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Investigating Empathy: The Unresolved Enigma - A Multicenter Study among Dental Students in South India

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Abstract

Introduction: Empathy in health care is associated with a reduction in patient's anxiety, improved cooperation in child patients, increased treatment compliance, improved treatment outcomes, and reduced stress. A recent systematic review of research on empathy among dental students stated that there is not enough evidence to understand empathy among dental students. A gap still exists in the understanding of the link between Empathy and gender and year of study. This multi-centric, cross-sectional study assesses the gender-wise and year-wise differences in empathy among dental students in Puducherry. **Materials and Methods:** Four hundred and fourteen clinical students (3rd year, final year, interns and postgraduates) of three Dental Institutes participated in the study. Empathy was scored using the Jefferson Scale of Empathy – Healthcare Provider-Student version assessed on a five -point Likert scale. Student's *t*-test and one-way ANOVA were used for statistical analysis. ($P < 0.05$). **Results:** Mean Empathy Score among the dental students was 68.71 (SD 7.441); 32.4% were male 67.6% were female. Difference in mean empathy scores between males (67.64 ± 7.72) and Females (69.22 ± 7.26) was statistically significant ($P = 0.043$). Interns showed the highest empathy levels and post-graduates the lowest. However, the difference in empathy levels across the different years of study was not statistically significant. (Third year 68.75 ± 7.24, final year 68.07 ± 6.97, interns 69.82 ± 7.82 and postgraduates 67.87 ± 8.13; $P = 0.206$). **Conclusion:** Empathy level among the students was low. Females had higher empathy levels. Among the undergraduates, empathy levels did not decline with increase in year of study, a finding which is contradictory to existing evidence. Educational reforms in the existing curriculum are required to impart ethics and professionalism and improve the empathy levels of dental students.

Keywords: Caring, Compassion, Emotional Intelligence, Ethics, Personality, Professionalism

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Introduction

Empathy is a vital component in the process of establishing clinicianpatient relationship.[1] It is the ability to vicariously enter into another person's emotional world and obtain a sense of what he/she is experiencing. The English word "empathy" previously referred to as sympathy came into common usage in the 20th century and was derived from the Greek word "empatheia" meaning "[in] passion." Empathy is also the commitment of the healthcare provider towards doing things in the patients' best interest even if it is in conflict with one's own perceived best interest.[2] It should be noted that empathy has two dimensions; the "cognitive" dimension that is concerned with the ability to view the world from another person's perspective and the "affective" or "emotional" dimension that is about joining the experiences of that person. This emotional dimension is conceptually similar to sympathy and is a relatively stable personality characteristic that is developed and established in childhood.[2,3] Thus a training curriculum on professional skills can maintain/enhance the cognitive dimension of empathy whereas the emotional dimension remains unaffected.[2] A dental graduate might have excellent knowledge and motor skills but fail in professional goodness due to deficiency of empathy, a fact that derives support from two studies on communication skills which found that patients preferred care over competence.[2,4] Therefore measuring one's ability to empathize should be an important admission criteria to study Dentistry and the students should also be trained to deliver care with moral integrity.[2] When dentists display empathy there is reduced dental fear among patients, increased compliance to treatment, reduced pain, improved co-operation by child patients, and improved patient satisfaction.[5] In addition, there will be reduced rates of litigations because the practitioner is able to obtain quality data from the patients which enhances his diagnostic capabilities.[3] The gold standard for measuring empathy is by direct observation of clinician behavior by trained observers. However, this is time-consuming and costly.[3] The Jefferson Scale of Physician Empathy, a self-report instrument to measure empathy among physicians was developed by Hojat.[2] A recent systematic review of research on empathy among dental students stated that there is not enough evidence to understand empathy among dental students.[5] A recent Indian study among dental undergraduates of Davengere City found no statistically significant differences in empathy levels across the year of study and they found males and females to have similar empathy levels.[6] Hojat had reported the occurrence of the phenomenon called "empathetic erosion," a term he used to describe the fall in the empathy levels among students as they progress in their academic program.[2] Hojat's observations have been contradicted recently by two more studies; one done among Polish Dental students[1] and the other among students of the Faculty of Dentistry in Saudi Arabia.[4] Another recent

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research found lower empathy levels among Post Graduates when compared with fourth-grade undergraduates of Turkey Dental faculty.[7] Likewise, there are many contradictory results on the role of gender on empathy levels. The review of literature thus reveals that a gap still exists in the research and understanding of empathy among dental students. Variability exists among the different student populations due to factors like different curricula, varied cultural backgrounds, traditions and beliefs among the students. Considering the Indian scenario, there are only two studies conducted simultaneously among both undergraduate and post-graduate dental students.[8,9] Hence this study aimed to perform a cross-sectional assessment of empathy among undergraduate and post-graduate dental students of Puducherry and to assess the influence of gender and year of study on the empathy scores.

Materials and Methods

This cross-sectional descriptive study was approved by the Institutional Ethical Committee (IGIDSIEC2018NRP24UGNSPPD) of the Dental Institute in Puducherry. The study population consisted of the Undergraduate students (third, final year and interns) and the Postgraduates enrolled for the academic year 2018–2019 in three Dental colleges in Puducherry. In the BDS curriculum, students enter the clinics in the 3rd year, and hence 1st and 2nd year students were not included. Permission was obtained from the Principals of the three Colleges. Participation was voluntary and informed consent was obtained from students who were willing to participate. The data collection took place during the second half of the academic year. The Jefferson Scale of Empathy – Healthcare Provider-Student (JSE-HPS) version with ten positively and ten negatively worded questions was used. The original questionnaire answered on a seven-point Likert scale was modified to a five-point scale as used in the study by Datta *et al*.,[10] (1=strongly disagree; 5= strongly agree). The total scores ranged from 20 to 100 and a higher score indicates the behavioral tendency towards empathetic patient care. The students were advised to fill in the gender and year of study details. A small explanation on the difference between sympathy and empathy was provided in the beginning of the questionnaire. On a designated day, the investigators met the 3rd and final year students in their respective classrooms during lecture hours, and the interns and Postgraduates in their respective clinics and distributed the questionnaires. A total of 600 students questionnaires were distributed to the willing students. The investigators visited the colleges every day for a period of 1 week to collect the responses. Questionnaires with complete data were included for analysis. Negatively worded questions were reverse scored. The final study sample was 414 (College A- 178 students, College B-86 students, College C-150 students) leading to a response rate of 69%. Data collected were entered into MS Office; Excel-2010 and subjected to statistical analysis using the statistical package SPSS (17.0). Descriptive statistics were done using Mean and standard deviation and inferential statistics were done with Independent sample *t*-test and one-way ANOVA. $P < 0.05$ was considered as a statistically significant difference.

Results

The study aimed to measure empathy levels among undergraduate and postgraduate dental students and to analyze the influence of gender and year of study on empathy scores. Table 1 shows the descriptive statistics of the study sample.

Table 2 presents the gender-wise and year-wise scores of empathy and the inferential statistics.

The mean empathy score of the Dental students in Puducherry was 68.71 (SD 7.44) which is low. 32.4% were males and 67.6% were females. The empathy levels among the females were higher than that of the males. The highest level of empathy was observed among UG-Interns and lowest among the postgraduates. Third and final-year UG students showed almost similar levels of empathy and their mean score was lower than that of the interns, however, the differences were not statistically significant.

Discussion

Empathetic care should be at the core of clinical dental practice. Studies evaluating empathy levels among dental students have resulted in conflicting results, especially with respect to the role of gender and year of study. A recent systematic review found that there were very less studies on empathy among dental students. Among the seven studies included in the systematic review, only one study had included the simultaneous assessment of postgraduates. The mean empathy scores across the various geographical locations were also varied. Three studies reported higher empathy levels among females and one study reported similar scores among males and females. The observations of four studies depicted a clear fall in empathy levels with increased patient contact while the remaining studies concluded that differences existed among the different years of study.[5]

The mean empathy score of the students in the present study is similar to the scores reported by Datta *et al*.[10] The present study used a Five-point Likert scale because it aimed only to compare the observations with the previous studies. Similar to previous studies[4,9,11] the present study also observed that the females were more empathetic than the males. On the contrary few studies have reported higher empathy levels among males.[6,12] Compassion is associated with gender, as the neural processing of emotions is different among men and women. The female is superior in empathetic skills and hence the higher scores.[7] Empathy has a genetic basis with an environmental overlay and is the opposite of autism. Females have an "empathetic brain" while males have a "systemizing brain" and the empathy quotient results from interaction of nature and nurture. However few studies have demonstrated higher scores among males; a finding which could have arisen due to differences in socioeconomic status, personal life experiences, different levels of anxiety and interpersonal behaviors all of which are highly individualistic.[2,7]

In the systematic review by Narang *et al*., it was concluded that, albeit inadequate evidence, empathy levels decreased with increased patient exposure.[5] In the present study, differences were observed among the different years of study. Interns had the

Table 1: Year-wise and Gender-wise distribution of students across the three Dental Institutions

Variable	*College A (n=178)*	*College B (n=86)*	*College C (n=150)*	*Total n=414*
Year of study				
UG- 3rd year	35	21	28	84
UG- Final year	61	28	69	158
UG- interns	51	21	53	125
PG	31	16	0	47
Gender				
Males	60	24	50	134
Females	118	62	100	280

Table 2: Year-wise and Gender-wise comparison of mean empathy scores of the Dental students

Variable	*Empathy (Mean and SD)*	*95% Confidence interval*		*P-value*
		Lower bound	*Upper bound*	
Year of study†				
UG- 3rd year	68.75 (7.24)	67.17	70.03	0.206 (F=1.53)
UG- Final year	68.07 (6.97)	66.98	69.16	
UG-Intern	69.82 (7.82)	68.44	71.21	
PG	67.87 (8.13)	65.49	70.26	
Total *n*=414	68.71 (7.44)	67.99	69.43	
Gender‡	*Empathy (Mean and SD)*	*t-value*	*95% Confidence Interval*	*P-value*
			Lower *Upper*	
Males (*n*=134)	67.64 (7.72)	2.03	0.05 3.11	0.043*
Females (*n*=280)	69.22 (7.26)			

†One way ANOVA. ‡Independent sample *t*-test. *Statistically Significant

highest empathy levels compared to 3rd and final year students and the postgraduates showed the least values. There was an increase in the empathy level at the end of the UG training, a finding similar to the study by Naguib.[4] On the contrary, a recent study observed a fall in empathy levels among the undergraduates in their final (5th) year of advanced clinical training.[7] Another recent study also observed a fall in empathy levels in the 5th year of training.[1] Varghese and Sapna[6] found no differences in empathy levels between 3rd, 4th year undergraduate students while Kalyan *et al*.[9] found that interns had the lowest levels of empathy. Interns have a desire to start their own clinical practice and hence they better understand the importance of communication skills when their mentors suggest improvements.[5] A fall in empathy toward the end of the undergraduate training observed in few studies could be attributed to the high stress associated with the completion of academic goals.[7] The kind of training involved could also play a significant role. High levels of empathy among the students in the final years of their undergraduate training as observed in the present study could also be attributed to the continued direct monitoring/supervision by the mentors. Moreover, exposure to CDE/Professional development programs could have also raised their empathy levels.

It was expected that the postgraduates would have the highest empathy levels considering their professional experience and confidence. Aggarwal *et al*.[8] also reported lowest empathy levels among the postgraduates. On the contrary conflicting observations were made by Tuncer *et al*.[7] and Kalyan *et al*.,[9] which were the only two recent studies that included the postgraduates in the study sample. While Tuncer *et al*. reported less empathy among postgraduates, Kalyan *et al*. observed highest empathy among them. A possible reason for the fall in empathy among the postgraduates could be due to the sense of privilege that develops during the training; sometimes non-compliance of patients to instructions given by the doctor further makes it difficult for the students to feel empathetic towards them.[5] Other possible reasons could be the increased professional workload and the lack of direct observation by clinical mentors.[7] Bailey found that medical students who planned to choose a patient-oriented specialty as their career scored significantly higher on empathy. It is, therefore, possible that the empathy levels could be different among the postgraduates of patient-oriented specialties (Pediatric Dentistry, Orthodontics) and those of procedure-oriented/technology-oriented specialties (Endodontics, Periodontics, Prosthodontics, Oral Surgery, Oral Pathology, and Oral Medicine) and this should be explored in future.[3]

The differences in empathy levels across the different years of study were not statistically significant, but the 95% confidence interval shows that the effect size is small; the heterogeneity of the population could have played a role. Thus, further sub-classification of the study population based on geographical and cultural origin of the students, socioeconomic status, "emotional" empathy levels, etc., could give more insights into whether true differences exist.

The Jefferson Scale of Physician Empathy does not focus on the emotional component of empathy. Hence the observed rise or fall in empathy across the different years of study would actually mean a rise/fall in the cognitive empathy. Mirror neurons in the brain help in grasping others minds through direct stimulation and feeling and not through conceptual reasoning or by thinking. Although already wired as an instinct in the brain, the development of empathy is influenced by brain plasticity and postnatal environmental circumstances. At the same time empathy also involves "separateness" or a detached or objective attitude towards patients so as to rationally apply dental skills and that was the reason why Jefferson did not focus on measuring the emotional theme of empathy.[2]

Therefore the factors responsible for the fall in the cognitive component of empathy could be lack of role models, magnitude of learning required, time pressures, sleep deprivation, an intimidating educational environment, and stressors of learning to interact with patients. These problems could be addressed through the exposure of students to role models, training them on interpersonal skills using standardized patients and through making improvements in the cultural environment of the health professions education. However, it is difficult to improve emotional empathy which is a stable personality characteristic that is developed in childhood. Emotional empathy requires one to be motivated to care and help and therefore a psychological instrument to measure this component should be employed during the time of enrolment into the professional course.[2]

Empathy levels of students of this study are relatively low. Integrating communication skills and professionalism into the dental curriculum and their 360 degree assessment will add to the professional acumen of the dental graduates. Exposure to subjects on humanities such as economy, literature, and philosophy will be also beneficial.[9] A recent trend toward market-driven health care system has been affecting the way the students are trained. Excessive importance to technical details of healthcare during the training result in exhaustion of students' resources and also compromise the development of more time-consuming behaviors and less essential skills such as compassion and care for the patients. Requirement driven structure of curriculum is actually encouraging students to focus more on procedures as opposed

to patient.[3] Training in empathy and communication skills can be imparted through role plays and interviews under the supervision of experienced clinicians with feedbacks and discussions, Wilson *et al*. have suggested a model of "patient shadowing" to improve communication skills. Future studies should employ similar training courses and assess immediate and long-term effects of these interventions.[13]

Strengths and Limitations

The current study's population characteristics need to be further explored. Students from various geographical, cultural, linguistic, and socioeconomic backgrounds study in these institutions and these could have affected the effect size. This heterogeneity is unavoidable, however, the study has provided data on the empathy levels of the dental students in Puducherry, based on which academicians and clinicians can design the curriculum.

This is a cross-sectional design. A longitudinal assessment of students throughout their clinical training will give more information on the changes in empathetic behavior with education and patient exposure. This is a multi-centric study. However as stated earlier, the institutes receive students from different geographical regions and hence the results might not be representative of the Puducherry population.

Future Research

Further studies can be done to assess the empathy levels of young dental practitioners in the city. This will further help modify the program educational objectives of the BDS and MDS curriculum. Also measuring the emotional empathy at the beginning of the course and co-relating it with cognitive empathy will prove useful. Further exploration of the variables such as sense of coherence can throw more insights. Other observational methods to assess student patient interaction such as history-taking rating scale, patient assessment of JSPPE could be used along with the JSE-HPS to measure the empathy levels.

Conclusion

Educational reforms in the existing curriculum are required to impart ethics and professionalism and improve the empathy levels of dental students. A 360-degree evaluation and feedback model of communication and interpersonal skills beginning right from under-graduation will ensure that empathy levels do not decline with the progress in the professional training. Females are more empathetic than the males as designed by Nature and therefore students should be made aware that coordinated efforts from both males and females will result in efficient patient care.

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