



Assessment of factors affecting parent's preference of general anesthesia for performing pedodontic procedures in a university hospital set up

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ABSTRACT

Dental practitioners should use their knowledge and skills and be able to identify and effectively treat dental diseases in children. The child's and family's response should be taken into account for providing safe and effective treatment for the pediatric patients. The present study aims to analyze the preference of GA by parents for children under 5 years of age. This retrospective study was conducted among the pediatric dental patients under 5 years of age visiting Saveetha Dental College and Hospitals. The collected data was statistically analyzed using IBM SPSS Software (20.0). The results proved that the majority (72.08%) of the parents did not accept the GA procedure. Parents of 3 year old children were the most accepting (44.2%) of GA procedure. Among gender, parents of female children show a slightly higher percentage of acceptance (51.2%) when compared to the parents of the male children (48.8%). Most common reason for acceptance was parents of children undergoing full mouth rehabilitation procedures(55.8%). Majority of the parents who accepted the GA procedure were educated (83.7%) which shows that educational qualification plays an important role. Therefore, it is important to bring the positive attitude among parents for delivering safe and quality dental treatment.



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INTRODUCTION

When pediatric dental patients do not comply with conventional dental treatment, to provide comprehensive and high quality dental treatment, dental practitioners resort to general anesthesia as an aid to the existing treatment modalities (Somasundaram, 2015; Jeevanandan and Govindaraju, 2018; Subramanyam *et al.*, 2018). Physical/mental disability, developmental delay, and acute or chronic disease are potential reasons for noncompliance during the dental appointment (Rud and Kisling, 1973; Brill, 2002; Baier *et al.*, 2004). In a healthy child with no communicating barrier, behavioral influences often are more subtle and difficult to

identify. Factors that contribute to noncompliance include fears, general or situational anxiety, a previous unpleasant and/or painful dental/medical experience, inadequate preparation for the appointment, and parental practices (Long, 2004; Sheller, 2004; Howenstein et al., 2015). The American Academy of Pediatric Dentists has recommended GA procedures for pediatric dental patients who are unable to cooperate, experience ineffective local anesthesia, extremely fearful, anxious or uncommunicative, require significant surgical procedures and can benefit from using GA to protect them from psychological trauma, reducing the medical risks and for those in need of comprehensive dental care (American Academy of Pediatric Dentistry, 2004; Govindaraju et al., 2017b).

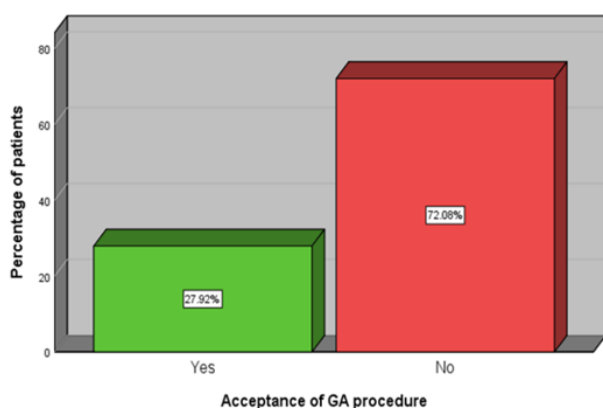


Figure 1: This frequency distribution chart represents the percentage of parents accepting/ Not accepting the GA procedure for their children below 5 years of age who were indicated for the same.

AAPD also lists GA under medically necessary care (American Academy on Pediatric Dentistry Council on Clinical Affairs, 2008; Ravikumar et al., 2017). ASA 1 and 2 pediatric patients would be appropriate for GA administration when the patient is uncooperative or if his/her treatment needs are extensive (Panchal et al., 2019). Most pediatric dentists show increasing interest towards GA, and frequently use it in their practice (Lee and Roberts, 2003; Gurunathan and Shanmugaavel, 2016; Packiri et al., 2017).

(Grytten et al., 1989; Tarján et al., 1990; Vermeulen et al., 1991) The General anesthesia was considered for comprehensive dental treatment has earlier been reported in many countries (Pohl et al., 1996; Harrison and Roberts, 1998; Vinckier et al., 2001), North America (Enger and Mourino, 1985; Loyola-Rodriguez et al., 2009), the Middle East (Ibricevic et al., 2001; Jamjoom et al., 2008), Asia (Kwok-Tung and King, 2007; Lee et al., 2009) and New

Zealand (Drummond et al., 2004). Findings contradictory to the above have recently been reported from Australia and England, where General anesthesia is primarily used for extractions in both children and adults (Jamieson and Roberts-Thomson, 2006; Jamjoom et al., 2008; Moles and Ashley, 1997). Since the publication of the Royal College of Surgeons guidelines for the use of GA in pediatric dentistry in 2008 move towards the usage of GA, the comprehensive dental care has been made (Albadri et al., 2018).

The advantages of General anesthesia include the ability to deliver a treatment which is safe, convenient and efficient; rendering a higher quality treatment in one visit, lesser discomfort to the patient; minimal mental and physical stress for the dentist as well as the patient (Lee and Roberts, 2003; Anderson et al., 2004; Atan et al., 2004; Wilson, 2004). Though there are a few risks associated with GA in dental treatment, it is generally considered safe (Lee and Roberts, 2003).

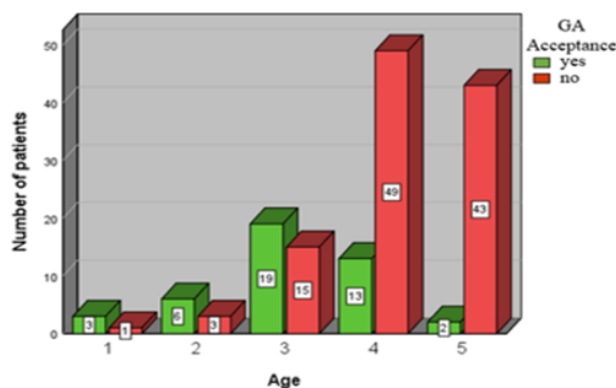


Figure 2: This bar chart shows the association between age of the patients indicated for GA and the acceptance of GA procedure by their parents. Green colour indicates the number of patients who agreed to the procedure.

When identifying the need for GA for their ward, most parents respond with an emotion of fear, worry and/or concern. Female parents tend to show higher levels of anxiety when compared to male parents when the child is undergoing the procedure (Amin et al., 2006). Therefore, our study aims to analyze the preference of general anesthesia by parents for children under 5 years of age.

MATERIALS AND METHODS

Study Setting

The present study was conducted to evaluate the preference of GA by parents for children under 5 years of age i.e preschool children, visiting Saveetha Dental College from June 2019 to

march 2020. Ethical clearance for this study was obtained from the Institutional Ethical Committee with the ethical approval number being: SDC/SIHEC/2020/DIASDATA/0619-0320.

Sampling

It is a retrospective study. The data was collected by reviewing the case records of the patients visiting the department of Pediatric dentistry in Saveetha Dental College. The data included in the study were from June 2019 to March 2020. All the available case sheets were reviewed and data evaluation was done. Simple random sampling, collecting more data sources and including the data only from the Institute were the measures taken to minimize the bias.

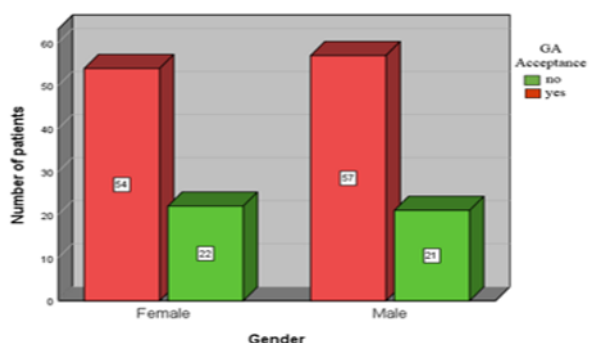


Figure 3: Bar chart showing the association between acceptance of GA by parents and the gender of their children who were indicated for GA.

Data Collection

The data collection was done by reviewing the case records of patient’s who were indicated for GA and the data were tabulated. The incomplete or censored data were verified and excluded from the study. A telephone interview was conducted to evaluate the educational status of the parents.

Data Analysis

The data were entered and analyzed using Statistical Package for the Social Sciences Software by IBM Version 20.0. Descriptive Statistics were calculated to explore the general features of the data. Independent variables were age and gender and the dependent variable was the acceptance of GA. Chi square test was applied and level of significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

Out of the 154 cases indicated for GA, the number of parents who agreed to the procedure constituted to 27.92% of the population and the number of parents who disagreed to the procedure constituted to

72.08% of the population [Table 1][Figure 1].

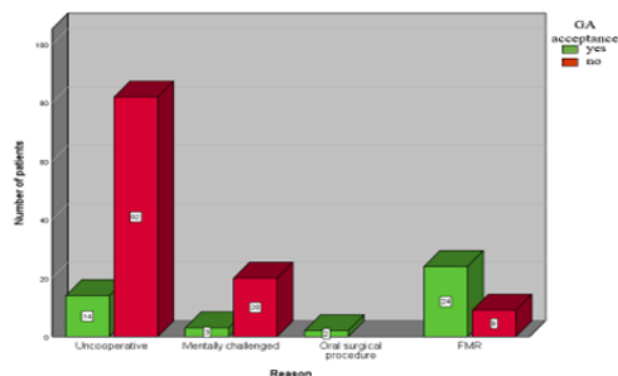


Figure 4: Bar chart showing the association between acceptance of GA by parents and the need for GA for their children.

It can be seen that the most number of parents who accepted the procedure are parents of children who are 3 years old (44.2%), followed by parents of 4 year old children (30.2%) followed by parents of 2 year old children constituting to 14.0%, parents of 1 year old (7.0%) and the least percentage of acceptance was seen among the parents of children who are 5 year old who constitute to 4.7%. As the p value was lesser than our chosen significance level ($\alpha = 0.05$), we can conclude that there is a significant association between age of the patient and acceptance of GA procedure. (Pearson chi-square value-38.554; df- 5; p-value-0.001)[Table 1][Figure 2].

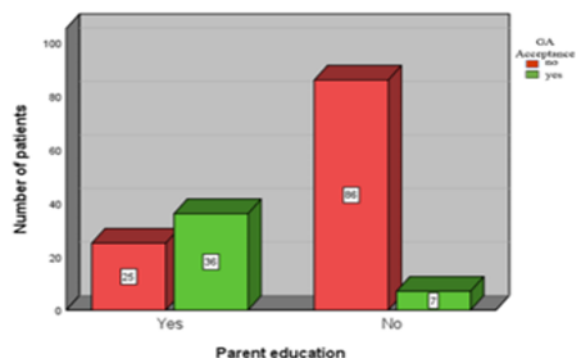


Figure 5: Bar chart presenting the association between acceptance of GA by parents and their educational status.

It can be seen that the parents of female children show a slightly higher percentage of acceptance (51.2%) when compared to the parents of the male children (48.8%). Chi- square analysis was performed and it can be seen that there is no statistically significant association between gender of the patient and acceptance of GA procedure. (Pearson chi-square value-0.078; df- 1; p-value = 0.780 > 0.05) [Table 1][Figure 3].

It can be seen that the most number of parents

who accepted the procedure are parents of children who underwent full mouth rehabilitation procedures (55.8%) followed by parents of uncooperative children (32.6%) and mentally challenged children (7.0%). The least percentage of acceptance was seen among the parents of were to undergo oral surgical procedures (4.7%). Since the p value is lesser than our chosen significance level ($\alpha=0.05$), we can reject the null hypothesis and conclude that there is a significant association between reason and acceptance of GA procedure. (Pearson chi-square value-7.844; df- 2; p-value <0.05) [Table 1] [Figure 4].

It can be seen that the most number of parents who accepted the procedure are parents who are educated (83.7%). Since the p value is lesser than our chosen significance level ($\alpha=0.05$), we can reject the null hypothesis and conclude that there is a significant association between parent education and acceptance of GA procedure. (Pearson chi-square value-48.527; DF- 1; p-value = 0.001) [Table 1] [Figure 5]. With the growing awareness of parents and the availability and accessibility of information, the satisfaction of parents plays a crucial role in the health care domain. It is important to understand that parents visit a dentist to get relieved of the physical discomfort of child's dental pain and to treat the obvious dental disease and therefore agree for the general anesthesia to carry out dental procedures.

A study by Kupietzky (Kupietzky, 2007) states that, most of the parents were not aware of the induction procedure and the degree of invasiveness of the general anesthesia procedure and may have assumed that their child would tolerate general anesthesia when compared to than conscious sedation. Now majority of those developed change in preference from general anesthesia to conscious sedation after viewing the general anesthesia procedure. From our observations we can see that 72.1% of the parents did not accept the GA procedure which is similar to the findings of Murphy et al (Murphy et al., 1984), which show that "tell show do" and conscious sedation was the most accepted behavioral management technique and GA was the least accepted behavior management technique.

Eaton et al (Eaton et al., 2005) showed that the most accepted behavior management techniques in decreasing order were: Tell show do, NO₂, GA, Active restraint, Oral premeditation, Voice control, Passive restraint and Hand over mouth technique. GA was considered to be the least accepted procedure by Lawrence et al. (American Academy of Pediatric Dentistry, 2004) which was in accordance

with our study. The current study reveals that the education levels of the parents has a major role in acceptance of GA procedure which is in contrast to the study by Eaton et al (Eaton et al., 2005) and Peretz et al (Peretz and Zadik, 1994). Another study stated that both socioeconomic status and educational qualification of the parents played a major role in preferring general anesthesia for their children medical care (Vellingiri and Gurunathan, 2015) which is in accordance to this present study. Also, other studies conducted on parental education and children health, showed a strong positive association.

The sole responsibility for providing a safe environment for the administration of deep sedation and GA is of the pediatric dentist. The qualifications of the anesthesiologist's must be verified, the pediatric dentist must take appropriate steps to minimize the risks that can affect the patient, which include: Setting up the OT, monitoring constantly and complete documentation, appropriate selection of patients by cross verification with their medical records and physical conditions, indications of the type of anesthesia administered, making sure that all the staff are properly trained, procuring emergency drugs, equipment and protocols, providing proper preoperative and postoperative instructions to patients/parents/guardians (Waters and Schmidt, 1934; Govindaraju et al., 2017a,b; Jeevanandan, 2017).

At present sedation GAs are not that risky as we have better equipment and medications. Nevertheless, there are quite a few risks involved with child sedation for dental procedures (Ramakrishnan and Bhurki, 2018; Malhotra, 2020). The extreme consequences are caused primarily by respiratory and airway compromise in sedated children. Minor risks include vomiting, irrational and paradoxical behaviors, and extremes in physiological parameters (Lee and Roberts, 2003; Nair et al., 2018). A few researches states that parents and children are more likely to engage in positive oral hygiene behaviors after the child undergoes the comprehensive dental treatment under GA. Children of a very young age who have been treated under GA have exhibited positive behavior at the following recall appointments when compared to those treated under conscious sedation.

Evidence states that certain children who undergo extensive/invasive treatment for early childhood caries have a tendency to exhibit new lesions within the next two years. It appears that the completion of restorative procedures under GA serves as a "window of opportunity" where both parents and chil-

Table 1: The association between acceptance of GA procedure by parents based on age, gender, reason and parent’s educational status *(statistically significant)

Variables	GA acceptance		Statistical values					
	Yes (%)	No (%)	Pearson chi- value	df	p-value			
Age (yrs)								
1 yrs	7.0%	0.9%						
2 yrs	14.0%	2.7%						
3 yrs	44.2%	13.5%	38.554	5	0.001*			
4 yrs	30.2%	44.1%						
5 yrs	4.7%	38.7%						
Gender								
Female	51.2%	47.7%				0.145	1	0.704
Male	48.8%	52.3%						
Reason								
Uncooperative	32.6%	73.9%						
Mentally challenged	7.0%	18.0%	7.844	2	0.020*			
Oral surgical procedure	4.7%	0.0%						
Full mouth rehabilitation	55.8%	8.1%						
Parent education								
Educated	83.7%	22.5%	48.527	1	0.00*			
Not educated	16.3%	77.5%						

dren are receptive to implement suggestions provided by their dental team. The GA experience motivates parents to make immediate and effective changes to their children’s oral health practices. To enhance these positive results dental practitioners could further resort to preventive services such as anticipatory guidance, coaching/instruction and motivational interviewing techniques (Christabel, 2015; Sharma et al., 2015). Limitations of the study include the socioeconomic status of the parents and geographical isolation.

Figure 1 shows that the X axis represents the Acceptance of GA procedure and Y axis represents the Percentage of patients. Green color indicates the number of parents who agreed to the procedure which constitutes to 27.92% of the population. Red color indicates the number of parents who disagreed to the procedure which constitutes to 72.08% of the population.

Figure 2 shows that the Red color indicates the number of patients who disagreed to the procedure. Chi square analysis was done and it can be seen that there is a significant association between age of the patient and acceptance of GA procedure. (Pearson chi-square value-38.554 ; df- 5; p-value-0.001). It can be seen that the highest percentage of acceptance was seen among the parents of 3 year old children and the least acceptance percentage was seen among the patients who are 5 years old.

Figure 3 shows that the Green color indicates the number of patients who agreed to the procedure. Red color indicates the number of patients who disagreed to the procedure. Statistically, there was no significant association between gender of the patient and acceptance of GA procedure. (Pearson chi-square value-0.078; df- 1; p-value =0.780>0.05). The acceptance towards GA procedure among parents of female children were slightly higher when compared to males.

Figure 4 shows that the Green color indicates the number of patients who agreed to the procedure. Red color indicates the number of patients who disagreed to the procedure. There is a significant association between reason and acceptance of GA procedure. (Pearson chi-square value-7.844; df- 2; p-value <0.05). Acceptance level of parents whose children were to undergo oral surgical procedures was more when compared with the other needs. It can be seen that the most number of parents who accepted the procedure are parents of children who were indicated for full mouth rehabilitation procedures.

Figure 5 shows that the Green color indicates the number of patients who agreed to the procedure. Red color indicates the number of patients who disagreed to the procedure. Chi-square analysis was done and it can be seen that there is a significant association between parent education and accep-

tance of GA procedure. (Pearson chi-square value-48.527; df- 1; p-value =0.001<0.05). It can be seen that the most number of parents who accepted the procedure are parents who are educated.

CONCLUSION

Within the limits of the study, following conclusion can be drawn, Most of the parents did not accept the GA procedure. Parents of children who were 3 year old were the most accepting of GA procedure. Among gender, parents of female children show a slightly higher percentage of acceptance when compared to the parents of the male children. Most common reason for acceptance was parents of children undergoing full mouth rehabilitation procedures. Majority of the parents who accepted the GA procedure were educated which shows that educational qualification plays an important role. Therefore, extensive research is required considering the socioeconomic status and parent satisfaction.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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