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## RESEARCH ARTICLE

# INVESTIGATION OF STRESS LEVEL IN DENTISTRY STUDENTS, GENERAL DENTISTS, AND PEDIATRIC DENTISTS WHILE PERFORMING PEDIATRIC DENTAL PROCEDURES IN CENTRAL INDIA

<sup>1</sup>Dr. Sahil Bundele, <sup>2</sup>Dr. Suryakanat kumar, <sup>3</sup>Dr. Arun Kumar Sajjanar, <sup>4</sup>Dr. Dishika Bhagwani, <sup>5</sup>Dr. Pratima Kolekar and <sup>6</sup>Dr. Anand Deo

<sup>1</sup>PG STUDENT, Department of Pediatric and preventive dentistry, SDKS DENTAL COLLEGE AND HOSPITAL, NAGPUR, Maharashtra, India

<sup>2</sup>Reader & PG guide, Department of Pediatric and preventive dentistry, SDKS DENTAL COLLEGE AND HOSPITAL, NAGPUR, Maharashtra, India

<sup>3</sup>PROFFESOR & HOD, Department of Pediatric and preventive dentistry, SDKS DENTAL COLLEGE AND HOSPITAL, NAGPUR, Maharashtra, India

<sup>4</sup>PG STUDENT, Department of Pediatric and preventive dentistry, SDKS DENTAL COLLEGE AND HOSPITAL, NAGPUR, Maharashtra, India

<sup>5</sup>PG STUDENT, Department of Pediatric and preventive dentistry, SDKS DENTAL COLLEGE AND HOSPITAL, NAGPUR, Maharashtra, India

<sup>6</sup>PG STUDENT, Department of Pediatric and preventive dentistry, SDKS DENTAL COLLEGE AND HOSPITAL, NAGPUR, Maharashtra, India

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#### \*Corresponding Author:

Naveen Kumar

### ABSTRACT

**Background:** Dentists are subjected to mental stress since they work closely with patients. Increased stress may impact dentist's work and pose a serious threat to patient's physical and emotional health. While performing Paediatric dental procedures which require experience and without this general dentists, dental students would lack self-confidence. As a result, General dentists and dental students will be unable to deal with difficult patients. In Central India, there has been no research paper published on mental stress while performing Paediatric dental procedures in dentistry students, general dentists and Paediatric dentists. **Aim:** To evaluate the stress level in dentistry Students, General Dentists, and Paediatric Dentist while performing Paediatric dental procedures. **Methodology:** A cumulative total of 300 dentistry students, general dentists, and paediatric dentist, will be participating in this study. The information including, demographic information, will be gathered utilizing a questionnaire which will be distributed through google forms in all the 3 groups. After checking the participant's comments, the data will be analyzed using SPSS version 16. **Results:** According to the findings, 113 (37.7%) and 178 (59.3%) of the 300 participants were male and female, respectively, while 9 (3%) of the participants did not complete this section. The participants' stress levels were highest and lowest after anesthesia injection in the jaw for an anxious child and amalgam restoration in the mandible, respectively. Furthermore, as compared to males, females showed a considerably higher level of stress (P=0.001). **Conclusion:** Anesthetic injection into an anxious infant was found to be the most traumatic practice in pediatric dentistry, we found that, pediatric dentist were less stressed than students and general dentists.

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## INTRODUCTION

Dentists have such intimate contact with their patients (Mahdizadeh, 2014; Rada, 2004), dentistry is regarded as a stressful profession (Alzahem, 2011; Locker, 1996;

Sugiura, 20053). Increased stress levels may have an impact on dentist's performance, posing a significant risk to patient's physical and emotional health (Pakshir, 2003). Pediatric dentistry is a discipline of dentistry concerned with the provision of dental services to children and adolescents under the age of 18 (Boran, 2012; Peres, 2005; Skaare, 2003).

General dentistry students in Central India are expected to complete a short-term theoretical and practical exam in the paediatric dental subject. As a result, paediatric dentists must complete paediatric dentistry course within three years. Dental practices, despite the training provided to dentists during the general and expertise periods, exert a considerable amount of stress on clinicians due to their high importance and sensitivity (Ayer, 2005; Moulton, 1955; Wright, 2014). There are a lot of dentists that don't like working on children. Children's crying, jerking, anger, and a variety of other avoidance behaviour are all seen by paediatric dentists. Dentists get impatient or nervous as a result of these conditions because they must expend energy to stop and adapt to such actions (Rønneberg, 2015). Dentists with higher anxiety and stress levels were more likely to report changes in clinical techniques in a study conducted by Chipchase in 2017 (Chipchase, 2017).

Experience is an important part of paediatric dentistry; without it, young students and dentists would lack self-confidence and will be unable to deal with difficult patients (DiMatteo, 1993; Gomes, 2015; Myers, 2004). Previous research into the stress levels of clinicians during dental work has shown a relatively high level of stress in several dental practices (Morse, 2017; Polychronopoulou, 2009). As a result, dental practices appear to be stressful for both patients and dentists. To the best of our knowledge, no study has been conducted in Central India to investigate this subject, particularly stress during paediatric dentistry, among dental students as well as general and paediatric dentists. In consideration of this, and in perspective of the importance of the problem, we carried out to investigate the stress levels of the three dental service providers described above who work in paediatric dentistry. The results of this study may be useful in identifying the educational needs of general and specialized students in terms of stress management programmes. Furthermore, this study is a good attempt to develop strategies to help general and pediatric dentists who deals with stress.

## MATERIAL AND METHODS

A cumulative total of 300 dentistry students, general dentists, and paediatric dentist of Central India, were participated in this study. The information including, demographic information, were gathered utilizing a questionnaire which was distributed through google forms in all the 3 groups. After checking the participant's comments, the data was analyzed using SPSS version 16. Sampling was performed by obtaining the name list of all general and pediatric dentists working in Central India from the medical system and dentistry faculty and referring to their workplace.

**Data collection:** The data were collected using a questionnaire, which was previously employed by Davidovich *et al.*, (2015). Based on the dental practices in Central India, a number of items were changed, and few questions was altered. The dependent variable in the present study was the stress level during pediatric dentistry, which was rated on an 11-point Likert scale (ranging within 0=no stress to 11=severe stress). After the evaluation of the subjects' views, the questionnaires were coded and then analyzed in SPSS software. Each item was assigned the score value of one; accordingly, the total score was estimated for comparative purposes. After data collection, the stress scores were divided into four groups.

In this regard, the stress scores at the 0-10<sup>th</sup>, 11-50<sup>th</sup>, 51-90<sup>th</sup>, and 91-100<sup>th</sup> percentiles were considered as showing low, moderate, high, and severely high-stress levels, respectively

**Sample Size:** The sample size included all dental students who, passed at least final year, General dentist Paediatric dentists working in Central India, those who were willing to participate in the study entered into the research process.

**Data Analysis:** Data analysis was performed using descriptive statistics (*e.g.*, mean and standard deviation). In addition, a t-test was conducted to compare the stress levels in terms of gender as well as maxillary and mandibular practices. The comparison of the three groups (*i.e.*, students, as well as general and expert dentists) regarding the stress levels of each practice performed in the maxilla and mandible was accomplished through using two-way ANOVA test.

## RESULTS

The mean age of all participants was 28±5 years. Out of the 300 participants, 113 (37.7%) and 178 (59.3%) cases were male and female, respectively, and 9 (3%) participants did not fill out this part. Furthermore, 108 (36%), 173 (57.7%), 6 (2%), and 10 (3.3%) cases were general students, general dentist, residents, and pediatric residents, respectively. However, 3 (1%) participants did not complete this section (Table no. 1)

**Table 1. (Showing demographic data of participants)**

Variable		
Gender	Male	113 (37.7%)
	Female	178 (59.3%)
Education level	Student	108 (36%)
	General dentist	173 (57.7%)
	Resident	6 (2%)
	Pediatric Dentist	10 (3.3%)

Anesthesia injection in the mandible for an anxious child caused the most stress among the participants (mean: 4.17), according to the findings. Cavity preparation for the Glass Inomer Cement restoration in the mandible, resulted in the lowest stress level (mean: 1.11). In terms of the mean stress level, there was a significant difference between the practices done in the maxilla and mandible ( $P=0.001$ ). However, there was no significant difference in the placement of the rubber dam between the two groups studied ( $P=0.9$ ). When compared to the males, females showed considerably more stress ( $P=0.001$ ). Despite the fact that females were more stressed, there was no significant difference in the insertion of the rubber dam and lower mandible restoration between males and females. ( $P=0.4$  and  $P=0.15$ , respectively). Additionally, the pediatric dentists showed a significantly lower stress level than the dental students and general dentists ( $P<0.001$ ) (Table no. 2)

## DISCUSSION

The present study was an attempt to determine the stress levels among the dentistry students, general dentists, and paediatric dentists during the paediatric dentistry procedures. According to anaesthesia injection for the anxious child was the most stressful part of paediatric dental work, which can be explained by the special anatomy of the mandible for injection, as well as the lack of cooperation from the child in opening the mouth

**Table 2. (Mean stress of different dental practices and their relationship with the practice in the maxilla and mandible)**

Variable	Stress based on Jaw			Stress based on Gender		
	Mean	SD	P-value	Male (SD)	Female (SD)	P-value
Anesthesia of mandible in a cooperative child	1.8	1.6	0.0001	1.1 (1.3)	2.2 (1.7)	0.0001
Anesthesia of maxilla in a cooperative child	1.5	1.4		0.8 (1)	1.8 (1.4)	0.0001
Anesthesia of mandible in an anxious child	4.1	2.1	0.0001	3.2 (1.6)	4.8 (2.2)	0.0001
Anesthesia of maxilla in an anxious child	3.7	2		2.9 (1.5)	3.4 (2.1)	0.0001
Rubber dam in mandible	1.6	1.8	0.904	1.5 (2)	1.7 (1.7)	0.4
Rubber dam in maxilla	1.6	1.8		1.4 (1.8)	1.7 (1.8)	0.15
Restoration in mandible	1.1	1.3	0.0001	0.6 (0.9)	1.4 (1.4)	0.0001
Restoration in maxilla	1.3	1.5		0.6 (0.9)	1.4 (1.4)	0.0001

Variable	Stress based on Jaw			Stress based on Gender		
	Mean	SD	P-value	Male (SD)	Female (SD)	P-value
Cutting of mandibular crown	1.2	1.6	0.006	1 (1.6)	1.3 (1.7)	0.15
Cutting of maxillary crown	1.3	1.7		1 (1.6)	1.5 (1.8)	0.04
Pulpotomy of mandible	2.4	1.5	0.004	2 (1.5)	2.6 (1.5)	0.0001
Pulpotomy of maxilla	2.5	1.5		2 (1.5)	2.7 (1.5)	0.0001
Pulpectomy of mandible	3	2	0.002	2.2 (1.7)	3.3 (2)	0.0001
Pulpectomy of maxilla	3	2		2.2 (1.8)	3.5 (2)	0.0001
Mandibular tooth extraction	2.8	2.4	0.0001	1.4 (1.5)	3.8 (2.4)	0.0001
Maxillary tooth extraction	2.7	2.3		1.4 (1.6)	3.5 (2.3)	0.0001

completely due to fear and anxiety, which is needed for this type of injection. These findings are comparable to those of Davidovich et al, (2015), who found that the anesthetic injection for an anxious child was the most likely stressful practice for general and pediatric dentists. These findings are consistent with those of Aishwarya et al. (2008), who found that administering anaesthesia to paediatric patients was the most stressful dentistry task for 43 percent of students (Aishwarya, 2017). Preparing the cavity for mandibular GIC restoration was found to be the least stressful technique in this study, possibly due to direct eyesight and simpler access to the mandible rather than the maxilla. However, Roneeberg et al. (2015) described the restoration of children aged 3-5 years as the most demanding dental work, without identifying the specific type of operation (Ronneberg, 2015). It's possible that this is due to the difficulty of behavioral regulation in children under the age of five. In terms of the mean stress level during the placement of the rubber dam, the outcomes of this investigation revealed no significant difference between the practices done in the mandible and maxilla. This conclusion could be attributable to a lack of training or the department's use of rubber dam. Furthermore, the rubber dam is not commonly employed in ordinary dental practices (Sofola, 2006). The findings of this study demonstrated that crown preparation on maxillary teeth was more stressful than doing it on mandible teeth. This could be due to the maxilla's high visibility and indirect access (Moore, 2001). Due to the visibility and indirect accessibility of the maxilla, as well as the child's limited mouth opening, the stress level during root canal therapy (i.e.pulpotomy and pulpectomy) was substantially higher in the maxilla than in the mandible. Furthermore, the presence of the zygomatic appendage prevents effective anaesthetic action for the second molar teeth in the posterior maxilla. On the other side, the hazards of aspiration, such as when a file slips into a child's neck, make access to the maxillary root canal more difficult. Because of the poor access, the stress created during maxillary dental extraction was higher than that induced during mandibular tooth extraction in this study. The maxillary molars also have three roots, which increases the likelihood of their breaking (Piazza-Waggoner, 2003). Furthermore, the position of the patient during maxillary tooth extraction increases the chance of a tooth going into the patient's throat (Ayers, 2008; Simon, 1994).

Except for the insertion of the rubber dam and cutting the crowns in the jaw, females showed a higher level of stress than males during all of the procedures evaluated. These findings are consistent with those of Gambetta Tessini et al. (2013), who found that women are more receptive, empathic, and supportive to patients, resulting in increased stress (Gambetta-Tessini, 2013). These findings clearly show that female dentists have a detrimental impact on patients due to their high level of emotional sentiments and more sensitive mood, particularly when they are aware of patient's pain or dread of dental procedures. As a result, this causes mental disturbances and tension, as well as stress on female dentists. Patients' stress was found to be highly connected with physicians' stress by Myers and Myers (2004), and higher stress in patients led to increased stress in dentists (18). This problem can be attributed to the fact that female general dentists in Central India primarily treat youngsters. According to the findings of this study, Pediatric dentists were less stressed than students and general dentists, which is consistent with the findings of Boran et al, (2011). These findings could be explained by the fact that specialists have more professional experience than students and ordinary dentists. The objective of this study was to increase public awareness regarding paediatric dentists' stress. The findings indicated that these dental care practitioners were under a lot of stress at work. The findings of this study can be used as a starting point for stress management and the implementation of training courses in fields involving children. To gather thorough information in this regard, more investigations at a higher level are necessary.

## CONCLUSION

Injection of anaesthesia to anxious children was found to be the most stressful practice in paediatric dentistry, according to the findings of this study. Furthermore, when compared to students and general dentists, experts were less stressed. Pediatric dentistry, according to our findings, is a challenging career that necessitates the ability to manage emotions and stress.

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#### Authors contributions:

Author 1:- Contributed to conception, design, data acquisition and interpretation, drafted and critically revised the manuscript

Author 2:- Contributed to conception, design, data acquisition and interpretation, performed all statistical analyses, drafted and critically revised the manuscript

Author 3:- Contributed to conception, design, and critically revised the manuscript

Author 4:- Contributed to conception, design, performed all statistical analyses and critically revised the manuscript

Author 5:- Contributed to conception, design, and critically revised the manuscript

Author 6:- Contributed to conception, design, performed all statistical analyses and critically revised the manuscript.

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