Effect of NEET based Selection Process on the Academic Outcome of Students Pursuing Dentistry - A Cohort Study at Saveetha Dental College

Saloni Kachhara[1], Deepak Nallaswamy[2], Subha M[3]

[1]Post-graduate Student , Department of Prosthodontics and Implant Dentistry, [2]Director of Academics, [3]Reader, Saveetha Dental College, Saveetha University, SIMATS, Chennai, India

Abstract

Introduction: In India, in 2016, the medical council of India introduced one single common entrance test called NEET- National Eligibility Entrance Test for admission to all the medical, dental and paramedical courses after 12th standard for government as well as private institutes. Since NEET is the first attempt by the government of India to create a central admission process, it is clearly in its early process and there is an incredible need for scientific data to evolve the system. The aim of this study is to analyze if the admissions through NEET affected the quality of students with respect to their academic performance pursuing the undergraduate dental program, especially in the private colleges.

Materials and Methodology: The academic performance was measured by comparing the Dental Anatomy (DA) subject marks acquired by the students in their university exam at the end of first year of their BDS course for the years 2015, 2016 and 2017.

Results: There was a significant difference (<0.05) in the academic outcome of the NEET and NON-NEET batches, but there wasn't a significant difference (>0.05) between the two NEET batches i.e. between 2016 and 2017 batches.

Conclusion: The academic quality of dental graduates in first year of the BDS course could be considered better considering the marks of dental anatomy subject for both the NEET batches 2016 and 2017 compared to the NON-NEET batch of 2015.

Key Words: *NEET, Dental education, Dental school admissions, India, Dental graduates*

Introduction

Indian education system in the field of healthcare is one of the largest in the world. Many of its graduated doctors emigrate, and create a global impact.[1] India is the seventh largest and the second most populous country of the world. Oral diseases form a huge part of public health issues in India. Around 60%–65% of the general population are being affected by dental caries.[2] The prevalence, incidence and severity of oral diseases in India lead to the need of an effective dental education methods and oral health care delivery systems.[3]

Dental education in India was formerly established in 1920s, when Dr.Rafidin Ahmed started the first dental college in Calcutta.[4] Till the 1960s, all dental colleges were government-aided colleges. At present, there are 342 dental colleges in the country amongst which 302 are privately owned and only 40 by the government.[5] The increasing number of dental colleges leads to a

Corresponding author:
Saloni Kachhara
Post-graduate Student, Department of Prosthodontics and Implant Dentistry, Saveetha Dental College
Saveetha Institute of Medical and Technical Sciences
162, Poonamallee High Road, Chennai 600077
Tamil Nadu, India, E-Mail: drsbk25@gmail.com
Telephone Number: 7666237137

substantial increase in the number of dental graduates per year.[6] The number of graduating dental students in 2000 was 26,000 compared to 1,370 in 1960.

Formerly, an aspiring student could gain admission to a dental college in India via two ways:

1) Government-administered entrance exam or

2) Private school-administered entrance exam

All the private colleges conducted their specific entrance exams.[7] Due to this system, the students had to appear for various tests and anticipate the results in different exams. There was no standardized exam at one level. This led to loss of their time, money and energy.

In 2010, the medical council of India introduced one single common entrance test called NEET- National Eligibility Entrance Test for Admission to all the medical and paramedical courses after 12th standard. It allowed dental admission to all the colleges including the government as well as the private. It suffered a lot of opposition and finally was systematically conducted in 2016. Many developed countries have evolved dental admission tests based on the academic research surveys, student performances and other relevant parameters. Since NEET is the first attempt by the government of India to create a central admission process, it is clearly in its early process and there is an incredible need for scientific data to evolve the system.

The aim of this study is to analyze if the admissions through NEET affected the quality of students with respect to their academic performance pursuing the undergraduate dental program, especially in the private colleges.

Materials and Methodology

The study was conducted in Saveetha Dental College and Hospital, Chennai with the ethical approval of the education review board of the institute. Three cohorts of batches were selected for the study, the 2015 batch (NON-NEET) whose admissions were done according to the Saveetha protocols which included a multiple choice exam conducted by the institute along with personal interviews and dexterity tests, the second cohort was the 2016 batch who acquired admission through clearing NEET, the centralized common entrance test as well as the personal interviews, while the third cohort was the 2017 batch who acquired admissions solely on the basis of NEET ranking (Table1). The academic performance was measured by comparing the Dental Anatomy (DA) subject marks acquired by the students in their university exam at the end of first year of their BDS course.

The datafile consisted of the final exam marks of the Dental Anatomy subject of the three batches. The marks were obtained out of 200.

IBM SPSS software was used for data analysis. The mean was compared between the three years using the Tukey HSD test. The data was checked for normality of distribution. The analysis consisted of comparison in the academic performance of the three batches.

Results

The data followed a normal gaussian curve pattern. So the difference in sample size didn't interfere with the results.

There was a significant difference (<0.05) in the academic outcome of the NEET and NON-NEET batches, but there wasn't a significant difference (>0.05) between the two NEET batches ie between 2016 and 2017 batches (Fig 1).

The mean score of 2015 ie the non NEET batch was 165.36, 2016 ie the NEET batch was 204.69 and that of 2017 was 198.31. A graph representing the means of Dental Anatomy marks in 2015, 2016 and 2017 between both the genders is as follows (Fig 2).

Table 1: Descriptive data of the three cohorts used in the study

Sr.No.	Year	Batch	Sample size	Admission protocol
1	2015	NON-NEET	96	Saveetha entrance test, interview, dexterity test
2	2016	NEET	49	NEET score and interview
3	2017	NEET	76	Only NEET rank

Table 2 : It shows Tukey HSD test depicting the comparison of means marks acquired by the three batches.

Years(I)	Years(J)	Mean Difference (I-J)	Std.Error	Sig.	95%Confidence Interval	
					Lower Bound	Upper Bound
2015	2016	-24.172	3.159	.000	-31.63	-16.72
	2017	-22.703	2.762	.000	-29.22	-16.18
2016	2015	24.172	3.159	.000	16.72	31.63
	2017	1.469	3.296	.896	-6.31	9.25
2017	2015	22.703	2.762	.000	16.18	29.22
	2016	-1.469	3.296	.896	-9.25	6.31

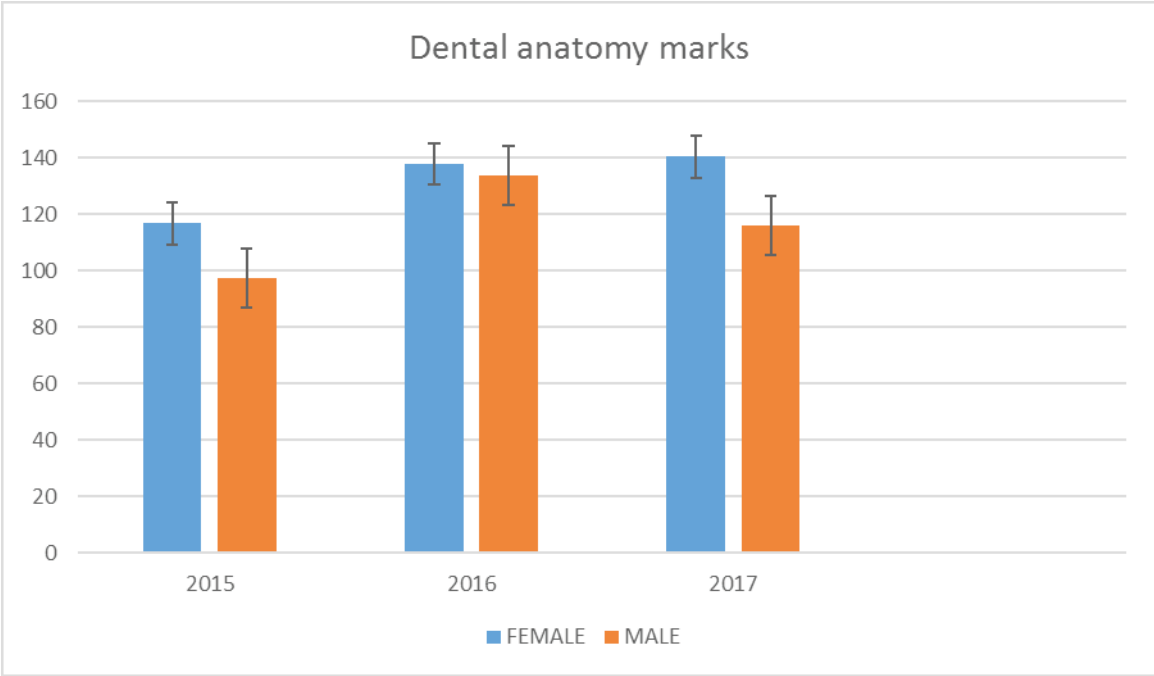

Fig 1: A bar graph representing the means of dental anatomy marks of the three cohorts between both the genders, male (dark blue) and female (light blue) along with standard error bars.

Discussions

From the above study, it is discovered that there is a significant difference in the mean dental anatomy marks of 2015 (NON-NEET) and 2016 (NEET) batches and between 2015 (NON-NEET) and 2017 (NEET) batches. There is no significant difference in the mean marks of the two NEET batches although the marks of 2017 batch were comparatively lesser than 2016 batch.

Admissions committees for dental schools around the world have assessed the correlation between admission requirements and students' subsequent performance in order to decide what factors to use for predicting students' success. The Dental Education Eligibility Test (DEET) was developed in Republic of Korea to establish the criteria that would be applied to all dental applicants. The DEET was designed to determine which applicants have the necessary cognitive abilities to successfully complete dental education programs in Korea. Although the DEET has been shown to have the ability to predict performance in the first semester, its ability to predict tends to decrease as students' progress to the end of the dental course.[116]

Dental Admission Test (DAT) is a multiple-choice standardized exam taken by potential dental school students in the United States and Canada.[8] It is designed to provide dental education programs with a means to assess program applicant's' potential for success. The DAT consists of four tests based on: Survey of the Natural Sciences, Perceptual Ability, Reading Comprehension, and Quantitative Reasoning.[9] It measures the cognitive ability of students and is considered as a predictor of dental school performance but only in the first and second years of dental training in a traditional curriculum.[10] Similarly, NEET is a multiple choice entrance exam in India for medical, dental as well as paramedical courses, including nursing, physical therapy, pharmacy, and occupational therapy. There is no exclusive test only for dental admissions.[5]

Dental admission exams are a positive indicator of students' performance in other countries.[11] There haven't been any studies in India which involve NEET. The present study assessed if the academic performance in the subject of Dental Anatomy, of the first year dental program was affected by the introduction of NEET in turn indicating the difference in the academic quality of students enrolled in the dental school. NEET seemed to be a positive indicator. There can be various other factors affecting the academic performance of the batches. These include the teaching methodology, exam pattern, exam toughness, examiners, the subject per se, the variety in the crowd due to national level exam and many more.

Factors like teaching methodology and exam patterns were studied amongst the three years in Saveetha dental college. The toughness of exam was evaluated for the three years by getting the papers analyzed by 5 examiners who graded the toughness of papers on a scale of 1-5. There was significant increase in the toughness of 2017 exam paper. The exam pattern was similar for 2015 and 2016 batches while it changed for 2017 batch. The paper pattern for the two previous batches comprised of 2 long questions, 5 short questions and 30 multiple choice questions while for the year 2017 it was changed to 1 long question, 2 short questions and instead of multiple choice questions, 90 one word questions were added. Answering one word questions would be difficult for the students of the first year who have been preparing for two years for NEET which is multiple choice question based exam. This could be one of the reasons for decreased marks of the 2017 batch.

Dental Anatomy as a subject includes the cognitive as well as the dexterity skills. Learning dental anatomy builds the foundation for a dentist for all the future studies. It is a new subject for the students and does not directly depend on the previous knowledge. The theoretical knowledge of dental anatomy helps in the clinical skills of the dentist. [12]The academic performance in this subject depends on the students' hard-work and understanding of the subject.[13] Since there is a significant difference in the academic performances of the batches between the NEET as well as the NON-NEET, the students acquiring admissions through NEET appear to be more sincere and hardworking.

Factors like the condition of the hostel, the culture of people in new area, the surrounding environment could be matched as all the groups belonged to the same institute and thus had same surroundings.

The limitation of the study is that it was performed only in one institute and this could lead to bias in the results. An elaborate study needs to be conducted

including all the dental institutes comparing the first year marks of the BDS curriculum between the NEET and NON-NEET batches.

Conclusion

NEET- National Entrance cum Eligibility Test does seem to improve the performance of the students in their first year exams in Saveetha Dental College and Hospitals,Chennai. The academic quality of dental graduates in first year of the BDS course could be considered better considering the marks of dental anatomy subject for both the NEET batches 2016 and 2017 compared to the NON-NEET batch of 2015.

A better understanding of the effects of NEET on the academic performance of first BDS could be made by conducting this study at multiple dental institutes. This could also help in achieving the comparison of the two batches, especially in private dental institutes where the admissions before the commencement of NEET were taken by respective college protocols. The ultimate test of validity will not be available for some years, until the current cohorts of students graduate.

Conflict of Interest – Nil

Source of Funding – Self

References

1. Supe A, dean. NEET: India's single exam for admission to medical school promises transparency and quality. BMJ. 2016 Aug 3;354:i4051.
2. George B, Sebastian S, Soman R, Johny M. A survey on NEET-MDS examination among dental graduates in South India [Internet]. Vol. 6, International Journal of Community Dentistry. 2018. p. 41.
3. Mathur M, Singh A, Watt R. Addressing inequalities in oral health in India: Need for skill mix in the dental workforce [Internet]. Vol. 4, Journal of Family Medicine and Primary Care. 2015. p. 200
4. Vundavalli S. Dental manpower planning in India: current scenario and future projections for the year 2020. Int Dent J. 2014 Apr;64(2):62–7.
5. Website [Internet]. [cited 2019 Jan 2]. Available from: Database of Dental Council of India. http://www.dciindia.org/search.aspx. Accessed 30 June 2015.Google Scholar
6. Yadav S, Rawal G. The current status of dental graduates in India. Pan Afr Med J [Internet]. 2016;23.
7. Elangovan S, Allareddy V, Singh F, Taneja P, Karimbux N. Indian dental education in the new millennium: challenges and opportunities. J Dent Educ. 2010 Sep;74(9):1011–6.
8. Contributors to Wikimedia projects. Dental Admission Test - Wikipedia [Internet]. Wikimedia Foundation, Inc. 2005 [cited 2019 Jan 20].
9. Home - American Dental Association [Internet]. [cited 2019 Jan 20]. Available from: https://www.ada.org
10. Poole A, Catano VM, Cunningham DP. Predicting performance in Canadian dental schools: the new CDA structured interview, a new personality assessment, and the DAT. J Dent Educ. 2007 May;71(5):664–76.
11. Arco Publishing Company. Dental Admission Test: The Complete Study Guide for Scoring High. ARCO; 1977. 320 p.
12. Rafai N, Lemos M, Kennes LN, Hawari A, Gerhardt-Szép S, Classen-Linke I. Anatomy meets dentistry! Linking anatomy and clinical practice in the preclinical dental curriculum. BMC Med Educ. 2016 Nov 25;16(1):305.
13. Guttmann GD. The current status of the anatomical sciences curriculum in U.S. and Canadian dental schools. J Dent Educ. 2003 Mar;67(3):375–9.
14. Ihm JJ, Lee G, Kim KK, Jang KT, Jin BH. Who succeeds at dental school? Factors predicting students' academic performance in a dental school in republic of Korea. Journal of Dental Education. 2013 Dec 1;77(12):1616-23.