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ORIGINAL ARTICLE

Assessing empathy levels in postgraduate students of pathology: a cross-sectional study

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ABSTRACT

Objective: To assess empathy scores among postgraduate students enrolled in the M. Phil programs of various Pathology disciplines at Khyber Medical University (KMU) Peshawar, Pakistan.

Methods: This cross-sectional study was conducted at Institute of Pathology and Diagnostic Medicine, KMU, Peshawar, Pakistan, between March and October 2023. A total of 48 students from M. Phil Histopathology, Hematology, Oral Pathology, and Microbiology were enrolled through consecutive sampling. Participants completed the Jefferson Scale of Empathy-Health Professions Student (JSE-HPS) questionnaire. Demographic and clinical variables were recorded, and data were analyzed using SPSS v.26.

Results: Out of 48 students, 43 completed the questionnaire (response rate: 89.5%). Of these, 15 (34.9%) were males and 28 (65.1%) females; 51.2% held MBBS/BDS degrees and 48.8% were from Allied Health Sciences. The mean JSE score was 92.9 ± 9.2, with a median of 93.0. Subscale means for perspective-taking, compassionate care, and walking in patients' shoes were 54.1±6.4, 35.5±6.3, and 7.4±2.5, respectively. Empathy scores showed no statistically significant association with gender, age group, academic qualification, M. Phil specialization, prior clinical experience, or level of seniority. Median scores reflected a similar pattern, with slightly higher empathy noted among males, Allied Health graduates, and those without prior clinical exposure, though none reached statistical significance.

Conclusion: Empathy scores among M. Phil students in pathology disciplines were modest and showed no significant association with demographic or educational variables. Compared to international literature, the overall empathy levels appear lower, highlighting the need for enhanced focus on empathy development in postgraduate pathology education.

Keywords: Empathy (MeSH); Students (MeSH); Postgraduate (Non-MeSH); Pathology (MeSH), Hematology (MeSH); Gender (Non-MeSH).

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INTRODUCTION

Empathy is a critical attribute for healthcare professionals and forms the foundation of patient-centered care. Understanding and acknowledging patient concerns, feelings, and perspectives is important for a number of reasons. Empathy helps physicians reach a diagnosis, make appropriate therapeutic decisions, and foresee challenges in treatment during the disease course. It also allows physicians to tailor their approach to patients' unique needs, beliefs, and values.[1,2] Being a complex, multifactorial emotion, empathy is difficult to measure.[3]

A large body of evidence is available on the level and different attributes of empathy amongst physicians and surgeons.[4] Physicians tend to exhibit higher empathy scores compared to surgeons.[5] Physicians spend more time with their patients and tend to understand their patient's physical as well as psychological conditions. Whereas surgeons focus more on the technical skills part of the work and, therefore, spend less time with the patients.[6] Furthermore, empathy is also context-specific. Surgeons exhibit higher levels of empathy before and after surgery but less so during surgical consultations or while discussing a surgical procedure with the patient. Empathy scores tend to decrease with increasing levels of training and experience. Irrespective of their field, the personality and communication styles of the person, also affect the empathy scores.[7]

Several tools have been developed and used to measure empathy in various contexts, ranging from medical professions to psychiatric illnesses. These include self-reported questionnaires, observer-rated scales, scenario-based assessments, role-play, and medical imaging. The most widely studied tools include the Jefferson empathy scale, the Interpersonal reactivity index, and the empathy quotient.[3]

Pathologists and laboratory scientists do not routinely interact with patients.[8] Yet, their work is directly related to patient care. Empathy allows pathologists to listen to the needs of patients, understand the significance of a laboratory result in a timely diagnosis, and understand the impact of diagnostic tests on management.[9] Furthermore, pathologists are often involved in grant acquisition and patient advocacy. Empathy helps them identify the most needed area of patient welfare. Indeed, it is the pathologists' responsibility to practice the physician's ethical codes.[10]

Studies investigating patient empathy among pathologists are scarce. Most empathy research has been conducted on medical practitioners, surgeons, and nurses.[11] To the best of our knowledge, no study has been performed on post-graduate Pathology students. Assessing laboratory professionals' empathy scores will contribute to understanding their potential impact on future professional practice. It will help identify any variations in empathy levels across

different stages of training and explore factors that may influence empathy development. The results may guide the development of targeted educational interventions to enhance empathy skills in pathology training programs and improve patient-centered care.[12]

This study was planned to assess empathy scores among postgraduate pathology students and determine associations between empathy scores and demographic factors such as age, gender, and clinical experience.

METHODS

Ethical approval was obtained from the Khyber Medical University (KMU) ethical committee (Approval no. I-12/IHPER/MHPE/KMU/23-12) before data collection.

This cross-sectional study was conducted between March 2023 and October 2023. Post-graduate students enrolled in M. Phil Pathology specialty programs (Hematology, Histopathology, Microbiology, and Oral Pathology) at the Institute of Pathology and Diagnostic Medicine (IPDM), Khyber Medical University (KMU), Peshawar were included in the study. These M. Phil programs are 2-year degree programs with 1-year taught and 1-year research modules. Students with undergraduate degrees in medicine and allied health sciences can enroll in these programs.

The sample size was calculated using OpenEpi software for cross-sectional studies using the following equation: Sample size n = [DEFF*Np(1-p)]/[(d2/Z21-α/2*(N-1)+p*(1-p)]. Taking an approximate sample population of 20,000 medical professionals, and a 5% proportion of laboratory professionals among this population, a sample size of 32 was calculated to be enough to give 80% power to the study. Participant selection and enrollment were done using consecutive sampling.

Participants were identified through the online enrollment system. This system (KMU-Learning Management System or KMU-LMS) is based on the open-source software Moodle. Basic enrollment details of students are already available in the system. This online system can take quizzes, give feedback, and take examinations. Students were approached in class, the aims and objectives of the study were explained, and one week was given to the participants to accept or decline to be part of the study.

Jefferson Scale of empathy-Health Professions' student (JSE-HPS) version was used to measure empathy in the study participants. This questionnaire is a revised version of the original Jefferson Scale of Empathy questionnaire. JSE-HPS is a 20-item tool and is scored on a Likert scale from 1 (strongly disagree) to 7 (strongly agree). Positively worded items are directly scored according to their Likert weights (1=Strongly disagree, 7=Strongly agree), and the negatively worded items are reverse scored (1 = Strongly agree, 7= Strongly disagree). The questionnaire is untimed but takes 10-15 minutes to complete. The individual Likert scale score (after reverse scoring) is added to calculate the total empathy score. The greater the score, the greater the emotion of empathy of the healthcare worker towards patients at their workplace. An online study questionnaire was prepared on the KMU-LMS that included JSE-HPS items, as well as additional demographic and career-related information such as age, gender, past clinical experience, and current specialty.

Participants were provided two reminders, 2 weeks apart, to fill out the questionnaires. To ensure transparency, participants' identifiable information was anonymized.

Data were exported to Microsoft Excel and analyzed using SPSS. Version 26. Categorical data included age categories, gender, previous experience with patients, and seniority level of practice. Previous experience working with patients as a doctor's assistant, observer, house officer, or medical officer was categorized as 'junior,' and as registrar or consultant was labeled as 'senior' level. Individual empathy scores mean empathy scores, and empathy scores in 'Perspective Taking,' 'Compassionate care,' and 'Walking in patients' shoes' domains were calculated. Mean empathy scores were compared between genders using independent student t-test and among age groups, primary specialty, and clinical experience using ANOVA. p-value of <0.05 was considered statistically significant.

RESULTS

Demographic characteristics of the study participants: Forty-eight eligible participants were invited to fill out the questionnaire. Out of these, 43 completed the JSE-HPS questionnaire demonstrating a response rate of 89.5%. Table I provides details of the demographic characteristics of the study cohort. Out of the 43 respondents, 15 were male (34.9%), and 28 were female (65.1%). Most participants were between 22-24 years old (13/42, 30.2%), followed by 25-27-year-olds (11/42, 25.6%). The basic qualification of 22/43 (51.2%) was MBBS/BDS, and 21/42 (48.8%) was in Allied Health Sciences. Most participants, 20/43 (46.5%), were enrolled in the M. Phil (Microbiology) program, followed by 9/43(20.9%) in oral pathology and 7/43 (16.3%) in hematology and histopathology. Thirty-three participants (76.6%) had experience of working in a clinical situation (Table I).

Empathy scores of study participants: Overall, the mean score of empathy of JSE-HPS was 92.9 (±9.2). In terms of the three-factor analysis, the score in 'Perspective-taking' was 54.6 (±5.4) out of 70, in compassionate care was 34.7 (±7.2) out of 56, and 'walking in patients' shoes was 7.3 (±2.8) out of 14. Empathy scores of study participants are given in Table II.

Factors affecting empathy scores: The study revealed generally high mean empathy scores among pathology postgraduate students, with minor, non-significant differences across subgroups (table III). Male participants had a slightly higher mean score (95.1) than females (91.8; p = 0.276). Students from Allied Health Sciences showed marginally higher mean scores (93.7) compared to MBBS/BDS graduates (92.1; p = 0.586). Among the MPhil specializations, histopathology students had the highest mean empathy score (94.5), while haematology students scored the lowest (91.7). Participants without undergraduate clinical exposure scored higher (96.0) than those with such experience (92.0), and those with additional patient contact outside

Table I: Demographic characteristics of the study participants (n=43)

Variables		Frequency	Percentage
Gender	Male	15	34.9
	Female	28	65.1
Age categories (years)	22-24	13	30.2
	25-27	11	25.6
	28-30	8	18.6
	31-33	4	9.3
	>34	7	1.63
Basic qualification	MBBS/BDS	22	49.8
	Allied Health Sciences	21	16.3
Mphil degree program	Histopathology	7	16.3
	Microbiology	20	46.5
	Oral Pathology	9	20.9
Did you have experience with patients as part of undergraduate qualification	Yes	33	76.6
	No	10	23.3
Did you have direct patient contact in any capacity other than part of your undergraduate degree (such as working in a clinic, dispensary etc)	Yes	17	39.5
	No	26	60.5
On what positions have you worked in your clinical capacity	Junior	31	72.1
	Senior	2	4.7
	NA	10	23.3

SD=Standard Deviation

Table II: Mean scores Jefferson Scale of Empathy–Health Professions Student (JSE-HPS) and subdomains among study participants (n=37)

Variable	Mean	SD
Jefferson Scale of Empathy score	92.9	9.2
Perspective Taking	54.1	6.4
Compassionate care	55.5	6.3
Walking in patients' shoes	7.4	2.5

SD=Standard Deviation

formal training also had slightly higher scores (93.7 vs. 92.5). However, none of these differences were statistically significant.

Median empathy scores showed a similar pattern, with modest variations that were not statistically significant (Table IV). Males had a median score of 95.1, slightly higher than females (91.8; p = 0.276). The highest median scores were observed in the 28–30 (98.1) and 40–42 (98) age groups. Allied Health Sciences graduates had a median score of 93.7, compared to 92.1 among MBBS/BDS graduates (p=0.586). Among MPhil programs, histopathology had the highest median (94.5), and haematology the lowest (91.7; p= 0.093). Students without prior undergraduate clinical exposure showed higher median empathy scores (96.0) compared to those with exposure (92.0; p=0.231). These findings suggest no strong influence of demographic or academic variables on empathy levels.

DISCUSSION

We investigated the empathy scores of post-graduate students enrolled in the M. Phil programs of various disciplines of Pathology. Using the Jefferson Scale of Empathy-Health Professions Student (JSE-HPS) version, we calculated the mean empathy scores. We report the mean empathy score of 92.9, and the mean empathy scores were not affected by the health professions students' gender, or their past or current clinical experience.

Our cohort consisted of a diverse group of professionals with varying age groups and medical or allied health sciences backgrounds. The group scored relatively low on the mean empathy compared to studies published in developed countries. For instance, in a study on pharmacy students in the US, the mean empathy scores were found to be 111/140.[13] Similarly, empathy levels were found to be 104/140 (±19.64) in a group of Nigerian students,[14] 114.3 (±13.06) in Thai dental students,[15] 110.06 (±11.76) in Australian students,[16] and 96.8 (±13.8) among Saudi dental students.[17] Among Pakistani students, empathy scores have been reported to be 101.15 (±13.73)[18] and (98.11±12.31).[19] Tariq N, et al., conducted a large multi-centered study on 1,453 medical students and found that the mean empathy score was 4.77, with significant differences based on seniority but not gender.[20] Similarly, Shaheen A, et al., using JSE on 260 students, reported a mean empathy score of 90.63.[21] In this study, higher scores were observed in females and first-year students. In another study on college students, overall low empathy scores were observed, with students interested in medicine scoring higher on the scale.[22] Rashid Z, et al., investigated empathy scores in physicians and surgeons and reported a mean score of 98.8, with higher scores in physicians compared to surgeons.[23] The authors also reported a negative association between empathy and fatigue.

Differences in student empathy scores

Table III: Distribution of mean empathy scores by demographic and educational characteristics among study participants (n=37)

Variables		JSE-HPS		p value
		Mean	SD	
Gender	Male	95.1	9.0	0.276
	Female	91.8	9.2	
Age categories (years)	22-24	97.2	14.2	0.887
	25-27	94.7	11.5	
	28-30	98.1	9.9	
	31-33	95.2	9	
	>34	95	3.5	
Basic qualification	MBBS/BDS	92.1	8.1	0.586
	Allied Health Sciences	93.7	10.3	
Mphil degree program	Haematology	91.7	8.9	0.093
	Histopathology	94.5	6.1	
	Microbiology	93.0	11.1	
	Oral Pathology	92.9	9.7	
Experience with patients as part of undergraduate qualification	Yes	92	10.4	0.231
	No	96	8.7	
Did you have direct patient contetc) act in any capacity other than part of your undergraduate degree (such as working in a clinic, dispensary	Yes	93.7	7.4	0.68
	No	92.5	10.2	
Practice level	Junior	91.4	8.6	0.238
	Senior	97.5	2.1	
	NA	96.6	10.7	

JSE-HPS: Jefferson Scale of Empathy-Helath Profession Student MBBS: Bachleor of Medicine and Baccleor of Surgery: BDS: Bachelor of Dental Surgery: IQR: Interquartile Range

from different countries, and lower empathy scores in our population, can be explained by a number of reasons.[24] Firstly, the student cohorts in these studies are widely different from each other. Our study population was post-graduate students from laboratory sciences. Since many of them do not actively treat patients, their understanding of the questionnaire may affect the results. The medium of instruction in our courses is English, yet the first language of most students is not English. Secondly, there are a number of social and cultural reasons, such as family structure, income inequality, political atmosphere, and religion and spirituality. Societies with higher income disparity, unstable political structure, and lower spirituality show lower levels of empathy.[25]

Our study also revealed no significant differences in empathy scores between male and female students. These results are inconsistent with past studies clearly showing higher empathy scores in female students and physicians compared to their male counterparts.[26,29] However, there is great clinical and anthropological debate on the reasons for this difference. Neuroimaging studies show that women have a greater neuronal activity in empathy-related areas of brain when presented with a clinical scenario. Electro-encephalography studies hint that women's scores on empathy questionnaires are subjective to social desirability, and priming social expectations in both men and women diminishes these differences.[30]

No significant differences were observed in age, levels of training, or past clinical experience. Past studies show that empathy scores significantly decline over the years of education.[17,19,31,32] This empathy decline is suggested to be a result of emotional exhaustion, burnout, depersonalization, and desensitization with increasing levels of exposure to clinical scenario.[32] However, not many studies have been conducted in laboratory-related allied health professions. We had a small sample size to effectively determine the scale of empathy erosion in our study population. It is nonetheless promising to see no reduction in empathy in students of Pathology.

Differences in empathy across students' basic education (MBBS/BDS or Allied Health Professions) were not significant. In a medical context, professions are roughly divided into 'people-oriented' specialties.[33] People with high empathy tend to gravitate towards 'people-oriented fields', and those with low empathy tend to choose 'technology-oriented' professions. Our study population has variable levels of direct patient interaction and those with more exposure to patients should demonstrate a higher level of empathy. However, it can be argued that since these participants chose to enroll in Pathology course (a technology-oriented specialty), might not be interested in people-oriented discipline to begin with. Similar to our findings, other studies with nursing students report that previous academics did not influence JSE scores.[34,35]

Findings of this study should be interpreted within the context of the limitations of the study. Firstly, we included students from only one university. Since this is the only medical university in the province, it was not possible to include other universities.

Table IV: Distribution of Median empathy scores by demographic and educational characteristics among study participants (n=37)

Variables		JSE-HPS		p value
		Median	IQR	
Gender	Male	95.1	9.0	0.276
	Female	91.8	9.2	
Age categories (years)	22-24	97.2	14.2	0.887
	25-27	94.7	11.5	
	28-30	98.1	9.9	
	31-33	95.2	9	
	34-36	97.5	17.7	
Basic qualification	MBBS/BDS	92.1	8.1	0.586
	Allied Health Sciences	93.7	10.3	
Mphil degree program	Haematology	91.7	8.9	0.093
	Histopathology	94.5	6.1	
	Microbiology	93.0	11.1	
	Oral Pathology	92.9	9.7	
Experience with patients as part of undergraduate qualification	Yes	92	10.4	0.231
	No	96	8.7	
Did you have direct patient contetc) act in any capacity other than part of your undergraduate degree (such as working in a clinic, dispensary	Yes	93.7	7.4	0.68
	No	92.5	10.2	
Practice level	Junior	91.4	8.6	0.238
	Senior	97.5	2.1	
	NA	96.6	10.7	

JSE-HPS: Jefferson Scale of Empathy-Helath Profession Student MBBS: Bachleor of Medicine and Baccleor of Surgery: BDS: Bachelor of Dental Surgery: IQR: Interquartile Range

Secondly, our sample size was small. Although we invited all the students enrolled in the study, and the response rate was high, only 43 participants were included in the final analysis. The sample size should be larger for generalizability. Finally, there is no empirical evidence that JSE scores reflect actual empathetic behavior in patient care. Despite its limitations, to our knowledge, this is the first study to investigate empathy levels in post-graduate students of Pathology using the JSE-HPS version.

CONCLUSION

Our study revealed a moderate level of empathy among postgraduate students enrolled in various M. Phil Pathology disciplines at KMU, with no statistically significant differences across demographic or academic variables. While minor variations in empathy scores were observed based on gender, qualification background, and clinical experience, these differences were not significant. These findings emphasize the need for integrating empathy-enhancing strategies into postgraduate training curricula, irrespective of discipline or background, to foster patient-centered care across all domains of diagnostic medicine.

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AUTHORS' CONTRIBUTION

The following author have made substantial contributions to the manuscript as under:

YMY: Conception and study design, acquisition, analysis and interpretation of data, drafting the manuscript, critical review, approval of the final version to be published

Author agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

The author declared no conflicts of interest, financial or otherwise, that could compromise the integrity, objectivity, or validity of their opinions.

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DATA SHARING STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request

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