ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACEUTICAL SCIENCES

Published by JK Welfare & Pharmascope Foundation Journal Home Page: https://ijrps.com

Dentist's Perception Regarding Treatment Criteria For Children Under General Anaesthesia: A Multi-Centred Survey

Pragyna Priyadarshini, Deepa Gurunathan*

Department of Paediatric and Preventive Dentistry, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil Nadu, India

Article History:

Received on: 20 Jul 2020
Revised on: 10 Oct 2020
Accepted on: 13 Nov 2020

Keywords:

Dental caries,
Developmental disability,
Early Childhood Caries (ECC),
General Anaesthesia,
Speciality practitioners

ABSTRACT

Treating children under general anaesthesia (GA) has become an essential phase of dentistry. However, it is of paramount importance for the general dentists (GDs) and specialist practitioners (SPs) to have adequate knowledge regarding the necessary treatment criteria and guidelines laid down for treating children under GA. The present study aims to assess the knowledge and practice regarding the treatment criteria used for treating children under GA among GDs and SPs. A convenient sample of 200 participants were enrolled, and the study was conducted among GDs and SPs in three different dental colleges and hospitals in India. A validated questionnaire was used to evaluate the knowledge, attitude and practice about the treatment criteria and guidelines followed for treating children under GA among the participants. A significant correlation was outlined between the different age group of practitioners and an increase in the number of GA cases performed by them in the last ten years (p= 0.011), where more number of participants in the age group of 20-25 years reported an increase in the number of GA cases performed by them in the last ten years. Another significant correlation was observed between the years of experience of practitioners and the number of GA cases performed by them in the last ten years (p= 0.048). It was found that an increased number of participants in their initial years of practice (i.e., 0-5 years) preferred treating children under GA which eventually increased the number of GA cases performed by them in the last ten years. The clinical practitioners should strictly follow the necessary treatment criteria and guidelines laid down for treating children under GA in their routine practice. An increasing trend of performing GA in dentistry have encouraged more of clinical practitioners for treating children under GA.

*Corresponding Author

Name: Deepa Gurunathan
Phone: +91-9994619386
Email: drgdeepa28@gmail.com

ISSN: 0975-7538

DOI: https://doi.org/10.26452/ijrps.v11iSPL4.4443

Production and Hosted by

IJRPS | https://ijrps.com

INTRODUCTION

Dental caries is the most common chronic widely prevalent global oral health disease mostly affecting children both in developing as well as in industrialized nations (Jurgensen and Petersen, 2009; Bücher *et al.*, 2014). Dental caries has shown an estimated prevalence of five times more than that of asthma in children (Edelstein, 2002). Presence of dental caries in children until the age of 6 yrs is commonly known as the "Early Childhood Caries" (ECC). American Academy of Paediatric Dentistry (AAPD) has defined ECC as the presence of one or more

Table 1: Depicting demographic and practice parameters of participants in the survey

Demographic and Practice Parameters	Frequency Analysis (N)	Percentage Analysis (N%)	p-value
Age (Years)			0.634
20-25	75	37.5%	
26-30	78	39.0%	
31-35	19	9.5%	
36-40	18	9.0%	
Above 40 yrs	10	5.0%	
Total	200	100%	
Gender			0.458
Male	74	37%	
Female	126	63%	
Transgender	0	0	
Total	200	100%	
Type of Community Practice			0.332
Rural	6	3.0%	
Suburban	50	25.0%	
Urban	144	72.0%	
Total	200	100%	
Type of Practice			0.389
Individual	34	17.0%	
Group	21	10.5%	
College/Hospital-based	114	57.0%	
Academic	31	15.5%	
Total	200	100%	
Academic Program Practice			0.412
College based	58	29.0%	
Hospital based	13	6.5%	
University based	129	64.5%	
Combined College & Hospital based	0	0	
Combined Hospital & University	0	0	
Total	200	100%	
Years of Experience (Years)			0.534
0-5	142	71.0%	
6-10	43	21.5%	
11-15	11	5.5%	
Above 15 yrs	4	2.0%	
Total	200	100%	
Mean ± Standard Deviation			
Age (Males)	30.95±6.810		
Age (Females	27.44±4.945		
Overall age	28.74±5.938		
Years of Experience (Males)	6.35±5.585		
Years of Experience (Females)	3.90±3.434		
Overall Years of Experience	4.81±4.501		

decayed (non cavitated or cavitated lesions), missing (due to caries) or filled tooth surfaces (dmfs) in any primary tooth, in a child of 71 months of age or younger (Priyadarshini and Gurunathan, 2020) while severe early childhood caries (S-ECC) in children of 3–5 years has been defined as having one or more dmfs in primary maxillary anterior teeth or a mean dmfs score of >=4 (age 3), >=5 (age 4) or >=6 (age 5) in smooth surfaces (proximal areas) of primary teeth (AAPD, 2016). Although ECC primarily being a preventable oral disease, a variable prevalence rate of 19.9%-27.9% in high-income countries to up to 85% in developing nations is still being observed (Thitasomakul *et al.*, 2006). Majority of children affected with ECC belongs to lower socioeconomic strata having poor health status, suffering either from undernutrition or malnutrition, lack of education and awareness, higher health care needs with inaccessibility to dental services and increased expenditure are some of the most common reasons for an unmet health care needs (Szilagyi *et al.*, 2003). However the association between prevalence of dental caries and socioeconomic status is yet to be conclusive as the data suggests that regardless of the economic standards, children with the presence of carious teeth generally experience the same level of severity (Tinanoff and Reisine, 2009).

High financial costs associated with the treatment of ECC imposes a direct financial burden on families which constitutes a significant public health expenditure (Hajishengallis *et al.*, 2017). Besides the immediate distress and discomfort caused by recurring toothache due to ECC, it also results in long term negative oral health impact if not timely treated and adversely affects the quality of living in children (Abanto *et al.*, 2011; Pahel *et al.*, 2007). The significant consequences of untreated dental caries/ ECC in children are the frequent recurrence of pain, decreased appetite, difficulty in mastication, weight loss, difficulty in sleeping, behavioural changes, poor academic performances, increased risk of hospitalization and emergency dental visits, thereby affecting the overall wellbeing and quality of life (Oliveira *et al.*, 2008; Abanto *et al.*, 2011). However, several studies have outlined that adequate intervention and proper management can improve the functional, emotional and social aspects of quality of living in children with ECC (Mashoto *et al.*, 2010; Paula *et al.*, 2012).

Treatment criteria for treating children with dental diseases under GA

Different treatment modalities are available for treating children both with normal as well as special health care needs. However, there are specific criteria explicitly outlined for treating children with special health care needs (CSHCN). Majority of the children are successfully managed and treated along the chairside by the implementation of non-pharmacological behavioural management techniques such as Tell-Show-Do (TSD), modelling, positive reinforcement and nitrous oxide conscious sedation (NOCS). In contrast, uncooperative children are managed with more advanced managerial techniques such as voice control, HOME (Hand over mouth exercise), HOMAR (Hand over mouth and airway), passive immobilization (Physical restraint) and a moderate level of sedation. However, in very young uncooperative children, GA is considered to be the most appropriate treatment option, also taking into consideration several other vital factors. Children undertaking three sittings of conscious sedation (CS) followed by treatment under GA has proven to be an effective cost-saving treatment plan (Lee and Vann, 2000). In a survey conducted among parents post the GA treatment of their children, reported significant improvements in their children's quality of living and only fewer children experienced post-operative symptoms of oral pain, difficulty in eating, interrupted sleep, irritability or behavioural problems during the weaning off phase of GA post-treatment. However, the problems encountered by fewer children post-treatment under GA can be corroborated to their pre-operative symptoms of chronic dental pain, difficulty in eating and sleeping (Malden *et al.*, 2008). The essential considerations to be accounted for treating CSHCN under GA are need of an extensive full mouth rehabilitation (FMR), underlying medical condition, behavioural problems, the feasibility of treatment options by parents, attitude and willingness within the dental team, financial considerations, problems of self-image and other associated co-morbid factors or physical access (Prabhu *et al.*, 2010; de Nova Garcia and Lopez, 2007). However, a child's referral for FMR under GA is generally the same between children with and without special health care needs.

Specific criteria outlined for treating children under GA

The major objective of children being treated under GA is to eliminate their cognitive, sensory and skeletal motor activity to facilitate the delivery of comprehensive, qualitative diagnostic, therapeutic and/or other dental services. The criteria laid down by the AAPD for treating children under GA includes (AAPD, 2005, 2008).

1. Inability to co-operate due to lack of psychological or emotional maturity (due to very young age) and/or mental, physical or medical disabil-

ity (developmental delay).

2. Ineffectiveness of local anaesthesia (LA) due to acute infections, anatomical variations or allergy.
3. Extremely uncooperative, fearful, anxious children or having communication barriers.
4. They require a significantly longer duration of surgical procedures.
5. Where the use of deep sedation or GA may protect the developing psyche and/or reduce medical risks.
6. They require immediate and comprehensive oral/dental care.

However other possible factors must also be taken into consideration before a definitive decision is taken for treating children under GA such as any alternative behavioural management technique and treatment, dental needs of the patient, effect on the quality of dental care, patient's emotional status and most importantly parents' willingness of treating their children under any appropriate treatment modality (AAPD, 2008).

Hence, the present study aims to determine the knowledge of the treatment criteria used by the GDs and SPs while the secondary objective is to spread the necessary awareness among the clinicians regarding the treatment criteria for treating children under GA.

MATERIALS AND METHODS

Study Design and Ethical Considerations

A multi-centred survey was designed for carrying out the present study which was approved by the Institutional Scientific Review Board (SRB/MDS/PEDO/17-18/0056) followed by the Human Ethical Committee. Keeping in view, the ethical approval obtained, the responses recorded from the study participants were not disclosed. The survey was conducted in three different hospital-based dental colleges in India among the GDs and SPs of different fields of dentistry who generally treat children in their routine clinical practice from November 2017 till April 2018. Prior written informed consent was obtained from the participants who were interested in participating in the survey only after explaining to them the purpose and objective of conducting the present survey.

Sample Size and Study Tool

A convenient sampling method was adopted for conducting the survey, and 200 participants were enrolled in the present survey. Only GDs and SPs working in different fields of dentistry and treating children in their routine clinical practice were included. In contrast, practitioners who do not treat children in their daily clinical practice or hospital set-up were excluded from the study. Responses from each participant were obtained in a printed sheet of the questionnaire. A validated questionnaire was used to record the different treatment criteria followed by the GDs and SPs for treating paediatric patients. However, the reliability and validity of the questionnaire was again tested by a pilot study conducted among the South Indian clinicians before the main survey. Twenty clinicians treating children in different hospital set-ups were asked to complete the survey form and give their feedback regarding its appropriateness and framed questions. The process was repeated at an interval of 7 days, and the same clinicians filled a similar survey form to determine the internal validity of the questionnaire to be used for the survey. Feedback and responses obtained were further used to make the necessary changes in the questionnaire and to be suitably used among clinicians in the main study.

Before filling the responses in the survey form, all the participants were explained regarding the AAPD criteria for treating children and also the different treatment protocols available for treating children effectively. Such an explanation was provided for a better understanding of the questionnaire and to answer the participants' queries to help them mark a correct or better assessment/response for every question. All the collected questionnaires were manually checked for the completeness of the data, and any incomplete data in the questionnaire was considered to be irrelevant for the participant to answer.

Statistical Analysis

Data obtained from the survey were analyzed using IBM.SPSS statistics software 23.0 Version. For descriptive data, descriptive statistics (i.e., percentage and frequency analysis) was used. One-way ANOVA was used for determining the mean and standard deviation of continuous variables (i.e., age, years of experience of participants). Pearson's Chi-square analysis was used to find out any level of significance, and a p-value of 0.05 was set as the statistically significant value for the present study.

RESULTS AND DISCUSSION

A total of 200 participants (74 males and 126 females) in an age range of (20 to >40 years) having a clinical experience of (1 to >15 years) participated in the survey.

Table 2: Decision making (Priority of choices) by participants for treating children under GA

Factors for Treating a Child Under GA	Frequency Analysis (N)	Percentage Analysis (N%)
Urgency of Treatment		
1st Priority	88	44%
2nd Priority	31	15.5%
3rd Priority	32	16.0%
4th Priority	48	24.0%
5th Priority	3	1.5%
Behavioural Issues		
1st Priority	53	26.5%
2nd Priority	73	36.5%
3rd Priority	39	19.5%
4th Priority	29	14.5%
5th Priority	4	2.0%
Underlying Medical Conditions		
1st Priority	48	24.0%
2nd Priority	58	29.0%
3rd Priority	76	38.0%
4th Priority	14	7.0%
5th Priority	4	2.0%
No. of Cavities/ Teeth to be Treated		
1st Priority	11	5.5%
2nd Priority	36	18.0%
3rd Priority	48	24.0%
4th Priority	90	45.0%
5th Priority	15	7.5%
Cost of Treatment		
1st Priority	0	0
2nd Priority	2	1.0%
3rd Priority	5	2.5%
4th Priority	19	9.5%
5th Priority	174	87.0%
Extent of Trauma		
1st Priority	135	67.5%
2nd Priority	177	88.5%
3rd Priority	92	46.0%
4th Priority	0	0
5th Priority	0	0
Level of Pain		

Continued on next page

Table 2 continued

Factors for Treating a Child Under GA	Frequency Analysis (N)	Percentage Analysis (N%)
1st Priority	184	92%
2nd Priority	158	79%
3rd Priority	78	39.0%
4th Priority	45	22.5%
5th Priority	12	6.0%
Other Surgeries to be Completed		
1st Priority	78	39.0%
2nd Priority	188	94.0%
3rd Priority	94	47.0%
4th Priority	68	34.0%
5th Priority	32	16.0%
Most Qualified to Determine GA for a Child Parents		
1st Priority	0	0
2nd Priority	28	14.0%
3rd Priority	96	48.0%
4th Priority	146	73.0%
5th Priority	193	96.5%
Most Qualified to Determine GA for a Child Dentist and Team		
1st Priority	168	84.0%
2nd Priority	126	63.0%
3rd Priority	83	41.5%
4th Priority	23	11.5%
5th Priority	9	4.5%
Most Qualified to Determine GA for a Child Physician		
1st Priority	28	14.0%
2nd Priority	67	33.5%
3rd Priority	112	56.0%
4th Priority	189	94.5%
5th Priority	0	0
Most Qualified to Determine GA for a Child Anaesthesiologist		
1st Priority	197	98.5%
2nd Priority	135	67.5%
3rd Priority	64	32.0%
4th Priority	11	5.5%
5th Priority	2	1.0%

Table 3: Awareness of AAPD guidelines by the participantsfor qualifying treatment of children under GA

AAPD Guidelines Qualifying a Child's Treatment Under GA	Frequency Analysis (N)	Percentage Analysis (N%)	p-value
Is there a specific age?			
Yes	87	43.5%	0.017*
No	45	22.5%	
Don't know	55	27.5%	
Not applicable	13	6.5%	
Total	200	100%	
Minimum age range			
0-2 years	12	6.0%	0.012*
3-4 years	36	18.0%	
5-6 years	19	9.5%	
<5 years	12	6.0%	
<7 years	4	2.0%	
Any age <18 years	6	3.0%	
Not applicable	111	55.5%	
Total	200	100%	
Is there a minimum no. of teeth for treatment?			
Yes	80	40.0%	0.001*
No	59	29.5%	
Don't know	49	24.5%	
Not applicable	12	6.0%	
Total	200	100%	
Minimum range of teeth			
<2 teeth	5	2.5%	0.345
3-4 teeth	28	14.0%	
5-6 teeth	20	10.0%	
>6 teeth	28	14.0%	
Not applicable	119	59.5%	
Total	200	100%	
Is there a specific no. of teeth for extraction?			
Yes	66	33.0%	0.010*
No	72	36.0%	
Don't know	50	25.0%	
Not applicable	12	6.0%	
Total	200	100%	
Minimum range of teeth for extraction			
<2 teeth	1	0.5%	0.479
3-4 teeth	24	12.0%	
5-6 teeth	23	11.5%	
>6 teeth	18	9.0%	
Not applicable	134	67.0%	
Total	200	100%	
Is there a specific no. of teeth for restorations?			
Yes	80	40.0%	0.002*
No	60	30.0%	
Don't know	50	25.0%	
Not applicable	10	5.0%	
Total	200	100%	
Minimum range of teeth for restorations			

Continued on next page

Table 3 continued

<2 teeth	1	0.5%	0.107
3-4 teeth	27	13.5%	
5-6 teeth	33	16.5%	
>6 teeth	19	9.5%	
Not applicable	120	60.0%	
Total	200	100%	
Does behavioural problems qualifies a child for GA?			
Yes	96	48.0%	0.419
No	65	32.5%	
Don't know	35	17.5%	
Not applicable	4	2.0%	
Total	200	100%	
Does developmental problem qualifies a child for GA?			
Yes	68	34.0%	0.005*
No	96	48.0%	
Don't know	35	17.5%	
Not applicable	1	5%	
Total	200	100%	
Does emergency in a permanent tooth qualifies a child for GA?			
Yes	20	10.0%	0.329
No	166	83.0%	
Don't know	13	6.5%	
Not applicable	1	0.5%	
Total	200		
Does facial swelling (not severe) qualifies a child for GA?			
Yes	37	18.5%	0.001*
No	130	65.0%	
Don't know	29	14.5%	
Not applicable	4	2.0%	
Total	200	100%	
Should treatment of cavitated teeth be attempted chair side before being under GA?			
Yes	143	71.5%	0.021*
No	37	18.5%	
Don't know	19	9.5%	
Not applicable	1	0.5%	
Total	200	100%	
Should a healthy cooperative 8 years old child with 5 interproximal cavities be treated under GA on parental request?			
Yes	40	20.0%	0.011*
No	150	75.0%	
Don't know	9	4.5%	
Not applicable	1	0.5%	
Total	200	100%	
Is quality of treatment affected under GA?			
Yes	46	23.0%	0.015*
No	123	61.5%	
Don't know	20	10.0%	
Not applicable	11	5.5%	
Total	200	100%	100%

The mean age of the male participants were (30.95 $\pm$ 6.810 years), and female participants were (27.44 $\pm$ 4.945 years) while the overall mean age of the participants were (28.74 $\pm$ 5.938 years). The mean years of clinical experience for male participants were (6.35 $\pm$ 5.585 years) and of female participants were (3.90 $\pm$ 3.434 years) while the overall mean years of experience of the participants were (4.81 $\pm$ 4.501 years). Comparison of the demographic and practice parameters between all the participants using the Pearson's Chi-square analysis pertaining to age (p= 0.634), gender (p= 0.458), community practice (p= 0.332), type of practice (p= 0.389), academic program practice (p= 0.412) and years of experience (p= 0.534) was found to be statistically insignificant (Table 1).

Table 2 represented the decision making for a priority of choices by clinicians for treating children under GA. The highest percentage of priority choice was given to urgency of treatment (88/44%) followed by behavioural issues (53/26.5%), underlying medical conditions (48/24.0%), no. of cavities/teeth to be treated (11/5.5%). In comparison, the cost of treatment was given the last (5^{th}) priority choice (174/87.0%) by participants for decision making of treating children under GA. Referral of a child suffering from trauma for treatment under GA was first decided by the level of pain (184/92%) followed by the extent of trauma (135/67.5%) and other allied surgeries to be completed (78/39.0%). Decision making based on the clinical and medical condition of a child for treatment under GA has been prioritized, to be made first by an experienced paediatric Anaesthesiologist (197/98.5%) followed by the dentist and team (168/84.0%) and then by physician (28/14.0%) while a decision to be made by parents were given subsequent priority according to the responses of the study participants.

Table 3 represented the knowledge and awareness among participants regarding the AAPD guidelines for qualifying treatment of children under GA. Several parameters showed a statistically significant difference i.e; specific age (p= 0.017), minimum age range (p= 0.012), minimum number of teeth for treatment (p= 0.001), specific number of teeth for extraction (p= 0.010), specific number of teeth for restorations (p= 0.002), developmental problem (p= 0.005), facial swelling (p= 0.001), treatment of cavitated teeth (p= 0.021), treating interproximal cavities on parental request (p= 0.011) and quality of treatment (p= 0.015).

Table 4 represented correlation between participants' clinical practice and treating children under GA. A significant correlation was found between the different age groups of participants and an increase in the number of GA cases performed by them in the last ten years (p= 0.011). It was found that more number of participants (12) in the age group of (20-25 years) reported an increase in the number of GA cases performed by them in the last ten years.

Table 5 represented correlation between participants' years of experience and treating children under GA. A significant correlation was observed between the participants' years of experience and the number of GA cases performed in the last ten years (p= 0.048). It was found that an increased number (16) of participants in their initial years of practice (i.e., 0-5 years) preferred more of treating children under GA which eventually increased their number of GA cases performed in the last ten years.

The existing literature has already witnessed an increasingly higher upsurge of treating children under GA by different practitioners. Several reasons could be outlined for referral of an increased number of children for treatment under GA, ever since the significant rise in peak incidence of S-ECC in children of very young age (< than six years) along with their uncooperative behavioural problem has made parents accept more of atraumatic treatment protocols such as GA for a more comfortable and smoother dental experience of their children. However many dentists have noticed a direct link between modern parenting styles and an increased demand of GA as a suitable treatment option for their children so that children embrace positive dental experience during their treatment and do not perceive any negative or traumatic emotional experience of their dental visits. On the other hand, parents have also been found to be less tolerant towards the various non-pharmacological behavioural management techniques especially the adverse ones such as voice control, HOME and passive immobilization (i.e., physical restraint by papoose board) (Lawrence and Mctigue, 1991; Eaton and Mctigue, 2005). Behavioural management by parents in the household has decreased over a while and children have become more strong-willed, defiant and temperamental in their behavioural pattern. However, parents are still willing to accept a suitable behavioural management technique as part of the treatment plan only if they are well informed before its implementation on children (Lawrence and Mctigue, 1991).

In the present study, a significantly less number of clinicians treated children or preferred treating children under GA regardless of the preference given by the parents which is in complete contrast to another study assessing the parental attitude

Table 4: Correlation between participants's clinical practice and treating children under GA

Practice	Males	Females	20-25yrs	26-30yrs	31-35yrs	36-40yrs	>40yrs
Regularly treat children under GA							
Yes	9	13	4	7	5	4	2
No	56	87	53	61	12	12	5
Don't treat at all	0	0	0	0	0	2	3
Not applicable	9	26	18	10	2	0	0
Total	74	126	75	78	19	18	10
p-value	Gender 0.310				Age 0.053		
In past 10 years no. of GA cases							
Increase	7	19	12	4	4	3	3
Decrease	4	2	2	0	2	2	0
Remained the same	2	4	0	5	1	0	0
Not applicable	61	101	61	69	12	13	7
Total	74	126	75	78	19	18	10
p-value	Gender 0.326				Age 0.011*		
Most preferred airway management for GA cases							
Open airway with throat screen	7	14	9	6	3	3	0
Naso-endotracheal tube	45	67	38	49	10	6	9
Laryngeal mask airway	0	9	7	0	1	1	0
Nasopharyngeal airway	22	36	21	23	5	8	1
Total	74	126	75	78	19	18	10
p-value	Gender 0.116				Age 0.102		

Table 5: Correlation between participants's years of experience and treating children under GA

Practice	Males	Females	0-5yrs	6-10yrs	11-15yrs	>15yrs	p-value
Regularly treat children under GA							
Yes	9	13	11	8	2	1	Gender
No	56	87	104	31	7	1	0.310
Don't treat at all	0	0	0	0	0	0	
Not applicable	9	26	27	4	2	2	Years of
Total	74	126	142	43	11	4	experience
In past 10 years no. of GA cases							0.106
Increase	7	19	16	7	1	2	Gender
Decrease	4	2	2	2	2	0	0.326
Remained the same	2	4	4	2	0	0	
Not applicable	61	101	120	32	8	2	Years of
Total	74	126	142	43	11	4	experience
Most preferred airway management for GA cases							0.048*
Open airway with throat screen	7	14	13	8	0	0	Gender 0.116
Naso-endotracheal tube	45	67	77	25	6	4	
Laryngeal mask airway	0	9	8	0	1	0	
Nasopharyngeal airway	22	36	44	10	4	0	Years of
Total	74	126	142	43	11	4	experience 0.269

towards behavioural management techniques and found parents to rank GA as the third most acceptable pharmacological mode of behavioural management technique besides TSD and NOCS (Eaton and Mctigue, 2005).

Several factors can be accountable for not treating children under GA by an increased number of participants in the present survey, which probably could be due to the additional specialized expertise needed to be acquired for treating children under GA, which might be lacking in many GDs as well as in non-paediatric specialists, highly incurred expenditure of the treatment which make parents unfavourable towards GA and also the outweighing risk-benefit ratio in subjecting a child under GA. However, an increasing trend has been recently observed among parents for treating their children under GA, which also coincides with the practitioner's choice and is well reflected in their routine practice. The notable reasons of an increased prevalence in treating children under GA are mainly due to the advanced state-of-the-art technology and facilities available in several hospitals/multispeciality clinics/surgery centres, clinicians' reluctance to the use of CS and the risks involved, increased number of sittings for FMR under CS, unpredictable outcomes of CS and an increase in the number of CSHCN, who requires treatment to be undertaken exclusively under GA. In the present study, participants who preferred treating children under GA undertook mostly in a university-based hospital set up having advanced state-of-the-art facilities and an experienced dental team along with a paediatric anaesthesiologist. Majority of participants in the survey had their response in agreement to the decision of subjecting a child's treatment under GA to be made jointly first by a well-trained paediatric anaesthesiologist (197/98.5%) and then by the dentist/pedodontist and its team (168/84.0%) after reviewing the medical and health status of the child, followed by a collateral decision taken by the physician (28/14.0%) and parents. Most of the participants considered urgency of treatment (88/44.0%) with behavioural issues (53/26.5%) in young children to be the most critical factor responsible for a wise decision making of subjecting children for treatment under GA followed by other criteria such as the presence of any underlying medical condition (48/24.0%), the number of teeth to be treated (11/5.5%) and associated treatment expenditure. In contrast, the level of pain perception was considered to be pivotal followed by the extent of trauma and other associated surgeries to be completed under GA for making a conscientious decision of subjecting a child with traumatic injuries for treatment under GA.

Regarding the knowledge and awareness of the AAPD guidelines by the participants for qualifying treatment of children under GA, only (87/43.5%) of participants outlined that there is a specific age range for children to be treated under GA and (36/18.0%) of participants mentioned children with a minimum age range of (3-4 years) to be the most suitable individuals for treatment under GA. (80/40.0%) of participants reported that a minimum number of teeth are required and should be at least greater than six teeth (28/14.0%) to qualify for treatment under GA. (66/33.0%) of participants also outlined that a specific number of teeth are required for extraction and need to be at least 3-4 teeth (24/12.0%) to be considered for treatment under GA while (80/40.0%) of participants stated that a specific number of teeth are required for performing restoration and should be a minimum of 5-6 teeth (33/16.5%) to qualify for treatment under GA. Presence of behavioural (96/48.0%) and developmental problems (68/34.0%) in children was considered to be the important qualifying parameters by a majority of participants for subjecting children to be treated under GA. However in the present survey almost (96/48.0%) of participants did not qualify developmental problem to be the first or major factor responsible for treating children under GA which could be probably due to the presence of advanced systemic ailment in children that would contraindicate their treatment under GA. (166/83.0%) of participants did not accept the treatment of a single permanent tooth in a child under GA and rather preferred treatment to be done by the chair-side.

Similarly, children with facial swelling of not so higher severity were disqualified by a majority of participants (130/65.0%) for treatment under GA. Majority of participants (143/71.5%) reported that treatment of cavitated teeth in children should be attempted first by the chairside, before being treated under GA.

Similarly, a majority of participants (150/75.0%) also did not accept the treatment of a healthy cooperative eight years old child with five interproximal cavities under GA on parental request. In the present study, a majority of participants (123/61.5%) reported that no notable difference is observed in the quality of treatment provided under GA and neither do the process of GA affects the standard of treatment. Significantly few participants (12) in the age group of 20-25years reported an increase in the number of GA cases performed over the last ten years, which probably could be due to

the increased acceptance of this treatment for young children among the parents and practitioners. A similar correlation was also observed between the participants' years of experience and an increase in the number of GA cases performed over the last ten years, which showed that more of young practitioners with a minimum of 5 years clinical experience (16) mostly preferred treating young children under GA. There has been a voiced concern over the past few years on the inappropriate use of GA for treating children and not implementing adequate behavioural management skills for managing children for effective delivery of treatment by the chairside. However, the important goals of treating young children under GA is not just rendering comprehensive quality treatment but also instilling in them a positive dental attitude. The present study found increased acceptability among the parents and practitioners for treating children under GA despite the several factors negating the use of GA in children. The disparity in the recruitment of an equal number of GDs and SPs for reporting the questionnaire to obtain a balanced opinion can be considered to be a significant limitation of the present survey.

CONCLUSIONS

Use of GA in both medical and dental practices has its own positive contribution. However, one should be highly cautious enough of its judicious use in children. Many imperative criteria should be met before treating children under GA and should be strictly followed by clinicians to ensure safety and efficacy of the treatment, thereby promoting increased acceptability of GA for children among parents and practitioners.

Acknowledgement

The authors thank all the practitioners for participating in the survey.

Conflicts of Interests

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

Funding Support

The authors declare that they have no funding support for this study.

REFERENCES

AAPD 2005. Guideline on the elective use of minimal, moderate, and deep sedation and general anesthesia for pediatric dental patients. *Pediatric dentistry*, 27(7):110–118.

AAPD 2008. Guidelines on behavior management for the pediatric patient. *Pediatr Dent*, 31(6):132–140.

AAPD 2016. *Policy on Early Childhood Caries (ECC): Classifications*. Consequences and Preventive Strategies.

Abanto, J., Carvalho, T. S., Mendes, F. M., Wanderley, M. T., Bönecker, M., Raggio, D. P. 2011. Impact of oral diseases and disorders on oral health-related quality of life of preschool children. *Community Dentistry and Oral Epidemiology*, 39:105–114.

Bücher, K., Tautz, A., Hickel, R., Kühnisch, J. 2014. Longevity of composite restorations in patients with early childhood caries (ECC). *Clinical Oral Investigations*, 18(3):775–782.

de Nova Garcia, M. J., Lopez, N. E. 2007. Criteria for selecting children with special needs for dental treatment under general anesthesia. *Med Oral Patol Oral Cir Bucal*, 12(1):496–503.

Eaton, J., Mctigue, D. 2005. Attitudes of contemporary parents toward behavior management techniques used in pediatric dentistry. *Pediatr Dent*, 27(2):107–113.

Edelstein, B. L. 2002. Disparities in Oral Health and Access to Care: Findings of National Surveys. *Ambulatory Pediatrics*, 2(2):141–147.

Hajishengallis, E., Parsaei, Y., Klein, M. I., Koo, H. 2017. Advances in the microbial etiology and pathogenesis of early childhood caries. *Molecular Oral Microbiology*, 32(1):24–34.

Jurgensen, N., Petersen, P. E. 2009. Oral health and the impact of socio-behavioral factors in a cross sectional survey of 12-year old school children in Laos. *BMC Oral Health*, 9(1):29–39.

Lawrence, S., Mctigue, D. 1991. Parental attitudes toward behavior management techniques used in pediatric dentistry. *Ped Dent*, 13(3):151–155.

Lee, J. Y., Vann, W. F. 2000. A cost analysis of treating pediatric dental patients using general anesthesia versus conscious sedation. *Pediatr Dent*, 22(1):27–32.

Malden, P. E., Thomson, W. M., Jokovic, A., Locker, D. 2008. Changes in parent-assessed oral health-related quality of life among young children following dental treatment under general anaesthetic. *Community Dentistry and Oral Epidemiology*, 36(2):108–117.

Mashoto, K. O., Åstrøm, A. N., Skeie, M. S., Masalu, J. R. 2010. Changes in the quality of life of Tanzanian school children after treatment interventions using the Child-OIDP. *European Journal of Oral Sciences*, 118(6):626–634.

Oliveira, L. B., Sheiham, A., Bönecker, M. 2008. Exploring the association of dental caries with social factors and nutritional status in Brazilian preschool children. *European Journal of Oral Sciences*, 116(1):37–43.

Pahel, B. T., Rozier, R. G., Slade, G. D. 2007. Parental perceptions of children's oral health: The Early Childhood Oral Health Impact Scale (ECOHIS). *Health and Quality of Life Outcomes*, 5(1):1–6.

Paula, J. S., Tôrres, L. H. N., Ambrosano, G. M. B., Mialhe, F. L. 2012. Association between oral health-related quality of life and atraumatic restorative treatment in school children: An exploratory study. *Indian Journal of Dental Research*, 23(6):738–741.

Prabhu, N. T., Nunn, J. H., Evans, D. J., Girdler, N. M. 2010. Access to dental care-parents' and caregivers' views on dental treatment services for people with disabilities. *Special Care in Dentistry*, 30(2):35–45.

Priyadarshini, P., Gurunathan, D. 2020. Role of diet in ECC affected South Indian children assessed by the HEI-2005: A pilot study. *Journal of Family Medicine and Primary Care*, 9(2):985–991.

Szilagyi, P. G., Shenkman, E., Brach, C. 2003. Children with special health care needs enrolled in the state Children's Health Insurance Program (SCHIP): Patient Characteristics and health care needs. *Pediatrics*, 112(1):508–520.

Thitasomakul, S., Thearmontree, A., Piwat, S., Chankanka, O., Pithpornchaiyakul, W., Teanpaisan, R., Madyusoh, S. 2006. A longitudinal study of early childhood caries in 9- to 18-month-old Thai infants. *Community Dentistry and Oral Epidemiology*, 34(6):429–436.

Tinanoff, N., Reisine, S. 2009. Update on Early Childhood Caries Since the Surgeon General's Report. *Academic Pediatrics*, 9(6):396–403.