

Prevalence of Children Treated Under General Anesthesia According to Mallampati Classification

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ABSTRACT:

INTRODUCTION: Dental procedures need open lines of contact with the patient. In certain cases, behaviour management, pharmacological approaches, and dental therapy under general anaesthesia may be required to ensure that paediatric patients receive effective and efficient dental treatment. The main aim of this present study is to assess the prevalence of children treated under general anesthesia according to Mallampati classification.

MATERIALS AND METHODS: A retrospective cohort study was conducted in Chennai at a particular institution. The data for this study was gathered from the Saveetha Dental College's online database (Dental Information Archiving Software DIAS). SPSS software version 23 was used to statistically analyse data from the records of 200 paediatric patients undergoing general anaesthesia. The p value was calculated using the Chi square test to determine the significance of the differences. As a level of significance, the P value was chosen at 0.05.

RESULTS: Among 200 patients taken for the study, the majority of the population are treated under general anesthesia according to class 1 Mallampati classification when compared to class 2 mallampati classification. No significant association with age was noted.

CONCLUSION: Irrespective of the gender, most of the children undergoing dental treatment under general anesthesia fall under class 1 and 2 of the Mallampati classification.

KEY WORDS: Pediatric children, General anesthesia, Mallampati classification, dental treatment.

INTRODUCTION:

Dental procedures need open lines of contact with the patient. In certain cases, behaviour management, pharmacological approaches, and dental therapy under general anaesthesia may be required to ensure that paediatric patients receive effective and efficient dental treatment(1). Despite current behavior modification and pharmacological approaches, dental therapy under General anesthesia may be needed in some cases to ensure appropriate and efficient dental care(2).

Children needing general anesthesia can exhibit intra-oral characteristics such as macroglossia, narrow palate, broad uvula, or tonsil hypertrophy, which may make intubation difficult for anesthesiologists. Consequently It's crucial to evaluate and recognise patients who might struggle with endotracheal intubation(3). Significant anatomic variations are often found as people get older. Anesthesiologists must be aware of some anatomical variances since they will determine the intubation process to be utilised, which will alter conditions such as head position, laryngoscope size and shape, and so on(4).

Mallampati classification is a tool used by anesthesiologists prior to surgical procedures. The oropharyngeal scoring is a straightforward, noninvasive, and low-cost procedure that involves visualising the oropharynx. It's simple to gather up and doesn't demand any particular equipment or settings(5). The Mallampati score is calculated for cooperative children who allow visualisation of their oropharynx. When possible, the Mallampati score was taken in both the erect and supine positions. When the mouth is open, patients are able to produce sounds(6). The anatomical features seen in the oropharynx influences scoring. The faucial/tonsillar pillars (arches in front and behind the tonsils), the base of the uvula, and the soft palate are the few anatomical structures present in the oropharyngeal complex. It is vital to remember that the size of the tonsils has no impact on the Mallampati score(7).

Several studies were conducted to determine the impact of GA on oral health after dental care. However, there are only a few reports that look at the other aspects of dental care under general anaesthesia. The Mallampati classification is one such element that must be considered.(8). The main aim of this present study is to analyse the prevalence of children treated under general anesthesia according to Mallampati classification.

MATERIALS AND METHODS:

The retrospective cohort study was carried out at Saveetha Dental College and Hospitals in Chennai. The data for this study was gathered from the Saveetha Dental College's online database (Dental Information Archiving Software DIAS). Prior to the start of the investigation, the Institutional ethical board at Saveetha University got ethical permission.

Data was collected from the records of the children less than 18 years of age who were treated under general anesthesia. A total of 200 children treated under general anesthesia were included in the study. Patient demographics (age/gender/annual family income), contact information, address (rural/urban), chief complaint, treatment plan, consent,

and high-definition pre/post-operative photographs are all fed into the software to allow for smooth inter-departmental coordination and a single source of information portal to avoid delays and ambiguity.

This collected data was divided into 3 age groups as 1-6, 7-12 and 13-18 and statistically analysed using SPSS software. Chi square test was done to obtain the p value to find the significant differences. P value was set as 0.05 as a level of significance.

RESULTS:

Among 200 patients taken for the study, the majority of the children who are treated under general anesthesia fall under class 1 Mallampati classification (57.98%) followed by class 2 mallampati classification (42.02%) (figure 1). Association between the gender and Mallampati classification shows that both males and females fall under class 1 when compared to class 2 mallampati classification and is statistically significant (figure 2). No significant association was found between the age and the classification (figure 3).

DISCUSSION:

Clinicians would feel more comfortable and confident executing the procedure if the patient was immobile during the process so that they could readily access the treatment area. Only under general anaesthesia or sedation is this possible(9). The length of the process determines the amount of general anaesthetic necessary; the longer the surgery, the more general anaesthesia is required. If oral procedures are not contraindicated, nasal intubation is recommended(10).

Mallampati classification is commonly used by the anesthetist before posting any child under General anesthesia and remains as one of the important criteria to access to decide on the same. There are four classes of Mallampati classification ; Class I - the soft palate and entire uvula are visible, Class II - the soft palate, hard palate, and upper portion of the uvula are visible, Class III - the soft palate, hard palate, and base of the uvula are visible, Class IV - only the hard palate is visible. Because mallampati class 3 or 4 is an independent predictor of difficulty with mask ventilation during anaesthesia induction and the presence of obstructive sleep apnea, most studies show that the majority of paediatric children have been treated under general anaesthesia according to mallampati class 1 or 2. In the current investigation, similar results were achieved because all of the students treated were in class 1 or 2(11).

Few studies show the inability to perform the Mallampati index in all children due to the difficulty of its application in kids younger than 4 years. In those cases, Koop et al. used tongue depressors for viewing and grading the classes of the modified Mallampati index(12). But in the present study, it was seen that majority of the children treated under general anesthesia were below 6 years of age and have been classified according to Mallampati classification before posting them under General anesthesia. This shows that experienced personnel can better identify and classify.

Previous research has demonstrated that the Mallampati score, a predictor of difficult intubation that is often used in adults, may be applied to a sample of children aged 4 to 8 who do not have anatomical deformities or genetic syndromes(13) . But the results of the present study shows that Mallampati classification can be used for all the children below 18 years of age who are indicated to be treated under General anesthesia and there is no association with the age.

The results of this current study also shows that, the majority of the children irrespective of their gender fall under mallampati class 1 wherein both the soft palate and entire uvula are completely visible.

Sample size of this study was small in comparison to the population of the representative region, which was one of the study's shortcomings. Furthermore, the study contained fewer factors. Furthermore, because the results are based on only one institution, generalisation is not possible. Future studies should use larger sample sizes and include more variables, according to our recommendations.

According to this research, many dental procedures, particularly for children, should be performed only under general anaesthesia or sedation. As a result, with a thorough preoperative evaluation, proper premedication and anaesthetic agents,

and method and equipment selection, these procedures can be conducted safely(14). Complications can be decreased by using the appropriate anesthetic method and following serious precautions in pediatric patients.

CONCLUSION:

From the results of the present study it can be concluded that irrespective of the gender, most of the children undergoing dental procedures under general anesthesia mostly fall under class 1 and 2 of the Mallampati classification.

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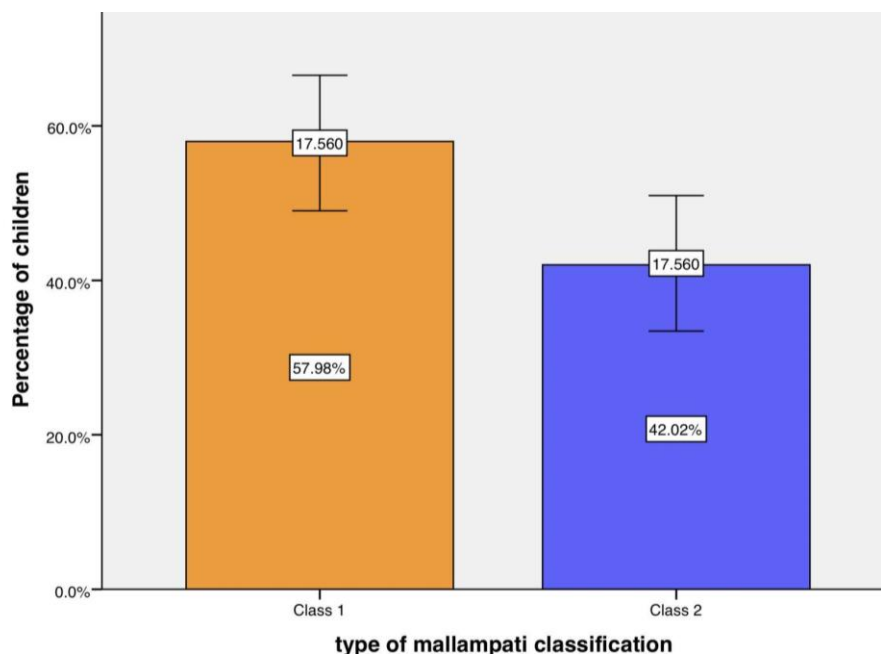


Figure 1: Figure 1 represents the percentage of children undergoing GA under class 1 and class 2 Mallampati classification. X-axis shows the class of mallampati classification and Y-axis shows the percentage of children undergoing Ga according to mallampati classification. It shows that 57.98% of children are treated under GA according to class 1 mallampati classification whereas 42.02% of children are treated under GA are according to class 2 mallampati classification.

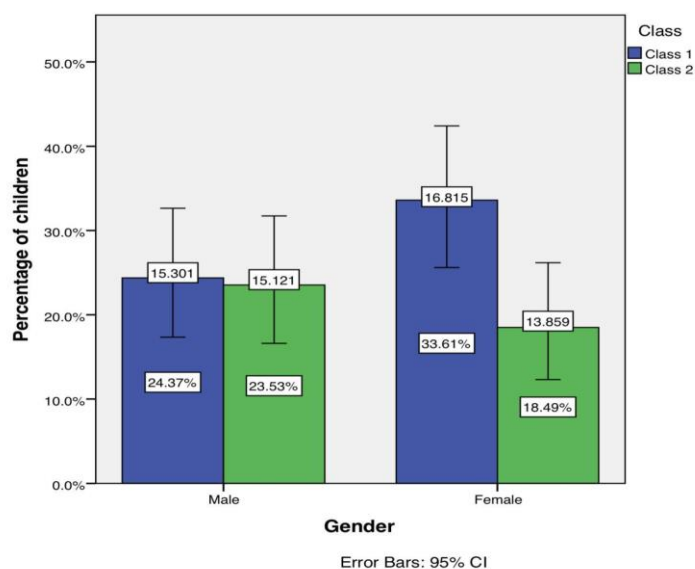


Figure 2: Figure 2 represents the association between gender and type of Mallampati classification. X-axis represents the gender of the patients and Y-axis represents the percentage of children treated according to Mallampati classification used for GA. It shows that, 24.37% of the male pediatric population are treated under class 1 Mallampati classification and 33.61% of the male pediatric population are treated under class 2 Mallampati classification whereas 33.61% of female pediatric population is treated under class 1 Mallampati classification and 18.49% of female population are treated under class 2 mallampati classification.

p value <0.05 (p value=0.04)which is statistically significant.

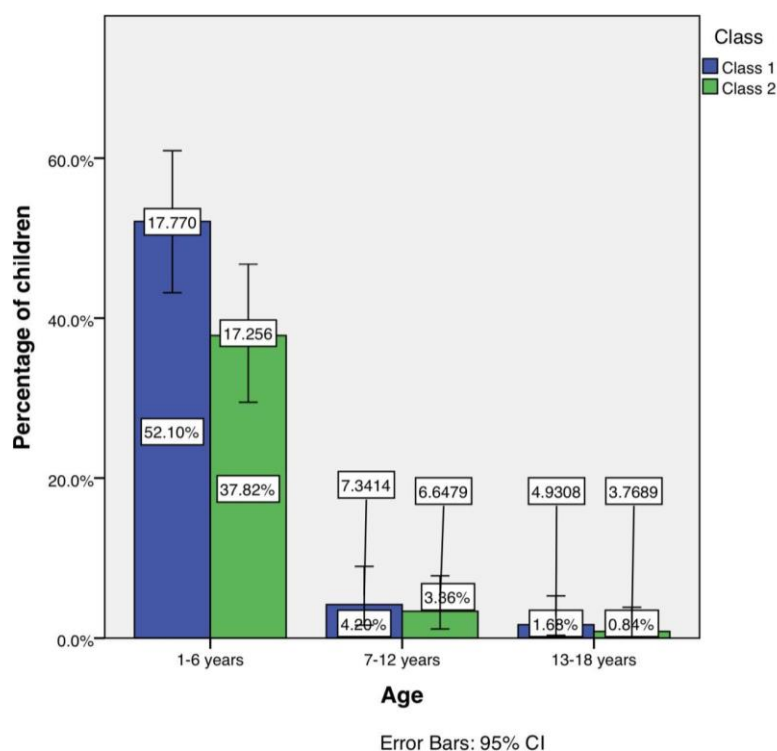


Figure 3 represents the association between age and class of Mallampati classification used for treating pediatric patients under GA. X-axis denotes the age of patients and Y-axis denotes the percentage of children treated according to the Mallampati classification. It shows that among the 1-6 years age group of children 52.10% of the population are treated under class 1 mallampati classification and 37.82% of the population are treated under class 2 mallampati classification. Among the 7-12 years age group of children 4.25% of the population are treated under class 1 and 3.86% of the population are treated under class 2. Among the 13-18 years age group of people, 1.63% of the population are treated under class 1 mallampati classification and 0.84% of the population are treated under class 2 mallampati classification.

p value <0.05 (p value=0.1)which is statistically non - significant.