



Evaluation of Physiological Parameters During Recovery in Children Treated Under General Anesthesia - A Retrospective Cohort Study

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Article History	Abstract
<p>Received: 12 June 2023 Revised: 12 September 2023 Accepted: 27 October 2023</p>	<p>Introduction: General anesthesia is used predominantly in pediatric dentistry. However, certain concerns over evaluating physiological parameters in children after postoperative dental treatment after under-recovery of general anesthesia still remain a concern Aim: The current study aim is to evaluate the physiological parameters during postoperative treatment on children treated over general anesthesia. Materials and methods: Children under the age group of 1-12 years were included in the study. The data of physiological parameters which include, systolic and diastolic blood pressure, pulse rate were taken into the study from the DIAS record and were analyzed using SPSS software. Results: The results show that the mean value of systolic heart pressure is 74.06, diastolic blood pressure is 37.52 and the average mean pulse rate is 131. Conclusion: The study concludes that all the physiological parameters were within the normal range during recovery in children who underwent dental treatment under general anesthesia.</p>
<p>CC License CC-BY-NC-SA 4.0</p>	<p>Keywords: General Anesthesia, Postoperative Physiological Readings, Innovative Technique</p>

Introduction

In the majority of developing countries, dental caries post as one of the most persisting health problems among children¹. In most of all cases, dental treatments are completed once the children's behavior is managed properly. However, young-aged children, those of the medically compromised children and those who suffer from severe anxiety, mental or physical health problems need to be treated under general anesthesia². The perception of the public towards the use of general anesthesia has become more widely accepted³⁻⁵. According to the American Society of Anesthesiologists, general anesthesia is a transient loss of consciousness which is induced by the drugs which make the patient independently maintain their airway and most often at times requires assistance. Treating pediatric patients under general anesthesia for minor and invasive surgical procedures has shown remarkably high performances in the past few decades. The goals when it comes to treating patients under general anesthesia generally include: patients safety and welfare, reduced physical discomfort and pain, reduced anxiety level, and control of the movements to ensure safe completion of the procedure^{6,7}. Monitoring of the anesthetized patient is very important and continuous throughout the anesthetic event from pre-medication to full recovery⁸.

Previous studies have focused mainly on the drugs combination provided and monitored the physiological parameters^{9,10}, some on postoperative dental morbidity of children treated under general anesthesia¹¹ and some on the common postoperative complication in children treated under general anesthesia¹² whereas the current study focuses only on the physiological parameters of children during recovery period treated under general anesthesia.^{13-25 26-32}

The aim of the present study was to assess and evaluate the physiological parameters during the recovery in children treated under general anesthesia.

Materials and methods:

The study was conducted in a private dental college, in Chennai, India. Ethical approval was obtained from the Institutional review board prior to the start of the study.

Children between the age groups of 1 and 12 years who underwent dental treatment under general anesthesia from September 2020 to February 2021 were included in the study. A total of 156 children treated under general anesthesia and under-recovery state were monitored for their physiological parameters.

The data records of patients' details blood pressure and heart rate were collected from the DIAS. The compiled data was put in an excel sheet and SPSS software with CHI-Square test was done to avail the results where the p-value was set as 0.05 as the level of significance.

Results and Discussion

A total of 156 data of children falling under the age group of 1-12years who have undergone general anesthesia for the oral procedures and are in a recovery state were taken from the records DIAS. The demographic details of the collected records along with the physiological parameters of blood pressure (systolic blood pressure and diastolic blood pressure) and the pulse rate were recorded.

Table 1 shows the demographic details such as the age and sex compiled from the data.

Age	3.44±1.962
Gender	M-50% F-50%

	Mean	Standard deviation
Systolic blood pressure	74.06	2.34
Diastolic blood pressure	37.52	0.86
Pulse rate	131	11.69

Table 2 shows the descriptive statistical data of the physiological parameters where the average mean value of systolic heart pressure is 74.06, diastolic blood pressure is 37.52 and the average mean pulse rate is 131.

Generally, pedodontists treat children adequately over using behavioural management techniques. However, there are certain children who cannot be treated through these methods³³. For those children treatments under general anesthesia are rehabilitation³⁴. In certain cases, dental general anesthesia is the most practical and co-effective mode of treatment³⁵. Evaluating the physiological parameters during the recovery period is mandatory and the present study was conducted to evaluate those recorded physiological parameters.

In the present study, it was noted that the systolic blood pressure of the children treated under general anesthesia was within the normal limits with 35.26% of children having 76mmHg, followed by 28.21% and 19.87% of 71mmHg, 72mmHg respectively which is in the normal range of systolic blood pressure. The results of the present study were found in accordance with a previous study done by Nagele et al showed readings of monitored systolic blood pressure under the normal value of in correlation with 80mmHg^{36,37}

With regards to diastolic blood pressure of the children treated under general anesthesia for oral rehabilitation, 75% of children monitored recorded the rate of 38mmHg of diastolic blood pressure, which is in contradiction to the previous study done by Joo HS et al who used sevoflurane versus propofol for the anesthetic induction in children 1-10 years and recorded diastolic blood pressure under the normal value of 40mmHg.

The present study shows that the pulse rate monitored was 57.5% of 120beats/min, 28.85% of 140beats/min, and 14.10% of 150 beats/min. Contradicting the current study value a previous study done by Yum MK et al³⁸ recorded the heart rate value was high, he carried the study under the usage of sevoflurane versus desflurane. Around 60 sixty children from the age group between 1-13 years were taken for the study, 30 children were injected with sevoflurane and 30 children were injected with desflurane.

The study concluded that there were high pulse rate readings during the recovery from being treated under general anesthesia.

The physiological parameters with regard to the minimum acceptable range of blood pressure are 80/40mmHg in children. In our study, the values were found to be within the normal range. No major commendable changes were observed in the pulse rate also. Complications in the post operative treatment such as nausea and vomiting were not seen in the current study, so similar results were seen in a previous study done by Son J et al³⁹.

Conclusion:

No major changes were observed in the physiological parameters of children those who underwent dental treatment under general anesthesia. Hence, parents can be reassured of the safety of treating children under General anesthesia.

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Authors Contribution

Data collection: S. Shreenidhi¹

Data analysis and Interpretation: S. Shreenidhi¹

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Critical Revision of the article: Dr. Lavanya Govindaraju²

Final approval of the version to be published- Dr. Lavanya Govindaraju²

Conflict Of Interest

The author declares that they have no conflict of interest for this study.

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Ethical Clearance

Taken from Saveetha Institute Human Ethical Committee.

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