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## ORIGINAL ARTICLE

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### Empathy levels in Australian chiropractic students

Stanley I. Innes, BAppSc(Chiro), MPsych, PhD, and J. Keith Simpson, DC, PhD

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#### ABSTRACT

**Objective:** Empathy is an important modifiable quality of health care practitioners that relates to the quality of patient care. The educative process may adversely affect the empathy levels of health care students at key phases of training. This topic remains unexplored in chiropractic students to date.

**Methods:** A voluntary and anonymous questionnaire was distributed to all chiropractic students in an Australian university-based program in April 2021. This questionnaire recorded age, sex, year of study, and Toronto Empathy Questionnaire scores.

**Results:** Chiropractic student empathy scores approximated those of other Australian health care students. No statistical differences were found when comparing the mean scores of empathy levels across the 5 student cohorts. The empathy levels of female chiropractic students' were significantly higher than those of the male chiropractic students.

**Conclusion:** This study provides a baseline from which further explorations on empathy may be conducted in chiropractic students. This holds the potential to improve practitioners' quality of life and patient outcomes and for educators to identify subject matter that may negatively affect empathy levels.

**Key Indexing Terms:** Empathy; Chiropractic; Students; Education

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#### INTRODUCTION

Empathy is an important attribute in health care practitioners (HCPs) that has implications for the quality of patient care.<sup>1</sup> It has been shown to be modifiable with tangible results in patient adherence and outcomes.<sup>2,3</sup> Interestingly, practitioner empathy reduces patient perception of medical errors with potential medicolegal implications.<sup>4</sup> To this end, it has been extensively researched in medical<sup>5</sup> and nursing students,<sup>6</sup> among others, around the world but never in chiropractic students.

Empathy is defined as “the ability to understand and share the feelings of another.”<sup>7</sup> In terms of HCPs, it is thought of as an ability to (1) understand the patient's situation, perspective, and feelings; (2) communicate that understanding and check its accuracy; and (3) act on that understanding with the patient in a helpful (therapeutic) way.<sup>8</sup> Patient-centeredness is a foundational principle in the biopsychosocial model of care, and practitioner empathy is a core competency in effective biopsychosocial practice.<sup>9,10</sup> Researchers recognize that there are 3 interrelated dimensions to empathy. An affective dimen-

sion, a cognitive dimension, and a behavioral dimension. Empathy has therefore been studied at 3 levels: as an attitude (affective), as a competency (cognitive), and as a behavior.<sup>10</sup>

Attitude is based on moral standards in the mind of the physician and are formed by factors such as the student's own human development, socialization, medical training, personal experience with patients, and knowledge acquisition in general such as reading professional literature, reading books, or even by watching movies.<sup>11</sup> Competency is thought to be composed of empathic skill, communication skill, and the ability to engage in a therapeutic relationship with the client.<sup>12</sup> This allows the HCP to enter and understand the world of the patient. Finally, the behavioral level is composed of affective and cognitive aspects. The cognitive aspect includes verbal/nonverbal skills, while the affective aspect relates to the ability to recognize the inner emotional state of the patient.<sup>13</sup>

Health care educators have sought to find interventions that address these dimensions to better prepare their students for clinical practice. Patient shadowing is thought to increase empathy (affective).<sup>14</sup> Acting and improving training also has been shown to increase empathy, as has meditation and an individual exercise called “naming

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emotions.”<sup>15</sup> Communication skills workshops involving lecture, role-play, and patient interviews followed by direct feedback given by faculty appear to be effective in teaching empathetic communication (behavior).<sup>16</sup> The comprehensive assessment of the 3 levels is best conducted via feedback from multiple perspectives, including the trainee, patient, and an expert.<sup>17</sup> More recently, work has begun exploring the use of virtual patient simulations (multimedia screen-based interactive patient scenarios) that allow for safe and repetitive practice as well as providing immediate feedback.<sup>18</sup>

Empathy has been found to be higher in women than men,<sup>2</sup> which is thought to be a result of women being more receptive to emotional signals and nonverbal cues. In addition, women are thought to be more interested in family and social life, thus leading to a better understanding of the patient.

Empathy assists the HCP's ability to take appropriate empathy-driven actions that result in the alleviation of another's need or the improving of their welfare.<sup>19</sup> Thus, it is positively associated with better client outcomes, such as improvement of both doctor and patient satisfaction; adherence to treatment recommendations; decreased patient anxiety and distress; enhanced patient enablement; and better diagnostic and clinical outcomes.<sup>10</sup> Empathy levels have been shown to have a negative relationship with stress and burnout in HCPs.<sup>20</sup>

Interestingly, some studies have shown that empathy levels decline over the course of medical education.<sup>21</sup> This is thought to be especially prevalent during the clinical practice phase of training and is a protective mechanism whereby students try to prevent overidentification with patients by dehumanizing patients.<sup>21</sup> This knowledge has allowed educators to rectify the situation by creating interventions to ameliorate the effect of dealing with people experiencing considerable distress. In their meta-analysis examining the efficacy of empathy training, Teding van Berkhouit and Malouff<sup>22</sup> identified many studies that found empathy levels are modifiable, although some concerns exist that these changes are not long lasting and decrease overtime.<sup>23</sup> There is also uncertainty around how empathy levels may change across the lifespan.<sup>24</sup>

These questions are worth pursuing, first because there are no data on this topic within the chiropractic literature, and second, the answers have the potential to provide chiropractic educators with information about factors that are amenable to change that will potentially lead to improved quality of patient care.

Our objectives were 2-fold. The first was to explore whether empathy levels vary across chiropractic educational programs. The second was to determine whether empathy levels differ between male and female chiropractic students.

## METHODS

The project involved an anonymous cross-sectional study using a convenience sample of chiropractic students at an Australian chiropractic university program using a classroom handout questionnaire. We elected to use this

approach as it had previously facilitated the collection of a large amount of robust data in a timely, cost-effective manner.<sup>25</sup> In Australia, most first-year chiropractic students are 1 year beyond their high school or secondary education. There is a considerably smaller percentage who are of mature age at entry, who come to the 5-year chiropractic program after studying other degrees or who return to study after a varying numbers of years in paid employment.

### Study Procedure

Ethics approval was granted by Murdoch University Human Research and Ethics (2021/023). Data were collected in April 2021. The entire chiropractic student population (years 1 through 5) was invited to participate via written information and an in-class announcement to complete a voluntary and anonymous in-class questionnaire.

### Sample Size

We sought to recruit enough respondents to ensure that the findings were representative of the chiropractic program. There were approximately 520 students across the 5-year program. Using these values and a 95% confidence interval, the minimum sample size was calculated at 221. This sample size calculation was derived from the statistical software from the Australian Bureau of Statistics.<sup>26</sup>

### Survey Implementation

Following an in-class announcement, an information sheet was distributed in the week prior to the anticipated questionnaire distribution day. It explained the project and invited students to participate by completing forms at the end of a designated lecture the following week. Students were advised that participation was voluntary and anonymous and that no implications would arise if they chose not to participate. This information was presented again at the beginning of the survey distribution the following week. Commencement of the survey was an indication of consent.

Students were given the option of returning responses to the research assistants or placing them into a designated drop box at a later date. Anonymity was preserved by ensuring that responses to the survey instrument were not linked to a unique identifier.

### The Questionnaire

The survey contained the following.

1. Demographic details of age, sex, and year of study, as studies have indicated that levels of empathy change across the educational and lifespan journey. Sex was included because it has been shown to be an independent predictor of empathy.
2. Measure of empathy: Toronto Empathy Questionnaire (TEQ).<sup>27</sup> This measure contains 16 questions rated on a 5-point Likert-type scale. The TEQ was initially developed for general populations. Its validity and reliability levels have been demonstrated.<sup>28</sup> Questions

such as “It upsets me to see someone being treated disrespectfully” sought a rating of *never* (score of 0), *rarely* (score of 1), *sometimes* (score of 2), *often* (score of 3), or *always* (score of 4). Eight items were reverse scored. Scores could therefore range between 0 and 64. The males’ general score for this measure ranged from 43.46 to 44.45, whereas females tended to score within the range of 44.62 to 48.93.<sup>27</sup>

### Data Management and Analysis

Data were entered and analyzed in SPSS v.24 (IBM Corp, Armonk, NY, USA) after identifying and correcting any incomplete or corrupt data. All surveys were allocated a dummy variable code to ensure anonymity. Descriptive statistics were generated.

Associations were presented as mean scores with standard deviations (SDs) and 95% confidence intervals (95% CIs) of the variable under investigation. When the CIs did not overlap, differences between groups were considered statistically significant. Chi-square tests of independence were also performed to examine the relationship between levels of empathy as measured by the TEQ and year of program and sex.

## RESULTS

### Descriptive Information

In all, 291 of 520 students (56%) returned the questionnaire, of which 142 were female (49%) with a mean age of 22.4 years. A description of the responders is shown in Table 1 for the collected demographic and predictor variables.

### Study Objectives Objective 1

Objective 1 investigated whether empathy levels varied across our chiropractic educational program.

Visual examination of the mean scores (SD and 95% CI) revealed that the mean TEQ 95% CIs for the chiropractic year cohorts 1, 2, 3, 4, and 5 were seen to overlap, indicating that there was not a statistically significant difference,  $\chi^2(128, n = 289) = 123.76, p = .59$ , between the year group empathy levels (Table 1; Fig. 1).

### Objective 2

Objective 2 was to identify whether empathy levels in male and female chiropractic students differed. Visual inspection of the mean TEQ scores and 95% CI reveals that they did not overlap, indicating that there was a significant relationship between male and female levels of empathy. Female chiropractic student empathy levels were significantly higher,  $\chi^2(32, n = 290) = 59.85, p = .002$  (Table 1; Fig. 2).

## DISCUSSION

### Summary of Results

This is the first study to explore empathy levels in chiropractic students, and the TEQ scores approximated

**Table 1 - Descriptive Table of Independent and Predictor Variables in a Survey of 291 Australian Chiropractic Students<sup>a</sup>**

Variable	Value
Sex, n (%)	
Males	142 (51)
Females	148 (49)
Missing	1
Age, mean $\pm$ SD (range), y	22.37 $\pm$ 5.2 (18–52)
Year of program, n (response % of year total) (n = 291)	
1	78 (65)
2	42 (38)
3	73 (61)
4	56 (90)
5	40 (63)
Missing	2
Predictor variable TEQ	
Mean	48.24
SD	7.00
Range	27–62
Cronbach alpha	0.79
Year of program, TEQ scores, mean $\pm$ SD [95% CI]	
Year 1	48.15 $\pm$ 7.50 [46.47–49.83]
Year 2	48.76 $\pm$ 7.14 [46.53–50.99]
Year 3	47.34 $\pm$ 6.60 [45.80–48.88]
Year 4	48.66 $\pm$ 6.62 [45.80–48.88]
Year 5	48.85 $\pm$ 7.60 [46.41–51.28]
Sex, TEQ scores, mean $\pm$ SD [95% CI]	
Males	45.89 $\pm$ 6.27 [44.84–46.93]
Females	50.57 $\pm$ 6.90 [49.45–51.70]
Overall	48.24 $\pm$ 7.00 [47.43–49.05]

Abbreviation: TEQ, Toronto Empathy Questionnaire.

<sup>a</sup> Response percentage of year total.

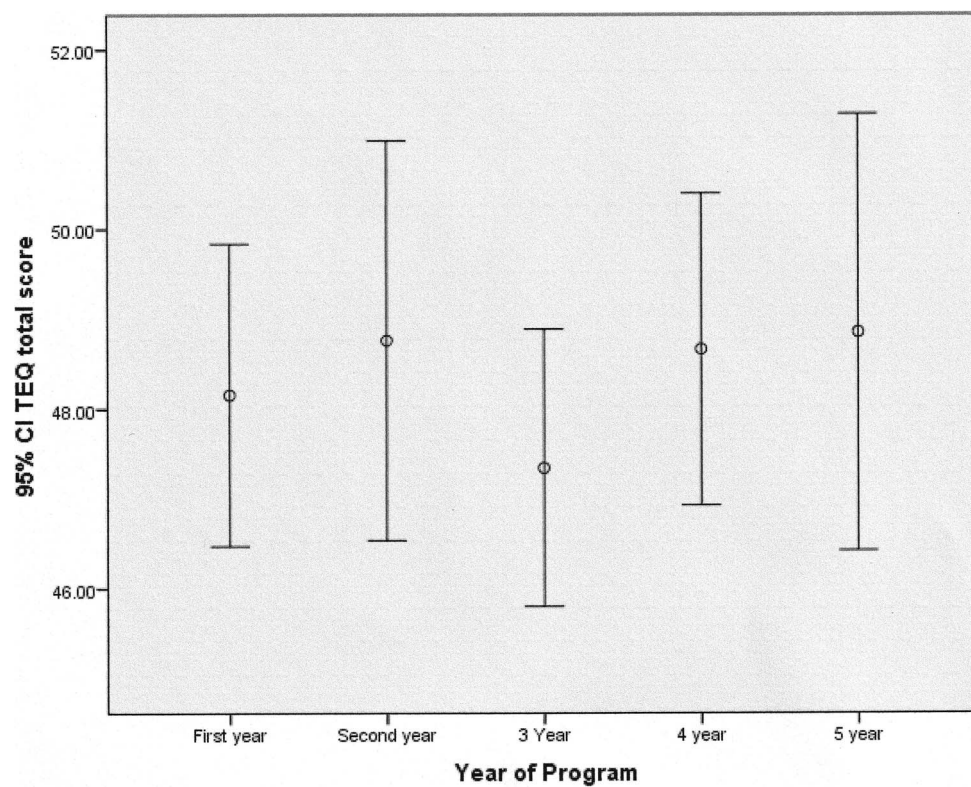
those of other health care students. Chiropractic students’ level of empathy did not vary significantly when comparing across the years of study. Females scored significantly higher than males did.

### Objective 1

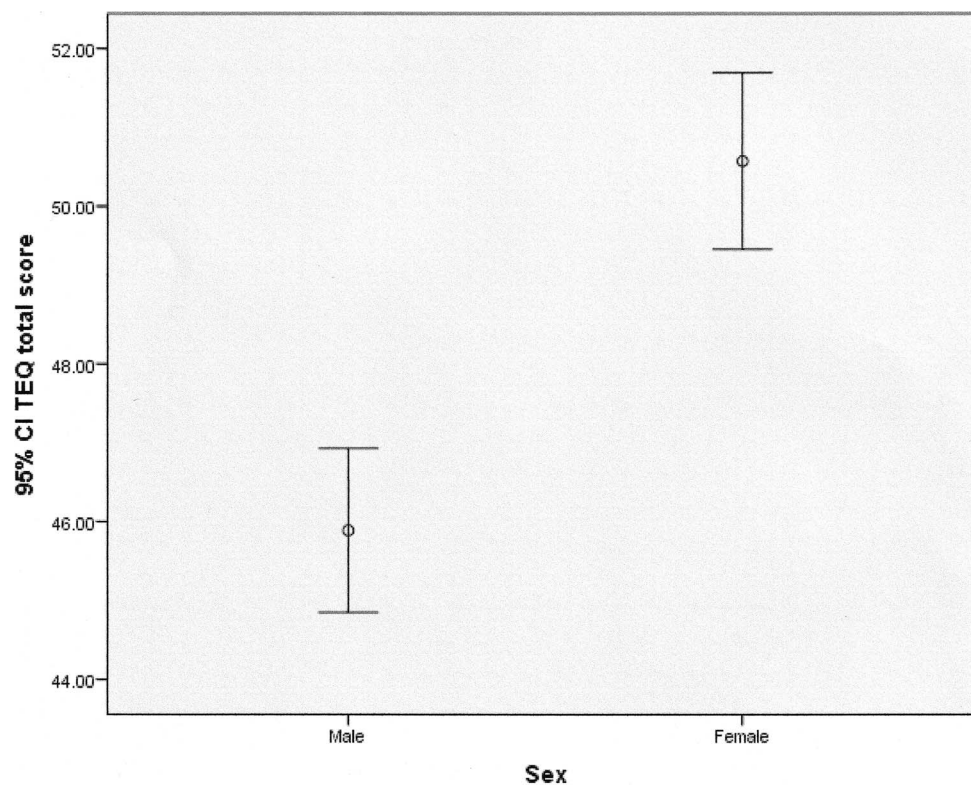
In this study, the empathy levels of Australian chiropractic students at Murdoch University were similar to those of other health care students. This resonates with a previous study in which this program’s students were shown to have similar levels of resilience, perceived levels of stress, and quality of life when compared with other health care students.<sup>25</sup> Some Australian health care students (paramedic and nursing) reported significantly lower empathy scores when compared with other students.<sup>29</sup> Another Australian study found no significant difference in empathy levels in Australian students enrolled in paramedics, nursing, midwifery, occupational therapy, physiotherapy, and health sciences.<sup>30</sup> This variability of response levels among Australian health care students remains unexplained.

Various patterns in empathy levels have been shown in health care students across the years of training. These





**Figure 1** - Mean Toronto Empathy Questionnaire scores with standard deviation and 95% confidence interval for each year of the chiropractic program.



**Figure 2** - Mean Toronto Empathy Questionnaire scores with standard deviation and 95% confidence interval for males and females in the chiropractic program.

studies have been cross-sectional in nature. They show a steady increase in empathy levels until the final year of medical studies, when it suddenly falls to its lowest point.<sup>31–33</sup> At this point in their training, students begin to encounter unwell patients who are experiencing considerable distress, and lower empathy levels are thought to be explained as a coping strategy that students use to manage their personal distress.<sup>21</sup> However, this is not a universal experience for medical students. Several studies have shown no changes over the duration of medical training,<sup>34,35</sup> and this is the pattern observed in this Australian chiropractic cohort.

Other factors, such as the clinical setting of the HCP, are thought to possibly play a role in empathy levels. For example, nurses training in a community setting scored significantly higher on the TEQ when compared with nurses in a hospital setting.<sup>36</sup> To add to the complexity, another study with dietetic interns showed that the clinical setting had little impact.<sup>37</sup>

Chiropractic students are trained predominately within clinical settings provided by the education program, and the case mix tends to be dominated by young, healthy peers<sup>38,39</sup> with benign self-limiting musculoskeletal conditions of a short duration<sup>40–44</sup> and low levels of disability.<sup>45–47</sup> It is possible that the clinical encounters generated from this population are insufficiently distressing to affect student empathy levels, as has been found in some medical programs.

## Objective 2

Females consistently scored more highly on tests of empathy levels than males did.<sup>27</sup> This finding was reiterated in this study, adding more data to the body of knowledge. Explanations for these results are worth considering. Some believe that the traditional and evolutionary role of women as caregivers explains the noted variations in empathy levels between males and females.<sup>48</sup> Thus, females are more perceptive to emotions and therefore more empathetic. Alternatively, it is hypothesized that males take a more rational rather than emotive approach,<sup>48</sup> rendering them less empathetic. Finally, it is argued whether empathy levels are a result of specific neural mechanisms that necessarily render females more empathetic than males.<sup>49</sup> Regardless, the findings of our study suggest that higher empathy levels place female chiropractic students at a distinct clinical advantage.

## Limitations

This study attained a high response rate. In addition, a previous study found no differences between this university-based chiropractic program and another university-based program in Australia; thus, these results are likely applicable to both<sup>50</sup> and may represent a considerable portion of the chiropractic students in Australia.

We were not able to compare responders and nonresponders in this Australian sample. It is possible that the nonresponders may not be reflective of this study's findings and alter the outcomes. However, with such strong participation levels, we are confident of the findings.

This was a cross-sectional study. A longitudinal investigation would confirm the nonfindings of this study.

In addition, these data were from only 1 Australian chiropractic program, and further investigations will determine its representativeness of other chiropractic programs, both nationally and internationally.

We have measured empathy levels using the TEQ. Some have suggested that it is better to use questionnaires specific to the domain of human behavior in question, for example, the Jefferson Scale of Empathy (JSE), whose questionnaire items relate to the clinical setting.<sup>1</sup> Unfortunately, we did not have the funds to procure its usage. However, past research has shown a strong correlation between the TEQ and JSE.<sup>51</sup>

The TEQ measures only the emotional dimension of empathy. There appears to be significant overlap across the cognitive and affective components of empathy as well as a positive correlation between the emotional aspect of empathic response and the affective aspect of empathic responding. Spreng et al<sup>27</sup> gave careful consideration to this when designing and testing the TEQ. The TEQ has been shown to be an easily administered, reliable, valid instrument for the assessment of empathy with high test-retest reliability and suitable for use in the health care setting<sup>9,27,32,34,52–54</sup>; thus, the use of more complex self-report empathy measures was unnecessary for our purposes.

## CONCLUSION

This study provides a baseline from which further explorations on empathy may be conducted in chiropractic students. Empathy is important because it is associated with positive aspects of practitioners' quality of life and clinical outcomes. Interventions have been designed in health professions that improve empathy levels. In addition, measuring empathy levels across health care educational programs has allowed for the identification of subject matter with a negative impact on empathy levels. This information has the potential to significantly improve the quality of the student experience and patient care.

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No funding was received for this work. The authors have no conflicts of interest to declare relevant to this work.

## About the Authors

Stanley Innes (corresponding author) is a lecturer in the College of Science, Health, Engineering and Education at

Murdoch University (90 South Street, Murdoch, 6163 Western Australia; S.Innes@Murdoch.edu.au). J. Keith Simpson is an adjunct senior lecturer in the College of Science, Health, Engineering and Education at Murdoch University (90 South Street, Murdoch, 6163 Western Australia; K.Simpson@murdoch.edu.au). This article was received April 23, 2021; revised May 12, 2021, and July 25, 2021; and accepted September 13, 2021.

## Author Contributions

Concept development: JKS. Design: SI and JKS. Supervision: SI. Data collection/processing: SI. Analysis/interpretation: SI. Literature search: SI, JKS. Writing: SI. Critical review: SI, KS.

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