PREVALENCE OF CHILDREN TREATED UNDER GA ACCORDING TO ASA CLASSIFICATION

Prevalence of children treated under GA according to ASA classification.

Theiva chandran R,
Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences,
Saveetha University, Chennai-77, Tamil nadu, India.
Email: 151801085.sdc@saveetha.com.

LavanyaGovindaraju*
Senior Lecturer, Department of pedodontics , Saveetha Dental College and Hospitals,
Saveetha Institute of Medical and Technical Sciences, Saveetha University,
Chennai - 77, Tamil nadu, India.
Email-glaavuu@gmail.com

Ganesh Jeevanandan
Senior Lecturer, Department of pedodontics , Saveetha Dental College and Hospitals,
Saveetha Institute of Medical and Technical Sciences, Saveetha University,
Chennai - 77, Tamil nadu, India.
Email-glaavuu@gmail.com

***Corresponding Author:** LavanyaGovindaraju,
Senior Lecturer, Department of pedodontics ,
Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences,
SaveethaUniversity, Chennai - 77, Tamil nadu, India.
Email-glaavuu@gmail.com**.**

ABSTRACT:
Introduction: In treating children, providing a pain free dentistry is important for all dentists. pain management is essential for conduct the executives. In the event that aggravation isn't controlled, it will influence the norm of work a dental specialist can achieve. This job is satisfied by giving General anaesthesia preceding dental treatment.
Materials and method: Aretrospective study was conducted among 124 paediatric patients of age 17 or below in the clinic of saveetha dental college.The data was collected from DIAS.The data is classified based on ASA classification and statistically analysed using SPSS software.
Result: It is clear that patients under class I And class II or more commonly treated under GA while patients under class III are rarely treated and patients under class IV and class V or not treated under GA.
Conclusion: It can be concluded that use of GA in pediatric dentistry is highly prevalent. This study emphasizes the importance to notice proper rules in the pre-sedation assessment using ASA classification .

Keywords: ASA Classification Dental treatment, General anesthesia ,Pediatric patients,,

INTRODUCTION:

In treating children, providing a pain free dentistry is important for all dentists. pain management is essential for conduct the executives. In the event that aggravation isn't controlled, it will influence the norm of work a dental specialist can achieve. This job is satisfied by giving General anaesthesia preceding dental treatment. .General anesthesia provides ways of treating pediatric patients with absence of pain with or without reversible muscle loss of motion. Sedation empowers a patient to endure surgeries that would somehow cause insufferable pain, potentiate outrageous physiologic intensifications, and result in unsavory recollections(1)

DOI: 10.9756/INT-JECSE/V14I3.183

The American Academy of Pediatrics (AAP) characterizes the objectives of sedation in the pediatric patient for demonstrative and helpful techniques as follows: to watch the patient's security and government assistance; to limit actual inconvenience and agony; to control tension, limit mental injury and to restore the patient to a state wherein safe release from clinical management, as dictated by recognized protocol .Sedation has been the technique for decision for imaging for a long time, and is regularly given by radiological staff inside the imaging division(2).

The AAPD characterizes ECC(early youth caries)as the presence of at least one non cavitated or cavitated lesions ,missing (because of caries), or filled tooth surfaces in any essential tooth in a youngster matured 71 months or younger.But the serious issue is acknowledgment of the proposed strategies in the dental seat without uneasiness .This is hard to accomplish without GA (3)(4).

Even though general anesthesia is useful in treating pediatric patients ,improper and overdose can lead to severe complications .It can sometimes lead to anaphylactic reaction,but severity may vary.A decreased degree of awareness can prompt an unprotected aviation route. In the event that the patient spews they can suction the vomitus contents into their lungs. This can set up lung irritation with contamination.Frequent usage of general anesthesia can lead to neurological problems.In rare cases ,use of general anesthesia can lead to embolism .So proper use of general anesthesia is recommended for proper outcome of the dental procedure(5).

In 1941, The American Society of Anaesthesiologists (ASA) requested a board of trustees to consider, look at, test and devise a framework for the assortment and arrangement of measurable information in sedation to permit anaesthesiologists to record the general wellbeing status of a patient before medical procedure and, along these lines, permit patients result to be delineated by an overall appraisal of ailment seriousness while their main goal was to decide indicators for employable danger, they immediately excused this undertaking as being difficult to devise(6),(7,8).

Since this article especially deals with pediatrics ,Manyanaesthetics conducted research to find the reliability of ASA classification towards pediatrics. Aplin et al. in his study reported the efficacy of ASA classification in terms of pediatric dentistry(9).The need for general anaesthesia is quite high for pediatric patient .However ,The ASA Physical Status Classification System that has been in practise for over 60 years is still used for pediatric patients.(10)

There were many modifications made to formulate the final version of ASA classification(2014) (FIGURE 1)which is currently used .In 1961, Drippsetal. Surveyed the ASA classification (11). This examination prompted the modification of the first ASA in 1980,(12) . (13,14).In 1995, Haynes et al. also appraised the ASA Classification(15,16). In 1997, Ranta et al. in his study tested the reliability of the ASA classification(17) similar investigation was led in 2003, (18). Riley et al., in 2014, made a survey in Western Australia to understand ASA classification. (19,20).
The aim of the study is to understand the prevalence of children treated under general anesthesia based on ASA classification.

MATERIALS AND METHOD:
A cross sectional review was directed in a short term patient populace in Saveetha dental college,Chennai ,India.Ethical endorsement was acquired from the worldwide audit board preceding the beginning of the study .Around 59 pediatric patients were taken into considerations.Theinformation was received from DIAS(Dental information archiving software) and recorded in excel for further study.**Inclusion criteria** - population consists of age from 0-17(i.e,Pediatric patients). **Exclusion criteria:** Outpatient population with age above 18and records with incomplete assessment and data .Information on pediatric patients were obtained including the ASA classification under which the patients were treated and compared with age and gender .

All the case sheets were reviewed and cross verified by another examiner. The data collected was tabulated under the following parameters – age, gender ,ASA classification. The results were obtained through SPSS software and analysed. Chi square test and pearson correlation was done using the software and P value less than 0.05 was considerably statistically significant.

DOI: 10.9756/INT-JECSE/V14I3.183

FIGURE 1:

American Society of Anesthesiologists

ASA Physical Status Classification System

Committee of Oversight: Economics

(Approved by the ASA House of Delegates on October 15, 2014, and last amended on December 13, 2020)

The ASA Physical Status Classification System has been in use for over 60 years. The purpose of the system is to assess and communicate a patient's pre-anesthesia medical co-morbidities. The classification system alone does not predict the perioperative risks, but used with other factors (eg, type of surgery, frailty, level of deconditioning), it can be helpful in predicting perioperative risks.

The definitions and examples shown in the table below are guidelines for the clinician. To improve communication and assessments at a specific institution, anesthesiology departments may choose to develop institutional-specific examples to supplement the ASA-approved examples.

Assigning a Physical Status classification level is a clinical decision based on multiple factors. While the Physical Status classification may initially be determined at various times during the preoperative assessment of the patient, the final assignment of Physical Status classification is made on the day of anesthesia care by the anesthesiologist after evaluating the patient.

Current Definitions and ASA-Approved Examples

ASA PS Classification	Definition	Adult Examples, Including, but not Limited to:	Pediatric Examples, Including but not Limited to:	Obstetric Examples, Including but not Limited to:
ASA I	A normal healthy patient	Healthy, non-smoking, no or minimal alcohol use	Healthy (no acute or chronic disease), normal BMI percentile for age	
ASA II	A patient with mild systemic disease	Mild diseases only without substantive functional limitations. Current smoker, social alcohol drinker, pregnancy, obesity (30<BMI<40), well-controlled DM/HTN, mild lung disease	Asymptomatic congenital cardiac disease, well controlled dysrhythmias, asthma without exacerbation, well controlled epilepsy, non-insulin dependent diabetes mellitus, abnormal BMI percentile for age,	Normal pregnancy*, well controlled gestational HTN, controlled preeclampsia without severe features, diet-controlled gestational DM.

DOI: 10.9756/INT-JECSE/V14I3.183

			mild/moderate OSA, oncologic state in remission, autism with mild limitations	
ASA III	A patient with severe systemic disease	Substantive functional limitations; One or more moderate to severe diseases. Poorly controlled DM or HTN, COPD, morbid obesity (BMI ≥40), active hepatitis, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD undergoing regularly scheduled dialysis, history (>3 months) of MI, CVA, TIA, or CAD/stents.	Uncorrected stable congenital cardiac abnormality, asthma with exacerbation, poorly controlled epilepsy, insulin dependent diabetes mellitus, morbid obesity, malnutrition, severe OSA, oncologic state, renal failure, muscular dystrophy, cystic fibrosis, history of organ transplantation, brain/spinal cord malformation, symptomatic hydrocephalus, premature infant PCA <60 weeks, autism with severe limitations, metabolic disease, difficult airway, long term parenteral nutrition. Full term infants <6 weeks of age.	Preeclampsia with severe features, gestational DM with complications or high insulin requirements, a thrombophilic disease requiring anticoagulation.
ASA IV	A patient with severe systemic disease	Recent (<3 months) MI, CVA, TIA or CAD/stents, ongoing cardiac ischemia or severe	Symptomatic congenital cardiac abnormality, congestive heart	Preeclampsia with severe features complicated by HELLP or other adverse event, peripartum cardiomyopathy with EF

DOI: 10.9756/INT-JECSE/V14I3.183

	that is a constant threat to life	valve dysfunction, severe reduction of ejection fraction, shock, sepsis, DIC, ARD or ESRD not undergoing regularly scheduled dialysis	failure, active sequelae of prematurity, acute hypoxic-ischemic encephalopathy, shock, sepsis, disseminated intravascular coagulation, automatic implantable cardioverter-defibrillator, ventilator dependence, endocrinopathy, severe trauma, severe respiratory distress, advanced oncologic state.	<40, uncorrected/decompensated heart disease, acquired or congenital.
ASA V	A moribund patient who is not expected to survive without the operation	Ruptured abdominal/thoracic aneurysm, massive trauma, intracranial bleed with mass effect, ischemic bowel in the face of significant cardiac pathology or multiple organ/system dysfunction	Massive trauma, intracranial hemorrhage with mass effect, patient requiring ECMO, respiratory failure or arrest, malignant hypertension, decompensated congestive heart failure, hepatic encephalopathy, ischemic bowel or multiple organ/system dysfunction.	Uterine rupture.
ASA VI	A declared brain-dead patient whose organs			

DOI: 10.9756/INT-JECSE/V14I3.183

	are being removed for donor purposes			

** Although pregnancy is not a disease, the parturient' s physiologic state is significantly altered from when the woman is not pregnant, hence the assignment of ASA 2 for a woman with uncomplicated pregnancy.*
***The addition of "E" denotes Emergency surgery: (An emergency is defined as existing when delay in treatment of the patient would lead to a significant increase in the threat to life or body part)*

RESULTS

A total of 59 children treated under general anesthesia were included for analysis in the present study.The Mean age of the children who underwent dental treatment under general anaesthesia was 3.72 ±2.091. The demographic details of the participants are tabulated in Table 1. 61.46% of the children treated under general anesthesia fall under Class 1 ASA classification.(figure 2).

TABLE 1:

AGE	3.72±2.091
GENDER	MALE:52.08% FEMALE:47.92%

Table 1 represents the total number of subjects included in the study and the mean value of the age of the subject corresponding to the study and the percentage of children treated on general anaesthesia with females(52.08%) and male(47.92%).

FIGURE 2:

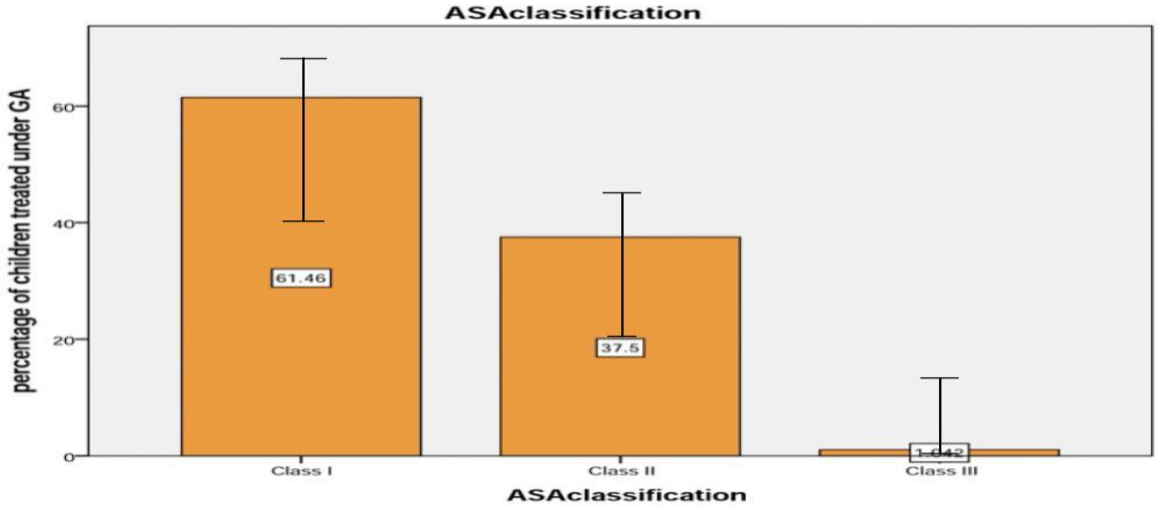

Figure 2 provides data on correlation between the ASA classification and the percentage of children treated on general anaesthesia with children belonging to class I(61.46%),class II(37.5%) ,Class III(1.042%)..P value for this graph is 0.078(p>0.05) which represents that the graph is statistically insignificant.

DOI: 10.9756/INT-JECSE/V14I3.183

DISCUSSION

On analysing the results it is clear that the majority of the population undergoing GA administration are females (52.08%) in comparison with male (47.92%) as seen in figure 2. Based on results it is clear that ASA classification It is clear that patients under class I (61.46%)And class II (37.5%), more commonly treated under GA while patients under class III(1.042%)are rarely treated and patients under class IV and class V or not treated under GA(Figure 3).This shows that population categorised above class III had health issues more complex than dental problems or their dental problems are less severe when compared with their health issues.Since our major concern is pediatrics ,General anaesthesia is more sensitive to them and a lot of concentration is required to determine the dosage to be administered to the pediatric patients.In some dental practices ,specialised person is available to administer anaesthesia to pediatric patients.

Kalkman and colleagues in their study played out a review of long haul conduct after youth medical procedure utilizing Child Behavior Checklist (CBCL) parental reports a s detailed that the people who had sedation and medical procedure before two years old enough seemed, by all accounts, to be bound to have 'degenerate' conduct than the individuals who had a medical procedure and sedation at a more seasoned age. The review test size gave adequate ability to yield measurably critical outcomes(17).

In a study,devan et al estimated pediatric general anesthesia exposure,Absolute of 1,548,021 pediatric cases were included.The extent of general sedatives performed on ASA III, IV, and V patients was higher among <1 year olds contrasted with more teenage kids in his review((7,8)) which is in contradiction to the present study.

The discussion speaks indirectly about the difficulty in treating dental problems in pediatric patients since general anaesthesia is not a general procedure and is given only if needed.It also indirectly speaks about the advantage of giving general anesthesia since it eases the dental procedures done in pediatric patients thereby providing a good quality of work.

The lacunae of the study is that since it is an institutional study,thereis no chance of review or recall of the patients.There is a limitation in the results since it is confined within the institution of the tamilnadu.

CONCLUSION

Children with ASA classification 1 and II are commonly treated under General anesthesia for dental rehabilitation.

Acknowledgement: Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Science, Saveetha University.

Conflict of interest:nil

SOURCE OF FUNDING:

The present study was supported by the following agencies

- Saveetha Dental college,
- Saveetha institute of medical and Technical Science,
- Saveetha University
- Prompt paper products private LTD.,
- Viswanathan Building Contractors

REFERENCES

1. Hill CM, Morris PJ. General Anaesthesia and Sedation in Dentistry [Internet]. John Wright; 1991. 157 p. Available from: https://books.google.com/books/about/General_Anaesthesia_and_Sedation_in_Dent.html?hl=&id=xPdpAAAAMAAJ
2. Welbury R, Duggal MS, Hosey MT. Paediatric Dentistry [Internet]. OUP Oxford; 2012. 416 p. Available from: https://play.google.com/store/books/details?id=v4zXYpiQ5EcC
3. Dental Caries: Diagnosis, Prevention and Management [Internet]. BoD – Books on Demand; 2018. 176 p. Available from: https://books.google.com/books/about/Dental_Caries.html?hl=&id=5S6RDwAAQBAJ
4. Goldberg M. Understanding Dental Caries: From Pathogenesis to Prevention and Therapy [Internet]. Springer; 2016. 249 p. Available from: https://play.google.com/store/books/details?id=H-d6DAAAQBAJ
5. Mirabella L, Cotoia A, Melchionda M, Cinnella G. Complication of General Anaesthesia in Obstetrics [Internet]. Management and Therapy of Late Pregnancy Complications. 2017. p. 295–315. Available from: http://dx.doi.org/10.1007/978-3-319-48732-8_18

6. Saklad M. GRADING OF PATIENTS FOR SURGICAL PROCEDURES [Internet]. Vol. 2, Anesthesiology. 1941. p. 281–4. Available from: http://dx.doi.org/10.1097/00000542-194105000-00004
7. Visnjevac O, Davari-Farid S, Lee J, Pourafkari L, Arora P, Dosluoglu HH, et al. The Effect of Adding Functional Classification to ASA Status for Predicting 30-Day Mortality [Internet]. Vol. 121, Anesthesia & Analgesia. 2015. p. 110–6. Available from: http://dx.doi.org/10.1213/ane.0000000000000740
8. Heesen M, Böhmer J, Klöhr S, Hofmann T, Rossaint R, Straube S. The Effect of Adding a Background Infusion to Patient-Controlled Epidural Labor Analgesia on Labor, Maternal, and Neonatal Outcomes [Internet]. Vol. 121, Anesthesia & Analgesia. 2015. p. 149–58. Available from: http://dx.doi.org/10.1213/ane.0000000000000743
9. Aplin S, Baines D, de Lima J. Use of the ASA Physical Status Grading System in pediatric practice [Internet]. Vol. 17, Pediatric Anesthesia. 2007. p. 216–22. Available from: http://dx.doi.org/10.1111/j.1460-9592.2006.02094.x
10. Reilly DF, McNeely MJ, Doerner D, Greenberg DL, Staiger TO, Geist MJ, et al. Self-reported exercise tolerance and the risk of serious perioperative complications. Arch Intern Med [Internet]. 1999 Oct 11;159(18):2185–92. Available from: http://dx.doi.org/10.1001/archinte.159.18.2185
11. Dripps RD, Eckenhoff JE, Vandam LD. Introduction to Anesthesia [Internet]. Vol. 243, The American Journal of the Medical Sciences. 1962. p. 682. Available from: http://dx.doi.org/10.1097/00000441-196205000-00022
12. Website [Internet]. [cited 2021 May 12]. Available from: ASA House of Delegates. ASA physical status classification system. 2014. https://www.asahq.org/resources/clinical-inf ormation/asa-physical-status-classification-system. (accessed 3/10/2018).
13. Owens WD, Felts JA, Spitznagel EL. ASA Physical Status Classifications [Internet]. Vol. 49, Anesthesiology. 1978. p. 239–43. Available from: http://dx.doi.org/10.1097/00000542-197810000-00003
14. Owens WD, Felts JA, Spitznagel EL. Tally of ASA Classification Responses [Internet]. Vol. 51, Anesthesiology. 1979. p. 181–181. Available from: http://dx.doi.org/10.1097/00000542-197908000-00026
15. Haynes SR, Lawler PGP. An assessment of the consistency of ASA physical status classification allocation [Internet]. Vol. 50, Anaesthesia. 1995. p. 195–9. Available from: http://dx.doi.org/10.1111/j.1365-2044.1995.tb04554.x
16. Mak PHK, Campbell RCH, Irwin MG. The ASA Physical Status Classification: Inter-observer Consistency [Internet]. Vol. 30, Anaesthesia and Intensive Care. 2002. p. 633–40. Available from: http://dx.doi.org/10.1177/0310057x0203000516
17. Ranta S, Hynynen M, Tammisto T. A survey of the ASA physical status classification: significant variation in allocation among Finnish anaesthesiologists [Internet]. Vol. 41, Acta Anaesthesiologica Scandinavica. 1997. p. 629–32. Available from: http://dx.doi.org/10.1111/j.1399-6576.1997.tb04755.x
18. Goldmann DA. The American Society of Anesthesiologists Physical Status Score and Risk of Perioperative Infection-Reply [Internet]. Vol. 275, JAMA: The Journal of the American Medical Association. 1996. p. 1544. Available from: http://dx.doi.org/10.1001/jama.1996.03530440022022
19. Riley R, Holman C, Fletcher D. Inter-rater reliability of the ASA physical status classification in a sample of anaesthetists in Western Australia. Anaesth Intensive Care [Internet]. 2014 Sep;42(5):614–8. Available from: http://dx.doi.org/10.1177/0310057X1404200511
20. Katary A. ASA classification audit do we speak the same language? [Internet]. Available from: http://dx.doi.org/10.26226/morressier.58f5b032d462b80296c9d774

DOI: 10.9756/INT-JECSE/V14I3.183