

Assessment of Clinical Anxiety Among Third and Fourth Year Dental Students in Bangalore, Karnataka: A Cross Sectional Study

Abstract

Introduction: Dental education is regarded as a complex, demanding and often stressful pedagogical exposure. Practicing dentistry requires clinical skills and patient management skills, characteristics that also add to the stress perceived by the students. One debilitating reaction to stress is anxiety, which is the only measure of stress that has been used to test the academic performance of dental students. In general, anxiety is reported to be predictive of reduced performance. Hence, the present study was aimed to assess clinical anxiety among third and fourth year dental students. **Materials & Methods:** The present cross sectional study was conducted among 500 third and fourth year dental students in four dental colleges of Bangalore, selected by simple random sampling using the 38 items, modified Moss and McManus questionnaire rated by 4 point Likert scale, addressing 6 domains. Statistical analysis was performed using Students' t-test. **Results:** Of the 500 students 250 were from third year and 250 were from fourth year. Study population consisted of 163 (33%) males and 337 (67%) females. There was a significant difference between third and fourth year students for the following items: clinical case presentation, admitting not knowing something to patient, joining theater team, communication with elderly, fear of patient's satisfaction with denture. **Conclusion:** The results have indicated that the students are fairly anxious and there exists no significant difference between the year of the study and gender. Some amount of anxiety appears to be inherent in professional education and prevalent to diverse dental educational settings. Hence there is a need to strengthen the efforts of creating a supportive learning environment thereby to minimize clinical anxiety.

Key Words

Clinical anxiety; dental students; Bangalore; academics

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INTRODUCTION

Dental education is regarded as a complex, demanding and often stressful pedagogical exposure. It involves an acquisition of required academic, clinical and interpersonal skills during the course of learning. Practicing dentistry requires clinical skills and patient management skills, characteristics that also add to the stress perceived by the students.^[1] Stress is a subjective sensation with a varied degree of perception. Stress includes a

wide range of strong external stimuli, both physiological and psychological, which can cause a physiological response called the general adaptation syndrome, first described in 1936 by Hans Selye.^[2] Anxiety is an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure³. One debilitating reaction to stress is anxiety, which is the only measure of stress that has been used to test the academic performance of dental students. In general anxiety is

Table 1: Gender wise distribution of study sample

| Gender | N | % |
|--------|-----|------|
| Male | 163 | 33% |
| Female | 337 | 67% |
| Total | 500 | 100% |

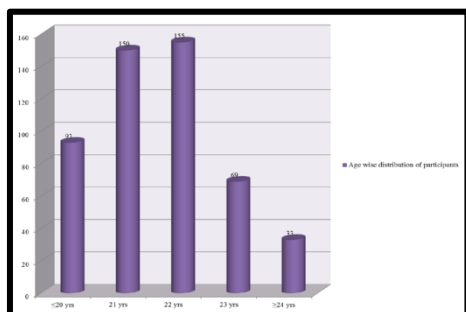


Fig. 1: Age wise distribution of participants

performance of dental students. In general anxiety is reported to be predictive of reduced performance.^[2] Several studies have stated that transition from preclinical to clinical course through the study years increase the stress among the dental students and managing the patients was perceived to be more stressful.^[2-5] The anxieties of new clinical medical students was about half of the total clinical situations elicited moderate to severe anxiety state among the participants.^[6] When the trainers and students perspectives of clinical anxiety among final year dental students was investigated various factors like inability to meet requirements before exams, inability to pass the final exams, dealing with psychiatric patients, coping with uncooperative children, getting infected by patients, fracturing a tooth during extraction, extracting the wrong tooth, discovering calculus by the supervisor after scaling, accidental pulp exposure, inadvertently hurting patients and using the high speed hand piece were observed to be anxiety provoking.^[7] The term clinical anxiety is used to describe the performance of those procedures during treatment that provoke anxiety among dental students. Most common cause of stress among clinical students was patient management and clinical performance. Sources of anxiety may vary among students exposed to different preclinical curricula and different educational environment⁸. It was shown that there exists a gender difference for perceived sources of stress.^[9] In India the course duration for dentistry is five years with one year of compulsory rotary internship. First two years will be preclinical; students get exposed to clinical cases from third year. Several studies have been conducted to assess the anxiety provoking situations among medical and nursing students but there is a dearth of knowledge

regarding clinical anxiety among dental students. Hence the present study was aimed to assess clinical anxiety among third and fourth year dental students.

MATERIALS & METHODS

A cross - sectional study was conducted with the aim to assess the clinical anxiety among third and fourth year dental students in Bangalore. The list of dental colleges in Bangalore was obtained from DCI website. The sampling frame consisted of all the 16 dental colleges located in Bangalore and the source of data consisted of third and fourth year dental students. The study proposal was approved by institutional review board and permission to conduct the study was obtained from the Principals of various dental colleges of Bangalore in which the study was conducted. The purpose and details of the study was explained to the study participants and written informed consent was then obtained from them. A specially designed proforma was used for collection of data in this study. The structured proforma consisted of two parts, the first part pertaining to the questions that included demographic information. The demographic variables considered were age, gender, year of study and name of the college. The second part consisted of information related to modified Moss and MacManus^[7] questionnaire for assessing clinical anxiety. A close ended self - administered questionnaire consisted of 38 items (6 domains) and the responses were in four point Likert scale. A pilot study was conducted among 50 students to determine the sample size and to check the validity of the questionnaire. Cronbach's alpha obtained was 0.91. A study sample of 488 was estimated which was rounded to 500.

Method of Data Collection

Colleges were selected using simple random sampling technique. Principals of four dental colleges in Bangalore were contacted prior and permission was obtained to conduct the study among third and fourth year dental students. Study was conducted during the month of March 2014. Questionnaire was administered during leisure hours without disturbing students' academic activities. All the participants were given 20 minutes of time to complete the questionnaire.

Table 2: Distribution of perceived sources of clinical anxiety among third and fourth year dental students

| Question | 3 rd year Mean (SD) | 4 th year Mean (SD) |
|---------------------------------------------------------------|-----------------------------------|-----------------------------------|
| Academic related situations | | |
| 1. Clinical case presentation | 2.42 (0.84) | 2.55 (0.97) |
| 2. Inability to meet requirement | 2.69 (0.89) | 2.63 (0.88) |
| 3. Examination failure | 2.98 (0.94) | 3.07 (0.90) |
| 4. Admitting not knowing something to consultant | 2.52 (0.97) | 2.72(0.94) |
| 5. Admitting not knowing something to patient | 2.45 (0.93) | 2.64(0.98) |
| 6. Difficult question from the patient | 2.34 (0.99) | 2.47(1.05) |
| Communication and health team interaction | | |
| 7. Joining theater team | 2.06 (1.01) | 2.34(1.10) |
| 8. Interacting with nurses | 1.80 (1.03) | 2.04(1.15) |
| 9. Talking with patients | 1.86 (1.03) | 2.10(1.13) |
| 10. Communication with elderly | 1.96 (1.07) | 2.2(1.16) |
| Investigations related situations | | |
| 11. Taking history | 1.86 (0.97) | 2.02(1.09) |
| 12. Examining patient | 2.14 (1.00) | 2.29(1.09) |
| 13. Taking pulse | 1.90 (1.05) | 2.01(1.08) |
| 14. Measuring blood pressure | 2.05 (1.07) | 2.13(1.13) |
| 15. Filling of laboratory request form | 1.91 (0.98) | 2.07(1.06) |
| 16. Poor radiograph taking | 2.50 (0.9) | 2.51(0.96) |
| 17. Poor radiograph development | 2.49 (0.88) | 2.54(0.97) |
| 18. Poor radiograph interpretation | 2.55 (0.89) | 2.68(0.97) |
| Diagnosis related situations | | |
| 19. Making diagnosis | 2.44 (0.92) | 2.45(0.95) |
| 20. Telling patient that you do not know the diagnosis | 2.66 (0.94) | 2.60(1.03) |
| 21. Getting diagnosis wrong | 3.04 (0.94) | 2.86(0.94) |
| 22. Not able to defend diagnosis | 2.88 (0.93) | 2.87(0.95) |
| Act of treatment related situations | | |
| 23. Treating children | 2.46 (1.02) | 2.41(0.95) |
| 24. Treating psychiatric patient | 3.03 (0.91) | 2.95(0.91) |
| 25. Coping with un co-operative patient | 2.92 (0.9) | 2.83(0.94) |
| 26. Administering local anesthesia | 2.78 (1.00) | 2.71(1.00) |
| 27. Using extraction force | 2.7 (0.99) | 2.46(1.02) |
| 28. Using high speed hand piece | 2.50 (1.01) | 2.37(1.08) |
| 29. Arresting post-operative bleeding | 2.58 (0.97) | 2.49(1.01) |
| 30. Helping in a faint | 2.56 (1.03) | 2.67(1.04) |
| Deficiencies and error in treatment related situations | | |
| 31. Fracturing a tooth | 2.73 (0.92) | 2.67(0.99) |
| 32. Extracting wrong tooth | 3.15 (0.97) | 3.1(1.01) |
| 33. Iatrogenic gingival trauma | 2.88 (0.89) | 2.79(0.94) |
| 34. Accidental pulp exposure | 3.06 (0.90) | 2.98(0.99) |
| 35. Trainer detecting calculus after scaling | 2.46 (0.94) | 2.41(0.98) |
| 36. Inadvertently hurting patient | 2.64 (0.94) | 2.68(0.95) |
| 37. Fear of patient's satisfaction with denture | 2.61 (0.86) | 2.78(0.97) |
| 38. Getting infected by patient | 3.04 (1.03) | 3.16(1.00) |

Statistical Analysis

The statistical analyses were done using the IBM Corporation, SPSS Inc. Chicago, IL, USA version 18 software package. Descriptive statistics were used to describe the age and gender distribution of the study population. To comparison of overall

mean anxiety score between the two groups Students' t-test was used.

RESULTS

The present study was conducted to evaluate the clinical anxiety among third year and fourth year dental students. A total of 500 students participated in the study out of which 163 (33%) were males and

Table 3: Comparison of perceived sources of clinical anxiety among gender

| Question | Females Mean (SD) | Males Mean (SD) |
|---------------------------------------------------------------|----------------------|--------------------|
| Academic related situations | | |
| 1. Clinical case presentation | 2.48 (0.88) | 2.49 (0.95) |
| 2. Inability to meet requirement | 2.69 (0.90) | 2.61 (0.85) |
| 3. Examination failure | 3.04 (0.94) | 3.00 (0.86) |
| 4. Admitting not knowing something to consultant | 2.56 (0.98) | 2.74 (0.91) |
| 5. Admitting not knowing something to patient | 2.54 (0.96) | 2.56 (0.96) |
| 6. Difficult question from the patient | 2.38 (1.03) | 2.47 (1.01) |
| Communication and health team interaction | | |
| 7. Joining theater team | 2.16 (1.05) | 2.28 (1.08) |
| 8. Interacting with nurses | 1.76 (1.08) | 2.26 (1.11) |
| 9. Talking with patients | 1.88 (1.08) | 2.19 (1.10) |
| 10. Communication with elderly | 1.96 (1.14) | 2.32 (1.08) |
| Investigations related situations | | |
| 11. Taking history | 1.88 (1.04) | 2.08 (1.02) |
| 12. Examining patient | 2.15 (1.05) | 2.35 (1.04) |
| 13. Taking pulse | 1.86 (1.06) | 2.15 (1.08) |
| 14. Measuring blood pressure | 2.02 (1.08) | 2.25 (1.13) |
| 15. Filling of laboratory request form | 1.91 (1.02) | 2.15 (1.03) |
| 16. Poor radiograph taking | 2.48 (0.91) | 2.57 (0.96) |
| 17. Poor radiograph development | 2.49 (0.90) | 2.57 (0.97) |
| 18. Poor radiograph interpretation | 2.56 (0.92) | 2.73 (0.95) |
| Diagnosis related situations | | |
| 19. Making diagnosis | 2.46 (0.93) | 2.42 (0.92) |
| 20. Telling patient that you do not know the diagnosis | 2.68 (0.99) | 2.55 (1.00) |
| 21. Getting diagnosis wrong | 2.99 (0.93) | 2.87 (0.94) |
| 22. Not able to defend diagnosis | 2.89 (0.93) | 2.85 (0.97) |
| Act of treatment related situations | | |
| 23. Treating children | 2.45 (1.01) | 2.40 (0.94) |
| 24. Treating psychiatric patient | 3.05 (0.92) | 2.85 (0.90) |
| 25. Coping with un co-operative patient | 2.91 (0.92) | 2.80 (0.91) |
| 26. Administering local anesthesia | 2.78 (0.99) | 2.66 (1.00) |
| 27. Using extraction force | 2.62 (0.99) | 2.50 (1.04) |
| 28. Using high speed hand piece | 2.44 (1.03) | 2.43 (1.06) |
| 29. Arresting post-operative bleeding | 2.50 (0.98) | 2.61 (0.99) |
| 30. Helping in a faint | 2.63 (1.04) | 2.60 (1.03) |
| Deficiencies and error in treatment related situations | | |
| 31. Fracturing a tooth | 2.77 (0.93) | 2.57 (1.01) |
| 32. Extracting wrong tooth | 3.19 (0.98) | 2.98 (1.01) |
| 33. Iatrogenic gingival trauma | 2.89 (0.89) | 2.74 (0.96) |
| 34. Accidental pulp exposure | 3.08 (0.91) | 2.89 (1.03) |
| 35. Trainer detecting calculus after scaling | 2.38 (0.93) | 2.57 (1.02) |
| 36. Inadvertently hurting patient | 2.65 (0.94) | 2.70 (0.93) |
| 37. Fear of patient's satisfaction with denture | 2.69 (0.88) | 2.72 (0.99) |
| 38. Getting infected by patient | 3.13 (1.02) | 3.04 (1.01) |

337 (67%) were females (Table 1). Fig. 1 shows age wise distribution of study participants. The mean age of the study participants was 21.676 ± 1.468 . A total of 255 students were distributed in the age range of 21 - 22 years. Third year students were more anxious about extracting wrong tooth (3.15 ± 0.97), accidental pulp exposure (3.06 ± 0.90),

getting infected by patient (3.04 ± 1.03), getting diagnosis wrong (3.04 ± 0.94), treating psychiatric patient (3.03 ± 0.91) and less anxious about filling of laboratory request form (1.91 ± 0.98), taking pulse (1.9 ± 1.05), talking with patients (1.86 ± 1.03), taking history (1.86 ± 0.97), interacting with nurses (1.8 ± 1.03). Fourth year students were more

Table 4: Over all Anxiety Score

| | Mean anxiety score (Mean \pm SD) | P – value |
|-------------|------------------------------------|-----------|
| Males | 3.10 \pm 1.01 | 0.29 |
| Females | 3.14 \pm 1.00 | |
| Third year | 3.10 \pm 1.02 | 0.38 |
| Fourth year | 3.05 \pm 1.03 | |

anxious about getting infected by patient (3.16 \pm 1.00), extracting wrong tooth (3.1 \pm 1.01), examination failure (3.07 \pm 0.90), accidental pulp exposure (2.98 \pm 0.99) treating psychiatric patient (2.95 \pm 0.91) and less anxious about talking with patients (2.1 \pm 1.13), filling of laboratory request form (2.07 \pm 1.06), interacting with nurses (2.04 \pm 1.15), taking history (2.02 \pm 1.09) and taking pulse (2.01 \pm 1.08) (Table 2). As evident in Table 3 the top clinical anxiety provoking situations in male students were getting diagnosis wrong (2.87 \pm 0.94), accidental pulp exposure (2.89 \pm 1.03), extracting wrong tooth (2.98 \pm 1.01), examination failure (3.00 \pm 0.86), getting infected by patient (3.04 \pm 1.01) and less anxious about measuring blood pressure (2.25 \pm 1.13), talking with patients (2.19 \pm 1.10), taking pulse (2.15 \pm 1.08), filling of laboratory request form (2.15 \pm 1.03), taking history (2.08 \pm 1.02). Whereas top clinical anxiety provoking situations among female students were extracting wrong tooth (3.19 \pm 0.98), getting infected by patient (3.13 \pm 1.02), accidental pulp exposure (3.08 \pm 0.91), treating psychiatric patient (3.05 \pm 0.92), examination failure (3.04 \pm 0.94) and less anxious about filling laboratory request form (1.91 \pm 1.02), taking history (1.88 \pm 1.04), talking with patients (1.88 \pm 1.08), taking pulse (1.86 \pm 1.06) and interacting with nurses (1.76 \pm 1.08) (Table 3). The overall mean anxiety score was 3.10 \pm 1.01 in males and 3.14 \pm 1.00 in females. Among third year students overall mean anxiety score was 3.10 \pm 1.02 and fourth year students it was 3.05 \pm 1.03 (Table 4).

DISCUSSION

This study was conducted to assess the perceived sources of clinical anxiety among third and fourth year dental undergraduate students in Bangalore city. Third year dental students have reported of being more anxious about extracting wrong tooth, accidental pulp exposure, getting infected by patient, getting diagnosis wrong, treating psychiatric patient. Among fourth year students top clinical anxiety provoking situations were getting infected by patient, extracting wrong tooth, examination failure, accidental pulp exposure, treating psychiatric patient. These results are in accordance

with the study done by Obarisiagbon *et al.*,^[7] in which the top clinical anxiety provoking situations were inability to meet requirements before exams, inability to pass the final exams, dealing with psychiatric patients, coping with uncooperative children, getting infected by patients, fracturing a tooth during extraction, extracting the wrong tooth, discovering calculus by the supervisor after scaling, accidental pulp exposure, inadvertently hurting patients, and using the high speed hand piece. Among fourth year dental students' fear of examination failure was one among the top anxiety provoking situations. This can be due to increased workload, as they have to take up exams in eight clinical subjects by the end of the year. In a study done by Harikiran *et al.*,^[1] appearing for exams was reported to be stressful by an overwhelming 97% of fourth year dental students. Fear of examination failure ranked third among males and fifth among females which is in accordance with the study done by Acharya *et al.*^[10] Getting infected by patient and getting wrong diagnosis were among the top five clinical anxiety provoking situations. A study conducted by Kieser *et al.*,^[11] reported the same. There was a significant difference between third and fourth year students for the following items: Clinical case presentation, admitting not knowing something to patient at ease, joining theater team, communication with elderly, fear of patient's satisfaction with denture. There was no significant difference between the year of study and gender for the mean clinical anxiety. This was in accordance with the study done by Harikiran *et al.*,^[1] and Kieser *et al.*,^[11] but contradictory to the studies done by Acharya *et al.*,^[10] Al-Sowygh *et al.*,^[2] Telang *et al.*,^[4] Polychronopoulou *et al.*,^[9] and Kumar *et al.*^[5] In comparing gender difference in anxiety provoking situation revealed statistically significant difference in 20 out of the 38 studied situations. According to Obarisiagbon *et al.*,^[7] there was a significant gender difference for using extraction forceps and arresting post-operative bleeding which was in accordance with the present study.

CONCLUSION

The present study results indicated that the students are fairly anxious and there exists no significant

difference between the year of the study and gender. Although some amount of anxiety appear to be inherent in professional education and prevalent to diverse dental educational settings. A contemporary dental school should address to the potential sources effectively, thus promoting the educational and professional well-being of dental undergraduates. There is a need to strengthen efforts to minimize clinical anxiety thereby creating a supportive learning environment. Furthermore, it would be interesting to explore the teacher's perspective on the effectiveness of teaching methods and their impact on students feeling of stress.

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