Finding Echoes: An Exploration of Empathy Among Physiotherapists and Physiotherapy Students in Singapore

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Abstract

Background: Empathy is an essential antecedent in motivating healthcare professionals to treat and care for their patients with compassion – few studies had explored empathy on healthcare workers. Currently, no data reported empathy amongst physiotherapists and physiotherapy students in Singapore.

Objectives: This study aims to: 1) measure and explore within- and between-group differences in empathy scores amongst physiotherapists and physiotherapy students in Singapore, and 2) compare the results with similar studies locally and overseas.

Methods: This cross-sectional survey recruited 187 participants (37 physiotherapists and 150 physiotherapy students) via convenience sampling. Participants completed the Jefferson Scale of Empathy (JSE) Health Professions (JSE-HP) and the JSE-Health Professions Students (JSE-HPS), correspondingly. The 20-item JSE-HP and JSE-HPS are validated self-reported questionnaires that measure clinical empathy using a 7-point Likert scale. Summed scores range from 20 to 140, with higher scores suggesting a higher level of empathy. Statistical analysis included descriptive statistics, independent-sample t-tests and one-way analyses of variance.

Results: The mean score of JSE-HP and JSE-HPS was 110.89±11.37 and 112.43±10.73, respectively. No statistically significant differences found between gender, physiotherapists and physiotherapy students, and years of study. However, physiotherapists scored significantly higher [5.08±1.24 (95% CI 4.67–5.49) vs 4.01±1.36 (95% CI 3.79–4.23), p < .001 ] in the JSE components ‘Walking in Patient’s Shoes’.

Conclusion: Physiotherapists and physiotherapy students in Singapore have similar empathy scores to their counterparts locally and internationally. No statistically significant differences in empathy scores were found. However, physiotherapy students were less able to understand patients’ perspectives. This warrants further exploration in developing this vital attribute amongst students.

Keywords

empathy, Singapore, physiotherapists, physiotherapy students, care and compassion

Introduction

Compassion is considered a fundamental ingredient in the delivery of healthcare.¹ It is frequently defined as the emotional response to another person’s pain or suffering, and urging a genuine desire to help.² In Singapore, it is explicitly stated in the Handbook on Medical Ethics, ‘Your duty of care to patients includes providing competent, compassionate and appropriate care’.³ Healthcare professionals are involved in the most intimate aspects of their patients’ lives and walking...
alongside them in their most challenging moments. Having empathy for patients is vital in motivating healthcare professionals to treat and care for their patients with compassion. Therein, empathy is an essential antecedent to motivate compassionate behaviour.

There is still a lack of consensus on the definition of empathy. Some researchers have identified empathy as a cognitive attribute that predominantly involves understanding another person’s concerns. Others have described empathy as an affective or emotional attribute that primarily entails feeling another person’s pain and suffering. Still, another group regards empathy as both affective and cognitive. Empathy in patient care or clinical empathy has been defined as ‘a predominantly cognitive (rather than an affective or emotional) attribute that involves understanding (rather than feeling) the patient’s experiences, concerns and perspectives, combined with a capacity to communicate this understanding, and an intention to help’. According to this definition, empathy is represented predominantly as a cognitive entity. An upside of defining empathy as a cognitive attribute suggests that empathy can be taught, thus leading to personal growth, career satisfaction and optimal clinical outcomes. The fostering of empathy is one of the learning outcomes recommended for medical schools. It illustrates that the field of medicine is committed to producing caring and empathetic doctors. Likewise, it is worthwhile to promote assessing and cultivating empathy among all other healthcare professionals and those in training.

Empathy has been studied in various healthcare fields for its capacity to improve patients’ health and wellness. Indeed, it is suggested that the relationship between empathy and positive clinical outcomes is linear, implying that patients’ health outcomes progressively improve with an increase in clinicians’ empathy. While there are limited studies that quantitatively measure self-reported empathy in physiotherapists, it is conclusive that the positive working relationship between the physiotherapist and patient brings about improved treatment adherence, satisfaction, physical functioning and decreased depression in selected patient populations. One study showed that patients receiving outpatient physiotherapy viewed a patient-centric approach, including the clinician’s empathy, vital to their care. Another study found that patients reported patient–therapist interactions, including empathy, motivation and encouragement, more critical than the quantity and substance of physical therapy received.

Empathy has been described in the literature as the most frequently mentioned humanistic physician attribute. Yet, there is limited research to measure empathy in the context of health professions education and patient care in Singapore, especially in physiotherapy. To our best knowledge, no attempt has been made to measure and explore empathy among physiotherapists (PT) and physiotherapy students (PT-S) in Singapore. The purpose of this study is to measure and investigate empathy among PT and PT-S in Singapore, using the Jefferson Scale of Empathy (JSE), a validated self-reported questionnaire measuring clinical empathy. The objectives are to measure and explore within- and between-group differences in empathy scores amongst PT and PT-S, and to compare the results with similar studies conducted locally and overseas.

**Methods**

This cross-sectional survey study recruited participants via convenience sampling. The University Institutional Review Board granted ethical approval (project number 20170054), and data collection took place between May 2020 and January 2021.

**Participants**

Participants included students enrolled in the 4-year entry-level undergraduate physiotherapy programme and physiotherapists working in Singapore. Demographic information was obtained from the participants in addition to their responses to the JSE questionnaires. No identifier was used in order to maintain the anonymity of the participants.

**The Survey Instrument**

The JSE was first developed to measure empathy in medical doctors and students. It comprises three components: perspective taking, compassionate care and walking in the patient’s shoes, which are congruent with the concept that empathy is multi-faceted. The JSE-Health Professions version (JSE-HP) and the JSE-Health Professions Students version (JSE-HPS) were created and subsequently found to have good validity and reliability. Both versions contain 20 questions each on a 7-point Likert scale, with items equally split between positively and negatively worded items. The positively worded items were directly scored according to their Likert weights (1 = Strongly disagree, 7 = Strongly agree), while the negatively worded items were reverse-scored (1 = Strongly agree, 7 = Strongly disagree). Summed scores range from 20 to 140, with higher scores suggesting a higher level of empathy. The internal consistency aspect of reliability (Cronbach’s alpha coefficient) of JSE-HP was 0.81 for physicians, and the test-retest reliability coefficient was 0.65. The alpha reliability estimates for residents and students were 0.87 and 0.89, respectively. The validity and reliability of the JSE-HP have also been established in Singapore, where the Cronbach’s alpha coefficient for JSE-HP was 0.87, and 0.83 for the JSE-Student version for medical students.

**Data Collection Procedures**

The PT-S were recruited via recruitment messages sent to the various academic cohorts in the students’ text messaging groups. The PT were recruited via social media and through the connections of existing participants. The JSE-HP and the JSE-HPS were administered to the PT and PT-S groups, respectively. Each questionnaire required approximately 10 minutes to complete, with its completion and submission as implied consent to participate in the survey.

**Data Analysis**

An accepted response to the JSE questionnaire was defined as having 16 or more of the 20 items answered. JSE surveys that were incomplete but had 16 or more items answered had the missing items replaced with the value of the mean score calculated from the items completed by that respondent, based
on the scale’s guidelines. Descriptive and inferential statistical analyses were performed using Stata version 16.1 (StataCorp LLC, Texas, USA). Descriptive statistics means and standard deviation (SD) were used to summarise the demographic data. Independent-sample t-tests and one-way analyses of variance (ANOVA) were used to compare the differences between variables and groups. All tests were two-tailed, with the results considered statistically significant if the p-value is < .05.

Results

A total of 162 JSE-HPS and 52 JSE-HP questionnaire responses were collected, of which 150 PT-S and 37 PT submitted accepted responses. The demographic information of the 187 participants is shown in Table 1. Consistent with the higher prevalence of women in physiotherapy practice and education, 72% of the 187 accepted participants were female. The response rate from PT-S was approximately 20% of the total 738 students currently enrolled in the local entry-level undergraduate physiotherapy programme. There was a fair representation of PT-S responses from each cohort: 13.9% from year one, 23.4% from year two, 25.8% from year three and 19.1% from year four. Notably, 28 PT-S possessed undergraduate or postgraduate qualifications, and a similar size of 30 had 2 years or more prior working experience. Approximately 28% of the PT-S surveyed (third and fourth-year PT-S) had clinical exposure during their clinical placements at the time of data collection. Out of the 1771 fully registered PT in Singapore, 37 PT provided accepted responses. Majority of the PT (86.5%) have had more than 2 years of professional experience.

The overall mean JSE score of PT and PT-S is (112.12 ± 10.84). Table 1 also shows the within groups comparisons on JSE scores, which revealed no significant differences. JSE scores between genders (male 112.58 ± 11.88 versus female 111.94 ± 10.45) were not significantly different. Within the PT group, there were no statistical differences in gender (p = .6531), age (p = .4127) and years of professional practice (p = .6303). Within PT-S, there were no significant differences in all the independent variables (p > .05).

The mean score of JSE-HP and JSE-HPS was 110.89 ± 11.37 and 112.43 ± 10.73, respectively, as shown in Table 2. There was no significant difference in JSE scores between both groups. However, PT scored significantly higher in one of the JSE components of empathy, ‘Walking in Patient’s Shoes’ (p < .001), as shown in Table 3.

Discussion

Our study is the first to measure empathy quantitatively in PT and PT-S in Singapore. To our knowledge, there is a lack of validated norm tables and cut-off scores to determine high or low empathy levels on the JSE, so we compared our findings with published results from empathy studies using JSE in healthcare professionals and health education students for reference.

Despite the different versions of JSE, most studies reported the mean scores of empathy (without any remedial/education intervention) to be around 112, with standard deviations being around 12. It appears that the overall mean score of PT and PT-S (112.12 ± 10.84) in Singapore is similar to healthcare workers in other reports. Since there was no significant difference in JSE scores between PT and PT-S, the group score for PT (110.89 ± 11.37) and PT-S (112.43 ± 10.73) was understandably very similar to most studies.

Table 1. Demographics of Participants and Group Comparisons on empathy Scores.

| Variable                        | JSE score |       | p-values |
|---------------------------------|-----------|-------|----------|
|                                 | Mean      | SD    |          |
| By role                         |           |       |          |
| PT (n = 37)                     | 110.89    | 11.37 | .4420    |
| PT-S (n = 150)                  | 112.43    | 10.73 |          |
| By gender                       |           |       |          |
| Male (n = 53)                   | 112.58    | 11.88 | .7151    |
| Female (n = 134)                | 111.94    | 10.45 |          |
| By age                          |           |       |          |
| 21–30 years old (n = 18)        | 117.00    | 2.83  | .4127    |
| 31–40 years old (n = 16)        | 108.11    | 12.36 |          |
| 41–50 years old (n = 1)         | 112.56    | 10.54 |          |
| By years of professional practice |         |       |          |
| <2 years (n = 3)                | 104.00    | 14.18 | .6303    |
| 2–5 years (n = 11)              | 112.27    | 13.38 |          |
| 6–9 years (n = 10)              | 109.20    | 11.94 |          |
| >9 years (n = 11)               | 113.91    | 9.08  |          |
| PT-S                            |           |       |          |
| By gender                       |           |       |          |
| Male (n = 10)                   | 112.30    | 3.89  | .6531    |
| Female (n = 27)                 | 110.37    | 2.16  |          |
| By academic year                |           |       |          |
| Year 1 (n = 25)                 | 112.48    | 9.17  | .3852    |
| Year 2 (n = 47)                 | 112.45    | 11.65 |          |
| Year 3 (n = 34)                 | 114.97    | 9.95  |          |
| Year 4 (n = 43)                 | 110.67    | 11.00 |          |
| By clinical status              |           |       |          |
| Without clinical exposure (n = 106) | 113.26 | 1.02  | .0818    |
| With clinical exposure (n = 42) | 110.67    | 1.68  |          |
| By highest level of education   |           |       |          |
| A-levels/IB diploma (n = 60)    | 113.63    | 9.38  | .5131    |
| Diploma/Advanced diploma (n = 62)| 111.84  | 10.59 |          |
| Undergraduate/Postgraduate (n = 28)| 111.14 | 13.55 |          |
| By academic programme           |           |       |          |
| 4-Year programme (n = 137)      | 112.31    | 10.74 | .9160    |
| Accelerated programme (n = 11)  | 113.55    | 10.28 |          |
| By previous working experience  |           |       |          |
| <2 years (n = 120)              | 112.28    | 0.98  | .7446    |
| 2 or more years (n = 30)        | 113.00    | 1.96  |          |

*Non-disclosure in the JSE-HP: age and years of professional practice (n = 2).
*Non-disclosure in the JSE-HPS: academic year and clinical status (n = 1), Academic programme (n = 2).
-Level of significance set at p< .05.
Interestingly, on comparable terms, Singapore PT (110.89 ± 11.37) scored lower than PT in other countries. A recent study by Starr et al. (2020) reported a higher mean JSE-HP score of 118.5 ± 9.1 among 123 PT with different years of practice in the United States of America (USA). Similarly, another study by Bayliss and Strunk (2015) in the USA also reported a higher mean empathy score of 119.21 ± 12.53 for a group of 29 former PT at 6 months post-graduation. Assuming they were practising by then, the score could represent the empathy level of novice PT. Perhaps this difference in empathy scores could be attributed to the socio-cultural context in which physiotherapy is experienced and practiced in Asian and Western cultures. It is also noteworthy that our data collection took place during the most severe peak of the COVID-19 pandemic in Singapore. Many healthcare workers, including PT, were deployed or volunteered to support medical frontline operations. The PT could have reflected lower empathy levels due to added workload and stress stemming from either caring for COVID patients, or covering duties for colleagues. Studies in Singapore have shown the adverse effects of increased workloads among allied healthcare workers, manifesting in burnout and the association between empathy and burnout.

Studies in Singapore have also reported a high prevalence of burnout among medical residents and its association with lower empathy. Comparing with local medical doctors, PT scored higher in empathy than residents from SingHealth Residency (104.9 ± 13.2, n = 446). Physiotherapy usually entails a significant amount of face-to-face therapy time, with more opportunities for empathic communication with patients, which could explain why PT had higher empathy scores than physicians. According to one Harvard Medical School study, 56% of physicians commented on the lack of time to be empathic, and 29% cited burnout as the main reason for being less empathic.

Singapore PT-S presented similar empathy levels to healthcare professions students in both local and overseas literature. The overall mean JSE-HPS score (112.43 ± 17.73) was on par with medical students (n = 881) enrolled in the Yong Loo Lin School of Medicine (112.18 ± 11.36) and also with PT-S in other countries. Two studies in Australia reported a mean JSE-HPS score of 109.26 ± 12.96 with PT-S, and 113.65 ± 10.05 with PT-S, respectively. In the USA, the mean JSE-HPS score ranged from 113 to 116 amongst 303 PT-S.

There was no significant difference in empathy scores between PT and PT-S in our study, although PT scored slightly lower than PT-S (110.89 ± 11.37 and 112.43 ± 10.73, p = .442). This contrasts with a study by Thomson et al. (1997), which observed that PT were more empathic than PT-S, possibly hinting that empathy increases with clinical experience. It could be interpreted that PT-S are likely to be less skilful at demonstrating empathy than PT due to insufficient clinical experience. However, a study by Lloyd and Maas (1991) found that empathic skills were not developed through clinical experience. Another study further substantiated this by suggesting clinical practice made no difference in occupational therapy students’ empathy levels. An Australian study observed a steady decline in PT-S’ empathy, bottoming out after concluding their clinical internships in the third year. Conclusively, JSE scores tend to decline in the third year of medical school when the curriculum is shifting toward patient care, and empathy is essential. Our study produced no statistically significant empathy changes across the years of study of PT-S nor between PT-S regardless of clinical experience.

In the factor analysis of the three components of JSE, namely ‘Perspective Taking’, ‘Compassionate Care’ and ‘Walking in the Patient’s Shoes’, no significant differences were found in the component scores between PT and PT-S except the component ‘Walking in the Patient’s Shoes’. These components surfaced from factor analytic studies of the JSE and are consistent with the elements of empathy often reported in the literature. They form the supportive pillars of empathic engagement in patient care. The PT-S overall mean score of 4.01 ± 1.36 (95% CI 3.79–4.23) in ‘Walking in the Patient’s Shoes’ leaned towards ‘4 = not sure’ on the 7-point Likert Scale. This factor emerges from question 3, ‘It is difficult for a health care provider to view things from patients’ perspectives’, and question 6, ‘Because people are different, it is difficult to see things from patients’ perspectives’ in the JSE-HPS questionnaire and are reverse-scored items (i.e., a higher number indicates more disagreement). This suggests that PT-S compared to PT (4.01 ± 1.36 (95% CI 3.79–4.23), 5.08 ± 1.24 (95% CI 4.67–5.49), p = .001) have difficulty with this factor in empathising with patients. It is probable that PT-S lack sufficient clinical exposure to appreciate patients’ experiences and, therefore, are unable to view things from patients’ perspectives. Hence, the clinically experienced PT can empathise with patients by ‘walking in the

Table 2. Descriptive Statistics of the Scores of JSE-HP and JSE-HPS.

| Component         | JSE-HP | JSE-HP |
|-------------------|--------|--------|
|                   | Mean (SD.) | Mean (SD.) |
| 25th percentile   | 110.89 (11.37) | 112.43 (10.73) |
| 50th percentile   | 101 | 106 |
| 75th percentile   | 111 | 113 |
| Range             | 91–135 | 75–140 |

Table 3. Group Comparisons on Components of Empathy.

| Component                  | JSE-HP | JSE-HP | Difference |
|----------------------------|--------|--------|------------|
|                            | Mean   | SD     | 95% CI     | Mean   | SD     | 95% CI     | p-values  |
| Perspective taking         | 5.76   | 0.63   | 5.55–5.97   | 5.96   | 0.59   | 5.86–6.05   | −0.20    | 0.14   | −0.31 to 0.09 | .075     |
| Compassionate care         | 5.39   | 0.68   | 5.16–5.62   | 5.61   | 0.71   | 5.49–5.72   | −0.22    | 0.16   | −0.35 to 0.10 | .100     |
| Walking in patient’s shoes | 5.08   | 1.24   | 4.67–5.49   | 4.01   | 1.36   | 3.79–4.23   | 1.07     | 0.76   | 0.84 to 1.33  | .000*    |

*Level of significance set at p < .05; 95% CI: 95% confidence interval; Difference represent the mean difference with JSE-HP score minus JSE-HPS score, and its 95% CI represent the confidence interval of difference of means.
patient’s shoes”. The reduced perception of PT-S to walk in a patient’s shoes warrant further exploration to develop this pillar of empathic engagement with patient care.

Our study found no significant difference in empathy scores between gender; unlike in most studies, women typically outscore men in different versions of the JSE. An empathy study done on 49 Korean PT-S reported female students being significantly more empathic than male students. Another study also found female PT self-reporting higher empathy levels than male PT. These findings are consistent with measuring clinical empathy in healthcare professionals. However, some studies did not find females as significantly more empathic than males. A Turkish study reported no significant differences in JSE score between gender (n = 381, p = .722) in an undergraduate PT-S population, but males had a higher level of empathy compared to females, although not statistically significant.

There are many attempts to explain the difference in empathy between genders. Research attributes it to evolution, or deem empathy as a female trait, or that males are more rational than emotional. Jolliffe and Farrington (2006) reported that females typically score higher on empathy measures, especially in questionnaires. They were, however, unable to conclude if there was a real difference between the genders or simply because males and females respond to the questionnaire according to ‘gender-role stereotypes’ or whether social desirability bias was present. It could be argued that national service (NS) possibly contributed to the males in our study scoring similar or slightly higher JSE scores than their female counterparts. It is mandatory in Singapore for its male citizens to be enlisted for NS after they reach 16.5 years of age. They are allowed to pursue their university studies only upon completion of their NS. One of the core values of the Singapore military is to ‘care for soldiers’, which embodies genuine concern and empathy for the well-being of comrades, their families and those the soldiers pledge to protect. Having gone through NS training, male PT and PT-S could have developed a collectivist culture that potentially enhances their attitude toward empathy.

Our findings may not be representative of the PT and PT-S populations in Singapore due to the relatively low participation rate. Causality between demographic factors and empathy could not be determined due to the study’s cross-sectional design. The survey responses are self-reported and may inherit social desirability response bias. All measures of empathy, JSE included, are only a representation of empathic behaviour. Having an empathic attitude, capacity to understand others or developing a tendency toward empathic relationships does not directly result in empathic behaviour, but may increase the chances that empathic behaviour will manifest under specific patient care settings.

Our recommendation for future research includes a larger sample size for better representation and generalisation of the empathy scores to the PT and PT-S populations in Singapore and making more equitable comparisons with overseas literature. Using longitudinal study designs would be better fitted in measuring meaningful changes in JSE scores as PT-S and PT progress through their educational and professional training, respectively. It would be interesting to explore possible cultural and cross-cultural factors that could result in variation in JSE scores in Singapore, since we are a multi-cultural society. Similarly, there is research potential in investigating whether specialities and subspecialities within physiotherapy would yield variation in JSE scores.

Lastly, conducting explorative studies to look into methods and conditions that could develop and sustain empathy during physiotherapy education and practice would be valuable in enhancing physiotherapists’ compassionate care towards their patients.

Conclusion

Our study suggests that PT and PT-S in Singapore have similar empathy scores to their counterparts locally and overseas. Overall, no differences in empathy scores were found between genders, PT and PT-S, and across years of study. However, PT-S were seemingly less able to perceive from the patient’s point of view. This warrants further exploration to develop this vital empathy attribute amongst PT-S, in order to recognise the patient’s concerns and to identify with them from his/her perspective. Only from this can effective clinical judgements be made without prejudice, and a collaborative PT-patient alliance can be developed. Our study has contributed preliminary insights into the extent of empathy amongst PT and PT-S in Singapore.

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Author contributions

Elsie K. Lim involved in drafting the manuscript, data collection and analysis of the data. Gordon J. Loh, Ren Yong Ong, and Rachel R. Tan involved in data collection and analysis of the data. Clement C. Yan, Katherin S. Huang, and Melissa Y. Chan contributed to the conception of the project and reviewed the manuscript. Meredith T. Yeung contributed to the conception of the project, reviewing and the final approval of the manuscript.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Ethical Approval

Ethical approval for this study was obtained from the Singapore Institute of Technology Institutional Review Board (Approval number 20170054).

Informed Consent

Consent to participate in the survey was implied from all participants upon the return of the completed questionnaire.

Availability of Data and Materials

The data sets generated and/or analysed during the current study are available from EKHL and MTY upon reasonable request.
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