ORIGINAL RESEARCH PAPER

Dental Science

ASSESSMENT OF EMPATHY LEVEL IN DENTAL THIRD AND FINAL YEAR STUDENTS IN DAVANGERE CITY- A CROSS-SECTIONAL STUDY

KEY WORDS: Jefferson scale of empathy, empathy, dental students, academic performance, dentist-patient relationships.

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ABSTRACT

Empathy is one of the basic "elements" of good dentist-patient relationships. It is often considered a hallmark for health care professionals as it can contribute positively to health care. So, the study was planned assess and compare the empathy scores across the year of study, gender and academic performance of dental third and final year students in Davangere city. The cross-sectional study was conducted among the third and final year undergraduates of two dental colleges in Davangere. Empathy was assessed using Jefferson Scale of Empathy- Health Care Provider Student version (JSE-HPS) questionnaire consisting of twenty questions. Statistical analysis was done using chi-square test and Spearman's correlation test. A total of 309 students participated in the study consisting of 93 male and 216 female students. The mean empathy score among the students was 85.5±11.8. The final year students had a mean empathy score of 84.5±11.67 and that of third year students was 84.±11.55. Mean empathy score of the male and female students were 86.0±11.48 and 85.2±11.20 respectively. Chi-square test was applied and results were found to be not significant. Spearman's correlation test was done to find out the co-relation between mean empathy scores and the academic scores which showed no significant results. It was concluded from the study that the mean empathy score was found to be 85.5±11.8 for the study population. The mean empathy score remained very similar in the third year and final year undergraduate students irrespective of their gender and academic performance.

INTRODUCTION:

A person learns to understand emotional state of others by seeing and processing their behaviour and emotion. The cognition of this emotional state is part of empathy. This empathy is one of the basic "elements" of good dentist-patient relationships.[1] It is often considered an important hallmark for professionals that contribute positively to health care (Marcum JA, 2013). Empathy was derived from two Greek terms, "em" and "pathos", meaning 'feeling into' and has its origin from the German word "Einfulung" (Babar et al, 2013) It involves an ability to understand the patient's experiences, pain, suffering and perspective in combination with capability to communicate this understanding to help the patients (Marcum JA, 2013).

Empathy significantly influences adherence to medical recommendations, reduces medical errors, increases patient compliance, satisfaction, as well as physician well-being (Babar, M. G et al, 2013). Empathy is described as being a significant factor in motivating patients to actively take part in treatment and is a key element in successful treatment outcome (Aggarwal VP et al 2016). Ultimately good dentistry depends on individual's commitment to treat their patients and society fairly and ethically. Evolutionary ethics grounds human morality in empathy. Understanding moral behaviour from this biological perspective has implications for the goal in dental education of developing good dentists (Nash DA, 2010)

Thus, over the past few decades the leaders in the health professions and dental education have begun to emphasise the importance of professional ethics and empathy in the curricula of those who are being educated to care for the public health (Aggarwal VP et al 2016)But, the role of empathy in the dentist–patient relationship has not received good attention in India. Our literature search showed few studies among the Indian Dental students to assess their level of empathy. The generalization of findings of medical students to dental students is uncertain, since the published literature is mainly restricted to medical schools (Orsini C A et al,2014). We hypothesise that there exist a difference in the empathy level between the third and final year dental undergraduates. Hence the present study was planned to assess the empathy level and its relation to the year of study, gender and academic performance in the dental third year and final year undergraduate students in Davangere city.

Materials and methods
STUDY POPULATION:

This cross-sectional study was carried out in June 2016 and included a study population of all third and final year undergraduate students enrolled in two Dental Colleges of Davangere city. That is a total of 323 students in the two colleges whole sample was attempted in the present study. The first college (College A) had a total population of 151 students and the second college (College B) had a total population of 172 students.

ELIGIBILITY CRITERIA:

Dental students from the selected dental colleges in the third and final year who are agreed to participate by signing the written voluntary informed consent were included in the study.

INSTRUMENT TO ASSESS EMPATHY:

Data was collected using a proforma containing two sections. **Section 1**: Demographic details (name, age, gender, year of study) and academic performance details (marks obtained in previous academic year). **Section 2**: Pre-validated questionnaire of the Jefferson Scale of Empathy Health Provider Student version (JSE-HPS-version) to assess empathy levels. The validation of the questionnaire was assessed in India (Kumar PR, 2016., Fields SK, 2011) which was modified in from previous versions JSE-HPS-version used in other countries. It consisted of 20 item questionnaire covering three sections namely perspective taking, compassionate care and standing in the patient's shoes. Each item was answered on a seven-point Likert scale which is scored from one (Strongly disagree, Disagree, Disagree somewhat, Neither agree nor disagree, Agree somewhat, Agree, Strongly agree) to seven. The final score for an individual is obtained by summing up all the individual scores. Then the score distribution for the sample being examined .The total score ranges from 20-140. A higher score indicates a behavioural tendency favouring empathic engagement in patient care(Fields SK, 2011). A pilot study was conducted on 10

dental students which showed the Cronbach alpha (internal consistency) as 0.85 for the HP version of JSPE-S.

ETHICAL FORMALITIES:

The study was performed in accordance with the *Declaration of Helsinki* with the ethical approval which was obtained from the Institutional Review Board of Bapuji Dental College and Hospital, Davangere (Ref. No. BDC/Exam/87/2016-17). Permission was obtained from the principals of the two institutions to collect the list of students and to collect the relevant information from the study participants in respective college premises. Voluntary written informed consent was obtained from every participant after describing them the purpose of the study. They were given an option to reject from participation if they are not willing. The participants were also assured that the information would be kept completely confidential.

DATA COLLECTION:

Questionnaire was self-administered to participants on prescheduled dates in their respective colleges. The study was designed so that the whole sample was collected from the two academic years. They were made to assemble in a class room, where the investigator appraised them regarding the purpose of the study and obtained the consent to participate. Thirty minutes are given to answer the questionnaire and collected back on the same day. Precautions were taken to prevent the discussion regarding the questionnaire to ensure truthful and accurate result. The previous year's academic scores were collected from the college records for each candidate who had given the consent. A non-responder was defined as a student who failed to return the survey sheet or those who is absent on the date of conducting the survey.

STATISTICAL ANALYSIS:

Data were analysed using the Statistical Package for the Social Sciences (SPSS), Version 21 (IBM Corp., Chicago, Illinois, USA). Descriptive statistics is analyzed in frequency and percentages. Pearson's Chi-squared test was used for group frequency comparisons. Spearman's correlation test was done to find out the co-relation between mean empathy scores and the academic scores. Statistical significance as set at $p \leq 0.05$.

RESULTS

309(95.66%) dental students participated in this study out of 323 students. 151 students were from the first dental college and the rest were from the second dental college. No change in the statistical test was done to account for non-responders. The study population consisted of 93 male students and 216 female students. The mean empathy score among the students was 85.5±11.8. Mean empathy score of the male and female students were 86.0±11.48 and 85.2±11.20 respectively. The final year students had a mean empathy score of 84.5±11.67 and that of third year students were 84.±11.55. (Table: 1, Fig 1). The participants were empathy scores divided into high and low empathy scores based on the mean score (Table: 2). **And table 3 shows Descriptive statistics of academic score of participants by gender and academic year.**
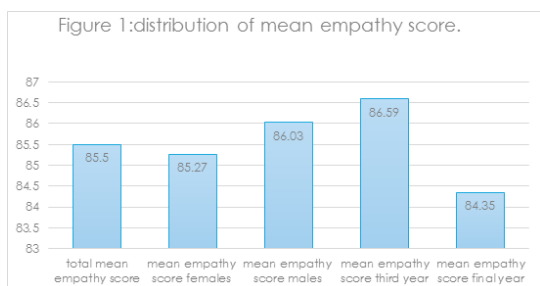
Figure 1: distribution of mean empathy score.

Table 1: Distribution of mean empathy score

Mean empathy score	Mean empathy score females	Mean empathy score males	Mean empathy score third year	Mean empathy score final year
85.5±11.8	85.27±11.20	86.03±11.48	86.59±11.55	84.35±11.67

Table 2: Descriptive statistics of empathy score of participants according to various demographics.

Demographics	Participants with high empathy score	Participants with low empathy score
Third year	72(48%)	86(54%)
Final year	78(52%)	73(45%)
Males	48(32%)	45(28.3%)
Females	102(68%)	114(71.7%)

Table 3: Descriptive statistics of academic score of participants by gender and academic year.

Gender	Mean Marks	Std. Deviation	TOTAL (Std. Deviation)
MALES	67.5269	6.05696	67.0712(6.16)
FEMALES	66.8750	6.20938	
THIRD YEAR	66.5316	6.18058	
FINAL YEAR	67.6358	6.11063	

Table 3: Descriptive statistics of academic score of participants by gender.

Gender	Frequency	Third	Final	Mean Marks Obtained In Last Academic Year
MALES	93	45	48	67.5269
FEMALES	216	113	103	66.8750
TOTAL	309	158	151	

Table 4: Comparison of the empathy scores between the academic year and gender.

Demographics	Participants with high empathy score	Participants with low empathy score	Pearson chi square value	p – value
Third year	72(48%)	86(55%)	01.45	0.170
Final year	78(52%)	73(45%)		
Males	48(32%)	45(28.3%)	0.502	0.279
Females	102(68%)	114(71.7%)		
p-value ≤0.05 is considered as significant				

Table 5: Comparison between empathy level and academic score.

	Mean	Standard deviation	r- value, p-value
Empathy score	85.50	11.80	- 0.038, 0.511
Academic score	67.07	6.16	
p-value ≤0.05 is considered as significant			

The comparison of the mean scores according to the demographics was done using chi-square test (Table 4). The comparison of the mean empathy scores of the third and final year students depicted a p value of 0.170 reflecting statistical non-significance. The comparison of the mean empathy scores of male and female participants showed a p value of 0.279 which was not statistically significant. Spearman's rank order correlation test results showed **r- value and p-value** of - 0.038 and 0.511 respectively. Showing no significant correlation between academic scores and the empathy scores (Table: 5).

DISCUSSION

The present study was a cross-sectional study conducted on 309 dental students with an intention to find out whether there exists any association between empathy and year of study and to their academic performance level. Sample size calculation was not done because we wanted to take the whole population that is all dental students in third and final year students which

gave us better generalizability. Hence we considered "The whole sample" in the study.

In the present study the health professional (HP) version of JSPE-S was used to measure empathy as it is exclusively designed and widely used, well validated measure of empathy. (Sherman et al, 2005) The (HP) version of JSPE-S was felt to be more appropriate for use with dental students as they begin clinical treatment at an earlier stage than medical students. This instrument has been validated earlier and it was found to be having acceptable psychometric properties (Sherman et al, 2005). It has only 20 questions hence the time required to answer the instrument is less and the chances of questionnaire fatigue is also relatively less. In this particular instrument the individual likert scores does not matter as the total empathy scores are taken as a whole not in the form of individual questions. The score of the individual questions does not have much significance. So, the Likert score data is not presented in this article.

In all forms of dental and medical setting, empathy is central to a meaningful patient–doctor relationship.[10] Without it, trust is not assured, patient satisfaction is limited, compliance is hindered, and outcomes are compromised.[10-12] Empathy is defined as "An ability to understand and accurately acknowledge the feelings of another, leading to an attuned response from the observer".[13] It is also described as the process of understanding a person's subjective experience by vicariously sharing that experience while maintaining an observant stance.[14] It is also said to be the ability to see the world through someone else's eyes. Empathy is not an accident rather it is to be carefully cultivated.[15] Although a person can be trained to be empathetic, the degree of empathy differs from one dentist to another dentist. So the empathy scores can be improved in the future through academic training so we planned to assess the difference in empathy in the third and final year dental students.

The mean empathy scores of the participants were 85.4±11.48. This score was consistent with the studies conducted by Muneer et.al and Prabhu et.al. While Dutta et.al found a lower score of empathy in India.[17] The results were different from studies conducted by Shermen et al, 2005 in United States and Díaz-Narváez et al 2016 in Chile showed a better empathy score than the studies conducted in Indian setting. Sherman JJ. et al 2005 has concluded that education in behavioural science may be effective in increasing empathy and that further training may be necessary in order to maintain high levels. These training methods to develop empathetic behaviour is absent in Indian dental curriculum. It may be attributed that the lack of these training methods may be the reason for less empathy score among the current study participants.

The empathy scores of the participants showed no statistically significant difference in accordance with the academic year. This was similar to the studies conducted by Kalyan VS et al.[19] and Babar MG et al, 2013. Studies by Sherman, et al 2005., Prabu S et al. and Datta et al. showed a reduction in empathy levels with progression in academic year(Sherman JJ, et al 2005)[16] Some studies linked "erosions" in empathy level with the progress in academic years. As students faces difficulties in dealing with stresses in dental education, and poor role modelling in the academic and clinical workplace.[8] But, in the present study none of these differences were noted. Will this pattern reins the same in the future as they pass on to internship has to be studied in the future.

The mean empathy in the present study was similar for both the male and female participants. This was similar to the study done by Muneer et al where no significant difference was found (Babar MG et al, 2013)But in most studies the mean empathy score of female participants were higher like (Sherman JJ, et al 2005) , Díaz-Narváez V et al.[18]. Only few

studies had shown that the empathy scores of males to be higher than females such as Datta et at[17] and Prabu S et al.[16] Some have argued that empathy is a feminine trait. Evolutionary theory of parenting as women tend to display more caregiving attitudes compared to men. But this was not true in regard to the present study as both genders showed similar results which showed no significant result.

The present study is the first of its kind in which academic performance was correlated with empathy scores of dental students. So, the only comparisons possible are to previous studies in the field of medicine which also has failed to any shown correlation between empathy score and academic performance.[20] This lack of correlation maybe due to the fact that empathy in something that can be learned and intelligence is a trait that is inherited. So, students might be mentally preparing themselves to have a good empathy even if they lack intelligence in the same respect.[21]

The sample is not representative of the Indian dental students. As the study accrue sample from one small geographic area containing only two dental colleges. The methodological constraints does not measure the change in empathy across a long time span as this is a cross-sectional survey. However, there is unique multi-institutional data from one country. With a country like India with much cultural variation it is important to advance the understanding on the associations between empathy, personality and demographic traits of dental students.

Also further studies can be carries out to check for the change in empathy in the internship and during dental practice which may be an interesting area to explore. Also, cultural and demographic variables can also be explored. As Indian is such a vast country with much variation in cultural characteristics. However there may be some unknown and unidentified variables influencing empathy. Like family members, social status, number of siblings. These variables need to be explored to predict the empathy of dental students with greater accuracy.

Conflict of interest
The authors like to declare no conflict of interest.

REFERENCES
1. Orsini, C. A., & Jerez, O. M. (2014). Establishing a good dentist-patient relationship: skills defined from the dental faculty perspective. Journal of dental education, 78(10), 1405-1415.
2. Marcum, J.A., 2013. The role of empathy and wisdom in medical practice and pedagogy: Confronting the hidden curriculum. Journal of Biomedical Education, 2013. 1-8.
3. Babar, M. G., Omar, H., Lim, L. P., Khan, S. A., Mitha, S., Ahmad, S. F., & Hasan, S.S. (2013). An assessment of dental students' empathy levels in Malaysia. International Journal of medical education, 4, 223.
4. Aggarwal, V. P., Garg, R., Goyal, N., Kaur, P., Singhal, S., Singla, N., & Sharma, A. (2016). Exploring the missing link–Empathy among dental students: an institutional cross-sectional survey. Dental research journal, 13(5), 419-423.
5. Nash, D. A. (2010). Ethics, empathy, and the education of dentists. Journal of Dental Education, 74(6), 567-578.
6. Kumar, P.R., Dave, P.H., & Thenmozhi, S., 2016 Empathy Levels Among Dental Students In India. International Journal Current Research, 8(06), 33418-20.
7. Fields, S. K., Mahan, P., Tillman, P., Harris, J., Maxwell, K., & Hojat, M. (2011). Measuring empathy in healthcare profession students using the Jefferson Scale of Physician Empathy: health provider–student version. Journal of interprofessional care, 25(4), 287-293.
8. Sherman, J. J., & Cramer, A. (2005). Measurement of changes in empathy

during dental school. Journal of Dental Education, 69(3), 338-345.

9. Williams, B., Brown, T., McKenna, L., Boyle, M. J., Palermo, C., Nestel, D., & Russo, V. (2014). Empathy levels among health professional students: a cross-sectional study at two universities in Australia. Advances in medical education and practice, 5, 107-113.

10. Hojat, M., Louis, D. Z., Markham, F. W., Wender, R., Rabinowitz, C., & Gonnella, J. S. (2011). Physicians' empathy and clinical outcomes for diabetic patients. Academic Medicine, 86(3), 359-364..

11. Del Canale, S., Louis, D. Z., Maio, V., Wang, X., Rossi, G., Hojat, M., & Gonnella, J. S. (2012). The relationship between physician empathy and disease complications: an empirical study of primary care physicians and their diabetic patients in Parma, Italy. Academic Medicine, 87(9), 1243-1249.

12. Bertakis, K. D., Roter, D., & Putnam, S. M. (1991). The relationship of physician medical interview style to patient satisfaction. Journal of Family Practice, 32(2), 175-182.

13. Post, S. G., Ng, L. E., Fischel, J. E., Bennett, M., Bily, L., Chandran, L., ... & Rodriguez, J. V. (2014). Routine, empathic and compassionate patient care: definitions, development, obstacles, education and beneficiaries. Journal of evaluation in clinical practice, 20(6), 872-880.

14. Anushka, G., & Nagesh, L. (2016). Empathy and Emotional Intelligence in Dental Practitioners of Bareilly City-A Cross sectional Study. National Journal of Integrated Research in Medicine, 7(4).

15. Weiner, S. J., & Auster, S. (2007). From empathy to caring: Defining the ideal approach to a healing relationship. The Yale journal of biology and medicine, 80(3), 123-30.

16. Prabhu, S., Kumar, V. S., Prasanth, S. S., & Kishore, S. (2014). Standing in patients' shoes—survey on empathy among dental students in India. Journal of Education and Ethics in Dentistry, 4(2), 69-73.

17. Datta, G., Vanishree, N., Nayak, S. S., Bullappa, D., Naveen, N., Lakshmikantha, R., ... & Anushri, M. (2016). Measuring Empathy Towards Patients among Dental Under Graduate Students of Bangalore City-A Cross Sectional Study. International Journal of Medicine and Public Health, 6(3), 113 6.

18. Díaz-Narváez, V. P., Núñez, A. C., Carrasco, D., Bustos, A., Zamorano, A., Silva, H., ... & Reyes, A. R. (2016). Levels of empathy among dental students in five Chilean universities. Health, 8(01), 32-41.

19. Kalyan, V. S., Manjula, S., Padma, T. M., Pratap, K. V. N. R., Vineela, P., & Varma, S. C. (2017). Assessment of empathy among clinical dental students in a teaching dental institution in Telangana State, India. Journal of Indian Association of Public Health Dentistry, 15(2), 162.

20. Hojat, M., Gonnella, J. S., Mangione, S., Nasca, T. J., Veloski, J. J., Erdmann, J. B., ... & Magee, M. (2002). Empathy in medical students as related to academic performance, clinical competence and gender. Medical education, 36(6), 522-527.

21. Benabbas, R. (2016). Empathy in Iranian medical students: A comparison by age, gender, academic performance and specialty preferences. Medical journal of the Islamic Republic of Iran, 30, 439-446.