Relationship between level of empathy during residency training and perception of professionalism climate

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Abstract

Background Empathy is one of the vital personality attributes for all physicians. It is essential for establishing genenal interpersonal relationships among doctors and patients.Unfortunately, there is evidence for the decline of physician's empathy during the clinial training phase and is a major concern for medical educators worldwide. One of the major factors reported for the decline of this trait is an unprofessional learning environment. Objective This study examines the relationship between empathy level and perception of climate of professionalism among the residents. Method The study participants included residents of Obstetrics & Gynecology and Pediatrics departments of a private sector tertiary care hospital. Two self-administered internet based surveys - Jefferson scale of Physician empathy (JSPE) and "professionalism climate instrument"(PCI) - were administered to assess the level of empathy among the participants and their perception of professionalism in the learning environment. The relationship between the level of empathy and professionalism was analyzed using Spearman rank correlation. Results The overall response rate was 81.4% with mean empathy level of 103±13. The internal consistency of each scale measured by Cronbach's coefficient α was 0.76 for JSPE and 0.65 for PCI. No significant difference was observed in the mean empathy scores between senior and junior residents of both specialties. Statistically significant difference in empathy scores existed between female and male residents ($p = 0.012$; 95% CI, 2.27 to 17.59). The mean PCI score was 106 + 8.88 with no significant difference among residents of two specialties. Professionalism score was not found to vary with either the year of residency or gender. Empathy score and professionalism climate were not found to be correlated ($r_s = 0.56$, $p = 0.64$). Conclusion The findings suggested that empathy is a relatively stable trait that remains unchanged during residency training programs. Female residents had higher empathic concern than the male trainees, however, the empathy level of the participants was not found to be influenced by the climate of professionalism.

Background:

Medical professionalism lays the foundation of patient-physician trust and represents the relationship between medicine and society. Nowadays, increasing attention is being focused to develop professionalism among medical school graduates.[1] American Board of Internal medicine (ABIM) has taken a lead to address the need to promote professionalism [2]. ABIM included altruism, accountability, excellence, duty, honor and integrity, and respect for others as the elements of professionalism [3]. The Accreditation Council on Graduate Medical Education (AGGME) recommended six general competencies, such as patient care, medical knowledge, practice-based learning and improvement, professionalism, and system-based practices among the medical residents [3]. While knowledge and skill are imperative, the unique characteristic of medical professionalism is empathy.

Empathy

Empathy commonly referred to as an ability to "put oneself in someone else's shoes", is an essential component of physician's therapeutic effectiveness (Osler 1963). Empathy is defined as a cognitive

attribute that implicates an understanding of the inner experiences and perspectives of the patients and at the same time communicating this understanding with patients and supporting them [4], [5]. Studies show that empathy is linked with enhanced patient's satisfaction, treatment compliance [6] and improved patients' outcome [7]. The Jefferson Scale of Physician's Empathy (JSPE) is considered as a reliable, valid, and psychometrically sound instrument to measure empathy [8], [9] . [10], [11], [12] .

Professionalism climate

Over the last two decades increased attention has been given to the promotion of medical professionalism and improving institutional culture. Professionalism in clinical environment has an impact on empathy and shaping attitudes, which are manifested through the hidden curriculum [13]. [14]. Despite the endeavor of the institutes to improve professionalism among medical students and residents, there are major concerns about poor role modeling of professionalism as part of the hidden curriculum [13]. Unprofessional learning environment usually leads to lower empathy, poorer patient care, and increased apparent medical errors. Assessment of climate of professionalism in learning environment is essential to gauge medical professionalism. The "climate of professionalism instrument" developed by Quaintance et al. has been successfully used in a number of studies. [15].

Reduction in empathy and compassion levels among medical students has been linked with excessive stress and burn out within the learning environment [13]. Many studies have reported high levels of stress during residency education; however, no study could be found that studied the relationship between the professionalism climate and residents' level of empathy.

This study was conducted to measure the empathy level and to determine the relationship between the percieved climate of professionalism and the level of empathy among the residents of two specialties, which are considered highly stressful. In addition we also studied if there was any difference in the level of empathy among men and women, years of residency training and in the climate of professionalism among the two specialties.

Method:

A descriptive correlational study design utilizing survey methodology was used.

Study participants included residents from first to fourth year of women and child health division, comprising departments of Obstetrics & Gynecology and Pediatrics at Aga Khan University, Karachi. The total number of residents in all four years in the Obstetrics & Gynecology department was 23 and in the Pediatrics department was 63. The sample size was calculated with "PASS 15" software having the limit of α- error less than 5%. All residents in both the departments who consented and filled both JSPE and PCI survey forms were included. Residents who did not fill both the forms were excluded from the analysis. Of the total 86 residents, 70 completed both the surveys and were included in the study.

The level of empathy and professionalism climate data was collected using Jefferson Scale of Physician Empathy (JSPE) and the Climate of Professionalism instrument (PCI). JSPE is a “self-administrated 20-item instrument intended to measure empathy in the patient-care context. It covers three underlying constructs of empathy including perspective taking (10 items), compassionate care (eight items), and standing in the patient’s shoes (two items). These items were answered on a 7-point Likert scale with 1 (strongly disagree) to 7 (strongly agree) for positive items and 1 (strongly agree) to 7 (strongly disagree) for negative items; scores range from 20 to 140. Higher scores indicate greater empathetic capacity [10].

PCI comprises of 12 statements on behaviors associated with professionalism in a clinical learning environment. Residents were required to rank students, residents, and attending physicians on a four-point Likert scale according to the frequency with which these behaviors were observed in each group (Mostly = 4, Often = 3, sometimes = 2, and rarely = 1), for a total of 36 items. Six negatively worded items were reverse coded. The score ranged from 36–144. Higher scores on the PCI denote more professional behaviors in that particular group. Permission for using the instrument was obtained before use.

The study was approved by the institutional review board of Aga Khan University Hospital (4817-DED-ERC-17). All participants were recruited on a voluntary basis and a written informed consent was obtained before participation under principles of full disclosure. Confidentiality of the participants was maintained by using anonymous surveys.

The data was collected by web based anonymous survey. Unique IDs were created for the respondents to match the responses on the two instruments for statistical analysis. The authorized web link provided by Thomas Jefferson University was provided to the study participants through email. The participants were provided with their unique respondent IDs required to open the survey site. The Principal investigator (PI) was blinded for these IDs to maintain confidentiality. The residents who were posted at the secondary site hospitals were contacted over phone and respondent ID was sent through email. In order to enhance the number of participants, three reminder emails were sent to the residents.

Statistical analysis was done using SPSS statistical software version 19. Chi –square test and Fisher’s exact test were used for categorical variables. Level of significance was defined as $p < 0.05$ for all statistical analyses. An independent- sample t –test was performed to determine any difference in mean scores of both empathy and PCI between senior and junior residents, and male and female residents. Cronbach’s α was calculated for reliability estimates. Spearman rho analysis was done to detect the correlation between PCI and JSPE scores. Finally, a simple linear regression analysis was performed to determine the variation in dependent variable (empathy score) that can be explained by the independent variable (professionalism score). Analysis was performed to check all assumptions made for linear regression.

Results

Out of total of 86 residents in women and child health division, 70 responded to both the surveys representing an 81.4%response rate. The response rate was better in Obstetrics &Gynecology department;

22 out of 23(95.65%) compared to Pediatrics; 48 out of 63(76.2%). All respondents in Obstetrics &Gynecology were females and comprised of 31.4% and remaining 68.6% belonged to Pediatrics. Most of the respondents (59%) were in the age range of 28-30 years. There was a female preponderance with 57 females (81.43%) and 13 males (18.47%). For the purpose of analysis, residents in years 1 and 2 were grouped as junior residents and in years 3 and 4 as senior residents. In both departments, majority of participants, about 70% were juniors, while only 29 % were seniors (Table 1).

Table 1: Frequency distribution of respondents by year of residency

Residency year	Frequency	Percent	Obstetrics and Gynecology(N)	Pediatrics (N)
Year 1	21	30.00	7	14
Year 2	28	40.00	11	17
Year 3	12	17.14	2	10
Year 4	9	12.86	2	7

Cronbach's α for JSPE scale was found to be 0.76 and for PCI was 0.65. Sub scale analysis of the items for professional and unprofessional behaviors showed Cronbach's α of 0.8 0.57 respectively.

The overall mean empathy score was 103 with a standard deviation of (SD) ± 13 with a slightly higher mean for the Obstetrics & Gynecology respondents. The range for the empathy scores was 73 -125 (Figure 1).

The mean empathy score for Gynaecology residents was 106 with a SD of ± 12.5 and a range of 73 -122, whereas the mean empathy score for the Pediatrics respondents was 102 with a SD of ± 13.1and range of 73 -125. The empathy scores for junior and senior residents of the both departments were measured separately. Independent t-test indicated no statistically significant difference in mean empathy scores between junior and senior residents in both departments (Table 2).

Table 2: Mean empathy score in OBGYN/Paediatrics based on year of residency

	Total	Obstetrics&Gynaecology		Paediatrics	
		Junior Years 1 and 2	Seniors years 3 and 4	Junior Years 1 and 2	Seniors years 3 and 4
Number of Respondents	70	18	4	31	17
Range	73-125	73-119	106-122	73-120	80-125
Mean	103	104.1	115.0	101.3	102.1
Mode	116	101	116	95	103
Standard Deviation	13	12.7	6.6	12.9	13.8

There were 18 junior and 4 senior residents in Obstetrics & Gynecology and the mean empathy score for the juniors was 104.1± 12.7 and for the seniors was 115.0 ± 6.6 with a range of 73-119 and 106-122 respectively. In the Pediatrics department there were 31 junior and 17 senior residents; the mean empathy score, SD, and range for juniors were 101.3 ± 12.9, and 73-120 respectively, whereas for seniors, the values were 102.1 ±13.8, and 80-125 respectively.

Overall, there was 57 female and 13male respondents in both specialties. The mean empathy score and SD of female and male participants were 104 ± 12.11 and 94.92 ± 14.08 respectively (Table 3). Independent t-test for female versus male residents in both specialties ($t_{(68)} = 2.58$, $p = 0.012$) revealed that the mean empathy score in female residents (9.94; 95% CI, 2.27-17.59) was much higher than the male residents.

Table 3: Empathy score distribution by gender in both specialties

	Total	Female	Male
Number of Respondents	70	57	13
Empathy score	103	104	94.92
Standard Deviation	13.1	12.11	14.08

The Professionalism Climate

The mean PCI score for the Obstetrics &Gynecology respondents was 100.31±8.43 and a range of 85 -114. The mean PCI score for Pediatric respondents was 100.55 ± 8.88 with a range of 85 -124. Tables 4 showed PCI score distribution according to the level of residency in both specialties.

Independent sample t-test to compare the mean PCI scores between junior and senior residents of both specialties indicated no significant difference in PCI scores between junior and senior residents of both specialties.

Table 4: Mean PCI score in OBGYN/Paediatrics based on year of residency

	Total	Obstetrics&Gynaecology		Paediatrics	
		Junior Years 1 and 2	Seniors years 3 and 4	Junior Years 1 and 2	Seniors years 3 and 4
Number of Respondents	70	18	4	31	17
Range	85-124	85-114	101-112	82-124	86-112
Mean	100.31	99.27	105	101.18	99.09
Median	102.5	101	103.5	101	101
Standard Deviation	8.43	8.78	4.96	9.63	6.81

The range of scores possible for both professionalism and unprofessionalism constructs was 18-24. The mean professionalism score was perceived to be highest in the resident group and lowest in the medical student group, whereas mean unprofessionalism score was similar in both faculty and the resident group and slightly higher among the students.

Spearman's rank–order correlation indicated a weak correlation ($r_S = 0.056$, $p = 0.64$) between empathy level and professionalism.

Discussion

The current study detected that mean empathy score among medical residents in Aga Khan University was 103 ± 13 on JSPE scale. This value was relatively lower than the empathy scores observed among the residents in the Western countries, such as USA and Italy [10], [12]. However, the mean empathy score of this study was higher than Korean physicians and even comparable with Japanese and Iranian

physicians, thus supporting Hojat's hypothesis of socio cultural differences existing between Western and Asian countries [16].

The present study could not detect any significant difference in the mean empathy scores among the residents of two different specialties as opposed to the previous findings [17], [18].. One of the possible explanations for this might be that both these specialties are more 'people- oriented' rather than 'technology oriented' and thus the residents in these specialties are assumed to have direct patient interaction and might have better communication skill than their counterparts in other technology based specialties and thus have higher empathy scores [16].

The mean empathy scores among junior and senior residents of both specialties did not show significant variation. The same results were seen in a fairly recent study involving Singaporean residents where empathy levels were stable throughout the training period.[19]

This study found a higher empathy level among the female residents compared to males in both specialties. This finding was in accordance with many other studies [9], [16], [20]. Probable explanation for this finding could be the association between activation of right cerebral hemisphere and empathy level in women. Another possible reason could be higher emotional receptivity in women than men, which might provide more emotional support, greater care, and also development of more interpersonal relationships. In contrast, a study by Mathew (2016) showed a higher empathy level in men and till date only one study had reported no gender based difference in empathy level [21].

The internal consistency of the JSPE scale (Cronbach's α) was 0.76, which lies within the standard Cronbach's α value of 0.7 or above (5), but for PCI Cronbach's α of 0.65 was less than the standard value. However, dividing the items into professional and unprofessional constructs, led to an improvement of the Cronbach's α to 0.8 for the professional construct, while for unprofessional behaviors it remained 0.57, proposing a probable shortcoming of this instrument for the sample used in this study. Moreover, use of negative words for 'unprofessionalism' items might have caused some problems in interpretation. Similar problem was confronted by Spiwak, who performed exploratory analysis to identify these professional versus unprofessional behaviors [22]. This could occur due to difference in population and probably there is a necessity of different instrument for measuring this important constructs.

The most obvious finding of this study was the climate of professionalism existing in the institution. No significant difference was detected by the residents in the mean observed unprofessionalism behaviors among three groups i.e., medical students, residents and faculty, but a higher professionalism was detected among the residents. The finding was in accordance to the study by Quaintance on American medical learners showing a significant difference between preclinical and clinical trainee's observations of professionalism among students, residents, and faculties [15]. Spiwak reported that residents rated the faculty to be the poorest in terms of observed professional behaviors [22].The finding of this study can be explained as the medical residents might rate the peer group more favorably since they had social similarity in behaviors and characteristics [22]. Moreover, the residents spent more time in training, had

increased opportunity to interact with the faculties, who act as a role model for the trainees and they learnt professionalism and unprofessionalism behaviors by observing the faculty [23], [24].

The current study could not identify any correlation between empathy score and professionalism climate. This was in opposition to the study by Brazeau who found a direct correlation between empathy score and PCI score among medical residents in the learning environment [13]. The probable reason for this finding could be the problem of self-reporting of empathy level by the residents and also low reliability of PCI instrument.

Limitations

There were some limitations of this study. Firstly, the use of self-reported questionnaires for detection of empathy level might not reveal the actual empathetic behavior of the residents during medical practice; rather it would indicate resident's orientation towards empathy. Secondly, the external validity or generalization of the findings was limited due to convenient sampling that included residents of a single institution of a particular geographical area. Thirdly, the sample size was small with only residents of two specialties leading to inadequate statistical power. Fourthly, since it was not a longitudinal study, it was difficult to ascertain empathy decline among the residents. Last, but not the least, PCI instrument despite being a validated tool for measuring professionalism climate, might be unable to capture participant's behavior properly in this study.

Conclusion

In summary this is the first study to examine the empathy level and professionalism climate and correlation between the two among the medical residents in a developing country. Despite the aforementioned limitations, this work offers invaluable understanding about empathy and professionalism in the learning environment of the residents. The study suggested that empathy is a relatively constant quality among the sample of residents under study that remained unaffected by year of residency or specialty. However, the empathy level of the female residents was found to be higher than male residents. The study could not detect a significant correlation between professionalism climate and empathy level.

Future research should be directed towards developing a longitudinal study involving a large number of residents from different specialties and different medical institutions to gain more insight into the relationship between professionalism climate and empathy and for a possible change in empathy level with progression in training years.

Abbreviations

ACGME
American Council of Graduate Medical Education ,

PCI
Professionalism climate instrument, ABIM:American board of internal medicine
JSPE
Jefferson Scale of Physician Empathy

Declarations

Ethics approval: The study was approved by the institutional review board of Aga Khan University Hospital (4817-DED-ERC-17).

Consent to participate: All participants received written information on the study before participation and participation was voluntary. A written informed consent was obtained before participation under principles of full disclosure. All data is kept confidential and published anonymously.

Consent for publication: Not applicable.

Availability of data and materials: The datasets generated and analyzed during the current study are not publicly available.

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Authors' contributions: AA and SKA contributed to the study's conception and design. AA developed the search strategy, extracted the data and drafted the manuscript. SKA revised the manuscript and gave final approval of the version to be published. The author(s) read and approved the final manuscript. All authors declare that they have read and approved the final manuscript.

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Figures

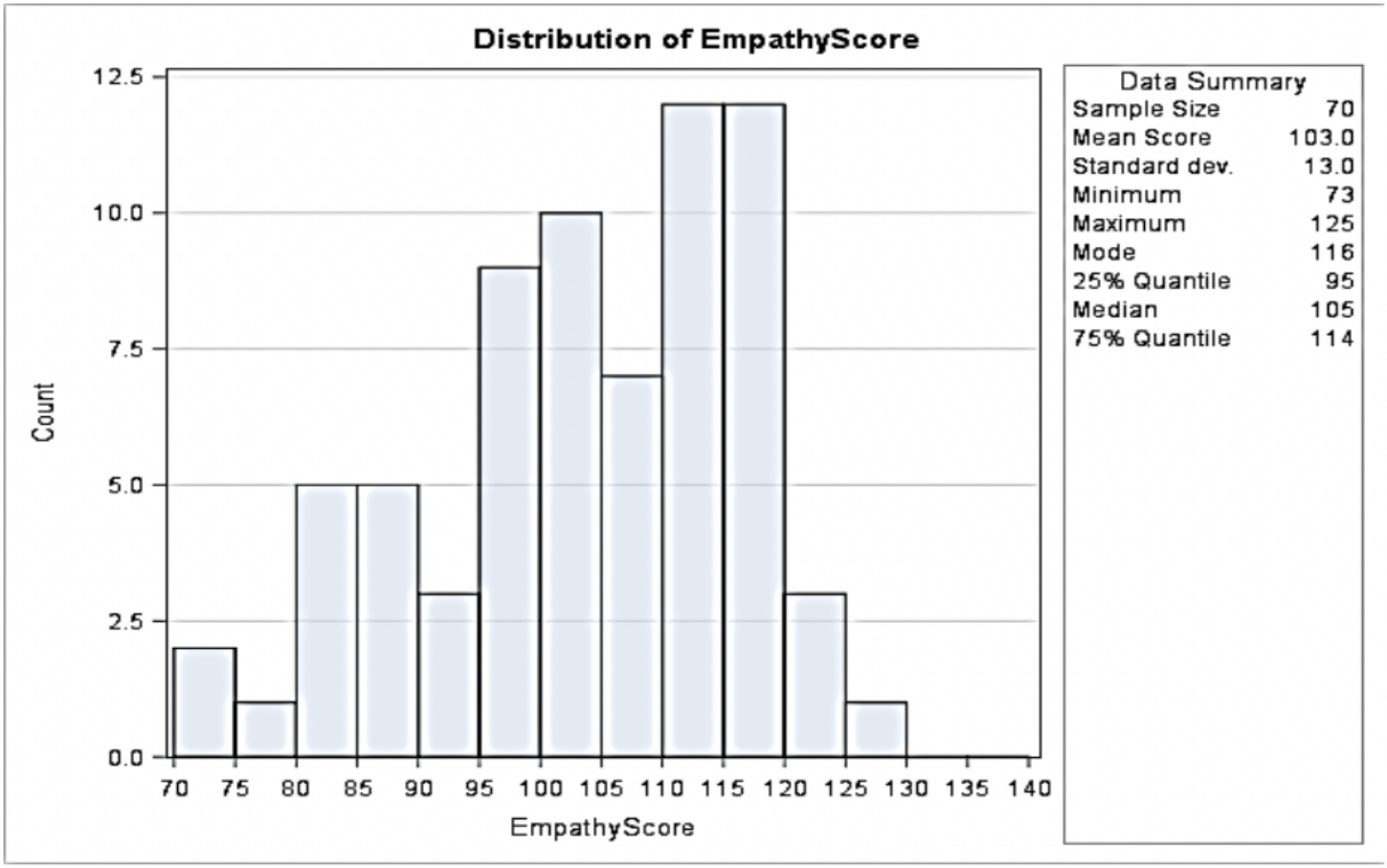

Figure 1

Empathy Score distribution: Total sampleEmpathy Score distribution: Total sample