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REFERRAL PATTERN OF CHILDREN FOR DENTAL TREATMENT UNDER GENERAL ANESTHESIA: A RETROSPECTIVE STUDY

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ABSTRACT

Aim: To evaluate the referral pattern of children for general anesthesia.

Background: Pain control is part of behavior management. If pain is not controlled, it will affect the standard of work a dentist can achieve. Dental treatment facilitated by general anaesthesia allows dentists to benefit from improved treatment conditions and provide a higher quality of care. Behavior problems and inability to cooperate were the main reasons for treatment under general anaesthesia and also patients that are too young to cooperate that have early childhood caries

Materials and methods: A total of 90 subjects who underwent treatment under general anesthesia were chosen from the study in a total of 49,832 subjects screened for the data. All the case records and treatment records were obtained from the patient management software known as DIAS. The statistical analysis was performed using IBM SPSS (Version - 24).

Results: The results showed that the most common reason for referral was patients' fear. Chi square tests were performed between age and gender to reason for referral for treatment under general anesthesia. Statistical significance was set at $p < 0.05$. A non-significant correlation was observed in the results.

Conclusion: Within the limitations of the study, the most common reason for referral to general anaesthesia is patients' fear followed by long term procedures such as full mouth rehabilitation. The most commonly affected gender is female and patients aged below 5 years.

Keywords: General anesthesia; referral reason; retrospective study

INTRODUCTION

In treating children, the delivery of pain free dentistry is of prime importance for all dentists **[1]**. Pain control is part of behavior management. If pain is not controlled, it will affect the standard of work a dentist can achieve **[1, 2]**. Dental treatment facilitated by general anaesthesia allows dentists to benefit from improved treatment conditions and provide a higher quality of care **[3]**. In additional, it also permit dentists to treat patients who otherwise could not be treated in a private practice setting, including highly anxious and/or phobic adults, pre-cooperative and uncooperative children, patients with developmental disorders, patients with muscle-control problems and patients with medical conditions that may be exacerbated by anxiety **[4]**. Behavior problems and inability to cooperate were the main reasons for treatment under general anaesthesia and also patients that are too young to cooperate that have early childhood caries **[4, 5]**. Patients with medically handicapping conditions may benefit from general anaesthesia **[6]**. including those with intellectual disability such as autistic disorder , cerebral palsy and mentally retarded patients . Studies have shown that the quality of restoration carried out under general anaesthesia were far more better than under local analgesia since there were better moisture control and planned restoration placements **[7]**.

Previous published data have suggested that medically compromised children (ASA II, III and IV) receiving dental treatment under general anesthesia have had more extractions and less restorations than the ASA I and II children undergoing similar procedures. The ASA II, III and IV children were classified into nine main groups according to their medical diagnosis: cardiac, neurology, craniofacial, dermatology, immunology and viral infections, bleeding, renal/hepatic, respiratory and other (primary multiple system disorders, metabolic and endocrine disorders) **[6]**. Nevertheless, some researchers found that unsurprisingly (since treatment planning for comprehensive care under general anesthesia has to be radical if recourse to further general anaesthetics is to be avoided), there was an overall

predominance of extractions over restorations in both groups. Many patients elect to undergo general anaesthesia to reduce stress and increase comfort, and some patients needed general anaesthesia because of lack of cooperation as a result of age, maturity or physical or learning disability **[8]**. There are also children who had undergone repeated general anaesthesia and the common characteristics of these children is that they have 100% caries involvement of maxillary central incisors at time of initial treatment, majority of central incisors were non restorable, still using nursing bottle at the time of general anaesthesia, child responsible for brushing own teeth, poor cooperation in the medical and dental setting, difficult personality as described by parent, dysfunctional social situation and lack of follow-up dental care **[9, 10]**.

There are several categories of dental problems in children that cannot be treated optimally in the office setting and are best managed in the hospital. There are several barriers to the access of dental care under GA for children **[11]**. The primary barrier for care is often cost. It has been pointed out that very often, cases are selected on the basis of treatment to be provided rather than the actual need for GA. A pattern of cases under GA helps to understand not only the rationale for treatment but also the type of treatment rendered **[11, 12]**. Despite some degree of risk to the patient, the ability to treat children in the hospital environment to provide comprehensive dental care using general anesthesia (GA) is a valuable option for the pediatric dentist **[11–13]**. The dentist should be mindful when formulating the treatment plan to consider the durability of the restorative materials to avoid failure of the restorations. Ineffectiveness, breakdown of materials and failure to arrest further demineralization of tooth enamel can often necessitate a second operating room or procedure **[14]**.

Using general anesthesia, necessary precautions were able to be taken for patients with complicated medical conditions, thus avoiding extra stress for the patients and their family of admission to an unfamiliar environment overnight **[1]**. This study is carried out to find out the most common reason for referral of pediatric patients for dental treatment under general anesthesia in south India.

MATERIALS AND METHODS

Study Design - Retrospective, descriptive study.

Study Setting - The study was a hospital based study conducted in Saveetha Dental College, Chennai. Data was retrieved from

Dental Information Archiving Software (DIAS) and was examined by two examiners.

Ethical approval - Prior to starting study, ethical approval number (SDC/SIHEC/2020/DIASDATA/0619-0320) was obtained from Scientific Review Board, Saveetha Dental College, SIMATS University.

Study Population - The study population consists of patients reporting to the Department of Pedodontics at Saveetha Dental College.

Study Period - The study was conducted between July 2019 - March 2020.

Inclusion Criteria - 1) Patients 6 months and above 2) Patients indicated for general anesthesia 3) Patients willing to take part in the procedure.

Exclusion Criteria - 1) Patients aged above 18 years. 2) Patients not willing to take part in the procedure.

Study Instrument - A total of 90 subjects who underwent treatment under general anesthesia were chosen from the data available.

Statistical Analysis - Data collection was done using microsoft excel and statistical tests were done using SPSS Version 23.0. Descriptive statistics were used. Referral pattern and Gender were compared using the Chi Square test. Age, gender and referral pattern were also compared using Chi square test. Statistical significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

The age groups undergoing treatment under general anesthesia **(Figure 1)** revealed that 81.11% were below 5 years, 16.67% were between 5-10 years, 2.22% were above 10 years of age. Majority of the patients were in the age group below 5 years. The gender groups undergoing treatment under general anesthesia **(Figure 2)** revealed that 46.67% were Male, and 53.33% were females. Majority of the patients who underwent treatment under general anesthesia were females .Reasons for referral to general anesthesia **(Figure 3)** revealed that 46.67% referrals were because of patients' fear. 36.67% referrals were because of multiple long standing procedures.16.67% referrals were on parents request.

The association between the age group and the reason for referral to general anesthesia. 41.11% were because of patients' fear, 27.78% referrals were because of multiple long standing procedures and 12.22% referrals were on parents request. In the age group between 5-10 years, 5.56% were because of patients' fear, 7.78% referrals were because of multiple long standing procedures and 3.33% referrals were on

parents request. In the age group above 10 years, 1.11% were because of patients' fear and 1.11% referrals were on parents request. The tests for association were done and found to be statistically not significant; P value: .416 (> 0.05).

However, distoangular impactions were predominantly observed among all age groups.

The association between the gender groups and the reason for referral to general anesthesia. In males, 20% were because of patients' fear, 18.89% referrals were because of multiple long standing procedures and 7.78% referrals were on parents request. In females, 26.67% were because of patients' fear, 17.78% referrals were because of multiple long standing procedures and 8.89% referrals were on parents request. The tests for association were done and found to be statistically not significant. ; P value: .757 (> 0.05). However, reports show that females subjects who were referred due to patients' fear were more than males. Male subjects were more commonly reported for long standing procedures.

In a study conducted by **[1]** , many patients were treated under general anesthesia because of their behavior problem. Nevertheless, other studies showed that some patients were treated under general anesthesia because of their dental fear or because they were too young to cooperate but otherwise healthy and the main background of variables that may cause dental fear include social factors, personality factors and previous negative experience **[1, 14]**. The majority of the patients were referred by their general dental practitioner for GA extractions and about one-quarter were self-referred, which may suggest that their parents consider dental GA to be an acceptable treatment option for their children. Caries and its sequelae was the main diagnosis in this study, which agrees with the findings of a previous study **[15]**.

It is the responsibility of the parents to look after brushing techniques hence to maintain the proper oral hygiene. Hence to prevent further lesions in the oral cavity. Lesions may also arise due to traumatic injuries. Ranula is a cystic lesion that arises in the floor of the mouth. Formation of the cyst is attributed to the traumatic rupture of the excretory salivary duct **[16-22]**. There are recent advances such as Kedo-S rotary files that have been used for instrumentation during obturation **[23–25]**.

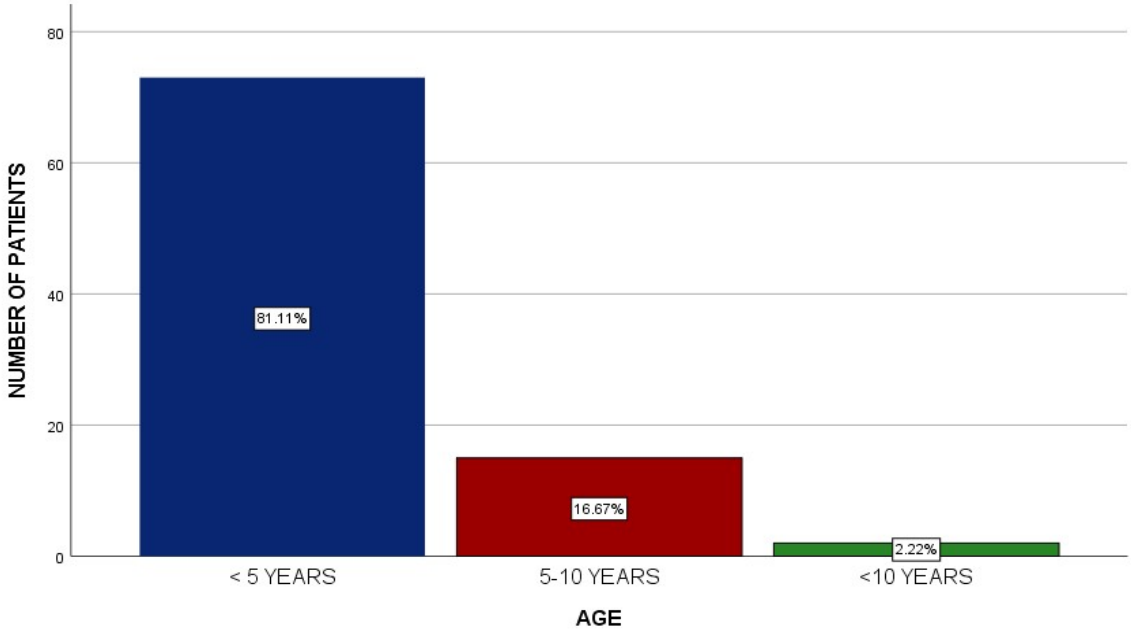

Figure 1: Bar graph shows the frequency distribution of age groups undergoing treatment under general anesthesia. The X axis represents the age groups and Y axis represents the number of patients who underwent treatment under general anesthesia. 81.11% were below 5 years (blue), 16.67% were between 5-10 years (red), 2.22% were above 10 years of age (green). Majority of the patients were in the age group below 5 years (blue).

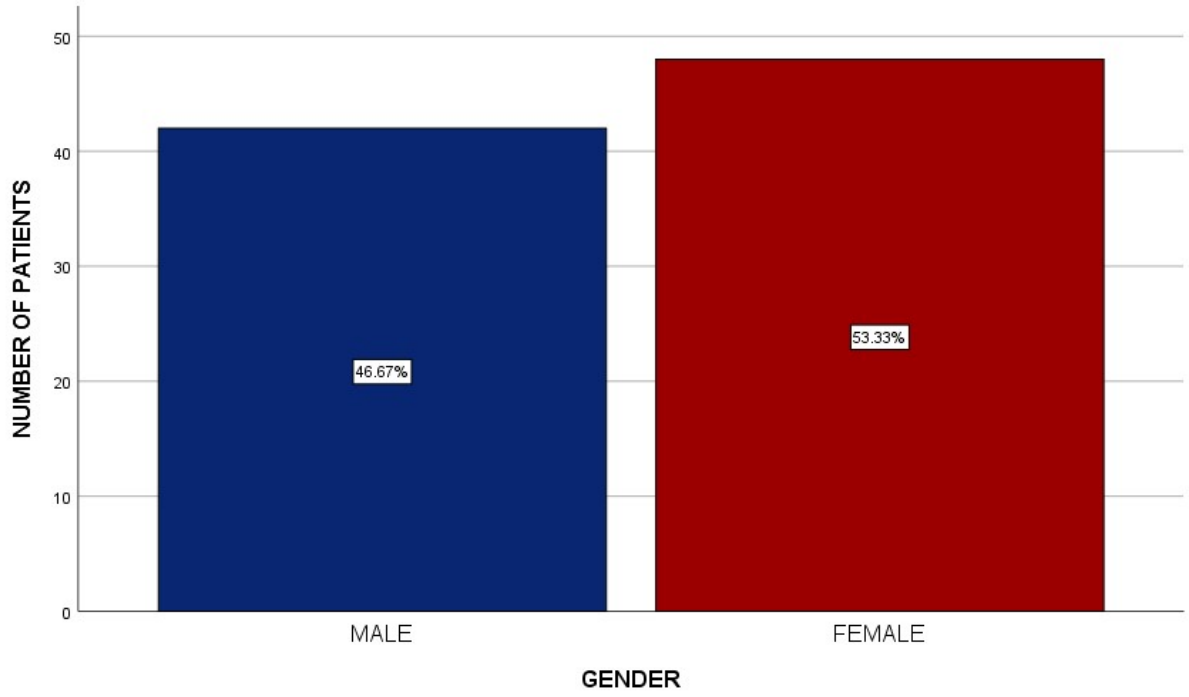

Figure 2: Bar graph shows the frequency distribution of gender groups undergoing treatment under general anesthesia.. X axis represents the gender and Y axis represents the number of patients who underwent treatment under general anesthesia. 46.67% were Male (blue), and 53.33% were females (red). Majority of the patients who underwent treatment under general anesthesia were females.

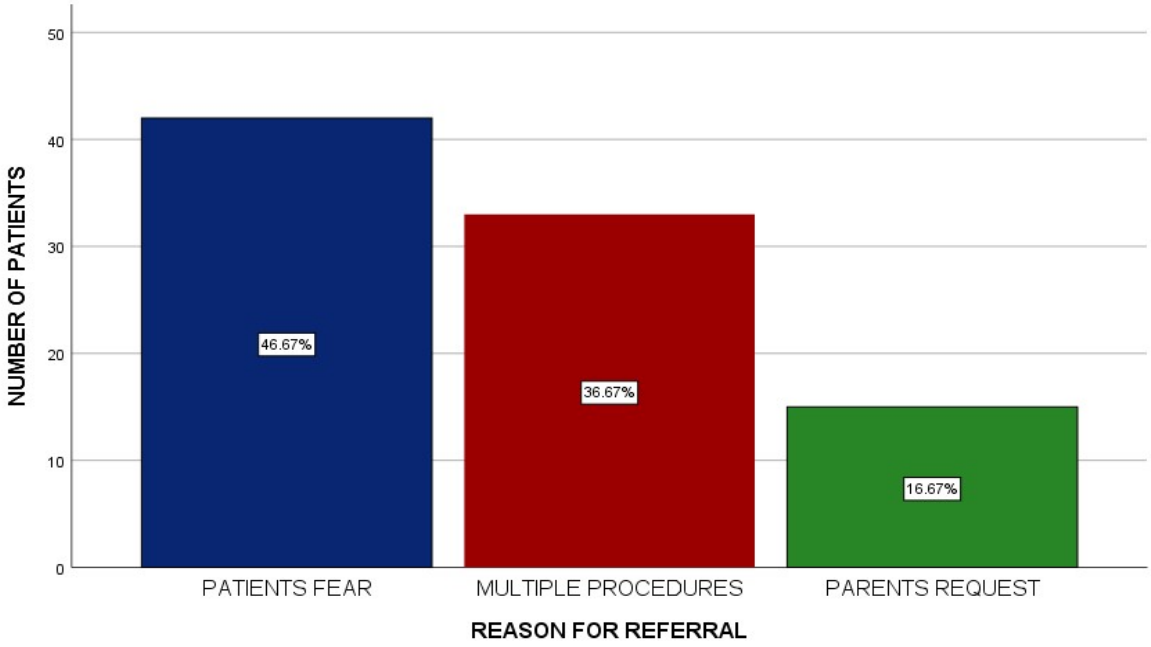

Figure 3: Bar graph shows the frequency distribution for reasons for referral to general anesthesia. X axis represents the reason for referral and Y axis represents the number of patients. Reasons for referral include patients' fear(blue), multiple long standing procedures(red) and due to parents' request(green). 46.67% referrals were because of patients' fear. 36.67% referrals were because of multiple long standing procedures.16.67% referrals were on parents request.

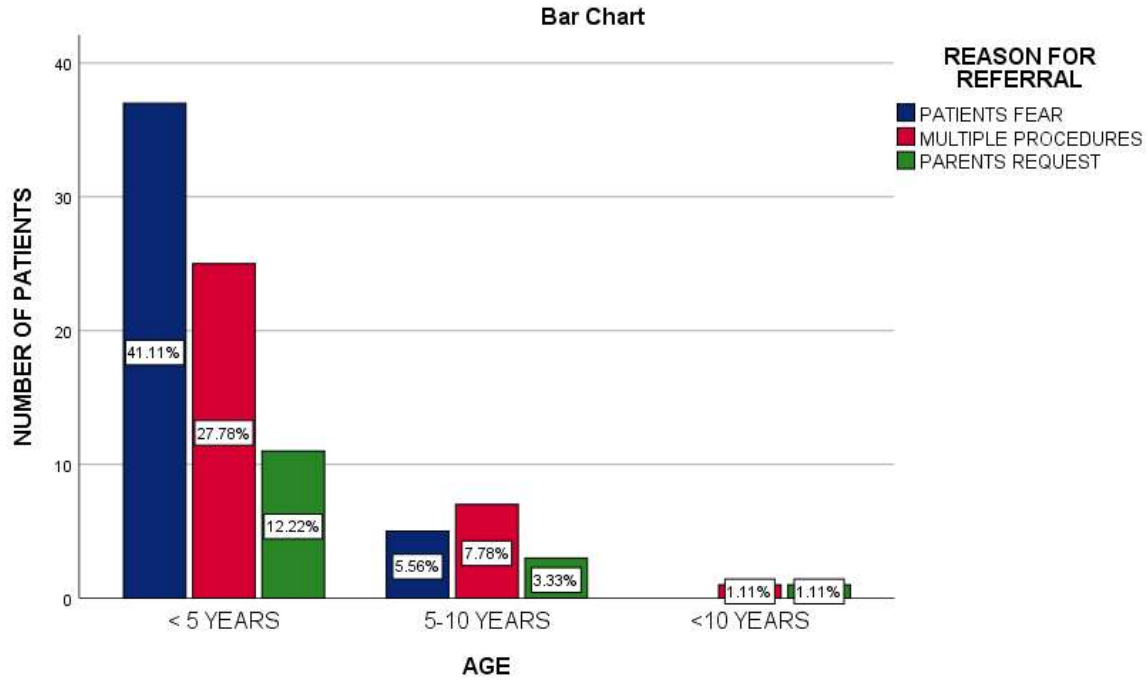

Figure 4: Bar graph shows the association between the age group and the reason for referral to general anesthesia. X axis represents the age group, the Y axis represents the number of patients who underwent treatment under general anesthesia. The tests for association were done and found to be statistically not significant. (Chi square: 3.92, df Value: 4 ,P value: .416 (> 0.05). However, subjects below 5 years were more commonly referred for treatment under general anesthesia.

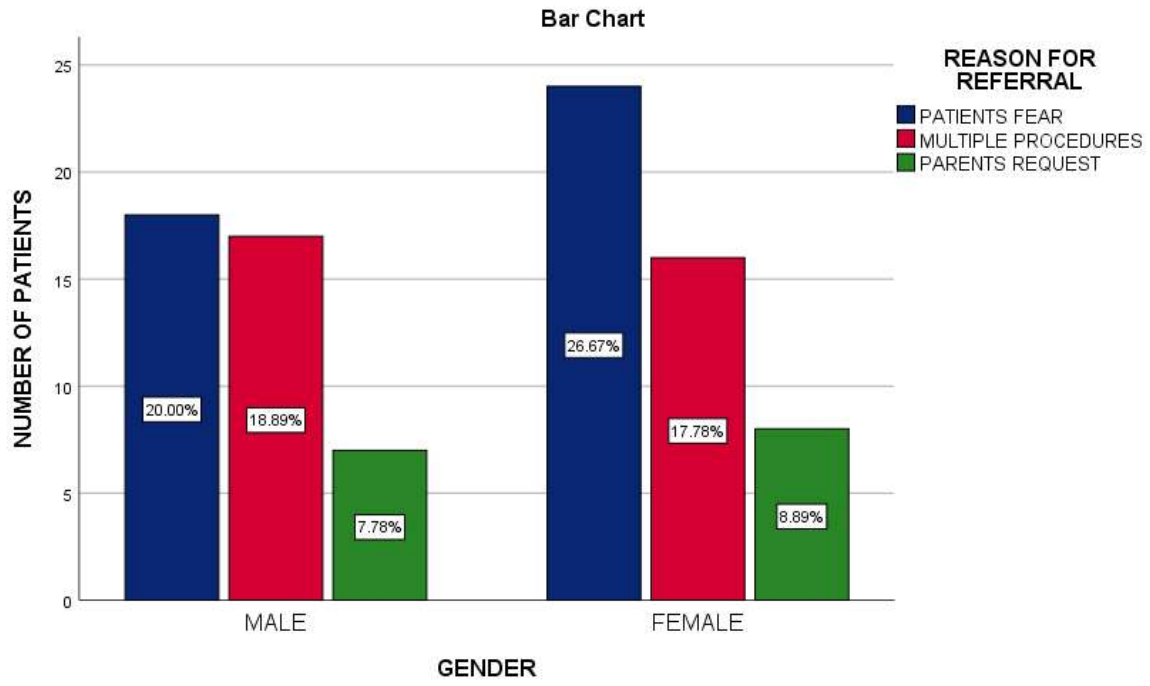

Figure 5: Bar graph shows the association between the gender groups and the reason for referral to general anesthesia. X axis represents the gender, the Y axis represents the number of patients. (Chi square: .557, df Value: 2 ,P value: .757 (> 0.05). Statistically not significant, however, reports show that females subjects were referred more than males due to fear. Male subjects were referred for long standing procedures.

CONCLUSION

Within the limitations of the study, the most common reason for referral to general anaesthesia is patients' fear followed by long term procedures such as full mouth rehabilitation. The most commonly affected gender is female and patients aged below 5 years.

AUTHOR CONTRIBUTION

Karthik EVG contributed to the concept design of the study, sequence alignment, statistical analysis and drafted the manuscript. Dr. Mahesh R, participated in the design of the study, statistical framework, and manuscript drafting. Dr. Uma Maheswari contributed in coordination of the study, manuscript drafting and proofreading. All authors read and approved the final manuscript.

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CONFLICT OF INTEREST

No conflict of Interest.

REFERENCES

[1] Karim ZA, Musa N, Noor SNFM. Utilization of dental general anaesthesia for children. Malays J Med Sci. 2008 Jul;15(3):31–9.

[2] Appukuttan DP. Strategies to manage patients with dental anxiety and dental phobia: literature review. Clin Cosmet Investig Dent. 2016 Mar 10;8:35–50.

[3] Razeghi S, Amiri P, Mohebbi SZ, Kharazifard MJ. Impact of Health Promotion Interventions on Early Childhood Caries Prevention in Children Aged 2–5 Years Receiving Dental Treatment Under General Anesthesia [Internet]. Vol. 8, Frontiers in Public Health. 2020. Available from: http://dx.doi.org/10.3389/fpubh.2020.00006

[4] Acs G, Pretzer S, Foley M, Ng MW. Perceived outcomes and parental satisfaction following dental rehabilitation under general anesthesia. Pediatr Dent. 2001 Sep;23(5):419–23.

[5] Funakoshi Y, Shinohara M, Inuishi T, Moritani Y, Hieda T. [Dental treatment under general anesthesia of a patient with pulmonary atresia with intact ventricular septum]. Shoni Shikagaku Zasshi. 1991;29(1):139–43.

[6] Eidelman E, Faibis S, Peretz B. A comparison of restorations for children with early childhood caries treated under general anesthesia or conscious sedation. Pediatr Dent. 2000 Jan;22(1):33–7.

[7] Tate AR, Ng MW, Needleman HL, Acs G. Failure rates of restorative procedures following dental rehabilitation under general anesthesia. Pediatr Dent. 2002 Jan;24(1):69–71.

[8] Chaudhary K, Bagharwal P, Wadhawan S. Anesthesia for intellectually disabled. J Anaesthesiol Clin Pharmacol. 2017 Oct;33(4):432–40.

[9] Sheller B, Williams BJ, Hays K, Mancl L. Reasons for repeat dental treatment under general anesthesia for the healthy child. Pediatr Dent. 2003 Nov;25(6):546–52.

[10] Kim Y-H, Kim S-W, Beak K-W. Dental Treatment in a Autistic Child under General Anesthesia [Internet]. Vol. 5, Journal of the Korean Dental Society of Anesthesiology. 2005. p. 15. Available from: http://dx.doi.org/10.17245/jkdsa.2005.5.1.15

[11] Nasr R, Moussa SA. Evaluation of Comprehensive Dental Treatment under General Anesthesia in Healthy and Disabled Children. (Retrospective Study) [Internet]. Vol. 0, Egyptian Dental Journal. 2020. p. 0–0. Available from: http://dx.doi.org/10.21608/edj.2020.26830.1095

[12] Andreeva R. Indications for dental treatment under general anesthesia [Internet]. Vol. 50, Scripta Scientifica Medica. 2018. p. 26. Available from: http://dx.doi.org/10.14748/ssm.v50i3.5327

[13] Andreeva R. Study of the indications of dental treatment of children under general anesthesia [Internet]. Vol. 4, Scripta Scientifica Medicinae Dentalis. 2018. p. 32. Available from: http://dx.doi.org/10.14748/ssmd.v1i1.5200

[14] Camilleri A, Roberts G, Ashley P, Scheer B. Analysis of paediatric dental care provided under general anaesthesia and levels of dental disease in two hospitals. Br Dent J. 2004 Feb 28;196(4):219–23; discussion 213.

[15] Albadri SS, Jarad FD, Lee GT, Mackie IC. The frequency of repeat general anaesthesia for teeth extractions in children. Int J Paediatr Dent. 2006 Jan;16(1):45–8.

[16] Packiri S. Management of Paediatric Oral Ranula: A Systematic Review [Internet]. JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH. 2017. Available from: http://dx.doi.org/10.7860/jcdr/2017/28498.10622

[17] Gurunathan D, Shanmugaavel A. Dental neglect among children in Chennai [Internet]. Vol. 34, Journal of Indian Society of Pedodontics and Preventive Dentistry. 2016. p. 364. Available from: http://dx.doi.org/10.4103/0970-4388.191420

[18] Govindaraju L. Effectiveness of Chewable Tooth Brush in Children-A Prospective Clinical Study [Internet]. JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH. 2017. Available from: http://dx.doi.org/10.7860/jcdr/2017/24238.9528

[19] Subramanyam D, Gurunathan D, Gaayathri R, Vishnu Priya V. Comparative evaluation of salivary malondialdehyde levels as a marker of lipid peroxidation in early childhood caries. Eur J Dent. 2018 Jan;12(1):67–70.

[20] Somasundaram S. Fluoride Content of Bottled Drinking Water in Chennai, Tamilnadu [Internet]. JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH. 2015. Available from: http://dx.doi.org/10.7860/jcdr/2015/14691.6594

[21] Fluoride, Fluoridated Toothpaste Efficacy And Its Safety In Children -

Review [Internet]. Vol. 10, International Journal of Pharmaceutical Research. 2018. Available from: http://dx.doi.org/10.31838/ijpr/2018.10.04.017

[22] Christabel SL, Linda Christabel S. Prevalence of Type of Frenal Attachment and Morphology of Frenum in Children, Chennai, Tamil Nadu [Internet]. Vol. 6, World Journal of Dentistry. 2015. p. 203–7. Available from: http://dx.doi.org/10.5005/jp-journals-10015-1343

[23] Govindaraju L, Jeevanandan G, Emg S, Vishawanathaiah S. Assessment of Quality of Obturation, Instrumentation Time and Intensity of Pain with Pediatric Rotary File (Kedo-S) in Primary Anterior Teeth: A Randomized Controlled Clinical Trial. Int J Clin Pediatr Dent. 2018 Nov;11(6):462–7.

[24] Govindaraju L, Jeevanandan G, Subramanian EMG. Knowledge and practice of rotary instrumentation in primary teeth among indian dentists: A questionnaire survey [Internet]. Vol. 9, Journal of International Oral Health. 2017. p. 45. Available from: http://dx.doi.org/10.4103/jioh.jioh_4_17

[25] Jeevanandan G, Govindaraju L. Clinical comparison of Kedo-S paediatric rotary files vs manual instrumentation for root canal preparation in primary molars: a double blinded randomised clinical trial [Internet]. Vol. 19, European Archives of Paediatric Dentistry. 2018. p. 273–8. Available from: http://dx.doi.org/10.1007/s40368-018-0356-6