Original Article

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Dentistry Section

Level of Stress among Final Year Dental Students while Performing Paediatric Dentistry Procedures in Riyadh City- A Cross-sectional Study

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ABSTRACT

Introduction: Dentistry is considered a stressful profession. Stress is defined as a state of mental or emotional strain or tension resulting from adverse or demanding circumstances. In particular to paediatric dentistry, dental student's anxiety and stress level is elevated to the peak as managing a child in the dental chair is a great challenge for any dentist.

Aim: To evaluate self-reported levels of stress of dental students about performing different procedures in paediatric dentistry in Riyadh city.

Materials and Methods: A cross-sectional survey was conducted among final year dental students in seven different dental schools in Riyadh city. The final questionnaire was used following literature review of similar studies, focus group and piloting stage. The questionnaire addressed upon stress of performing treatment on a child patient and the future specialty preference for final year dental students. Descriptive analysis was done using Microsoft Excel. The statistical analysis were performed using Statistical Package for the Social Sciences (SPSS) (Version 22.0. Armonk, NY: IBM Corp.) and conducted at a Confidence Interval (CI) of 95%, and a significance level of 0.05. Internal consistency of the questionnaire was assessed by calculating Cronbach's alpha. The level of significance was set at p-value <0.05.

Results: The study included 176 participants of which 92 males and 84 females. A 43.8% of the dental students are not stressed of having the patient's guardian in the clinic during the time of treatment, some are little confident in using the non-pharmacological management approaches for uncooperative child. A 54% of the students are quite stressed when performing dental treatment for preschool children.

Conclusion: The current study revealed that both genders show some similarity in their answers, with the majority having no or little stress providing paediatric treatment. Dental students in Saudi Arabia were more stressed when performing pain stimulating procedures on preschool children.

Keywords: Children, Dental schools, Emotional strain, Mental stress, Oral health, Paediatric patients

INTRODUCTION

Dentistry as a profession is considered highly stressful career path. It is often accompanied with high levels of anxiety, depression and addiction [1]. Stress is defined as "a state of mental or emotional strain or tension resulting from adverse or demanding circumstances" [2]. It has also been stated that stress encountered during dental education is more pronounced than during medical education [3]. Epidemiological studies demonstrated that dental students experience considerable stress during their training and they are more anxious than the general population [4,5].

Common reported stressors include anxious-uncooperative patients, busy workloads, pressure related to time, trying preventing and managing the patients pain, failure of equipment, defective material, compromise work condition, routine nature of the job, medical emergency, staff issues and financial consideration [6,7]. While few studies have found that there is no gender differences regarding experiencing stress, most dental and medical related studies have found that females are more distressed than males [8]. In particular to paediatric dentistry, dental student's stress level and anxiety is elevating to the peak due to great challenge of managing the child patient in the dental chair that could face any dentist [9,10].

A holistic preventive and therapeutic oral health care for infants, children and special health care needs children is provided by Paediatric dentistry [11]. Pedodontic triangle which consists of the child patient, the parents and the dental team usually influence paediatric dental care [9,10].

Though high levels of stress have been well-documented among dentists and dental students, differences in degrees of stress according to dental procedure have been less investigated [12].

Multiple factors have an impact on selecting dentistry as a profession. The importance of these factors are presented in how they relate to the expectation of the profession [13]. Most undergraduate students favour to resume their postgraduates toward a specialised degree [13,14]. With the growing population in Saudi Arabia and the high prevalence of dental caries, there is an increase in demand of dental care, this explains the importance of investigating the stress related to this career [15].

Until today, many studies looked at the level of stress among dental students nationally and internationally [1,3,8,16]. However, this study investigated the level of stress performing different kinds of treatment provided for paediatric dental patients. Therefore, the aim of this cross-sectional study is to measure, evaluate and analyse the stress experienced by dental students performing different paediatric dental procedures; furthermore, assessing the future desire for dental students to paediatric dentistry as a future profession.

MATERIALS AND METHODS

Design and Sample

A cross-sectional study was conducted under Department of Preventive Dental Science, College of Dentistry, Prince Sattam University, Al-kharj, Saudi Arabia during the months of March to May 2018 (end of the academic year).

Ethical approval: It was taken from the Ethical Committee of the College of Dentistry, Prince Sattam Bin Abdulaziz University, Al-kharj, Saudi Arabia on February 1,2018 (No. PSAU2018003).

Inclusion criteria: Dental undergraduate dentistry students from the sixth year chosen as a target group, to eliminate discrepancy since it is the last year in dentistry program. Eight Colleges from Riyadh region were chosen to fill the survey, which were contacted by a member of the research team and were checked to make a list to send the final survey. Only the final year dental students were eligible to participate in the survey.

Exclusion criteria: One of the eight selected colleges were found to have absence of sixth year students. Hence was excluded from the study.

So the total of final year students in Riyadh city targeted seven schools at the time of this study were 776 and were included by obtaining informed consent according to World Medical Association ethical principles.

Questionnaire Development

Comprehensive review of literature was done to evaluate the previous studies done. Three studies were suitable for the present study purpose and were used as a guide [12-14]. In combination of these three studies, paediatric dentistry undergraduate courses were evaluated to check the procedure required to be performed by the students. Information extracted from the mentioned methods were convenient to formulate a 10-question survey concerning stress and a question about considering paediatric dentistry as a future career followed by choosing the preferred future specialty if it is not paediatric dentistry. Lastly, the participant would answer a yes/no question regarding their confidence of referring the child to a paediatric dentist when needed. In order to check the content and ease of the survey, the questionnaire in English was distributed by a member of the research team to a focus group in March 2018, and was given five minutes to complete the survey. The focus group consisted of 15 randomly selected students of both genders from three different dental colleges and to identify any obstacles such as language difficulties, paediatric dentistry areas covered in previous courses and necessary modification were made accordingly. This resulted in modifying four questions and reducing the number of responses from five options to three options as it was reported by the participant to reduce the confusion and for more accurate reporting. Overall, reliability of the survey was assessed by calculating Cronbach's alpha. There liability of the questionnaire with all the questions was 0.651, which indicates significant internal consistency.

Following that, piloting of the survey was initiated. A random group of 20 selected male and female 6th year dental students from King Saud University and Prince Sattam University to complete the survey, each student answered the final version of the questionnaire and were excluded from the final included sample and modification was made accordingly. The final questionnaire [Table/Fig-1] consisted of ethical approval, demographic data, specialty preference, 11 questions assessing perceived stress about performing paediatric dentistry procedure and referring a child. The questionnaire included several paediatric procedures and the students were asked to rate the level of stress using a three-point scale of severity similar to student stress study previously done [17] with the following answers: very stressful, quite stressful, not stressful. Furthermore, the students were asked to indicate their best future preference among the list of 13 specialties available in the field of dentistry along with general dentistry and options outside the field of dentistry.

The purpose of the survey was given to the participants written on the introductory page of the questionnaire. A responsible student from each of the seven dental colleges was contacted and assigned as the contact person for correspondence during the survey. This person was sent an electronic link to be distributed among dental student in the institute.

Do you agree to participate in this survey?
Gender/Age
Would you consider specialising in paediatric dentistry after you graduate?
If your answered by NO in the previous question, kindly choose your desired future speciality
1. How do you feel regarding having patient's guardian (e.g., parents) in the clinic during the time of treatment?
2. When dealing with an uncooperative child in the clinic, are you confident to use non-pharmacological behavioural management approaches?
3. Do you feel stress treating a pre-school child (five-year-old)?
4. Do you feel stress while giving local anaesthesia to a child?
5. Do you feel stress while performing dental extraction to a child?
6. Do you feel stress while performing a restorative procedure on a child?
7. Do you feel stress while placing a rubber dam on a child?
8. Do you feel stress while taking an impression for a child?
9. Do you feel stress while performing a preformed metal crown (SSC) to a child?
10. Do you feel stress while performing a pulp therapy (vital or non-vital) to a child?
Do you feel confident referring a child to a specialised paediatric dentist?

[Table/Fig-1]: The questionnaire.

STATISTICAL ANALYSIS

The data were analysed using the Microsoft Excel 2016 and the statistical analyses were performed using SPSS (IBM Corp. Released 2013. IBM SPSS Statistics for Macintosh, Version 22.0. Armonk, NY: IBM Corp.) and conducted at a CI of 95%, and a significance level of 0.05. Descriptive statistics (Mean and standard deviation) was used to describe the study and outcome variables. Repeated measure ANOVA Test was used for determining the significance within the groups. Internal consistency of the questionnaire was assessed by calculating Cronbach's alpha. The level of significance was set at $p<0.05$.

RESULTS

The overall response rate was 22.6% (176 of 776 potential participants). The mean age of the respondents was 25.11 years (ranging from 24-27 years). Among the participant, 52.3% (n=92) of the respondents were male, and 47.7% (n=84) were female.

The data were encoded and then transferred to an Excel spreadsheet. Qualitative analysis was used to determine the percentages for each answer. As shown in [Table/Fig-2] both genders show some similarity in their answers, with the majority having no or little stress providing paediatric treatment. A 43.8% (n=77) of the dental students are not stressed of having the patient's guardian in the clinic during the time of treatment, (n=78; 44.4%) are little confident in using the non-pharmacological management approaches for uncooperative child. A 54% (n=95) of the students are quite stressed when performing dental treatment for preschool children (under five-year-old). A 60.8% (n=107) of the dental students did not find it stressful performing restorative procedure. On the other hand, 51.1% (n=90) of the students found it quite stressful performing pulp therapy. A 97.2% (n=171) of the students are confident in referring their paediatric patients to a specialist.

When evaluating the answers obtained from students, nearly, half the participants were quite stressed regarding having parents in the clinic. In most of the questions, more than half of the sample was experiencing no or little stress. The very stressful answer was the least answer chosen. On the other hand, generally, the quite stressful response was most commonly chosen by the respondents.

For the male respondents, they feel more stress performing dental extraction to a child or placing a rubber dam as compared to females. Half of the male respondents felt that taking an impression for a child patient was quite stressful. On the other hand, responses about giving local anaesthesia had less variation between the three choices of levels of stress.

Paediatric dental procedure	n (%) Total: 176		Significance	Mean (SD)
	Females	Males		
Having patient's guardian (e.g., parents) in the clinic during the time of treatment?				
Not stressful	36 (20.5%)	41 (23.3%)	0.320	1.61 (0.59)
Quite stressful	43 (24.4%)	46 (26.1%)		
Very stressful	5 (2.8%)	5 (2.8%)		
Using behaviour management approaches				
Not stressful	11 (6.3%)	15 (8.5%)	0.134	2.26 (0.70)
Quite stressful	33 (18.8%)	45 (25.6%)		
Very stressful	40 (22.7%)	32 (18.2%)		
Treating a preschool child (five-year-old)?				
Not stressful	23 (13.1%)	19 (10.8%)	0.909	1.98 (0.68)
Quite stressful	39 (22.2%)	56 (31.8%)		
Very stressful	22 (12.5%)	17 (9.7%)		
Giving local anaesthesia to a child?				
Not stressful	20 (11.4%)	30 (17%)	0.120	1.98 (0.74)
Quite stressful	42 (23.9%)	37 (21%)		
Very stressful	22 (12.5%)	25 (14.2%)		
Performing dental extractions to a child?				
Not stressful	42 (23.9%)	25 (14.2%)	0.027	1.76 (0.69)
Quite stressful	31 (17.6%)	52 (29.5%)		
Very stressful	11 (6.3%)	15 (8.5%)		
Performing a restorative procedure to a child?				
Not stressful	53 (30.1%)	54 (30.7%)	0.912	1.44 (0.59)
Quite stressful	26 (14.8%)	34 (19.3%)		
Very stressful	5 (2.8%)	4 (2.3%)		
Placing a rubber dam on a child?				
Not stressful	42 (23.9%)	24 (13.6%)	0.117	1.80 (0.72)
Quite stressful	29 (16.5%)	49 (27.8%)		
Very stressful	13 (7.4%)	19 (10.8%)		
Taking an impression for a child?				
Not stressful	45 (25.6%)	26 (14.8%)	0.259	1.75 (0.71)
Quite stressful	25 (14.2%)	52 (29.5%)		
Very stressful	14 (8%)	14 (8%)		
Performing a preformed metal crown (SSC) to a child?				
Not stressful	56 (31.8%)	44 (25%)	0.306	1.50 (0.63)
Quite stressful	21 (11.9%)	42 (23.9%)		
Very stressful	7 (4%)	6 (3.4%)		
Performing a pulp therapy (vital or nonvital) to a child?				
Not stressful	17 (9.7%)	25 (14.2%)		
Quite stressful	44 (25%)	46 (26.1%)		
Very stressful	23 (13.1%)	21 (11.9%)	0.017	2.01 (0.70)

[Table/Fig-2]: Students perceived levels of stress performing paediatric dental procedures.
p-value <0.05 to be considered significant

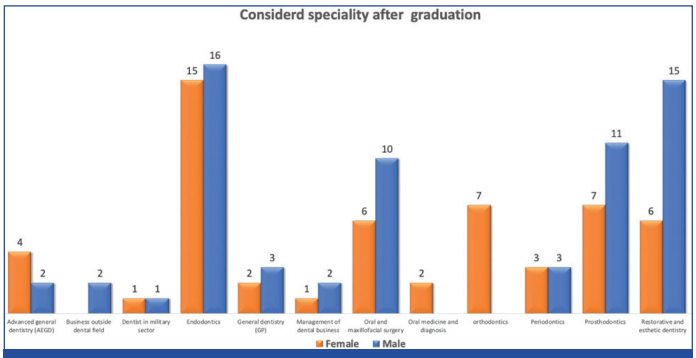
Female participants reported less stress about extraction procedures for a child where only 11 responses showed high stress giving very stressful response. However, more than 40 participants reported being quite stressed when giving local anaesthesia and having parents along for the treatment. Taking impression and placing a rubber damp were less stressful compared to other procedures, 45 and 42 female participants reported no stress respectively.

Both genders showed some similarities in certain questions; especially the 1st question (having child's guardian during treatment), the 6th question (Performing restorative procedures in a child) the 10th question (performing vital pulp therapy) and the last question (referring the child). However, male score for (not stressful) were higher than the female participant in a few questions. The distribution of the respondents according to the most stressful procedures for male was managing the child's behaviour (n=32; 18.2%) followed by giving local anaesthesia (n=25; 14.2%). Similarly, for females it was the behaviour management of the child (n=40; 22.7%). Nearly, all of the respondents felt confident in referring a child to a specialised paediatric dentist (171 out of 176).

Specialty Preferences

The distribution of the respondents according to the most preferred future options in terms of choosing a specialty or continue as a paediatric dentist. A 32.3% (n=57) of the participants want to pursue paediatric dentistry, with females having more interest in the specialty than their male counterparts (30 out of 57).

On other hand, 67.6% (n=119) participants preferred pursuing another specialty [Table/Fig-3]. Endodontics was the most preferred specialty (n=31; 26%) followed by Restorative and Aesthetic Dentistry (n=21; 17.6%); Prosthodontics (n=18; 15.1%) Oral and Maxillofacial Surgery (n=16; 13.4%), Orthodontics (n=7; 5.9%), Advance General Dentist (n=6; 5.1%) and periodontics (n=6; 5%). The most preferred specialty among female respondents was Endodontics (n=15; 12.6%) followed by Prosthodontics (n=7; 5.9%) and Orthodontics (n=7; 5.9%). The most preferred specialty among male respondents was Endodontics (n=16; 13.4%) followed by Restorative and Aesthetic Dentistry (n=15; 12.6%) and Prosthodontics (n=11; 9.2%).



[Table/Fig-3]: Specialty preference.

DISCUSSION

This study aimed at studying the different levels of stress amongst dental students in seven different dental colleges in Riyadh, Saudi Arabia performing various paediatric dental procedures. Pursuing dentistry as an undergraduate level of education poses a high risk of stress for students and has been investigated extensively during recent years [1-3,5]. However, no previous study looked at the perceived levels of stress performing paediatric specific dental procedures.

The results of this study indicated that dental students in Riyadh city do exhibit moderate levels of stress when performing various paediatric dental procedures such as rubber dam placement, pulp therapy, extractions, and giving local anaesthesia, especially when treating preschool-aged children this is in agreement to previous literature. On the other hand, dental students did not find it stressful performing restorative procedures, which might be related to the fact that they are performing similar procedures on adults, however, when performing more paediatric specific procedures they are not as adapted, this was in agreement to previous literature [16]. Furthermore, it was noted that the procedures students found most stressful were more pain stimulating and, in most instances, it would trigger an adverse behaviour from children. This finding was not surprising as it was in concurrence with a study done in Saudi Arabia that investigated perceived stress-inducing problems among dental students, the authors found that amongst the different categories investigated, clinical training was the highest in terms of stress, however they did not specify different procedures related to specialty [16] this also was in agreement with studies done internationally in India, Greece and China [5,17-20].

The student's increased level of stress performing paediatric specific procedures could lead to an underlying issue in the paediatric dental curriculum in dental colleges, especially considering that dental colleges in Saudi Arabia have a teacher-focused curriculum rather than problem-based and case-based learning [21]. Another issue is that, assessment methods used in paediatric dentistry for the most part do not meet the standard. Assessing students based on the accumulative number of and types of clinical procedures completed only provides a quantitative assessment; Wong TJ and Hubball H, suggested assessing students by performing procedures unassisted by instructors, however due to possibility of patients getting hurt, this might not be feasible [22].

Pulpal treatment in children can be quite challenging, especially when done on an anxious child that might increase the stress upon the inexperienced dental students performing such procedures. In this study, students performing pulp therapy had a statistically significant higher level of perceived stress, this is consistent with a finding by another study that found the performance of endodontic treatment by undergraduate students is causative of high levels of anxiety [23].

Due to the lack of literature investigating levels of stress amongst dentists, dental students, and dental students when performing paediatric dental procedures, it was difficult to draw direct comparisons, however, a previous study by Kieser J and Herbison P in New Zealand looked at the clinical anxieties among dental students, in which they concluded that dental students do exhibit high levels of anxiety when performing different surgical procedures as well as giving local anaesthesia [10]. Majority of the respondents were more confident in referring cases to paediatric dentists, which might be reflective of their level of confidence in managing paediatric patients and knowing their limitations as future general dentists. In a study done in Jeddah city in Saudi Arabia in 2018, researchers looked at the clinical anxiety among postgraduate paediatric dentistry students, it was concluded that a higher level of anxiety was noted amongst postgraduate students performing various paediatric procedures such as sedation and dealing with emergency cases [24].

Owing to the stressful nature of dentistry and its huge impact on dental students the, incorporation of stress management programs to combat the dreadful effects of stress on the academic and personal lives of students would be of tremendous benefits. In a systematic review of the stress management in dental students, it was suggested that the inclusion of stress management programs into the dental curricula is promising and show signs of positive effects on the dental students. These stress management programs, could be in the form of enhancement of inter-professional skills, yoga classes, progressive muscle relaxation techniques, or stress reduction exercise [25].

Another interesting finding of this study was that about only a third of the participants want to pursue paediatric dentistry as a specialty, while the most preferred specialty for both genders among the respondents was endodontics, this is different from what was reported previously in 2011, and 2012 where orthodontics was the most preferred specialty [19,26] and in 2014, where oral and maxillofacial surgery was the most preferred specialty among males while operative dentistry was most preferred specialty among females [27]. The latest study in 2017 showed a shift in preference towards restorative and aesthetic dentistry [14].

Limitation(s)

As with any questionnaire-based study certain limitation arise, there is potential for students completing the survey based on what they believed the investigators would like to know, the study only included seven dental college and had a 22.6% response rateso generalisability remains limited.

CONCLUSION(S)

Dental students in Riyadh, Saudi Arabia were more stressed when performing pain stimulating procedures on preschool children, which might be related to undergraduate dental students' paediatric dental training, hence undergraduate dental students might benefit from a paediatric dentistry curriculum reform, that has a clinical component that enables students to experience a diverse range of patients and procedures so that once they graduate they feel more comfortable and less stressed when practicing paediatric dentistry in their general practice. Future studies are recommended on a larger scale in Saudi Arabia with better response rates, to be of benefit.

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