ORIGINAL ARTICLE

THE EVALUATION OF EMPATHY LEVEL OF UNDERGRADUATE DENTAL STUDENTS IN PAKISTAN: A CROSS-SECTIONAL STUDY

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Background: Empathy is of significant importance in the dentist-patient relationship. The objective of the current study was to assess the empathy level of students at the culmination of their respective academic year, studying in first to fourth year across the undergraduate dental school of Pakistan. **Methods:** The cross–sectional study of undergraduate dental students was carried out at the dental school of Riphah International University in Islamabad, Pakistan in 2017. The survey was conducted with each class as they approached near the completion of their academic year. The Jefferson Scale of Physician Empathy– Health Professions Student Version (JSE-HPS version), was used in the study for measuring empathy. JSE-HPS is a valid and reliable self-reporting instrument comprising of 20 items. The total score on this instrument ranges between 20 and 140. ANOVA test and Independent sample t-test were used to analyze the data on SPSS 24. **Results:** Two hundred and twenty-two students participated in this study. The mean empathy score of students was 101.15±13.73. The mean empathy score of the first-year dental students was the highest (104.70±15.53) followed by the scores of second year students (102.70±13.48); the third-year class had the lowest mean empathy score (98.63±11.53) that corresponded to the first year of clinical training and final year students had a score of 99.48±13.96. Dichotomization of data showed statistically significant difference between the mean empathy scores of students studying in the preclinical and clinical years. The difference in the mean empathy scores of male and female students was found to be statistically significant. The JSE-HPS was found to be reliable with Cronbach's alpha=0.77. **Conclusion:** The present study revealed a statistically significant decline in empathy levels of undergraduate dental students when the empathy levels of the students studying in the preclinical years and clinical years were compared. The JSE–HPS was found to be a reliable instrument for assessing the empathy levels of dental students.

Keywords: Empathy; Communication; Dental education

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INTRODUCTION

The capability to communicate efficaciously lies at the center of the delivery of quality care to the patients. There is a growing realization of the importance of adequately teaching the art of communication to the healthcare professionals.[1] This increased appreciation emerged from the research that suggested the lack of adequate communication skills in healthcare professionals might be attributed to the lack of effective teaching methods.[1] An effective interpersonal skill is prerequisite for developing rapport with the patient and providing patient centered care.[2] Also, the improved interpersonal skills have shown in the previous research to increase productivity of dentist.[3] The World dental federation[4] and Higher Education Commission of Pakistan[5] emphasized on the structured training of communication skills at the undergraduate level. Conversely, Schouten and colleagues[6] suggested that currently there are limited studies on empathy in relation to the dentist-patient interaction. Empathy has been highlighted as the main feature of patient-dentist interaction.[7] Consequently, the undergraduate dental curriculum has been revised and for dental training, empathic behavior of dentist has been listed as a fundamental competency.[8] The knowledge of how the undergraduate dental students' empathy changes over the course of four years of education is important because it will aid in designing an evidence based curriculum for training of communication skills. The targeted training can enhance empathy and improve the communication skills of dental professional.[9,10] Recent studies assessing the level of empathy have noted the decline in empathy levels of both dental[8] and medical[11] students, during training. The understanding of the change in empathy will enable educationists to incorporate appropriate soft skills training in years where it is most required by developing communication skills training curriculum. Moreover, the current study will pave

the way for subsequent multicentre longitudinal study.

MATERIAL AND METHODS

Considering the significance of empathy for effective communication and professionalism[12,13], in the current study assessment of the empathy level of the dental students was carried at the Undergraduate Dental School. This was questionnaire based quantitative cross-sectional survey which was conducted among the first to fourth year undergraduate dental students enrolled at Riphah International University, Pakistan from September to October 2017. Sample size was calculated by the calculator designed for calculating the sample size of survey.[14] The estimated total student population was 260, with margin of error of 5% and Confidence level set at 95%, 61 percent was calculated as an acceptable response rate for the results of the survey to be considered as valid. The ethical approval was obtained from the institutional ethical review committee of Riphah international University. The returning of filled survey questionnaires by students was regarded as implied consent; therefore, written consent was not taken. The Jefferson Scale of Physician Empathy–Health Professions Students version (JSE-HPS version) was used in this study to evaluate the empathy level. The JSE is a copyrighted instrument comprising of a structured questionnaire, therefore, was taken from the designers of the instrument. The JSE (HPS version) was modified from JSE (student version) that was designed specifically to assess the empathy level of medical students.[15] Current literature on JSE confirmed the validity and reliability of the instrument.[8,16,17] Moreover, JSE (HPS-Version) was specifically designed to measure the empathy of students of healthcare professions.[18] Thus, it was utilized in this study. The JSE (HPS-version) was comprised of twenty items, ten positively worded and ten negatively worded items. The response to all the items was given on seven-point Likert scale. Scoring for ten positively worded items was done directly (strongly disagree=1 and strongly agree=7), whereas, ten negatively worded items reverse scored (strongly agree=1 and strongly disagree=7). The cumulative score was calculated by summing all the scores. The cumulative score ranged from 20 to 140, with higher score equivalent to the higher empathy level.[19] The JSE-HPS version and participant information sheet were distributed among the students of undergraduate dental school. Subsequently, at the gap of five days, two email reminders were sent to the students for returning the survey questionnaire. Students were informed that their participation in the study will be voluntary. Moreover, those who returned the forms were required to mention their age, gender and academic year. The number of male and female students was reasonable. Thus, gender disclosure didn't enable the researcher to identify the students and anonymity of the respondents was maintained. The students who chose to participate returned the forms by dropping them in the box placed in the room, accessible to staff and students only. The returned forms having more than four items unanswered were excluded from the data analysis. For up to four un-responded items, values were substituted by the rounded mean score of the questions that participants answered. Data was analysed on SPSS 24. Total empathy score was calculated for every student by summing scores of all 20 items. The negatively worded items were recoded to re-score them in the positive direction. For four or fewer un-responded items, missing values were replaced by the rounded mean score of the items that respondent answered. Mean empathy score was calculated for four years and respondents' age. Percentages were calculated for gender. The ANOVA test was used for comparing the mean empathy score of students of four classes and three age groups for statistical significance. Independent sample t-test was utilized for carrying out the comparison of the mean empathy score of female and male respondents for statistical significance. Cronbach's alpha was utilized for evaluating the internal consistency of JSPE (HPS version).

RESULTS

The JSE-HPS version was distributed by the researcher, amongst 260 undergraduate dental students, 60 students from the first year, 63 students from the second year, 67 students from the third year and 70 students from the fourth year, during their regular classes at Riphah International University, Islamabad, Pakistan. A total of 216 students returned the questionnaires. However, four questionnaires were not included in the data analysis as more than four items were unanswered in them (two from 3rd year, one each from 1st and 4th year). Therefore, data was analysed from 212 questionnaires representing the net response rate of 81.5 percent. This was more than the required response rate of 61 percent as calculated by the sample size calculator.[14] The response rate was lowest, standing at 73.4 percent for the first-year students**.** Whereas, response rate for final year was highest, standing at 87 percent. The number of

students who responded from each of the four classes is shown in table-1.

The male to female ratio was 1:5.6, with 32 male and 180 female students. 125 respondents were between 19 and 21 years of age, 12 students were less than 19 years old and 75 were between 22 and 24 years of age.[1] The range of empathy score of the students is depicted in figure-1. Median was 103 and mode was found to be 105.

The female students with higher mean empathy score were found to be more empathic than the male students. The aforementioned difference between the mean empathy scores on the basis of gender was found to be statistically significant by utilizing independent sample *t*-test (Table-2)

The highest and the lowest mean empathy score was found in the students of first year (104.70±15.53) and third year (98.63±11.53), respectively (Table-3). The difference in the mean empathy score of first year (first preclinical year) and third year (first clinical year) was found to be statistically significant. Likewise, on the dichotomization of data into preclinical years (1st year and 2nd year) and clinical years (3rd year and 4th year) the difference in the mean empathy scores of students was found to be statistically significant by using independent sample *t*-test (Table-4). The JSE (HPS-version) was found to be reliable with the Cronbach alpha value of 0.77.

Table-1: Characteristics and demographics of the dental school classes

	1st year	2nd Year	3rd Year	4th Year	Total Students
Surveys Distributed	60	63	67	70	260
Number of Respondents (%)	44 (73.4%)	53 (84.1%)	54 (80.6%)	61 (87%)	212 (81.5%)

Table-2: Comparison of mean empathy scores by gender

Gender	Number (n)	Mean±SD	*p*-Value
Male	32	94.44±13.55	**0.002**
Female	180	102.34±13.44	

Table-3: Comparison of mean empathy scores of by class

Class	n	Minimum	Maximum	Mean±SD	*p*-Value
First year	44	63	129	104.70±15.53	0.095
Second year	53	56	128	102.70±13.48	
Third year	54	70	118	98.63±11.53	
Fourth year	61	65	133	99.48±13.96	
Total	212	56	133	101.15±13.73	

Table-4: Comparison of mean empathy scores by clinical categories

Clinical categories (year wise)	n	Mean±SD	*p*-value
Preclinical years	97	103.61±14.40	**0.016**
Clinical Years	115	99.10±12.82	

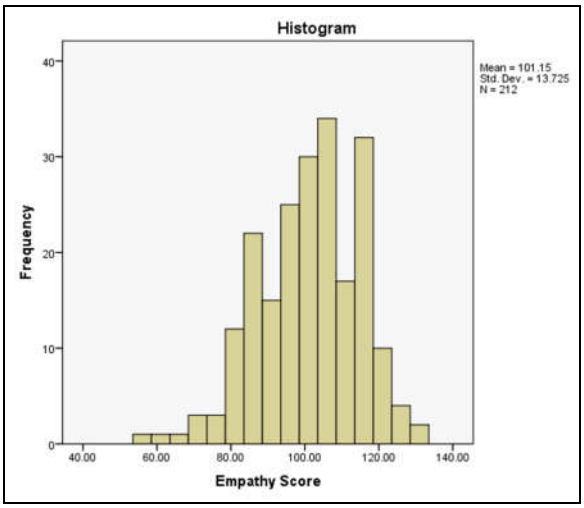

Figure-1: Mean Emapthy Score of undergraduate dental students

DISCUSSION

The results revealed statistically significant association of mean empathy score with the years in which students were studying (clinical or preclinical years) and the gender of the students. Furthermore, the reliability of the JSE (HPS-version) was established with the Cronbach's-α value of 0.77. Bland and Altman[20] deemed Cronbach-α value as satisfactory if it falls between 0.70 and 0.80 when the groups are compared.

The mean empathy score of 101.2 in the present study is comparable with mean empathy score of 101.4 reported by Shariat and Habibi[18] in Iranian medical students using JSE-S-version. However, mean empathy score of 101.2 is more than the mean scores reported in the prior studies, 84, 90 and 78.[17,21,22] Contrary to this, the score of 101.2 is less than the mean empathy scores of 114 and 117 reported by Chen *et al*[23] and Sherman *et al*[8]. The current study noted the trend of empathy decline in the consecutive years, though, it was not statistically significant. This finding was in line with the trends reported Babar *et al.*[17] Conversely, Chen *et al*[23] and Hojat *et al*[24] found that the decline in the students' mean empathy score studying in successive years was statistically significant. Furthermore, in present study small increase of mean empathy score of the final year students was in line with the findings of Sherman *et al*[8] and Baber *et al*[17]. The slight increase of empathy score in the final year may be the result of recently delivered lectures on communication skills. Subsequently, with the dichotomization of data and by comparing the mean empathy scores of students enrolled in preclinical and clinical years, statistically significant decline was noted in empathy level of students with their progression to the clinical years (99.10±12.82). Similar, trends were reported in

the earlier studies by Shariat and Habibi[15], Hojat *et al*[23], Hojat *et al*[24] and Chen *et al*[25].

The factors that might influence this erosion of empathy includes inadequate social support for the students, mistreatment by seniors, lack of suitable role models, high workload, insufficient sleep and environmental factors.[11] Likewise, the erosion of students' empathy level noted in the current study, from preclinical to clinical years can be attributed to the stress due to increased clinical workload. To counter this erosion of empathy one important measure is to embed and foster professionalism in dental students by exposing them to the concept of professionalism from the start of their undergraduate programme because of their involvement in the treatment of patients within two years of commencement of their studies.[26] Conversely, Colliver and colleagues[27] argued that the current evidence revealed a questionable and minimal decline in mean empathy ratings. Subsequently, they put forward their reservations on the results of researches that have noted the erosion of empathy in the medical school years. Conversely, the developers of the self-reporting instrument, Hojat *et al*[28], refuted the criticism of Colliver and colleagues[27] by objecting and questioning the method that was utilized for making the comparisons in their review. Hojat and colleagues[28] argued that due consideration has not been given to the effect size of differences while making the comparisons by the Colliver and colleagues.

The correlation between the participants' age and total mean score was found to be statistically insignificant. The findings are similar to the findings of Babar *et al*.[17] Alternatively, Aggarwal *et al*[29] noted the statistically significant correlation of age group and mean empathy score of students. In the current study, statistically significant correlation was found between the gender and mean empathy score with female students having higher empathy score. The findings are not in line with the higher mean empathy score of male students as reported by Babar *et al.*[17] However, current results are consistent with the outcome reported in studies on Physicians[18], dental students[6], and medical students[23,25]. Additionally, findings corresponded with the results of previous studies where the researchers suggested that females tend to note higher empathy score when self-reporting instruments were utilized.[30,31] Davis as cited by Harton *et al*[31] noted that the belief of the women that they are presumed to be more caring might be factor behind their reporting of higher empathy score.

Even though female reported higher mean empathy scores, the current literature base relevant to medicine suggests a decline in the level of empathy of female and male students during training.[13,23,24] Similarly, decline of empathy score of female and male students was noted as they progressed from preclinical to clinical years. Empathy is the core element for adequate patient-healthcare professional interaction[16], thus, one of the principal purposes of medical education should be to augment the empathic engagement of students during patient care[24]. Considering the beneficial impact of empathic interaction on the patient outcomes,[32,33] it is significant to educate medical professionals in the both aspects of illness, that is biomedical and psychosocial[34].

Consequently, in the present study, the empathy level of dental students was assessed. The results showed a statistically significant decline in the empathy level of students. These finding will serve as a guide for designing the structured communication skills training curriculum with the incorporation of training in those years where it is most required. It is important to embed professionalism in dental students by exposing them to the concept of professionalism from the start of their undergraduate programme because of their involvement in the treatment of patients within two years of commencement of studies.[22] The limitations of the current study is that empathy level of students was evaluated in one dental school of Pakistan, hence, cautious approach should be taken while generalizing the results of the study. Secondly, the cross-sectional nature of the present study makes it difficult to eliminate the possibility of a cohort effect in terms of findings.

CONCLUSION

JSE-HPS version was found to be reliable for measuring empathy level of dental students at a Pakistani dental school. Considering the importance of empathic attitude in the patient-dentist interaction, the researcher suggests the need for multicentre longitudinal studies involving both public sector and private sector dental schools. This will provide a better understanding of empathy levels of dental students and the correlation of change in empathy with the clinical training. To sum up, based on the results of this study, it was observed that students join the dental school with a determination to administer patient cantered care in an empathic manner, however there was a noticeable decline in this empathy as they progressed. Therefore, there is a need to explore suitable teaching methods with an incorporated training in communication skills to prevent this decline in empathy among students enrolled in undergraduate programs.

Conflicts of interest: The author has no conflicts of interest to declare.

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