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Research Article

**ANXIETY AND STRESS FACED BY UNDERGRADUATE  
DENTAL STUDENTS WHILE CARRYING OUT ANESTHESIA  
AND EXTRACTION PROCEDURES**

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**Abstract:**

*The purpose of this cross-sectional study was to assess the level of dental anxiety prevailing in the dental students at the Riyadh colleges of dentistry and pharmacy while carrying out anesthesia and extraction procedures and comparing the anxiety levels reported by the female and male students.*

**Keywords:** Dental anxiety; local anesthesia; Extraction; Dental students; Pre-graduate.

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## INTRODUCTION:

The local anesthesia and extraction procedure is the most problems which face the undergraduate dental students before and during the procedures.

Anxiety and stress can be modified by both psychological and practicing.

Dental and medical students often suffer from high levels of stress and can sometimes experience an adverse psychological symptom which leads them to practice dysfunctional coping mechanisms (Harris et al. 2015).

Dental anxiety is an important challenge for many patients and clinicians. It is thus of importance to know more about dental students' own experiences with dental anxiety and their understanding of dental anxiety (Storjord HP, 2014)

Psychological stress amongst dental students is a topic of great interest for various investigators from all over the world (Steenen SA et al. 2015).

Carrying out local anesthesia (LA) and extraction procedures may be one of the factors causing this high amount of stress. Administering LA to a patient is a technique sensitive procedure which requires the operator to have meticulous skills and mastery over the procedure (Hossaini M 2011).

The anxiety, which is a multisystem response to a perceived threat or danger, reflects a combination of biochemical changes in the body, the patient's personal history and memory, and the social situation (A. Obarisiagbon.2013)

Achieving absolute anesthesia is very important in clinical dental practice. It allows for painless treatment, so that the patient is very comfortable and also allows the dentist to undertake the procedure with accuracy. There are various methods for teaching LA, including demonstration on cadavers and dry human skull, practice on simulation models and live human subjects (Brand HS et al. 2010).

Student-to-student administration of local anesthesia (LA) has been widely used as the teaching

modality to train preclinical dental students as well. However, studies assessing students' outlooks towards their first injection are limited (Chandrasekaran B et al. 2014).

Undergoing an extraction has also been shown to pose a significantly increased risk for the development of chronic apprehension for dental surgical procedures (Waghachave VB et al. 2013).

The aim of this cross-sectional study to investigate the anxiety and stress affecting the dental students in Riyadh college of dentistry and pharmacy while they administer LA and carry out extraction procedures.

## METHODS:

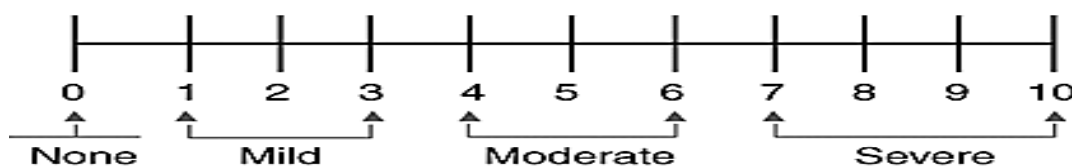
This cross-sectional study was carried out in Riyadh colleges of dentistry and pharmacy on march – April.2016.

The study consisted of 890 students including 319 males and 571 females from level 8 to level 12 at Riyadh colleges of dentistry and pharmacy, complete questionnaires were returned, the sample consisted of 264 males students (82.7%) of total number of male and 228 females students (39.9%) of total number of female, with a mean age (23.1) years the majority of the subjects (38.3%) were 19 – 29 years old, with multiple nationalities (Saudi : 93.7%, non-Saudi : 6.3%) .

This survey had 27 questions (in both English and Arabic language) including two parts which the first part contained questions concerning Local anesthesia, and the second part contained questions concerning extraction persuader.

examining the anxiety levels experienced for different levels, ages, nationalities and gender.

The measuring method was a survey using multiple choice questions and visual analog scale (VAS) ratings, The VASs were 10-mm horizontal lines with end-point anchors such as not Anxious and Very Anxious.



The students was required to make a vertical mark on the line to indicate their response to a question.

VASs are used widely in health care studies, they have good validity and reliability, were provided for some questions, Data were analyzed statistically by using SPSS Statistics (Statistical Package for the Social Sciences).

### RESULTS:

Overall response rate was 55.3% of the total number of both genders 890 students,

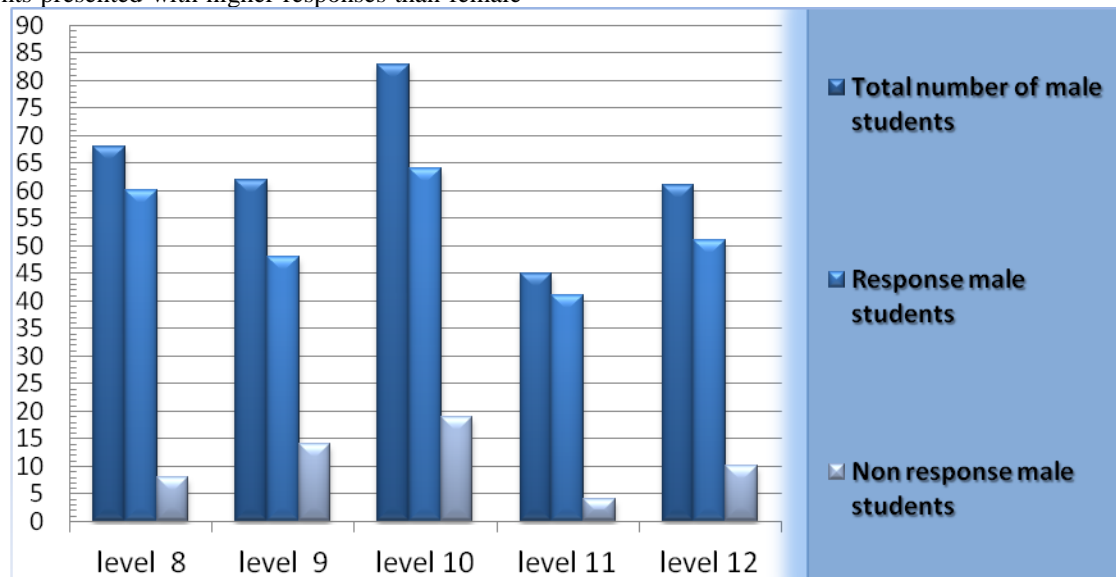
(n = 492, males: 264, females: 228,), Male dental students presented with higher responses than female

students and the difference was statistically significant.

Descriptive statistics is used to find out and identify the dental students anxiety the results show that:

The prevalence of dental anxiety during extraction procedures in the present study was found to be mild anxiety 22.8% , moderate anxiety , 37.8% , severe anxiety 32.5% .

The students who have returned and complete the questionnaires consisted of 264 males students (82.7%) from the total number of 319 males



-Table1-

1-The first question was have you ever had a dental procedure carried out under local anesthesia

The result was 434 of student answering yes , 53 answering no. We found out that 11,2% with no anxiety, 23.7% mild , 37.2 % moderate and 27,9% sever anxiety.

2-The second question was have you ever practiced giving anesthesia on a model?

The result was 198 of them says yes ( 41,3% ) and 293 says no ( 58,7% ).

3-The third question was have you ever observed/assisted someone giving anesthesia to a

patient before level 8 (439) of the student says yes ( 89% ) and (50) says no (10.2%)

4-Fourth question was have you ever given local anesthesia injection to a patient before level 8t ,the result was (236) ( 54.8% of male )(40.5% of female) answering yes and (254) answering no ( 45.2% of male )( 59,9% of female ) .

5-The fifth question was have you ever seen any video demonstrating how to give local anesthesia injection the result was (451) (92%) says yes and (50) (8%) says no

procedure carried out under local anesthesia	Yes	88.2%
	NO	10.8%
practiced giving anesthesia on a model	Yes	40.2%
	NO	59.6%
observed/assisted someone giving anesthesia to a patient before level 8?	Yes	89.2%
	NO	10.2%
given local anesthesia injection to a patient before level 8?	Yes	48.0%
	NO	51.6%
seen any video demonstrating how to give local anesthesia injection?	Yes	91.7%
	NO	8.1%

-Table 2-

6- the sixth question about asking the student if they are satisfied with the theoretical knowledge given to them in colleges the result according to the VAS was: (17) , (3.5%) with no anxiety, (50),(10.2%) mild , (156) (31.7%) moderate, (269) (54.7%) severe anxiety .

7-Question number seven was are you comfortable giving anesthesia without any supervision, Result was 11 with no anxiety (2.2%), 28 mild(8.7%) , 107 moderate (21.7%), 346 severe anxiety (70.3%) .

8-Question eight was , how anxious were you when you gave local anesthesia for the first time The result was 9 with no anxiety (1.8%), , 44 mild (9%), 145 moderate(29.5%), , 293 severe anxiety (59.7%)

9-And when we asked them are you more anxious when administering a block anesthesia compared to an infiltration?

The result was 46 with no anxiety (9.2%), 89 mild(18.1%) , 177 moderate(36%) , 180 severe anxiety( 36.6%)

10-Question ten was do you feel you have enough anatomical background needed to administer local anesthesia ?

The result was 5 with no anxiety (1%) , 27 mild(5.5%) , 183 moderate(37.3%) , 275 severe anxiety (56.1%)

the theoretical knowledge given to you in college?	Not satisfied	3.5%
	Mild satisfied	10.2%
	Moderate satisfied	31.7%
	Severe satisfied	54.7%
comfortable giving anesthesia without any supervision?	Not comfortable	2.2%
	Mild comfortable	5.7%
	Moderate comfortable	21.7%
	Severe comfortable	70.3%
The anxiety when you gave local anesthesia for the first time?	Nothing	1.8%
	Mild	8.9%
	Moderate	29.5%
	Severe	59.6%
when administering a block anesthesia compared to an infiltration?	Nothing	9.3%
	Mild	18.1%
	Moderate	36.0%
	Severe	36.6%
background needed to administer local anesthesia?	Nothing	1.0%
	Mild	5.5%
	Moderate	37.2%
	Severe	55.9%

-Table 3-

11-In question eleven we asked the student if you get more anxious when giving anesthesia to a medically compromised patient

The result was 8 with no anxiety (1.6%) , 48 mild(9.8%) , 165 moderate(33.5%) , 271 severe anxiety (55.1%)  
Level 8 (64.3%) Level 9 (50.6%) Level 10(56.8%)  
Level 11(45.5%) Level12 (55.2%)

giving anesthesia to a medically compromised patient?	LEVEL				
	8	9	10	11	12
no anxiety	2.6%	3.7%	0.0%	0.0%	2.1%
Mild	8.7%	8.6%	10.8%	6.8%	13.5%
Moderate	24.3%	37.0%	32.4%	47.7%	29.2%
Severe	64.3%	50.6%	56.8%	45.5%	55.2%

-Table 4-

12-Question number 12 was about complications following local anesthesia plays role in your anxiety  
The result was 38 with no anxiety (7.7%) , 67 mild(13.6%) , 189 moderate(38.4%) , 196 sever anxiety (39.8%)

13-And we ask them in question number thirteen who was the first person you gave anesthesia  
The result was :- 244 partner , 138 patient , 73 model , 30 relative or friend , 2 other

the first person you gave anesthesia	Partner	49.6%
	Patient	28.0%
	Model for practice	14.8%
	Relative or friend	6.1%
	Others	0.4%

-Table 5-

**The second part contained questions concerning extraction persuader**

14-The first question part , have you ever observed/assisted someone carrying out an extraction before level 8

The result was 415 (84%) say yes and 75 (15.2%) say no

15-The second question was ,have you ever seen any video demonstrating how to carry out an extraction  
And the result was 419(85.2%) answering yes and 72 (14.6%) answering no

observed/assisted someone carrying out an extraction before level 8?	Yes	84.3%
	NO	15.2%
video demonstrating how to carry out an extraction?	Yes	85.2%
	NO	14.6%

-Table 6-

16-When we asked them , do you feel you have enough anatomical background needed to perform dental extraction

The result was 5 with no anxiety (1%), 27 mild (5.5%), 195 moderate (39.6%), 263 severe anxiety (53.5%)

17-For the following question we asked them about

anxiety before performing an extraction .

The result was 34 with no anxiety (6.9%), 112 mild (22.8%), 186 moderate (37.8%), 160 severe anxiety (32.5%) .

18-And also, we asked them in question number 18 about if they interested in attending a surgery

workshop to improve their knowledge and surgery skills

The result was 25 with no anxiety (5.2%), 61 mild (12.4%), 172 moderate (35%), 233 severe anxiety (47.4%)

19-And we asked them in important question related to the colleges role if they think that the rules of the college make them stress and uncomfortable

The result was 15 with no anxiety (3%), 29 mild (5.9%), 151 moderate (30.7%), 296 severe anxiety (60.2%)

20-And other question about the instructor and how uncomfortable they make the student feel

The result was 20 with no anxiety (4.1%) , 58 mild(11.8%) , 220 moderate(42.5%) , 206 severe anxiety (41.9%)

<b>anatomical background needed to perform dental extraction</b>	<b>Nothing</b>	<b>1.0%</b>
	<b>Mild</b>	<b>5.5%</b>
	<b>Moderate</b>	<b>39.6%</b>
	<b>Severe</b>	<b>53.5%</b>
<b>anxiety before performing an extraction</b>	<b>Nothing</b>	<b>6.9%</b>
	<b>Mild</b>	<b>22.8%</b>
	<b>Moderate</b>	<b>37.8%</b>
	<b>Severe</b>	<b>32.5%</b>
<b>attending a surgery workshop to improve your knowledge and surgery skills ?</b>	<b>Nothing</b>	<b>5.1%</b>
	<b>mild</b>	<b>12.4%</b>
	<b>moderate</b>	<b>35.0%</b>
	<b>severe</b>	<b>47.4%</b>
<b>rules of the college make you stress and uncomfortable</b>	<b>Nothing</b>	<b>3.0%</b>
	<b>mild</b>	<b>5.9%</b>
	<b>moderate</b>	<b>30.7%</b>
	<b>severe</b>	<b>60.2%</b>
<b>instructors make you feel stress and uncomfortable</b>	<b>Nothing</b>	<b>4.1%</b>
	<b>mild</b>	<b>11.8%</b>
	<b>moderate</b>	<b>41.5%</b>
	<b>severe</b>	<b>41.9%</b>

-Table 7-

21-And we asked them about the stress and how they deal with it The result was (Sleep 157, Talk to friend 212, Read 95, Listen to music 99, Exercise 122, Other 38)

sleep	31.9%
Talk to friends	43.1%
Exercise	24.8%
Listen to music	20.1%
Reade	19.3%
other	7.7%

-Table 8 -

22 - And about fearing we asked them have you ever cancelled your patient appointment because of fear?

The result was 98 (19.9%) they cancelled and 392 (80.1%) no

cancelled appointment because of fear?	Yes	19.9%
	NO	80.1%

-Table 9-

23 - we asked the students about facing any anxiety or stress :-

- during extractions of maxillary teeth
- during extractions of mandibular teeth
- during extractions of Endo treated teeth
- during extractions of remaining root teeth

The result was

		IN GENERAL,	GENDER	
			Male	female
Maxillary teeth	Nothing	20.9%	20.5%	21.5%
	Mild	28.3%	30.3%	25.9%
	Moderate	32.9%	34.1%	31.6%
	Severe	17.9%	15.2%	21.1%
Mandibular teeth	Nothing	20.6%	22.3%	18.4%
	Mild	28.6%	31.1%	25.4%
	Moderate	31.6%	35.2%	27.2%
	Severe	19.2%	11.0%	28.5%
Remaining root	Nothing	15.5%	17.0%	13.6%
	Mild	25.3%	28.8%	21.1%
	Moderate	35.4%	33.3%	37.7%
	Severe	23.8%	20.5%	27.6%
Endo treated teeth	Nothing	20.2%	23.9%	15.4%
	Mild	24.7%	27.7%	20.6%
	Moderate	35.0%	33.3%	36.0%
	Severe	20.2%	14.4%	26.3%

-Table 10-

27-The last question was about what they feeling when they start giving anesthesia or extraction procedure, if they perceive any of these symptoms

The result was

Your breathing becomes faster	24.0%
Your hands become sweaty	28.3%
Your heart beats faster	23.4%
You sleep poorly the night before the appointment	9.3%
Others	3.3%
None of the above	43.3%

### DISCUSSION:

Regarding to our cross-sectional study we found that the males response more than females because we faced some completions distributing our survey by our self due to some issue in reaching female section while we distributing our survey which had less than half of them.

and we found that the students in between moderate and severe anxious during dental procedures carried out under local anesthesia, maybe due to fearing of seeing their patients under stress and pain.

We also find half of students try to practice on model and we encouraging them to practicing more to reduce the anxiety, to be more comfortable, flexible during giving local anesthesia.

In another hand we found there is great number of students they did assist and observe for local anesthesia and dental extraction before level 8 which is good to reduce the anxiety and give good idea how to carrying out anesthesia and dental extraction procedures and our advice for the students is to increase the numbers off assisting session to have even much less anxiety level.

We also found that the females giving less anesthesia injection before level 8 than males maybe due to fearing from using needle ,fearing of bleeding or complication we recommend them to assist , watching a video ,and we found there's a big number of student going with self-learning by watching videos to improve them self in both local anesthesia and extraction procedures , first of all we should appreciate their interesting to improve them self and

we advice them to use trusted websites.

Depend on our survey we found that more than the half of student satisfied with the theoretical knowledge that given in the colleges.

we also found that most of students feel comfortable to give anesthesia and extraction procedures without any supervisor , It could be because of the attention cause by the supervisor and we recommend the supervisor to be flexible, friendly and supportive and give more comfortable environment to students during working , based on our survey we found most of students feel severe anxiety when give anesthesia at the first time ,we recommend the supervisor to stay with student to reduce the anxiety and encourage the student to improve them self by observing and assisting , we recommend our college to focusing on the models to help student.

Also, we found most of them practicing on their partner may be due to feeling more comfortable with each other , or due to limited option by college rolls .

We found that a little number of students don't know about anatomical background when giving local anesthesia maybe because they didn't attend the classes , they feel its difficult subject, complicated or they not interested in this course, our recommendation to the doctors try to make it easy and interesting for all students and our advice the student to improve them self and consuming more time on this subject.

We can find most of students feel severe anxiety when dealing with medical compromised patient ,

and level 8 get more anxious when giving anesthesia to

a medically compromised patients than all levels , maybe due to less experience in dealing with patients and complication , we advice the students to read about that medical condition to improve the them skills with patient and be ready for any complication that will face them .

We also found that most of students in between moderate and severs anxious, maybe because they fear of complication and loss points.

We Should reassuring the students fearing of complication and teach them how to deal with it to reduce the anxiety .

We found that a little number of students they don't know about anatomical background in extraction procedures it could be because they didn't attend the classes ,or they are not interesting in surgery , or feeling its difficult or complicated subject , so our recommendation to the doctors, try to make it easy and interesting for all students, and our advice for the students to improve them self and consume more time in the course , that lead us to find out there anxiety before performing an extraction .

Based on our survey we found that most of students in between moderate and severs anxious, it could be because they fearing of complication happened while carrying out the procedure or the fearing of loss point .

And as an encouraging question also we asked them about their interesting in attending a surgery conference and workshop to improve their knowledge and surgery skills and for us there is a good number of students who are interesting in attending surgery course , maybe because they want to improve them self in this subject , feeling them self with no enough information .

related to our college roles unfortunately we find out that more than half of students feeling stress and uncomfortable , Due to limited option of patients type, difficult procedures ,or number of instructors , or may be due to pressure from some doctors on the students .

And to know how they relive their anxiety we asked them about the stress and how they deal with it , the result of most of them was talking to friends to reduce the anxiety.

we were interesting to know if someone have ever

cancelled his/her patients appointment because of fear, the result as expected was so much low for those who cancel their appointment . So, we advice them to face there fearing and ask the doctors to help them passing this temporary phase.

According to the results we find out that most of students are in moderate anxious in this surgery part ,maybe due to insufficient expose to surgery procedure ,

so, we recommend that the colleges and instructors increasing the surgery requirement ,and we advise the students to practice, read and watching more videos improving them skills to reduce this fearing and stress, especially for the female students , because we found that the females are more anxious than males for all procedures .

Finally, we found most of students having symptoms , we advice them to calm them self and work with partner

### CONCLUSIONS:

All levels of dental students have more anxiety toward giving local anesthesia at the first time,

and regarding to level 8 students both genders have severe anxiety more than level 12 students before extraction procedure.

According to the results we find out that most of students are in moderate anxious in this surgery part , it could be due to insufficient expose to surgery procedure ,

so, we recommend that the colleges and instructors increasing the surgery requirement ,and we advise the students to practice, read and watching more videos improving them skills to reduce this fearing and stress, especially for the female students , because we found that the females are more anxious than males for all procedures .

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