



Knowledge, Attitude and Practice of Dentists towards Dental Procedures under General Anesthesia in Children

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

General anaesthesia is used in routine pediatric dental practice. Although they are considered effective and safe in controlling pain during dental procedures, complications related to their use appear inevitable. Aim of the study was to assess knowledge, attitude and practice of dentist towards dental procedures under general anesthesia. It was a university setting study. Questionnaires consisting of ten questions [Fig. 1] focused on the perceptions and experiences on protocols followed by general dental practitioners and specialists on general anesthesia. Data was entered in excel in a methodical manner and was imported to SPSS software 20. Chi square association was done to compare the responses between general dentist and specialist and were represented in the form of bar graphs. In relation to association between Qualification and common indications of general anaesthesia. (Pearson Chi Square = 2.789, P value = 0.425(<0.05), hence statistically not Significant). Among General dentists, 37.5% of them agreed with Extreme non-

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cooperation followed by 25% for long surgical procedures and strong emetic and 12.5% for Extreme dental fear as a common indication for general anesthesia. Among Specialists, 38.2% of them agreed with long surgical procedures followed by 35.2% for extreme non cooperation, 17.6% for extreme dental fear and 8.82% for strong emetic reflex as a common indication for general anesthesia [Fig. 5]. Both General dentist and specialist have fairly good knowledge about paediatric general anaesthesia.

Keywords: General anesthesia; dental practice; pediatric patients; consciousness; dental care.

1. INTRODUCTION

Administration of local anesthesia, sedation and general anesthesia is an integral part of pediatric dental practice [1]. General anesthesia is a state of reversible loss of consciousness during which the patient cannot be aroused even in the presence of painful stimulation. General anesthesia affects the central nervous system, functions of cerebral cortex, thalamus and spinal cord [2]. In pediatric dentistry, general anesthesia is rarely used, dentists usually prefer conscious sedation since it is extremely safe and easy [3]. However, in children dental procedures are carried out under general anaesthesia for many reasons, which includes very young age, extensive treatment necessities, long surgical treatments, patients who requires special safety conditions, patients with physical disabilities with uncontrollable motor deficits making it impossible for them to collaborate, patients who travel long distance in order to receive a specialized dental treatment, patients for whom local anesthesia is ineffective because of acute infections, anatomical variations or allergy [4]. Dental trauma during paediatric general anesthesia differs from enamel crack to avulsion, hypoplasia and crown dilacerations [5]. Trauma may also occur from use of airways, mouth openers, props, or gags. Incidence of perioperative dental damage that can occur during general anesthesia has been found to range from 0.02% to 0.07% [6]. However, a much higher frequency of dental trauma about 12.1% and overall incidence of oral injuries of about 18% has been reported in a retrospective study [7].

As far as General anaesthesia is concerned trained, experienced and skilled individuals in operation team are critical to avoid any risk and at the same time provide the most suitable and high quality care [8]. The existence of dedicated assistance in anesthesia and also dental nurse with recognized training in their roles is required [9]. Furthermore patients with medical emergency should be managed with a pediatric team including pediatrician, pedodontists, besides performing conventional treatment by

applying behavior management techniques, are specially trained to do treatment under GA [10]. In this regard, emphasis is placed on the importance of delivering the most durable and successful treatments to avoid another GA and providing the child with high oral health-related quality of life [11].

Previously our department has published extensive research on various aspects of pediatric dentistry our department is passionate about child care, we have published numerous high quality articles in this domain over the past 3 years [12-28]. With this inspiration we planned to pursue research on this vast research experience that has inspired us to research about to evaluate the knowledge, attitude and practise of dentists towards dental procedures under general anesthesia. The aim of the study is to assess knowledge, attitude and practise of dentists towards dental procedures under general anesthesia.

2. MATERIALS AND METHODS

2.1 Study Setting

It is a university setting study, conducted in University dental college. The pros of the study are flexibility, low cost. The cons of the study are that it is limited to a certain population. Total of 50 participants (25 General Dental surgeons and 25 specialists) in Saveetha dental colleges were randomly selected. Two examiners were included in the study.

2.2 Sampling

Convenience sampling was done. It was generalised to the South Indian population.

2.3 Data Collection

Questionnaire based study. Questionnaires consisting of Eight questions [Fig. 1] focused on the perceptions and experiences on protocols followed by general dental practitioners and specialists on general anesthesia.

- 1) Which among the following conditions will lead to general anesthesia?
a) Extreme non co-operation b) Extreme dental fear c) Long surgical procedures d) strong emetic reflex
- 2) Which of the following evaluations are used when discharging a pediatric patient after completing a procedure under general anesthesia?
a) ability to walk b) ability to talk c) ability to void d) ability to drink
- 3) Is there a minimum number of teeth requiring treatment that automatically qualifies a patient for general anesthesia?
a) <2 b) 3-4 c) 5-6 d) >6
- 4) At which phase of general anesthesia do maximum orodental injuries occur?
a) At the time of intubation b) while EndoTracheal Tube in place c) During extubation d) Recovery phase
- 5) Minimum no of people (patient's parents or caregivers) needed at your institution to accompany pediatric patients undergoing dental treatment under general anesthesia?
a) 0 b) 1 c) 2 d) 3
- 6) Which among the following measures do you most commonly use to calculate general anesthesia dose given to a pediatric patient?
a) weight b) height c) age d) Lean Body Mass
- 7) Do you carry out pre – operative risk assessment of teeth before providing general anesthesia?(mobile teeth, crowns, gingival inflammation) a) yes b) no
- 8) Have you ever had a pediatric patient suffer a medical emergency related to GA in your institution? a) yes b) no

Fig. 1. List of questionnaires

2.4 Analysis

Data was entered in excel in a methodical manner and was imported to SPSS software 20. Descriptive statistics were used to evaluate the distribution of undergraduate and postgraduate students. Chi square association was done to compare the responses between General Dentist and Specialist were represented in the form of bar graphs.

3. RESULTS AND DISCUSSION

In relation to the Age distribution of study population, it was found that among 50 participants, 40% of the study participants were in the age group between 25-30 yrs, 16% of the participants were in the age group between 31-35 yrs, 32% of the participants were in the age group between 36-40 yrs and 12% of the participants were in the age group between 41-45 yrs [Fig. 2]. In relation to Gender distribution 66% were male participants and 34% were female participants [Fig. 3]. Out of 50 participants, 32% of the participants were General Dentist and 68% were Specialist [Fig. 4]. In relation to association between Qualification and common indications of general anaesthesia. (Pearson Chi Square = 2.789, P value = 0.425(<0.05), hence statistically not significant). Among General dentists, 12% of them agreed with Extreme non- cooperation followed by 8%

for long surgical procedures and strong emetic and 4% for Extreme dental fear as a common indication for general anesthesia. Among Specialists, 25% of them agreed with long surgical procedures followed by 24% for extreme non cooperation, 12% for extreme dental fear and 6% for strong emetic reflex as a common indication for general anesthesia [Fig. 5]. In relation to association between Qualification and minimum number of teeth requiring treatment under general anesthesia (Pearson Chi Square = 3.064, P value = 0.382(<0.05), hence statistically not significant). Among General dentists, 18% of them agreed with greater than 6 number of teeth followed by 6% agreed between two to four teeth and 2% between five to six teeth. Among Specialists, 34% of them agreed with greater than 6 number of teeth followed by 18% agreed between five to six teeth and 8% between two to four teeth [Fig. 6].

In relation to association between Qualification and Phase of General anesthesia with maximum orodental injuries. X axis shows Phase of General anesthesia with maximum orodental injuries; Y axis shows qualification. (Pearson Chi Square = 0.611, P value = 0.894(<0.05), hence statistically insignificant). Among General dentists, 14% of them agreed with during recovery phase, followed by 12% during Extubation, 4% during intubation of endotracheal tube and 2% at time of intubation. Among

Specialist, 32% of them agreed with during Extubation, followed by 26% during recovery, 8% during endotracheal tube insertion and 2% at time of intubation [Fig. 7]. In relation to association between Qualification and minimum number of people to accompany patient during

general anesthesia. (Pearson Chi Square = 0.700, P value = 0.705(<0.05), hence statistically not significant). Among General dentists, 14% of them agreed with one person accompany, followed by 12% agreed with no accompany and 6% agreed with two person accompany.

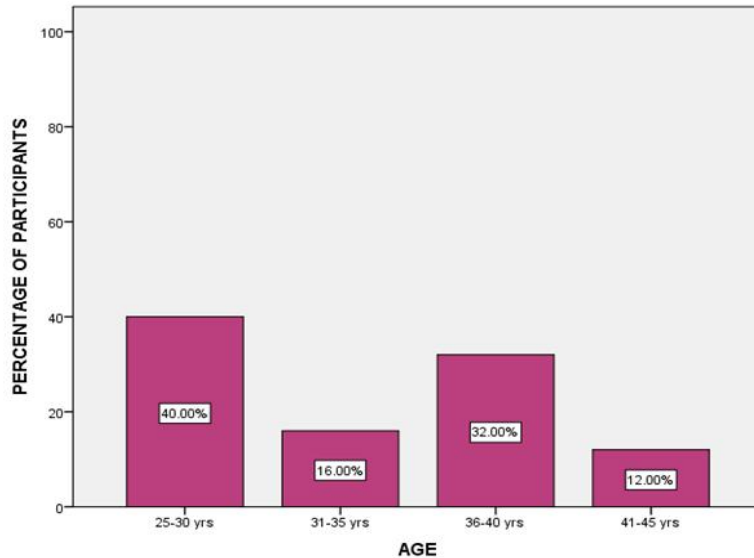


Fig. 2. Bar graph shows Age distribution among the study population. 40% of the study participants were in the age group between 25-30 yrs, 16% of the participants were in the age group between 31-35 yrs, 32% of the participants were in the age group between 36-40 yrs and 12% of the participants were in the age group between 41-45 yrs

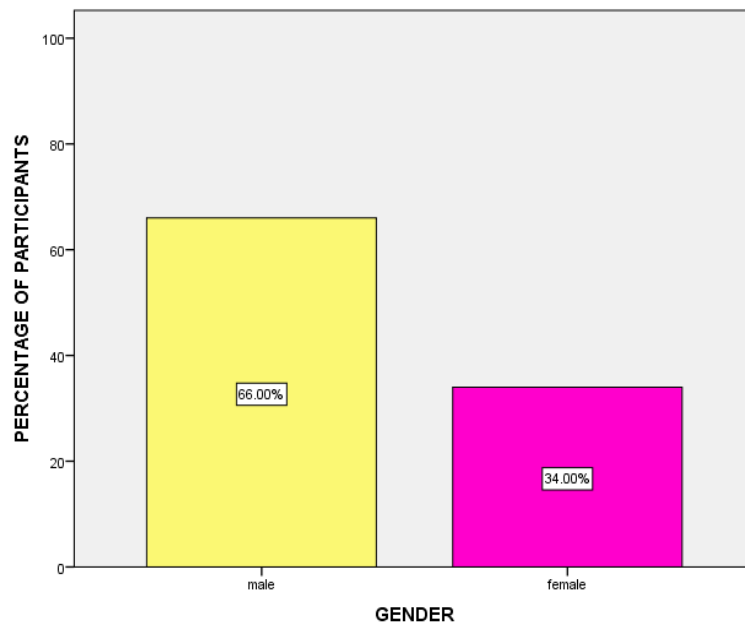


Fig. 3. Bar graph shows gender distribution among the study population. Among the study participants 66% were male (yellow) participants and 34% were female (pink) participants

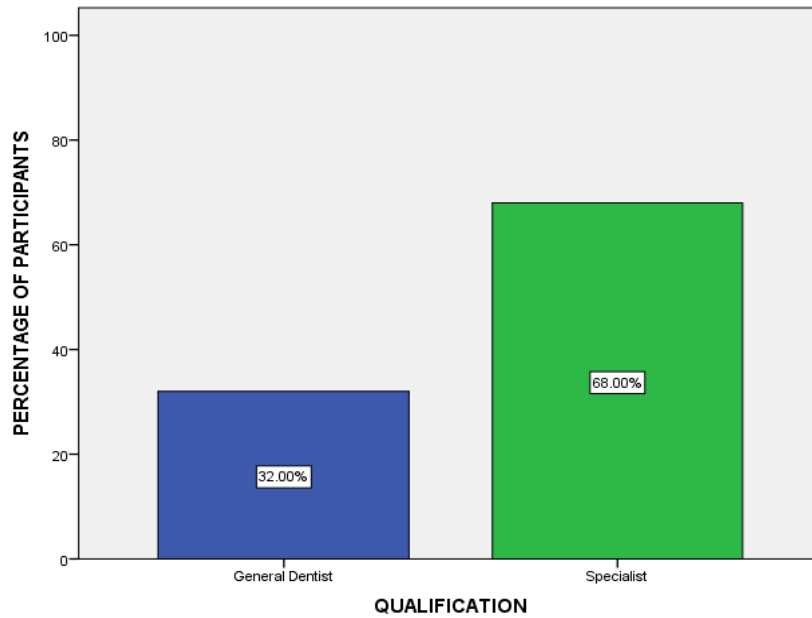


Fig. 4. Bar graph shows distribution of level of study population. Out of 50 participants, 32% of the participants were General Dentist (Blue) and 68% were Specialist (Green)

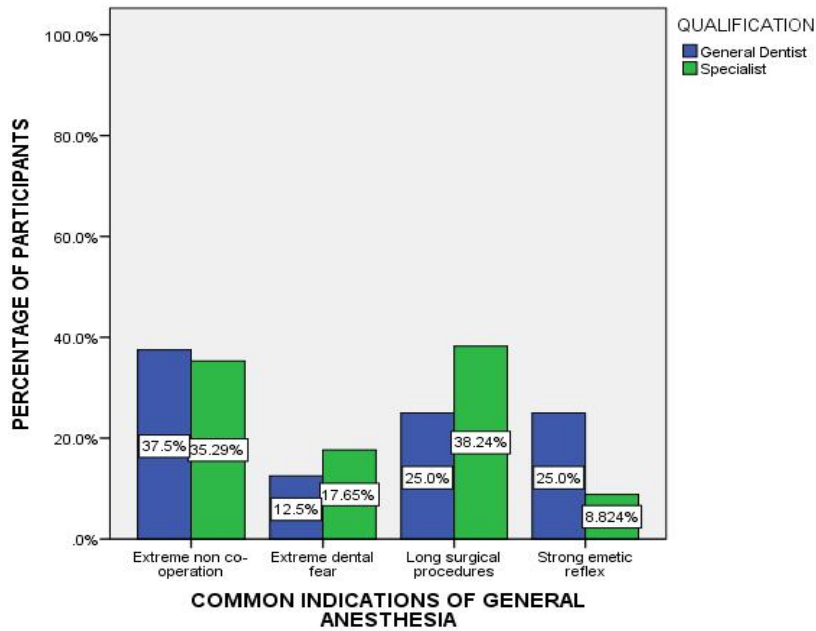


Fig. 5. Bar graph shows association between Qualification and common indications of general anaesthesia. X axis shows common indications of procedures under General anaesthesia; Y axis shows percentage of participants. (Pearson Chi Square = 2.789, P value = 0.425(<0.05), hence statistically insignificant). Among General dentists, 37.5% of them agreed with Extreme non-cooperation followed by 25% for long surgical procedures and strong emetic and 12.5% for Extreme dental fear as a common indication for general anaesthesia. Among Specialists, 38.2% of them agreed with long surgical procedures followed by 35.2% for extreme non-cooperation, 17.6% for extreme dental fear and 8.82% for strong emetic reflex as a common indication for general anaesthesia

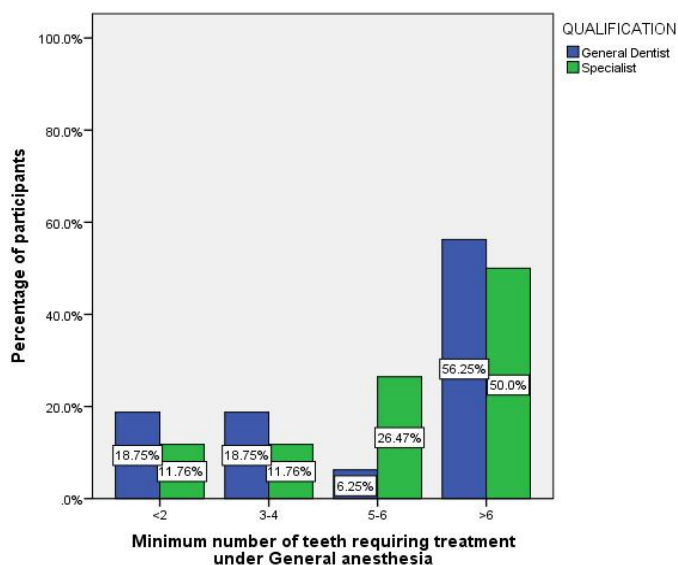


Fig. 6. Bar graph shows association between Qualification and minimum number of teeth requiring treatment under general anesthesia. X axis shows minimum number of teeth requiring treatment under General anaesthesia; Y axis shows Percentage of participants. (Pearson Chi Square = 3.064, P value = 0.382(<0.05), hence statistically insignificant). Among General dentists, 56.2% of them agreed with greater than 6 number of teeth followed by 18.75% agreed between two to four teeth and 6.2% between five to six teeth. Among Specialists, 50% of them agreed with greater than 6 number of teeth followed by 26.4% agreed between five to six teeth and 11.7% between two to four teeth

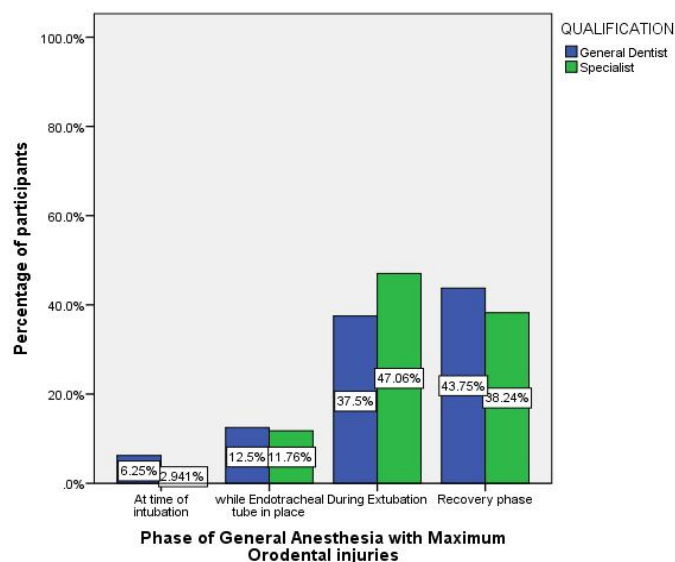


Fig. 7. Bar graph shows association between Qualification and Phase of General anesthesia with maximum orodental injuries. X axis shows Phase of General anesthesia with maximum orodental injuries; Y axis shows percentage of participants. (Pearson Chi Square = 0.611, P value = 0.894(<0.05), hence statistically not significant). Among General dentists, 43.7% of them agreed during recovery phase, followed by 37.5% during Extubation, 12.5% during intubation of the endotracheal tube and 6.2% at time of intubation. Among Specialists, 47% of them agreed with Extubation, followed by 38.2% during recovery, 11.7% during endotracheal tube insertion and 2.9 % at time of intubation

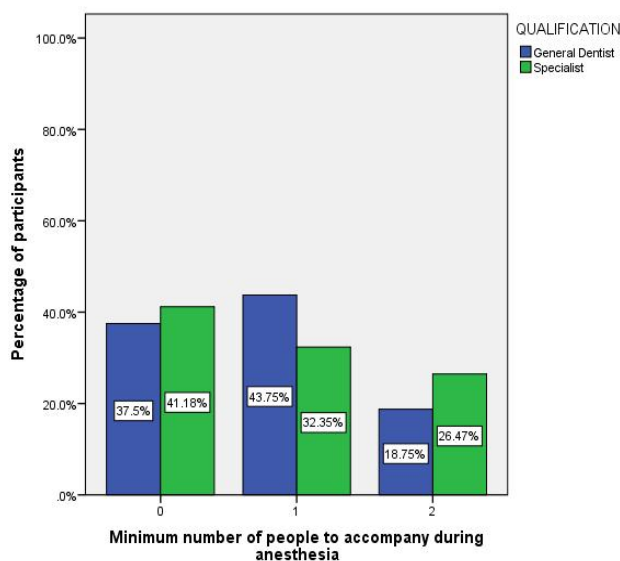


Fig. 8. Bar graph shows association between Qualification and minimum number of people to accompany patient during general anesthesia. X axis shows minimum number of people to accompany patient during general anesthesia; Y axis shows percentage of participants. (Pearson Chi Square = 0.700, P value = 0.705(<0.05), hence statistically not significant). Among General dentists, 43.7% of them agreed with one person accompany, followed by 37.5% agreed with no accompany and 18.7% agreed with two person accompany. Among Specialists, 41.1% of them agreed with no accompany, followed by 32.3% one person accompany and 26.4% agreed with two percent accompany

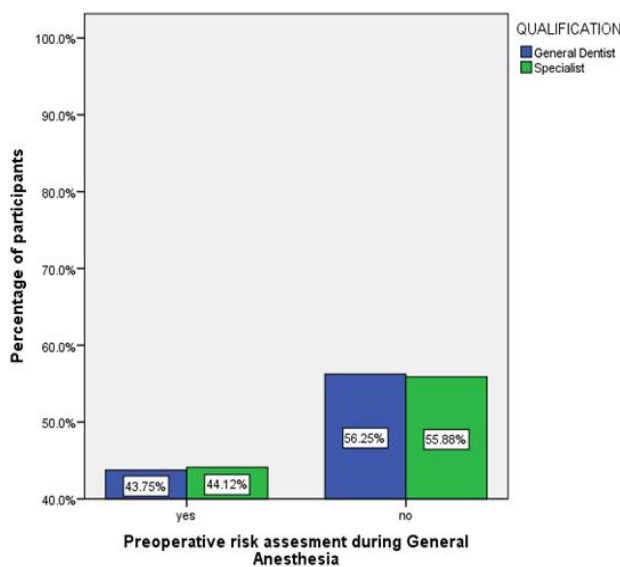


Fig. 9. Bar graph shows association between Qualification and preoperative risk assessment during general anesthesia. X axis shows preoperative risk assessment during general anesthesia; Y axis shows percentage of participants. (Pearson Chi Square = 1.597, P value = 0.450(<0.05), hence statistically not significant). Among General dentists, 56.2% of them does not agreed with preoperative risk assessment during general anesthesia and 43.7% agreed with preoperative risk assessment during general anesthesia. Among Specialists, 55.8% of them does not agreed with preoperative risk assessment during general anesthesia and 44.1% agreed with preoperative risk assessment during general anesthesia

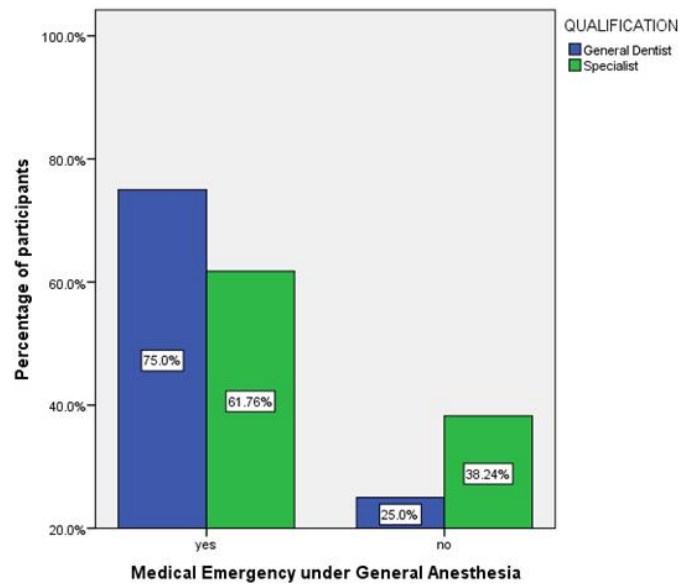


Fig. 10. Bar graph shows association between Qualification and Medical emergency under General anesthesia. X axis shows Medical emergency under General anesthesia; Y axis shows percentage of participants. (Pearson Chi Square = 0.001, P value = 0.981(<0.05), hence statistically not significant). Among General dentists, 25% of them does not agreed with medical Emergency under general anesthesia and 75% agreed with medical Emergency under general anesthesia. Among Specialists, 38.2% of them does not agreed with medical Emergency under general anesthesia and 61.7% agreed with medical Emergency under general anesthesia

Among Specialists, 28% of them agreed with no accompany, followed by 22% one person accompany and 18% agreed with two percent accompany [Fig. 8]. In relation to association between Qualification and preoperative risk assessment during general anesthesia. (Pearson Chi Square = 1.597, P value = 0.450(<0.05), hence statistically not significant). Among General dentists, 18% of them does not agreed with preoperative risk assessment during general anesthesia and 14% agreed with preoperative risk assessment during general anesthesia. Among Specialists, 38% of them does not agreed with preoperative risk assessment during general anesthesia and 30% agreed with preoperative risk assessment during general anesthesia [Fig. 9]. In relation to association between Qualification and Medical emergency under General anesthesia. (Pearson Chi Square = 0.001, P value = 0.981(<0.05), hence statistically not significant). Among General dentists, 18% of them does not agreed with preoperative risk assessment during general anesthesia and 14% agreed with preoperative risk assessment during general anesthesia. Among Specialists, 38% of them does not agreed with preoperative risk assessment during

general anesthesia and 30% agreed with preoperative risk assessment during general anesthesia [Fig. 10].

Fig. 8 shows that, Among General dentists, 43.7% of them agreed with one person accompany, followed by 37.5% agreed with no accompany and 18.7% agreed with two person accompany. Among Specialists, 41.1% of them agreed with no accompany, followed by 32.3% one person accompany and 26.4% agreed with two percent accompany. This is in accordance with a study by Vishnu Prasad et al reported that 88% of dental surgeons and auxiliary staff allowed parents in the dental clinics. A survey done by the Association of Pedodontic Diplomats, nearly 90% of the dental surgeons allowed parents in the dental clinic. Another study reported that 35% of general dentists and 87% of pediatric dental surgeons allowed parents in the operatory [29].

Fig. 6 shows that, When asked about minimum no of teeth requiring treatment that qualifies for treatment under general anesthesia, majority of General dentists, 56.2% of them agreed with greater than 6 number of teeth followed by

18.75% agreed between two to four teeth and 6.2% between five to six teeth. Among Specialists, 50% of them agreed with greater than 6 number of teeth followed by 26.4% agreed between five to six teeth and 11.7% between two to four teeth. These results are in accordance with study done by Fisher Owens et al., in which it was reported that by 47% describe a situation of 4-6 carious lesions, (32.8%) described a child with more than 6 carious lesions requires treatment under general anaesthesia and (20.3%) described a situation with 1-3 carious lesions. Of those who responded (33.2%) that there was a specific age under which full mouth dentistry in a healthy child was best done under GA, most (61.5%) felt that under 3 was most appropriate. Fourteen percent felt that any age less than 5 is best. Sixty-six percent felt that difficulty coping / behaving for dental treatment at any age was a qualifier for GA to provide necessary dental treatment [30].

Fig. 10 shows that when asked about pediatric medical emergencies related to GA in clinical practice, Among General dentists, 18% of them does not agreed with preoperative risk assessment during general anesthesia and 14% agreed with preoperative risk assessment during general anesthesia. Among Specialists, 38% of them does not agreed with preoperative risk assessment during general anesthesia and 30% agreed with preoperative risk assessment during general anesthesia. This is contradictory to a study done by Hardman et al. It has been reported that 75% of the participants indicated that they have had a medical emergency in their office related to sedation with general anaesthesia [31]. Better knowledge about various anaesthesia techniques and their possible complications in various conditions of patients may reduce the number of medico legal litigations. The major reason for this is ignorance towards general anaesthesia is that dentists prefers conscious sedation over general anaesthesia for about 80% of their cases. There is not any well known survey conducted among dental students regarding general anaesthesia. Organising seminars and additional classes would help them acquire more knowledge about general Anaesthesia. This would create more awareness among the dentists and their attitude towards general anaesthesia would also change.

4. CONCLUSION

From the results of the present study, it can be concluded that both General dentist and

specialist have fairly good knowledge about paediatric general anaesthesia. However, dentists prefers conscious sedation over general anaesthesia for about 80% of their cases. Organising seminars and additional classes would help to overcome this ignorance towards General anaesthesia.

CONSENT

As per international standard or university standard, patient's consent has been collected and preserved by the authors.

ETHICAL APPROVAL

The study Approval was obtained from the Institutional Ethical Committee (IEC), Saveetha Dental College.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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