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Empathy in Paediatric Postgraduate Trainees: The Gender Effect

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ABSTRACT

Empathy is a key element of patient-physician relationship. Higher empathy levels are associated with better clinical outcome. Gender differences have been observed in prior international studies. The purpose of this study was to explore the empathy levels among the male and female postgraduate trainee residents in Paediatrics in Pakistan. This study involved 129 postgraduate trainee residents in Paediatrics. The participants anonymously completed the Jefferson Scale of Empathy (HP-Version). The data were analysed by SPSS 20. Comparison of empathy score between males and females was carried out by the independent sample *t-test.* The mean empathy score was 102.75. Females had significantly higher empathy levels than males (105.22 vs. 99.43). The gender difference was statistically significant (p=0.028). The male residents were significantly less empathic than males. Targeted educational activities are recommended to sustain and enhance empathy during postgraduate training.

Keywords: Empathy, Postgraduate Trainees, Paediatrics, Jefferson Scale of Empathy.

INTRODUCTION

Empathy is the ability to understand other people's experiences, emotions, and feelings, and an ability to communicate this understanding to others [1]. It involves both verbal and non-verbal communication [2]. Empathy is of central importance in patient care. There is a significant link between physician empathy and optimal clinical outcomes [3,4].

Different aspects of empathy have been explored in several studies. Gender differences in empathy have also been observed. Females have shown higher empathy scores than males in several studies [5-9] while a few studies have shown higher scores in males [10] or no gender difference at all [11,12]. The majority of these studies have been carried out in North America and Europe. So far, no study has had an explicit focus on examining the empathy levels in postgraduate trainees in Asian context.

The present study explores the empathy levels in the postgraduate trainees in Paediatrics to answer the following question:

> *"Do female Paediatric postgraduate trainee residents have different levels of empathy than males?"*

The following hypothesis was tested:

> *"Female Paediatric postgraduate trainee residents will have higher empathy scores than males."*

METERIAL AND METHODS

The study was carried out at The Children's Hospital and The Institute of Child Health, Lahore. The study was approved by the Institutional Review Board of the Children's Hospital and The Institute of Child Health, Lahore. The study was carried out in accordance with the Declaration of Helsinki. No harm to the participants was anticipated. The trainees were assured that their responses would remain confidential.

The study was descriptive analytic one. This was a cross-sectional survey, with data collected at single point in time. The study population was the Postgraduate trainee doctors in Paediatrics and various Paediatric sub-specialties at the Children's Hospital & Institute of Child Health, Lahore. All 129 postgraduate trainees in Paediatrics at the Children's Hospital & Institute of Child Health were included.

The Jefferson Scale of Empathy (JSE), (HP – Version), was the instrument used in the study.

It contains 20 items. Each item is answered on a seven-point Likert-type scale. The responses from the participants to the scale were coded and entered into IBM SPSS 20.

Gender was the independent variable and the empathy score was the dependent variable. Descriptive analyses were carried out. For numerical data, mean and standard deviation were used. For categorical data, percentage and frequencies were used. Comparison of empathy score between males and females was carried out by the independent sample *t-test.* A *p-value* of <0.05 was considered to indicate statistical significance.

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RESULTS

All the postgraduate trainees completed and returned the questionnaire i.e. JSE (overall response rate = 100%). All of them replied all the items in the scale (item response rate = 100%) A total of 129 postgraduate trainee residents in Paediatrics and sub-specialties participated in the study. Table 1 provides the distribution of basic demographic characteristics of the participants. Out of these, 74 (57.4%) were females and 55 (42.6%) were males.

Table 1: Socio-demographic characteristics of the participants

Gender	Frequency	Percent	Valid Percent
Male	55	42.6	42.6
Female	74	57.4	57.4

The overall mean empathy score was 102.75 ± 14.80.

Group Comparison by Gender

The means and standard deviations by gender are shown in Table 2. As reported in the table, overall, the female trainees outscored the males. The mean empathy score for female trainees was 105.21 (SD= 14.81) and that for male trainees was 99.44 (SD=14.25). This difference was statistically significant (p=0.028). When looked for different academic years, this gender difference was found in all grades except for third-year residents (Figure 1).

Table 2: Group differences in empathy score by gender

Gender of resident	N	Mean	Std. Deviation	Std. Error Mean
Male	55	99.44	14.25	1.92
Female	74	105.21	14.81	1.72

(P-value: 0.028)

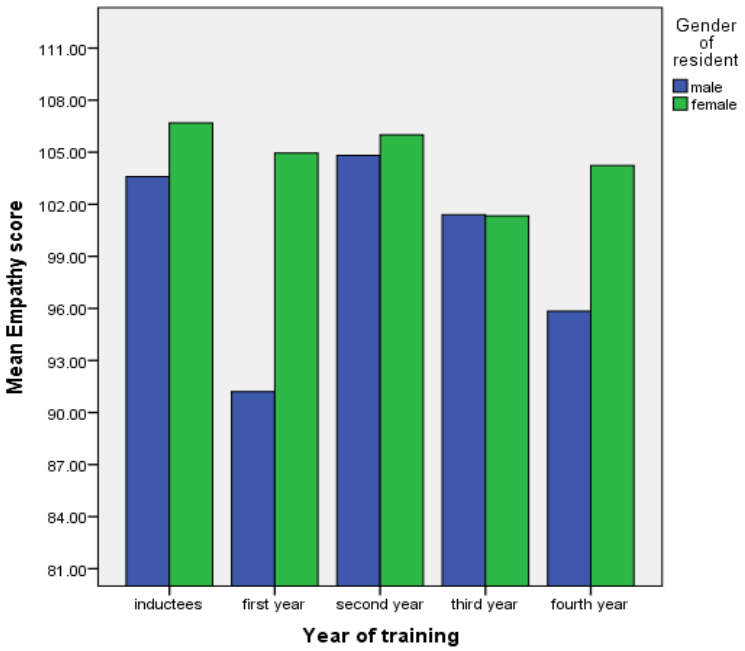

Figure 1. Distribution of mean empathy scores of postgraduate trainee residents in each year by gender.

DISCUSSION

The findings of the current study indicate that female postgraduate trainees outscored the males (Table 2). The difference was statistically significant (p=0.028). Hence, the hypothesis is confirmed. These findings are in concurrence with the majority of international studies. Studies from America have shown significant gender difference in favor of females [1,5,13]. Similarly, studies from Japan [14], Portugal [7], Romania [6], Korea [15] and China [16] have shown higher empathy levels in female residents and physicians. Though a few studies failed to show any gender difference [12,17], in general it appears that the female residents express more empathy.

These higher scores in the female residents and physicians can be attributed to several factors including both intrinsic and extrinsic ones [18]. The intrinsic factors include evolutionary-biological gender characteristics, while the extrinsic factors include socialization, interpersonal care and gender role expectation [1,14,19,20]. According to the evolutionary theory of parental investment, females are expected to develop a stronger sense of caring for offspring than males [21]. They are also supposed to be more skillful in understanding the needs and emotions of their offspring. A possible parallel can be drawn between the skills of communication and understanding, as applied to offspring, and empathy, as applied to patients [7,22]. Females have advantage in the decoding of non-verbal emotional cues in both visual and auditory modalities [23,24]. They are quick and more accurate in recognizing facial expressions [24]. Studies have suggested gender differences in empathy and emotional attunement beginning early in ontogenic development. Female infants are more responsive to their mother's voice and initiate more maternal social interactions [24]. Females are more prosocial from the early childhood through adolescence. Studies involving preschool and adolescent children indicated that females outperform males on the tests of theory-of-mind (ToM) [24]. Current neuroscience studies have investigated the relevant brain networks. The network of the human mirror-neuron system has been found to be strongly linked to empathy competence [25]. Certain gender differences have been noticed in neuroimaging and neurophysiology. Females display larger gray matter volumes than males in the pars opercularis and inferior parietal lobules of the right hemisphere [26]. Gender differences have also been found in mirror neuron system on the neurobiological level using the functional magnetic resonance imaging (fMRI) studies. Two areas superficially associated with mirroring include posterior inferior frontal and anterior inferior parietal cortex. The mirror neurons have a peculiar feature of firing when a specific action is observed or executed. Females have also been found to recruit more mirror-neurons than males during empathic interactions [25,26]. Event-related potentials (ERP) studies have also demonstrated gender differences during emotion processing. Females were found more sensitive and processed emotions more automatically than males [24].

Extrinsic factors such as role expectation, socialization and interpersonal relationships may also effect the empathic behavior. There is a gender difference between role expectations. Females express better emotional receptivity, social sensitivity, and caring attitude [7,8,15]. Females exhibit more caring prosocial moral judgment and reasoning. In contrast, males appear to show more utilitarian behavior. Males have more deliberate control over their production of expressions [24]. Studies of economic games and the analytic data of charitable behavior indicates high altruism in females [24]. In addition, women are more likely to develop and value interpersonal relationships. On the contrary, males generally exhibit an attitude of dominance, authority, control and independence [12,13]. In a meta-analytic review, it was found that

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compared to males, the female physicians engaged in more patient-centered communication including psychosocial support, counseling, positive talk and patient enlistment. Furthermore, female physicians spent more time with their patients than their male colleagues [27].

CONCLUSION

In the present study, the male residents expressed significantly low empathy levels compared to the female residents. The findings of significant gender-based differences in empathy scores in doctors may have potential implications. These findings may provide a reference for the policy making for postgraduate training. There should be increased awareness in the curriculum planners about the potential gender difference in empathy. This may help to plan remedial educational interventions especially directed to those who are potentially expected to have low empathy scores.

Conflict of interest: The authors declare no conflict of interest.

References

[1] Hojat M, Gonnella JS, Nasca TJ, Mangione S, Vergare M, Magee M. Physician empathy: definition, components, measurement, and relationship to gender and specialty. Am J Psychiatry. 2002; 13: 1563-1569

[2] Neumann M, Sceffer C, Tauschel D, lutz G, Wirtz M, Edelhauser F. Physician empathy: definition, outcome relevance and its measurement in patient care and medical education. GMS Zeitschrift fur Medizinische Ausbidung, 2012; 29: 1-10

[3] Jani BD, Blane DN, Mercer SW. The role of empathy and the physician-patient relationship. Forsch Komplementmed, 2012; 19: 252-257

[4] Hojat M, DeSantis J, Shannon SC, Speicher MR, Dragon L, Calabrese LH. Empathy as related to gender, age, race and ethnicity, academic background and career interest: A nationwide study of osteopathic medical students in the United States. Med. Educ. 2020; 54: 571-581

[5] Chen D, Lew R, Hershman W, Orlander J. A cross-sectional measurement of medical student empathy. J Gen Intern Med 2007; 22: 434-438

[6] Rahimi-Madeshi Mohammad, Tavakol M, Dennick R, Nasiri J. Empathy in Iranian medical students: A preliminary psychometric analysis and differences by gender and year of medical school. Med Teach. 2010; 32: e471-478

[7] Magalhaes E, Salgueira AP, Costa P, Costa M. Empathy in senior and first year medical students: a cross-sectional study. BMC Med. Educ. 2011; 11:52-59

[8] Voinescu BI, Szentagotal A, Coogen A. Residents' clinical empathy: gender and speciality comparison – a Romanian study. Acta Medica Academia 2009; 38: 11-15

[9] Higazi I, Wilson I. Maintaining empathy in medical school: it is possible. Med Teach. 2013; 35: 1002-1008

[10] Mocny-Pachonska K, Lanowy P, Trzcionka A, Skaba D, Tanasiewicz M. Gender related changes of empathy level among Polish dental students over the course of training. Medicine. 2020; 99: 1-5

[11] Loffler CS, Greitemeyer T. Are women the more empathetic gender? The effects of gender role expectations. Curr. Psychol. 2021; 9: 1-12

[12] DiLillo M, Cichetti A, LoScalzo A, Torani F, Hojat M. The Jefferson Scale of Physician Empathy. Preliminary psychometrics and group comparison in Italian physicians. Acad. Med. 2009; 84: 1198-1202

[13] Hojat M, Honella JS, Nasca TJ, Mangione S, Veloski JJ, Magee M. The Jefferson Scale of Physician Empathy: further psychometric data and differences by gender and specialty at item level. Acad. Med. 2002b; 77: 58-60

[14] Kataoka HU, Hoide N, Hojat M, Gonnella JS. Measurement and correlates of empathy among female Japanese physicians. BMC Med Education. 2012; 12: 48

[15] Suh DH, Hong JS, Lee DH, Gonnella JS, Hojat M. The Jefferson Scale of Physician Empathy: A preliminary psychometric study and group comparisons in Korean physicians. Med. Teach. 2012; 34: e464-468

[16] Wen D, Ma X, Li H, Liu Z, Xian B, Liu Y. Empathy in Chinese medical students: psychometric characteristics and differences by gender and year of medical education. BMC Med. Educ. 2013; 13: 130

[17] Tariq N, Tayyab A, Jaffery T. Differences in empathy levels of medical students based on gender, year of medical school and career choice. J Coll Physicians Surg Pak 2018; 28: 310-313

[18] Santos MA, Grosseman S, Morelli TC, Gluliano ICB, Erdmann TR. Empathy differences by gender and specialty preference in medical students: a study in Brazil. Int. J. Med. Educ. 2016; 7: 149-153

[19] Hojat M, Mangione S, Nasca TJ, Cohen MJ, Gonnella JS, Erdmann JB et al. The Jefferson Scale of Physician Empathy: development and preliminary psychometric data. Aduc. Psychol. Measur. 2001; 61: 349-365

[20] Mostafa A, Hoque R, Mostafa M, Rana MM, Mostafa F. Empathy in undergraduate medical students of Bangladesh: Psychometric analysis and differences by gender, academic year, and specialty preference. ISRN Psychiatry, 2014; 1-7

[21] Hojat M, Gonnella J, Mangione S, Nasca T, Magee M. Physician empathy in medical education and practice: experience with the Jefferson Scale of physician empathy. Seminars in Integrated Medicine. 2003; 1: 25-41

[22] Bagash AS, Ali NF, Shehzad AH, Haqqi S. Maintenance of empathy levels among first and final year medical students: a cross sectional study. Published online, F1000Res. 2013; 2: 157

[23] Hall JA, Cartet JD, Horgan TG. Gender differences in the nonverbal communication of emotion. In: Fischer AH (Ed), Gender and emotion: Social Psychological Perspectives. Cambridge University Press, Paris. 2000; pp. 97-117

[24] Christov-Moore L, Simpson EA, Coude G, Grigaityte K, Iacoboni M, Ferrari PF. Empathy: Gender effects in brain and behavior. Neurosci Biobehav Rev. 2014; 46: 604-627

[25] Schulte-Ruther M, Markowitsch HJ, Shah NJ, Fink GR, Piefke M. Gender differences in brain networks supporting empathy. Neuroimage 2008; 42: 393-403

[26] Cheng Y, Chou KH, Decety J, Chen IY, Hung D, Tzeng OJ et al. Sex differences in the neuroanatomy of human mirror-neuron system: a voxel-based morphometric investigation. Neuroscience 2009; 158: 713-720

[27] Roter DL, Hall JA, Aoki Y. Physician gender effects in medical communication. A meta-analytic review. JAMA 2002; 288: 756-764

URL: http://dx.doi.org/10.14738/bjhr.1202.18492.