

# **Preanaesthetic Medications Commonly Prescribed in Children Undergoing Dental Treatment Under General Anaesthesia - A Retrospective Cohort Study**

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**ABSTRACT :**

**INTRODUCTION:** Children are more restless and unfortunate because of their restricted mental capacities, absence of comprehension of health care framework and control. It turns into a significant worry for an anaesthesiologist to relieve their preoperative anxiety. Nervousness can deliver forceful responses, increased trouble, and might make the control of postoperative pain complicated. The benzodiazepine and midazolam, has transformed into the most often utilized preanesthetic drug given to children planned for a surgical procedure.

**AIM:** The aim of the study is to assess the preanaesthetic medication commonly prescribed in children undergoing dental treatment under general anaesthesia.

**MATERIALS AND METHODS:** The data for the study was collected from the Dias of Saveetha dental college and hospitals management system. A total of 19 kids treated with preanaesthetic medication were included in the study and the data analysis was performed using SPSS software

**RESULTS:** Taxim was found to be the most commonly prescribed preanesthetic agent in children followed by midazolam. (Figure 1) A statistically significant association was found between the age, gender and prescription of preanesthetic medication.

**CONCLUSION:** This study concludes that the most commonly prescribed preanaesthetic medication in children undergoing dental treatment under general anaesthesia are taxim, dexamethosone and midazolam drugs with respect to age and gender.

**KEYWORDS:** Preanaesthetic medication, children, dental treatment, general anaesthesia.

## **INTRODUCTION:**

Children are generally helpless to dread and stress of surgical procedure because of their restricted mental capacities, restricted self experience of life, unfortunate comprehension of the health care framework, absence of control and reliance. In children, pharmacotherapy is often utilized as preanesthetic medication to let the dread free from a surgical procedure, to make child-parental partition simple and to complete a smooth acceptance of sedation (1). Alleviating pre-and post-operative tension is a significant worry for the pediatric anesthesiologist. Uneasiness can create forceful responses, increased trouble, and may make the control of postoperative torment troublesome (2).

Anxiolysis and sedation utilizing preoperative drug is as yet normal in pediatric sedation. Key elements of good premedication are simple application, quick beginning, brief span of activity and absence of huge aftereffects. Midazolam meets these standards with its various courses of organization (oral, rectal, nasal), an onset time of 10-20 minutes (3). The benzodiazepine, midazolam, has turned into the most often utilized preanesthetic drug given to children scheduled for a surgical procedure. Midazolam has various helpful impacts when utilized as premedication in children: sedation, quick onset, and restricted duration of activity (4). However new medications, for example, the  $\alpha_2$  - agonists have arisen as alternatives for premedication in pediatric sedation. Dexmedetomidine is an exceptionally specific  $\alpha_2$  - agonist with both calming and pain relieving properties and is without respiratory depressant effect (5). Premedication with midazolam has demonstrated to be more successful in lessening uneasiness and further developing consistence on induction of anaesthesia when contrasted with presence of parent/guardian inside the operation theater during induction of sedation (6). The great impacts of midazolam as preanaesthetic prescription incorporate sedation, anxiolysis, amnesia and decrease of post-operative regurgitating (7)(8).

The ideal premedicant drug for children ought to be not difficult to control, instigate sedation quickly, not delay the recovery after short procedure, and make sedative acceptance less traumatic. Ketamine has been advocated for pediatric premedication, given either *ir* or *pr*. However, most children object to infusions, and numerous to the introduction of tubes in their anus which makes premedication administration traumatic (9). Unpremeditated kids every now and again object to inhalational acceptance, and they frequently feel that the utilization of needles is one of the absolute most troubling parts of the hospital clinic stay. Children aged two to six years are particularly vulnerable against this issue, since their arrangement is restricted. In this manner, these children ought to be premedicated, to permit smooth enlistment, decline tension, and to forestall postoperative mental and conduct changes. Promethazine and meperidine 1 mg/kg each are generally utilized for pediatric *im* premedication, however it was our impression that this routine had an inadmissibly high failure rate. Low dose *im* ketamine was shown for preinduction sedation in the pediatric population. All things considered, the "fear about needles" is as yet present, which might make it unwanted for routine use. Our group has broad information and examination experience that has convert into great publications (10–22) (23–29). The aim of the current study was to evaluate the pre anaesthetic medications commonly prescribed in children undergoing dental treatment under general anaesthesia.

## **MATERIALS AND METHODS:**

It is a single focused study concentrate led in a private dental organization. The information for the review was gathered from the Dias of Saveetha dental hospital and college management framework. Ethical clearance for this study was acquired from the Institutional audit board.

Data was collected from the records of the children less than 12 years of age who were treated with preanaesthetic medication before general anaesthesia between September 2020 and February 2021. A total of 19 children treated with preanaesthetic medication were included in the study.

The data was divided into 3 age groups as 0-3 years old kids , 4-6 years old kids or more 6 years old kids and the data analysis was done utilizing SPSS programming. The chi square test and Pearson relationship was finished. P value < 0.05 was viewed as statistically significant.

## RESULTS:

In the present study, a total of 19 kids who were treated with preanaesthetic medication were involved, out of which 12 were female children and 7 were male children. The age groups were divided into 3 categories, 0-3 years old kids, 4-6 years old kids and above 6 years old kids. Majority of the kids belonged to 0-3 years.

Taxim was found to be the most commonly prescribed preanesthetic agent in children followed by midazolam. (Figure 1) A statistically significant association was found between the gender and prescription of preanesthetic medication. In whole more females were prescribed with preanesthetic medications compared to males with Taxim and dexamethasone being the most commonly prescribed.(Figure 2)

A statistically significant association was also observed with age and the preanesthetic medications prescribed. Children between the ages of 0 and 3 years were commonly prescribed with preanesthetic medications compared to the other age groups. Taxim., Dexamethsone and Midazolam being the most commonly prescribed. (Figure 3)

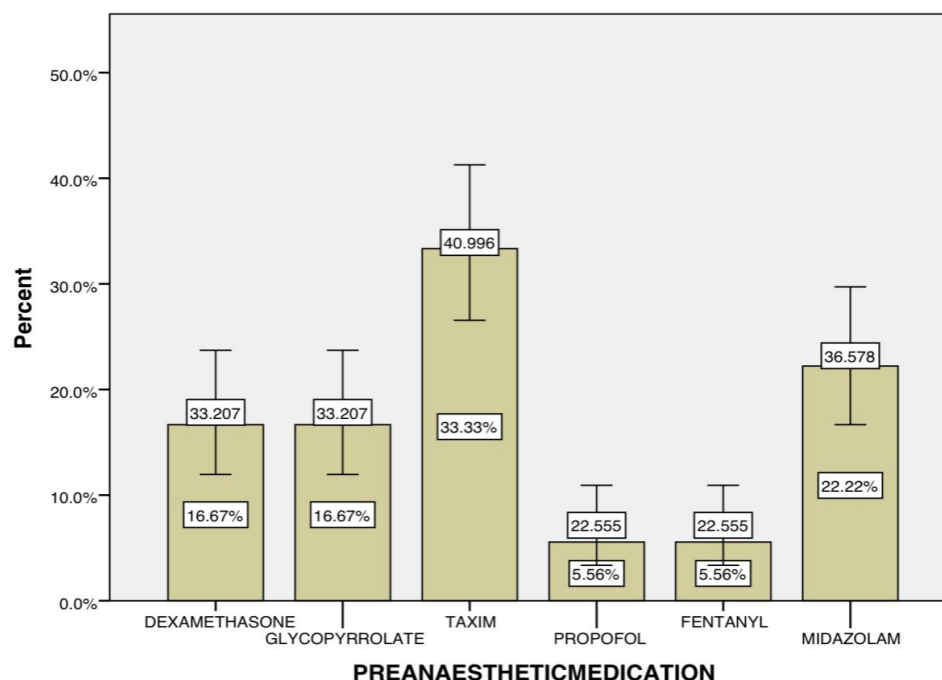


Fig.1 Bar graph representing the preanaesthetic medication that are prescribed in children undergoing dental treatment under general anaesthesia. It shows that taxim drug (33%) and midazolam (22%) are the most commonly prescribed drugs.

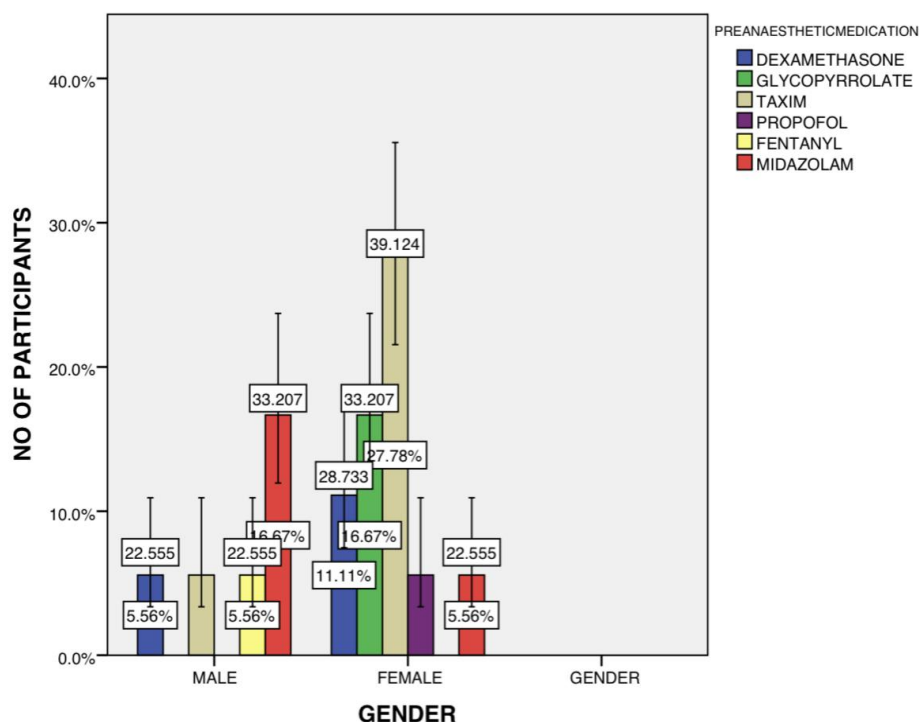


Fig.2 Bar graph representing the correlation between gender and preanaesthetic medication. X axis represents the gender and Y axis represents the percentage of preanaesthetic medication that is prescribed. Chi-square test was done and the association was found to be statistically significant. p value : 0.007 ( $p < 0.05$ ).

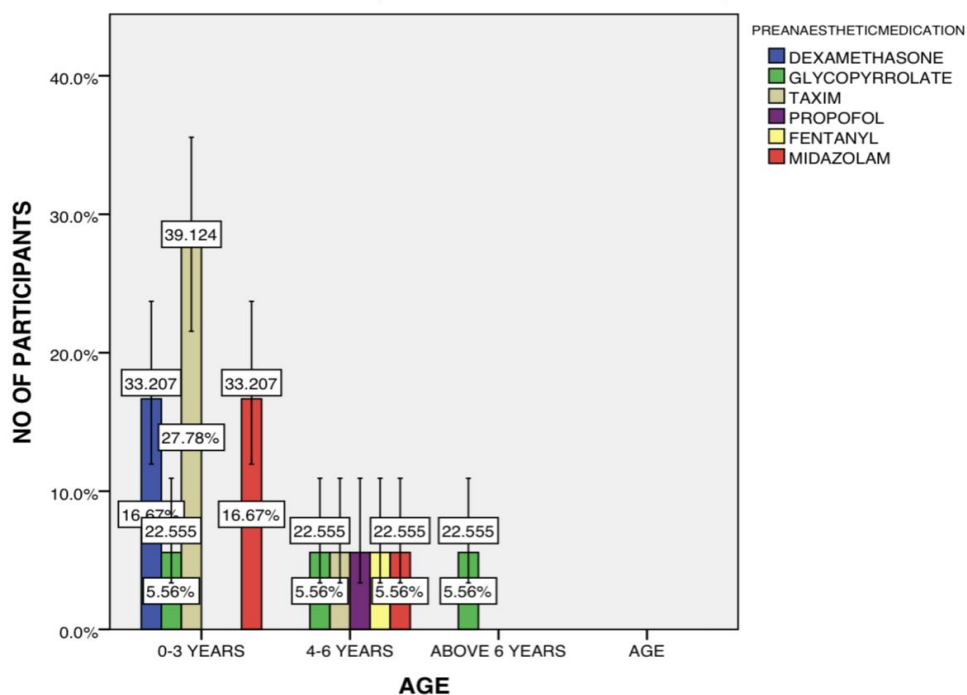


Fig.3 Bar graph representing the correlation between age and preanaesthetic medication. X axis represents the age of children and Y axis represents the percentage of preanaesthetic medication that is prescribed. Chi-square test was done and the association was found to be statistically significant. p value : 0.021 ( $p < 0.05$ ).

## **DISCUSSION :**

Preanaesthetic medicine is usually requested by dental specialists for all long term children going through broad general anaesthesia for dental surgeries in the clinic. The advantages of preoperative drug are generally recognized; these incorporate psychic sedation, smooth enlistment and maintenance of sedation, and postoperative amnesia. Then again, pre-medication isn't broadly endorsed by dental specialists for ambulatory children going through broad sedation for dental surgeries performed in the dental clinic or private office.

In the present study, the results show that the most commonly prescribed preanaesthetic medications were taxim, midazolam, Glycopyrrolate and dexamethasone. Taxim is an antibiotic and is prescribed majorly to prevent any sort of infection post treatment. In the present study it was seen that Taxim was most commonly prescribed in females and in children below 3 years of age.

Midazolam is the second most common preanesthetic drug given to children. It is a strong imidazo-benzodiazepine, which has quick onset of activity and has a elimination half-existence of around two hours. It is water solvent in acidic medium however exceptionally lipophilic at physiological pH. Midazolam has been accounted for to deliver partial anterograde amnesia, give tranquil sedation, lessen fearing abandonment, and work with induction of sedation (30). It has been utilized for preoperative sedation by intramuscular (IM), rectal, oral and sublingual courses, however each has its own benefits and disadvantages. Previous studies shows that Midazolam is the most broadly used drug as a preanaesthetic medicine. The serious issue in ordinary practice while utilizing intranasal midazolam is related with an unsavory consuming sensation in the nasal pit. Therefore, the nasal administration of midazolam isn't favoured toward practice. However, there are also reports that the intranasal administration of midazolam is better tolerated by infants over its oral administration (31). In the current study, it was seen that Midazolam is the only drug that was commonly prescribed in male children and between the age of 0-3 years old children. The prescription of Midazolam diminishes with increase in age.

Glycopyrrolate is the third commonly recommended drug. It is a new, long-acting anticholinergic medicine which has been generally assessed as of late as a premedicant and an adjunct to inversion by anticholinesterases of lingering neuromuscular block(32).

It is administered predominantly to prevent any secretions which would make the intubation as well as dental treatment easier. In the present study it was seen that glycopyrrolate was prescribed to all the children treated under General anesthesia irrespective of their age. However surprisingly none of the boys were given glycopyrrolate and there are no obvious reasons to substantiate.

Dexamethasone is the other drug that was commonly prescribed. The preoperative organization of a single large portion of IV dexamethasone fundamentally diminished the occurrence of PONV( postoperative sickness and retching) in the 24 hours after release, worked on oral admission, diminished the recurrence of parental calls, and brought about no emergency clinic returns for the management of PONV and poor oral intake.(33). With respect to dexamethasone prescription it was seen that it was prescribed only in kids less than 3 years of age.

Propofol and Fentanyl are the least commonly prescribed drug and the prescription was seen only in children between 4-6 years. Also Propofol was prescribed only in females and fentanyl only in males.

## **CONCLUSION:**

From the present study, it can be concluded that

- Taxim, Midazolam and glycopyrrolate are the most commonly prescribed preanaesthetic medication in children undergoing dental treatment under general anaesthesia.
- Taxim, midazolam are commonly prescribed in kids below 3 years of age.

- Dexamethasone is prescribed only in kids below the age of 3 years predominantly to prevent postoperative nausea and vomiting.
- Propofol and Fentanyl are 2 other premedication agents prescribed in children between the ages of 4 and 6 years.

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