

# Levels of empathy in undergraduate health science students

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## Abstract

Background Empathy is often considered an important trait for professionals in the health field. Empathy amongst physicians, medical students, and nurses has been investigated previously while studies examining the empathy levels in allied health students are non-existent. The objective of this study was to determine the extent of empathy amongst undergraduate students in six allied health professions – emergency health (paramedic), nursing, midwifery, occupational therapy, physiotherapy, and health sciences at one Australian University. Methods A convenience sample of undergraduate students enrolled in six allied health courses across the first, second, and third year levels at Monash University were surveyed. Students completed the Jefferson Scale of Physician Empathy (HP-version), a valid and reliable self-report scale, and a brief demographic form. Analysis of mean scores, t-test, and one-way ANOVA were used to evaluate the extent of empathy amongst the student groups. Results There were 459 students who participated. Females were found to be significantly more empathic than males ( $p=0.002$ ) with a significant difference between age groups ( $p=0.039$ ). No significant difference between year level of study, and professional course of study was found and, as such, the results overall show the extent of empathy to be more similar than different across the six allied health undergraduate students groups. Conclusion This study suggests a strong presence of empathy amongst allied health science students. Females were found to be more empathic than males with little difference between the course students were enrolled in and year of study.

## INTRODUCTION

The term empathy and its current usage have a short history [1]. The German word *Einführung*, which directly translates as ‘feeling into’, was first used as a scientific psychological term by Theodor Lipps in 1897 [2]. It was subsequently translated into English as the neologism ‘empathy’ by psychologist Edward Tichner [2]. There is, as yet, no universally agreed-upon definition of the term empathy; however, in order to measure the attribute, a consensus on its definition is required. For this reason, the definition adopted here is that proposed by the authors of the Jefferson Scale of Physician Empathy, which is: “Empathy is a predominantly cognitive (rather than emotional) attribute that involves an understanding (rather than feeling) of experiences, concerns and perspectives of the patient, combined with a capacity to communicate this understanding” [3]. This definition is specifically tailored for the health care situation.

Researchers agree on the positive role empathy plays in interpersonal relationships when providing health care [4]. In

Hojat et al.’s review of the literature, he found that empathy had a positive impact on both physicians and patients. For patients, empathy facilitated patients’ satisfaction, their compliance with treatment regimens, provided a more humanistic relationship, and more accurate diagnoses [5]. For physicians, greater empathy reduced the likelihood of malpractice litigation, improved competence in history taking, improved attitude to elderly patients, and improved resource utilisation and performance of physical examinations [5].

In health care, an important aspect of physician empathy is being able to communicate this understanding of the patient to the patient [2, 6]. It is also important that the health care professional has this understanding of the patient without intense emotional involvement, sometimes referred to as maintaining a professional distance. Not becoming emotionally involved is what distinguishes empathy from sympathy, and, in the context of health care, this is an important distinction. Sympathy has the potential to ‘jeopardize clinical neutrality and personal durability’,

whereas empathy has no such concern because its focus is on understanding and not personal involvement [2].

While several previous studies have assessed empathy in medical students and medical interns [6-13], no previous studies were located that investigate empathy across the allied health professions nor specifically undergraduate allied health science students. Therefore, there is a clearly-identified need for such studies. While empathy is considered an important graduate attribute of each of the health professions, it is usually only taught in a context where it is not formally evaluated and is rarely integrated into clinical teaching and learning, in examples, such as role play and other forms of simulation.

When empathy is taught, it is often included during the sections of the curriculum taught to students that relate to professional behaviour, verbal and non-verbal communication skills, establishing rapport with patients, or taking a patient's medical and social history. These types of professional skills are introduced to students during the first year of their respective health-related program, and then are re-visited during the second and third years of their education programs. The objective of this study was to examine the extent of empathy amongst undergraduate students of six allied health professions – emergency health/paramedics, nursing, midwifery, occupational therapy, physiotherapy and health sciences at one Australian university.

## METHODS

### DESIGN

A cross-sectional study using a paper-based Jefferson Scale of Physician Empathy (JSPE) Health Professional version (HP-version) was administered to students.

### PARTICIPANTS

All undergraduate students in one of the health-related courses at Monash University Peninsula Campus were eligible to participate in the study. This included students from any year of their course (see Table 1).

**Figure 1**

Table 1: Student numbers by course by year

Course	Year 1	Year 2	Year 3	Total number of students enrolled	Total number of female students	Total number of male students
Emergency Health (Paramedic)	12	77	160	249	165	84
Nursing	35	153	270	458	421	37
Midwifery	4	31	51	86	86	0
Occupational Therapy	18	33	118	169	143	26
Physiotherapy	13	42	181	236	161	75
Health Science	24	29	45	98	86	12

## INSTRUMENTATION

We utilised the Jefferson Scale of Physician Empathy Health Professional (JSPE-HP) version, a psychometrically validated measurement of empathy [6]. The JSPE-HP required students to answer 20 questions using a 7-point Likert scale (Strongly disagree=1 to Strongly agree=7). Ten of the 20 questions were negatively worded in order to decrease the confounding effect of acquiescence responding, which were afterwards reversed-scored for analysis [4]. The scale can be completed in approximately five minutes and produces scores ranging from a minimum of 20 through to a maximum of 140. The higher the score, the higher the participant's level of empathy. The JSPE-HP has proven reliability and validity [2, 4, 9, 10, 14].

While the authors of the JSPE-HP put the measure forward as a valid and reliable measure of physician empathy, its limitations need to be noted: primarily that it is a self-assessment and only measures stated empathy intent and not actual empathetic behaviour [15].

## PROCEDURES

All students participating in the study received an explanatory statement about the study and were informed that participation was voluntary and anonymous prior to commencing the survey. Each participant was required to complete a self-reporting questionnaire which included demographic questions and the JSPE-HP. The scale was completed at the end of a lecture for each respective group of allied health students. A non-teaching member of staff facilitated the process and collected the questionnaires and consent was implied by completion of the survey. It took participants on average 10 minutes to complete the JSPE-HP.

## ETHICS

Ethics approval for the study was obtained from the Monash University Standing Committee on Ethics in Research Involving Humans (SCERH).

**DATA ANALYSIS**

Descriptive and inferential data analysis was undertaken using SPSS (Statistical Package for the Social Sciences Version 17.0, SPSS Inc., Chicago, Illinois, U.S.A.). Descriptive statistics, means and standard deviations, were used to summarise the demographic and some JPSE-HP data. Inferential statistics, t-test and ANOVA, including post hoc tests, were used to compare the difference between courses, age groups, gender, and year of the course. All test were two tailed unless otherwise stated with the results considered statistically significance if the p value is < 0.05.

**RESULTS**

**STUDENT DEMOGRAPHICS**

A total of 459 students participated in the study with all six health-related courses having an adequate representation of participants for statistical analysis. The number of students from each course who participated in the study is presented in Table 2. Because convenience sampling was used we cannot be sure of the number of students who declined to participate, therefore, no response rate can be provided.

**Figure 2**

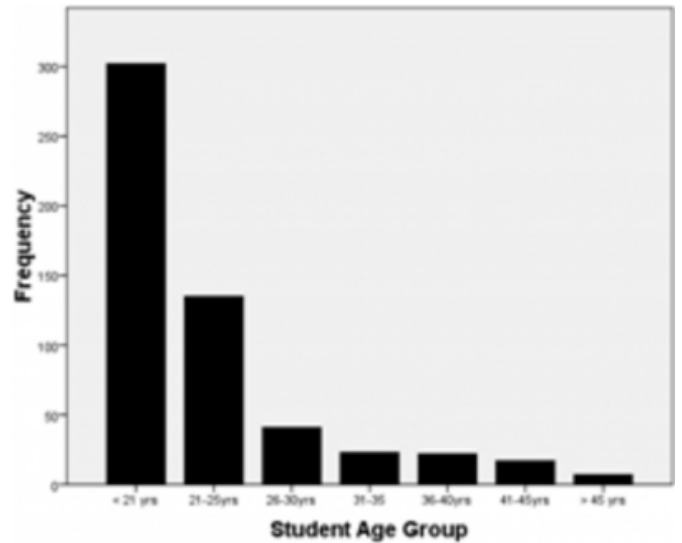
Table 2: Total number of student respondents by course enrolled in

Course	n	% of Total Students Enrolled
Emergency Health (Paramedic)	120	48.2
Nursing	107	23.4
Midwifery	52	60.5
Occupational Therapy	92	54.4
Physiotherapy	109	46.2
Health Science	69	70.0

Of the participants, the majority were female (81.3%) and were under the age of 21 (55.2%) or between 21 and 25 years of age (24.7%), (See Figure 1). There was a good representation of students from each of the three years of study; 24.6% from first year, 42.7% from second year, and 32.7% from third year, (See Table 3). An important phenomenon encountered in the results was the uneven distribution of males across the six allied health courses. Most of the male students were studying physiotherapy (38.6%) or emergency health (35.6%) with no males studying midwifery.

**Figure 3**

Figure 1: Student age groups



**Figure 4**

Table 3: Total number of students by year

Course	n
Year 1	135
Year 2	234
Year 3	179

**COMPARISON OF MEAN EMPATHY SCORES**

The mean empathy score for females (mean=109.78, SD=14.73) was significantly higher than the mean empathy score for males (mean=104.76, SD=12.21), p=0.002. There was a significant difference in empathy scores between the age groups, p=0.039, however post hoc testing did not demonstrate any statistically significant when comparing the difference between each of the age groups. Students enrolled in Occupational Therapy reported the highest levels of empathy (mean=111.55, SD=17.12) while nursing students reported the lowest levels of empathy (mean=107.34, SD=13.74). However, there was no statistically significant variation between the students enrolled in the six allied health courses (p=0.164). The mean empathy scores for each course are reported in Table 4. There were no statistically significant difference recorded between each year level of the course (p=0.862).

The 52 participants enrolled in midwifery reported a

statistically significant rise in mean empathy levels ( $p=0.025$ ), a rise from first year (mean=101.00, SD=28.48) through to third year (mean=119.88, SD=12.61). No other health-related course demonstrated this type of change.

**Figure 5**

Table 4: Mean empathy score of students by course

Course	n	Mean(SD)
Emergency Health (Paramedic)	120	106.32(14.02)
Nursing	107	107.34(13.74)
Midwifery	52	109.87(20.9)
Occupational Therapy	92	111.55(17.12)
Physiotherapy	109	109.26(12.96)
Health Science	69	108.68(10.69)

**JEFFERSON SCALE OF PHYSICIAN EMPATHY-HEALTH PROFESSIONAL VERSION**

The Cronbach alpha coefficient of 0.85 for this study demonstrates a high level of internal consistency.” An analysis of the individual JSPE-HP items showed that respondents tended to answer all but one item in a way that was indicative of empathy. The exception being, ‘I do not allow myself to be touched by intense emotional relationships among my patients and their family members.’ For this item responses were centred on ‘4=not sure’ on the 7-point Likert Scale (mean=4.03).

**DISCUSSION**

As is commonly reported in other studies for students studying in the health-related disciplines [6, 9, 14], females in this study reported being more empathic than males. This sample of allied health students includes a far greater proportion of females to males, a ratio of approximately 6:1. This imbalance does not have a significant confounding effect as when the males are removed from the analysis, it makes little difference to the other results. In any case, this proportion of male to female students is typical of the actual proportion enrolled in health science courses at Monash University.

Studies using versions of the JSPE typically find females to have significantly higher mean empathy scores than males [2, 4, 9, 10, 14]. While this gender difference is commonly reproduced in studies, there are still some studies that do not find females as being significantly more empathic than males [6, 16, 17]. The tendency for females to appear being more empathic than their male counterparts are also found in studies using other empathy scales [18, 19]. There are many hypotheses that attempt to account for the difference in

empathy between males and females. Some researchers explain the difference as a result of evolution, or view empathy as a feminine trait, that females are more perceptive to emotions, or that males take a more rational rather than emotive approach [2]. Jolliffe and Farrington report that females consistently score higher on measures of empathy, particularly in questionnaires [18]. They are unsure whether this is a true difference between the genders or a result of males and females responding to the questionnaire in concordance with ‘sex-role stereotypes’ or whether there is an element of social desirability bias at work [18].

This study produced no statistically significant decline in empathy across the year levels of study of students. On the surface, this result is contrary to the results obtained in other studies which typically record declines in empathy as they progress through their professional education [6, 19]. The difference in this study is largely due to the course structures and timing of the questionnaire completion. Students in their first year do not usually undertake clinical education placements, and, in second year, most students spend only a small amount of time completing clinical education placements. It is not until third year that students have considerable exposure to patients and this study was undertaken before the third year students included in this study had gained much in the way of clinical experience or exposure. This is consistent with other studies, as the reported decline in students’ empathy typically coincides with students’ increased hands-on experience gained through the complete of clinical education placements [6, 14, 16].

One course, midwifery, did demonstrate an increase in empathy from year one to year three. Further exploration of this finding is recommended and, in particular, increasing the sample size as the standard deviation for first year midwifery students was high. If a rise in empathy can be replicated in another study, it would be counter to the decline in empathy that previous studies have typically reported. Furthermore, midwives usually work in more intimate, one-to-one relationships with childbearing women over extended periods of time, needing to be ‘in tune’ with women’s needs and feelings throughout pregnancy, labour and birth.

Leading on from the view that people innately endowed with the necessary interpersonal skills and traits are drawn to the medically-related professions is the belief that the altruism in students begins to wane by the end of their medical education, a problem often cited in the literature [20, 21]. An increase in cynicism corresponds with a decline in empathy

and various causes have been proposed in the literature. Rosenfield and Jones posit the idea that medical students 'develop maladaptive responses' in order to cope with the anxiety of confronting illness, emotional distress, and suffering [22]. In another study that involved paramedics, respondents reported emotionally distancing themselves in order to continue working despite confronting traumatic events and stressful emotionally charged situations [23]. Work by Branch [20] found the issue to be derived from the narrow focus in current clinical training on the biomedical aspects of medicine, rather than interpersonal.

A number of studies have been undertaken in order to provide empirical evidence of this decline in empathy amongst medical students. Chen et al. reported a statistically significant change in the mean empathy scores of medical students as they progressed through their four year courses. First-year students reported the highest level of empathy which did not significantly change until third year, coinciding with their first year of placements in clinical and hospital settings [6]. This replicated an earlier finding by Hojat et al. who also found a statistically significant decline in empathy during third-year, the students' first full year of clinical experience [16]. Sherman and Cramer's study of dental students also highlighted a significant decline in empathy levels the year that students first began to treat patients [14]. Newton et al.'s study using Mehrabian's Balanced Emotional Empathy Scale also found students' empathy decreased by the time they completed their medical course [19]. It appears that medical and dental students become 'hardened' or develop an emotional coping mechanism that distances themselves from the patients they work with once they gain real-life professional experience. This decline in student empathy appears to be a common phenomenon emerging in the literature.

There was no significant difference between students from the six allied health courses in this study. The results, however, indicate potentially important differences between the courses when taking into account both the year level and the health-related course students are enrolled in. Unfortunately the sample does not include an adequate number of students for each year of each specific course for this to be analysed further. It is recommended that a larger study be undertaken to explore possible differences, as the results presented in this paper suggest a potentially important difference between the student health professional groups. These differences could provide important insights into empathy in the health services context.

Numerous studies have explored potential differences in empathy between different types of health care professionals; however, there are still significant gaps in the literature. Fields et al postulates that "professional roles and expectations influence the degree to which empathy is demonstrated in patient relations" [24]. Indeed, some studies have shown significantly higher levels of empathy amongst physicians in people-oriented specialties (such as psychiatry), as compared to more technology-oriented specialties (such as radiology or anaesthesiology) [6, 25]. Another study using the JSPE found nursing professionals and paediatricians reported significantly higher levels of empathy as compared to general practice physicians [26]. Furthermore, a subsequent study exploring empathy amongst nurses and physicians found no statistically significant differences between the two professional groups [24]. This is interesting since nursing and medicine tend to be female and male dominated professions respectively. Fields et al. did, however, find differences in how nurses and physicians reported their empathy [24].

A further result that warrants discussion is the response to the JSPE item, 'I do not allow myself to be touched by intense emotional relationships among my patients and their family members.' Participants evidently had some difficulty with this item. The other 19 items were answered consistently, showing a strong presence of empathy. This exception suggests that there is a problem with this one item. Of the 20 JSPE-HP items, this is the one item which has the most relevance to sympathy rather than empathy. As such, it is possible that the students understood that demonstrating too much emotion is potentially not good professional practice and thus in answering the questions were not sure if the words 'to be touched' meant to be emotionally engaged with patients (sympathising) or to understand the patients (empathising). Despite this result, there was a strong internal consistency for the JSPE-HP in this study as measured by Cronbach's alpha coefficient, which was 0.85.

Further exploration into the potential difference midwifery has in promoting empathy as compared to other health professions should be undertaken. The aim would be to see if it is possible to replicate this study's findings that midwifery students' empathy increases over the duration of their course. This would provide an important insight into the issue of empathy in the health care context. Additional study comparing levels of empathy in other allied health student groups such as speech therapy, optometry, audiology, nutrition and dietetics and pharmacy will allow

for a direct comparison between the different health care professionals and a broader understanding of the phenomenon in health settings. Furthermore, as the literature suggests there is a decline in student empathy after gaining clinical experience, a study exploring if the transition from student to newly employed graduate health professional has an impact on a newly practicing health care professional's empathy would be beneficial.

This study is potentially limited as it was completed early in the academic year, and, consequently, third year students were still to gain some of their third year clinical experience. Therefore, this study could not explore whether clinical experience or completing fieldwork education placements for the complete course had an overall impact on students' empathy. As discussed earlier, the sample also did not include sufficient numbers to facilitate comparisons of how student empathy changes over the duration of each individual course. Another limitation of this study was the use of convenience sampling. This method, while being easier to recruit participants, is less likely to recruit a representative sample of students. Consequently, those students who did volunteer to participate may themselves bias the results.

### CONCLUSION

The findings from this study indicate a strong presence of empathy amongst nursing, midwifery, emergency health (paramedics), occupational therapy, physiotherapy, and health science students. Overall, there was little difference recorded between the year levels of study and professional courses in which students were enrolled. Females were found to be more empathetic than males. The results indicate that there were more similarities than differences in the extent of empathy amongst students of the six health professional groups studied. However, the results also hint at potential differences between the disciplines that warrant further exploration.

Understanding the extent of empathy amongst allied health professional students and whether this varies between the professions is an important step in understanding how to promote the development of this vital attribute amongst student groups. This study has contributed to the body of knowledge by providing insight into the levels of empathy of six undergraduate health professional student groups.

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### References

1. Hunsdahl J: Concerning Einfuhlung (Empathy): A concept analysis of its origin and early development. *J Hist Behav Sci*; 1967; 3(2):180-91.
2. 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 Integrative Medicine*; 2003; 1(1):25-41.
3. Hojat M: *Empathy in Patient Care: Antecedents, Development, Measurement, and Outcomes*. New York: Springer 2007.
4. Hojat M, Gonnella J, Nasca T, Mangione S, Vergare M, Magee M: Physician empathy: Definition, components, measurement, and relationship to gender and specialty. *Am J Psychiatry*; 2002; 159(9):1563-9.
5. Hojat M, Mangione S, Nasca T, Gonnella J, Magee M: Empathy scores in medical school and ratings of empathic behavior in residency training 3 years later. *J Soc Psychol*; 2005; 145(6):663-72.
6. Chen D, Lew R, Hershman W, Orlander J: A cross-sectional measurement of medical student empathy. *J Gen Intern Med*; 2007; 22(10):1434-8.
7. Bailey B: *Empathy in medical students: Assessment and relationship to specialty choice [PhD]*. Charlottesville VA: University of Virginia; 2001.
8. Harsch H: The role of empathy in medical students' choice of specialty. *Academic Psychiatry*; 1989; 13(2):96-8.
9. Hojat M, Gonnella J, Mangione S, Nasca T, Veloski J, Erdmann J, et al: Empathy in medical students as related to academic performance, clinical competence and gender. *Med Educ*; 2002; 36(6):522-7.
10. Hojat M, Zuckerman M, Magee M, Mangione S, Nasca T, Vergare M, et al: Empathy in medical students as related to specialty interest, personality, and perceptions of mother and father. *Personality and Individual Differences*; 2005; 39(7):1205-15.
11. Kupfer D, Drew F, Curtis E, Rubinstein D: Personality style and empathy in medical students. *J Med Educ*; 1978; 53(6):507-9.
12. Newton B, Savidge M, Barber L, Cleveland E, Clardy J, Beeman G, et al: Differences in medical students' empathy. *Acad Med*; 2000; 75(12):1215.
13. Winefield H, Chur-Hansen A: Evaluating the outcome of communication skill teaching for entry-level medical students: Does knowledge of empathy increase? *Med Educ*; 2000; 34(2):90-4.
14. Sherman J, Cramer A: Measurement of Changes in Empathy During Dental School. *J Dent Educ*; 2005;69(3):338-45.
15. Spencer J: Decline in empathy in medical education: how can we stop the rot? *Med Educ*; 2004; 38(9):916-8.
16. Hojat M, Mangione S, Nasca T, Rattner S, Erdmann J, Gonnella J, et al: An empirical study of decline in empathy in medical school. *Med Educ*; 2004; 38(9):934-41.
17. Kliszcz J, Nowicka-Sauer K, Trzeciak B, Nowak P, Sadowska A: Empathy in health care providers - validation study of the Polish version of the Jefferson Scale of

- Empathy. *Advances in Medical Sciences*; 2006; 51:219-25.
18. Jolliffe D, Farrington D: Development and validation of the Basic Empathy Scale. *J Adolesc*; 2006; 29(4):589-611.
19. Newton B, Barber L, Clardy J, Cleveland E, O'Sullivan P: Is there hardening of the heart during medical school? *Acad Med*; 2008; 83(3):244-9.
20. Branch Jr W: Supporting the Moral Development of Medical Students. *J Gen Intern Med*; 2000; 15(7):503-8.
21. Singh S: Empathy: Lost or Found in Medical Education? *Medscape General Medicine*; 2005; 7(3):74.
22. Rosenfield P, Jones L: Striking a balance: training medical students to provide empathetic care. *Med Educ*; 2004; 38(9):927-33.
23. Regehr C, Goldberg G, Hughes J: Exposure to human tragedy, empathy, and trauma in ambulance paramedics. *Am J Orthopsychiatry*; 2002; 72(4):505-13.
24. Fields S, Hojat M, Gonnella J, Mangione S, Kane G, Magee M: Comparisons of Nurses and Physicians on an Operational Measure of Empathy. *Evaluation and the Health Professions*; 2004; 27:80-94.
25. Hojat M, Mangione S, Gonnella J, Nasca T, Veloski J, Kane G: Empathy in Medical Education and Patient Care. *Acad Med*; 2001; 76(7):669.
26. Hojat M, Fields S, Gonnella J. Empathy: An NP/MD Comparison. *Nurse Pract*; 2003; 28(4):45-7.

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