesthetic depth during the operative procedure, which is a good indicator of patient safety. That being said, the need for airway management during xtuples for light antheisia. Extraordinarily reporting the occurrence of challenging light antheisia airway manipulation speaks on the need for attention for the techniques being used. It also noted in the research that compared to other adrenaled common surgeries, these procedures as for the removal of the glands formed in the mouth as well as the styes is of lesser epimis. The rest of the information outline depicts their trained, the experience and readiness with trust. It discussed the edges of how there must be techniques for further development and research to aide the child from complications during the sleep. The children in particular tend to face the more challenging situation and need the general anesthetized procedures done.

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