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Prevalence of prescribing antacids in children treated under general anaesthesia: A retrospective cohort study

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***Abstract*---**Background: There are a few instances of dental problems in children that can't be handled effectively in the clinic and should be treated in the hospital setup under general anesthesia and the patients are prescribed painkillers and antacids as postoperative medications. Children treated under general anesthesia are common in pediatric dentistry but prescription of antacids is not very common. Aim: To find the Prevalence of prescribing antacids in children treated under general anaesthesia. Materials and Methods: The study was done in private dental college and hospitals, Chennai India. Patient records were reviewed and the data of 300 patients between September 2020 and February 2021were analyzed. Total sample data was 73 and was minimized by inclusion of all available data. Collected

Data were analyzed using SPSS statistical software. Data analysis done using chi-square test and p-value was set as 0.05 as level of significance. Results: According to the findings of this research, Among 73 children treated under General anesthesia, 32% had antacid prescribed, while 68% were not prescribed with antacids .while 11-18 years were the most prescribed with antacids than other groups. Conclusion: 32% of the children treated under general anaesthesia were prescribed antacids. Ranitidine was the most prescribed antacid for children treated under general anesthesia.

***Keywords*---**antacids, children, general anaesthesia, ranitidine, Innovative.

Introduction

There are some dental problems in children that can't be handled effectively in the clinic and should be treated in the hospital setup. Despite any risk to the patient, the potential to give comprehensive dental services to children in a hospital setting using general anaesthesia (GA) is a beneficial choice for paediatric dentists. Majority of children are managed by dentists using behavioural techniques (1). Certain children, however, will not be able to undergo treatment with these techniques (2). Children's dental treatment under general anesthesia (GA) is a form of rehabilitation (3). The body's protective reflexes are disabled in General Anaesthesia, which causes a state of controlled loss of consciousness (4). For almost three decades, the paediatric community has had access to comprehensive dental rehabilitation by GA (5).

Dental GA is sometimes the most practical and cost-effective treatment choice (2,6).GA is used to treat paediatric patients who are very young, or who have physical, behavioural, neurological, or emotional immaturity or inability, or who have severe anxiety and need comprehensive rehabilitation (7–9). These children aren't good candidates for in-office care, but GA is a better option for them (8). The majority of dental GA patients are children who suffer early childhood caries (ECC) (3,7)(10,11).

Under GA, the required procedures are done in a single session in a hospital setting, resulting in efficient and safe care (5,12). Furthermore, GA is one method of ensuring that the child receives effective pain control (8). Another advantage of GA is that it does not require child cooperation as a requirement of treatment (11).

Oral health has a major impact on overall well-being and quality of life. Recent research examined the effect of GA-based dental care on children's quality of life. It is well known that children who receive this care have a marked difference in their quality of life (13,14).

Children may feel confused following surgery and proper care should be taken.Following discharge, parents are advised to provide painkillers (Paracetamol or Ibuprofen) within the first 24 hours (15). A dose can be received as the child

demonstrates clear liquid tolerance along with which antacids are prescribed. Antacids are often used by physicians as other symptom-relieving medicine to relieve the distress involved with the procedure or pain medications (NSAIDs, opioids) (16).

An antacid is a medication used to relieve heartburn, acid reflux, and stomach upset by lowering stomach acidity (17). Antacids have been used to relieve constipation and diarrhea (18). Antacids are over-the-counter medications that are administered by oral route to treat heartburn, a common symptom of gastroesophageal reflux disease, and indigestion (19). It is composed of a variety of chemicals that include calcium, magnesium, and aluminium salts as active compounds which work by neutralising stomach acid and inhibiting the enzyme pepsin, which is a proteolytic enzyme (20). Our team has extensive knowledge and research experience that has translate into high quality publications (21–33)(34–40). The aim of the present study was to find out the prevalence of prescribing antacids in children treated under general anaesthesia in Chennai.

Materials and Method

The retrospective study was conducted in a private dental college, Chennai, India. Ethical approval was obtained from the Institutional review board prior to the start of the study. Data was collected from the records of the children less than 15 years of age who were treated under general anaesthesia between September 2020 and February 2021. A total of 73 children treated under general anesthesia were included in the study. Data was collected with following parameters like age, gender, antacid prescription of children treated under general anaesthesia The collected data was divided into 3 age groups as 0-5, 6-10 and 11-15 years and was analyzed using SPSS statistical software. Data analysis done using chi-square test and p value was set as 0.05 as level of significance.

Result

Among 73 children treated under General anesthesia, 24 had antacid prescribed, while 49 were not prescribed with antacids (Table 1). Also among 73 patients 19 with antacids prescribed and 48 without antacid prescription belong to 0-5 years while 2 with antacids prescribed and 1 without antacid prescription belong to 6-10 years. And 3 with antacids prescribed belong to 11-18 years (figure 1) implying that most children below age 5 are not prescribed with antacids.

With increase in age, the prescription of antacids also increased and was found to be statistically significant (P=0.016). Our study also found that ranitidine was the most commonly prescribed antacid followed by pantoprazole (figure 2). Current study says that prevalence of prescription of antacids in children treated under general anaesthesia is 32%.

Table 1
Showing antacid prescription among different age groups

		Antacid		
		Antacid prescribed	Antacid not prescribed	Total
Age	0-5	19	48	67
	6-10	2	1	3
	11-15	3	0	3
Total		24	49	73

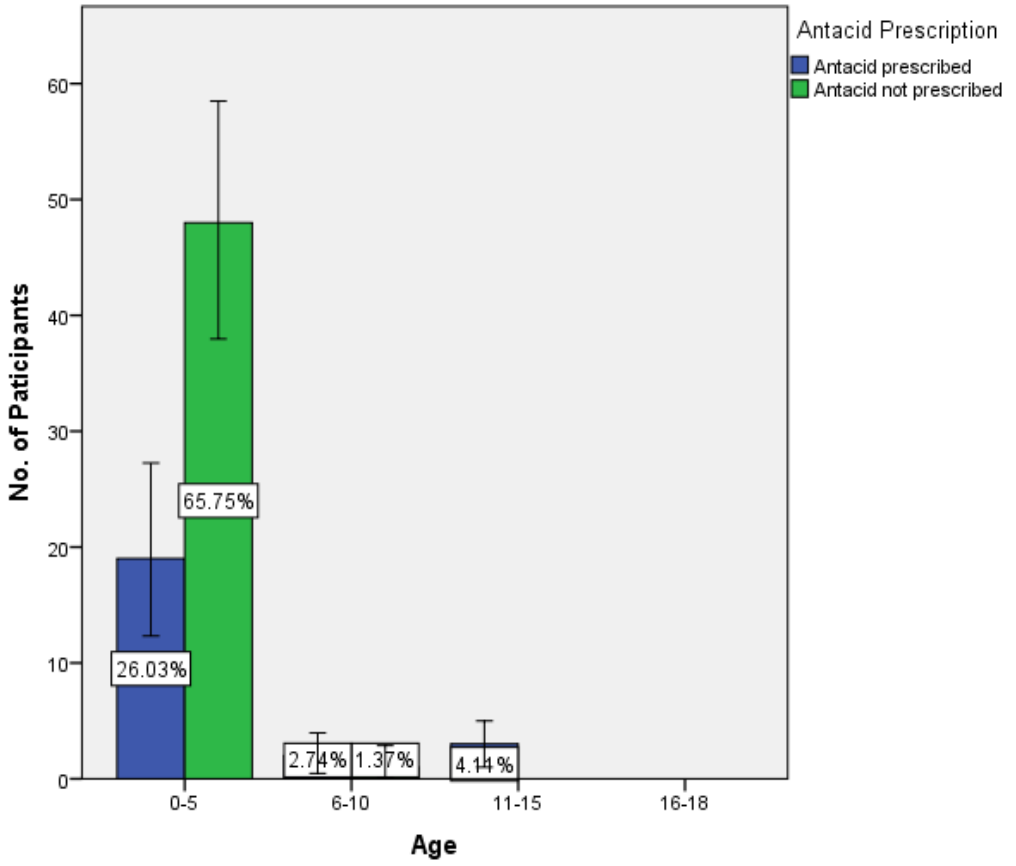

Figure 1: Bar graph showing association between Age and Prescribing antacids in children treated under general anaesthesia. X-axis represents the age and the Y Axis represents the children treated under general anesthesia. Wherein, the blue color represents antacid prescribed and green color represents antacid not

prescribed.Chi Square test was done,p-value :0.016, ($p<0.05$) hence statistically significant, providing as age increases prescription of antacids increase.

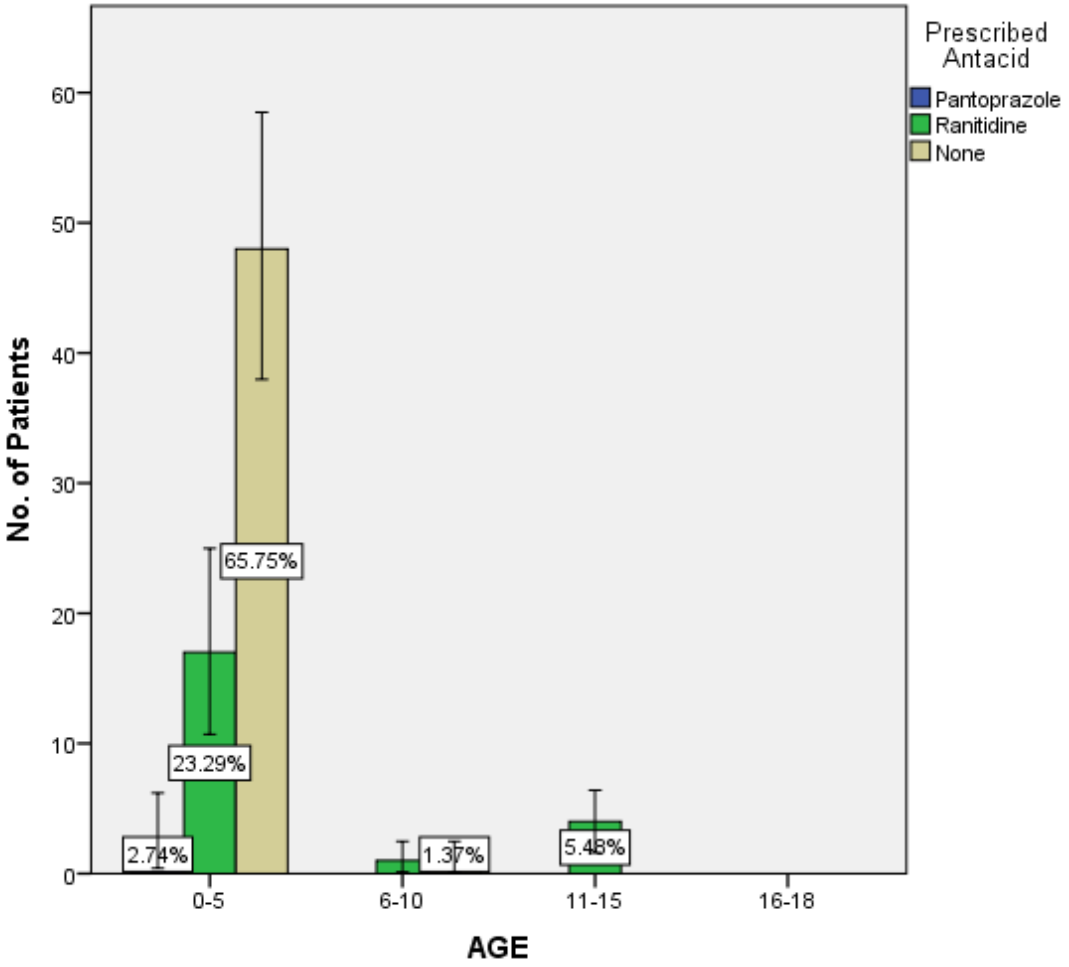

Figure 2: Bar graph showing association between Age and antacids prescribed in children treated under general anaesthesia.X-axis represents the age and the Y Axis represents the children treated under general anesthesia. Wherein, the blue color represents pantoprazole and green color represents Ranitidine and yellow colour represents none.Chi Square test was done,p-value :0.034, ($p<0.05$) hence statistically significant, providing ranitidine is the most prescribed antacid in children treated under general anesthesia.

Discussion

In the present study it was found that antacids were not commonly prescribed to children below 5 years (figure 1). Only 26.03% of children less than 5 years were given antacids. Use of antacids in children is a controversial topic. Though Antacids are commonly used for infantile colic, gastroesophageal reflux, esophagitis, and other peptic conditions (41)(42), it was also found that children

who are given antacids in their 1st year of life are at risk for bone fractures later in life (43). Proton pump inhibitors (PPIs) and histamine H2-receptor agonists (H2RAs) are two widely prescribed antacids that decrease the amount of acid released by cells in the stomach lining (44). Latest findings have shown that patients taking this medication for acid reflux have a higher chance of bone fractures (45). The study by Malchodi et al also observed that children who were given a PPI before the age of one were 23% more prone to have a bone fracture later in life, and those given a PPI and H2RA were 31% more likely. Meanwhile, children who were given the H2RA alone did not have a higher risk of bone fractures later in life (43)(45).

Also, in the paediatric age group, acid suppression drugs are one of the most often used medications. Long-term use of nonabsorbable antacids like aluminum-magnesium hydroxides has been shown to reduce phosphorus absorption in the gastrointestinal tract (46). A well-known complication of impaired renal tubular phosphate reabsorption is hypophosphatemic bone disorder, also known as rickets or osteomalacia(47).

Acid suppressing drugs have also been linked to a higher risk of C. difficile infection (CDI) and recurrent CDI (48). The chance of serious infection with C. difficile bacteria, a complicated infection that causes severe diarrhoea, is perhaps the most frightening risk of PPI (49).C. diff is effectively kept under control by stomach acid. PPIs, on the other hand, hold stomach acid at a level that protects against the bacteria (50). According to Amy Linsky et al, PPIs increase the incidence of chronic C. diff infections in hospitalised patients with C. diff infections by 42 percent (51). In another study, Trifan et al discovered that patients taking PPIs had a greater chance of contracting C. diff when in the hospital than people taking H2RAs or no antacids (52). Acid suppression medicine must be used caution, particularly in those who are at the highest risk of CDI.

However, antacids relieve heartburn by neutralising the stomach acid that induces it. Children with GERD are treated with non-surgical antacids such as Mylanta and Maalox in prescribed doses (53). Since the digestive tract is still growing in babies and children, reflux is normal. Antacids are used as a pre- and post-anesthetic drug (54)(55,56).

In the present study it was also found that ranitidine was most commonly prescribed antacid (figure 2), it is a histamine 2 receptor antagonist (H2RA) that effectively prevents gastric acid secretion at prescription doses, thus raising intragastric pH and reducing the amount of gastric contents required for reflux into the oesophagus. With over 18 million prescriptions written in 2018, it was the 41st most widely used drug in the United States (57)(58).But studies say that 75 mg ranitidine appears to be effective and safe for use in children to control symptoms of gastroesophageal reflux disease (59)(60) and also doesn't show higher risk of bone fracture unlike the other drugs.

In the present study, it was also observed that the prescription of antacids increased with increase in age and was statistically significant. However there was no equal distribution of children between the three age groups. Only 3 children between the ages of 6-10 and 11-15 years were treated under General anesthesia

which is a potential bias.

This is probably the first study of its kind to report data on prevalence of prescription of antacids in children treated under general anesthesia in Chennai, and the findings may be used to further studies More studies with larger sample size should be conducted to evaluate the prevalence of using antacids in children treated under general anesthesia and also to estimate the benefit risk ratio.

Conclusion

Within the limits of the study, prevalence of prescribing antacids in children treated under general anaesthesia is 32%, with most prescription in 11-15 years old implying increased prescription of antacid as age increases, and Ranitidine is the most prescribed antacid for children treated under general anesthesia. Antacid drugs should be used with precaution in children because they may have adverse side effects. These observations are essential to the general public since they assist paediatricians, family practise doctors, and other professionals who work with young children in making the right decisions about their long-term health and well-being.

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Conflict Of Interest
None declared.

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