

Original Article

Empathy Levels in Canadian Paramedic Students: A Longitudinal Study

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Abstract

Background: Empathy in healthcare delivery is an essential component to providing high-quality patient care. Empathy in paramedics and paramedic students has been subject to limited study to date. This study aimed to determine the empathy levels demonstrated by first year paramedic students over the course of their first year of study.

Methods: This study employed a longitudinal design of a convenience sample of first year paramedic students in a community college program in Ontario, Canada. The Medical Condition Regard Scale (MCRS) was used to measure empathy levels across four medical conditions: intellectual disability, suicide attempt, substance abuse and mental health emergency. Surveys were conducted three times approximately 2-3 months apart; before first semester field placements (Nov/17), after first semester field placements (Jan/18) and near the end of second semester field placements (Mar/18).

Results: A total of 20 students completed all three surveys. Females, respondents aged 22-24, and participants with previous post-secondary education demonstrated higher mean empathy scores than their counterparts. Substance abuse was associated with the lowest mean empathy score for every demographic. Mean scores for intellectual disability, attempted suicide and mental health emergency decreased from the first survey to the last. Mean scores for substance abuse increased from 43.3 (SD±8.2) to 46.45 (SD±7.04).

Conclusion: Results from this study suggest that in general, empathy levels among paramedic students decline over the course of their education. Male paramedic students are less empathetic than their female counterparts, and those with previous post-secondary education displayed higher mean empathy scores. The findings in this research support previous findings, and suggest that paramedic education programs may benefit from the inclusion of additional empathy training and education.

Keywords: empathy, paramedics, paramedic students

Introduction

There are many definitions of empathy, but it is most commonly defined as the ability to emotionally connect to another individual and to view the world through the lens of someone else's circumstances (Hojat et al., 2004). The concept of empathy in patient care and its benefits to the healthcare system is not a new one. In healthcare, evidence suggests that empathy helps to establish trust between the patient and health care professional.

This trust increases treatment compliance, decreases medical errors, and ultimately increases overall patient satisfaction (Hojat et al., 2004; Kim, Kaplowitz, & Johnston, 2004; Mercer & Reynolds, 2002; Williams, Boyle, & Howard, 2015b). Through empathetic patient care, healthcare providers have the potential to improve patient satisfaction, reduce risk of lawsuits, and enhance patient relationships (Kim et al., 2004; Mercer & Reynolds, 2002; Williams et al., 2015b). Although these benefits are well studied and observed in several studies, there is still a general lack of empathy education and awareness among healthcare profession students, especially within emergency settings.

Previous studies have compared empathy levels in several healthcare professions; paramedics have generally demonstrated lower empathy scores than other students (Nunes, Williams, Sa, & Stevenson, 2011; Williams et al., 2014; Williams, Boyle, & Howard, 2015a; Williams, Lau, Thornton, & Olney, 2017; Williams, Boyle, Brightwell, et al., 2013; Williams, Boyle, & Earl, 2013). Studies also suggest differences in empathy levels based on gender, age, and clinical exposure (Kus, Gosling, Wilson, & Batt, 2018; Williams et al., 2014, 2015a, 2017; Williams, Boyle, Brightwell, et al., 2013). The current research suggests that paramedic students have varying levels of empathy for different medical conditions, and empathy levels decline as students' progress through their education.

While trends are observable in these studies, the issue of empathy among paramedics and paramedic students remains poorly understood. This is due to the limited amount of data available on the topic, as the topic remains under-researched. Only one previous study has been published which investigated empathy levels among Canadian paramedic students (Kus et al., 2018).

This study aims to investigate the levels of empathy in first-year paramedic students at (redacted for peer review) and document any changes in empathy scores as time elapses. We hypothesized that empathy levels would decrease as students' progressed through their first year in the paramedic program, in line with previous literature.

Methods

Participants

This study was a longitudinal study using a paper-based questionnaire and convenience sampling of first year paramedic students in a two-year diploma program at [redacted for peer review] in Ontario, Canada. Ethics approval was granted by the Research Ethics Board at [redacted for peer-review] (approval S17-10-03-1).

Materials

This study utilised the Medical Condition Regard Scale (MCRS), a 6-point Likert scale consisting of eleven statements for each medical condition. The MCRS is a validated tool used to measure empathy, regard, and bias for a number of medical conditions (Christison, Haviland, & Riggs, 2002). This scale has previously been used to measure empathy levels in paramedic students in both Australia and Canada (Kus et al., 2018; Williams et al., 2012; Williams, Boyle, & Earl, 2013). We elected to use the MCRS to allow for comparisons to previous studies in this population. The MCRS requires respondents to rate their agreement to each statement from 1 (strongly disagree) to 6 (strongly agree). Five questions are negatively phrased and the scores for these questions are reversed for analysis (strong agreement with these questions would indicate lower empathy). Overall empathy scores for this study could range from 44 (lowest) to 264 (highest). For each medical condition, scores could vary from 11 (lowest) to 66 (highest). Higher scores indicate a higher regard of empathy for the medical condition in question.

This study utilised the MCRS to assess empathy levels for four medical conditions: intellectual disability, suicide attempt, mental health emergency and substance abuse. These medical conditions were selected based on previous studies of empathy levels in paramedic students. In addition to the MCRS, brief demographic questions were posed regarding age, gender, and previous post-secondary education.

The MCRS and demographic questions were distributed to students on three separate occasions, with each participant identified by a unique coded identifier. Participants were provided with an explanatory statement prior to each completion, and informed that participation was voluntary and responses were anonymised. Surveys were completed without the presence of the researchers in the room. Two of the authors (redacted) labelled each survey with a code, and removed the consent form to prevent the team members performing data entry and analysis (redacted) from identifying any participants.

Data analysis

Due to the small sample size that completed all three surveys ($n=20$), statistical analysis would be unreliable with a high margin of error. Descriptive statistics are instead used to describe trends in the data.

Results

A total of 37 first year paramedic students participated in the November 2017 survey. In January 2018, 33 students participated. In the final survey in March 2018, 25 students participated. After the completion of the surveys, any student who did not participate in all three surveys, or had been previously enrolled in the paramedic program prior to the 2017/2018 school year, was removed from the dataset. This left a final sample size of 20 participants.

There was notable variance between respondents' attitudes towards patients with the four different medical conditions as measured by the MCRS. Means for each medical condition are presented in Table 1. Of the participants, 11 (55%) identified as female and 9 (45%) identified as male. Females displayed higher mean empathy scores than males for all medical conditions (Table 1). For both males and females, substance abuse was associated with the lowest mean empathy scores. (Table 2, Figure 1).

The participants ranged in age from 19 to 40 years old. The respondents were divided into three age groups for analysis. There were six participants aged 19-21, nine aged 22-24 and five aged 25 or greater. Participants in the 22-24 age range demonstrated the highest mean empathy scores across all medical conditions. Substance abuse was associated with the lowest mean empathy scores across all age groups.

Seven participants reported previous post-secondary education. Participants who reported previous post-secondary education displayed higher mean empathy scores across all medical conditions compared to those who did not. For both groups the lowest mean empathy score was recorded for substance abuse and the highest mean empathy score was recorded for suicide attempts (Table 3).

Mean empathy scores decreased for intellectual disability, attempted suicide and mental health emergency from the November 2017 to January 2018 survey and again from the January 2018 to the March 2018 survey. By contrast, substance abuse decreased from November 2017 (45.35 $SD\pm 8.2$) to January 2018 (45.3 $SD\pm 7.04$) and then increased by March 2018 (46.45 $SD\pm 7.04$) (Table 4). Overall, mean empathy scores decreased across the three surveys.

Discussion

Our study demonstrates that empathy scores vary across medical conditions, and are significantly lower when dealing with substance abuse presentations. Empathy levels also appear to decline as students' progress through their education. The results of our study also demonstrate that females display higher empathy scores than their male counterparts, consistent with previous findings (Hojat et al., 2004; Williams et al., 2012; 2015; Kus et al., 2018). Our results also demonstrated differences in mean empathy scores based on age, and previous education. The lower empathy scores demonstrated towards substance abuse patients may stem from a multitude of reasons. Healthcare professionals perceived substance abuse patients to be a waste of medical expenses, unworthy of medical treatment, a burden on the medical system, and to be suffering from self-inflicted illnesses (Boyle et al, 2010; Williams et al 2015, 2013b). Furthermore, healthcare professionals stigmatize conditions involving substance abuse more adversely than any other conditions (Williams et al, 2015), and this stigma may give inexperienced healthcare professionals a preconceived idea of what it may be like to interact with these patients.

Variations in mean scores may also be attributed to factors that influence perceptions of certain medical conditions. For instance, patients with intellectual disabilities have been thought of to have an unpredictable nature and are frustrating to deal with (Williams et al, 2013a, 2013b).

Patients who have attempted suicide in the past often experience emotionally distant healthcare due to the association of suicide attempt to mental illness. Pre-existing negative attitudes of these patients from the media, society, or more

experienced healthcare providers may also play a role in how less experienced professionals perceive patients with these conditions (Boyle et al, 2010; Williams et al, 2013b).

Table 1. Mean Medical Condition Regard Scale scores for each medical condition

Medical condition	Mean	SD
Intellectual Disability	52.27	6.82
Suicide Attempt	53.27	6.8
Substance Abuse	45.7	7.28
Mental Health Emergency	52.32	6.83

SD=standard deviation

Table 2. Mean Medical Condition Regard Scale scores by gender

Medical condition	Female (SD)	Male (SD)
Intellectual Disability	54.6 (6.84)	50.07 (6.26)
Suicide Attempt	56.12 (4.95)	49.78 (7.37)
Substance Abuse	47.24 (7.32)	43.81 (7.19)
Mental Health Emergency	54.45 (6.29)	49.7 (6.88)

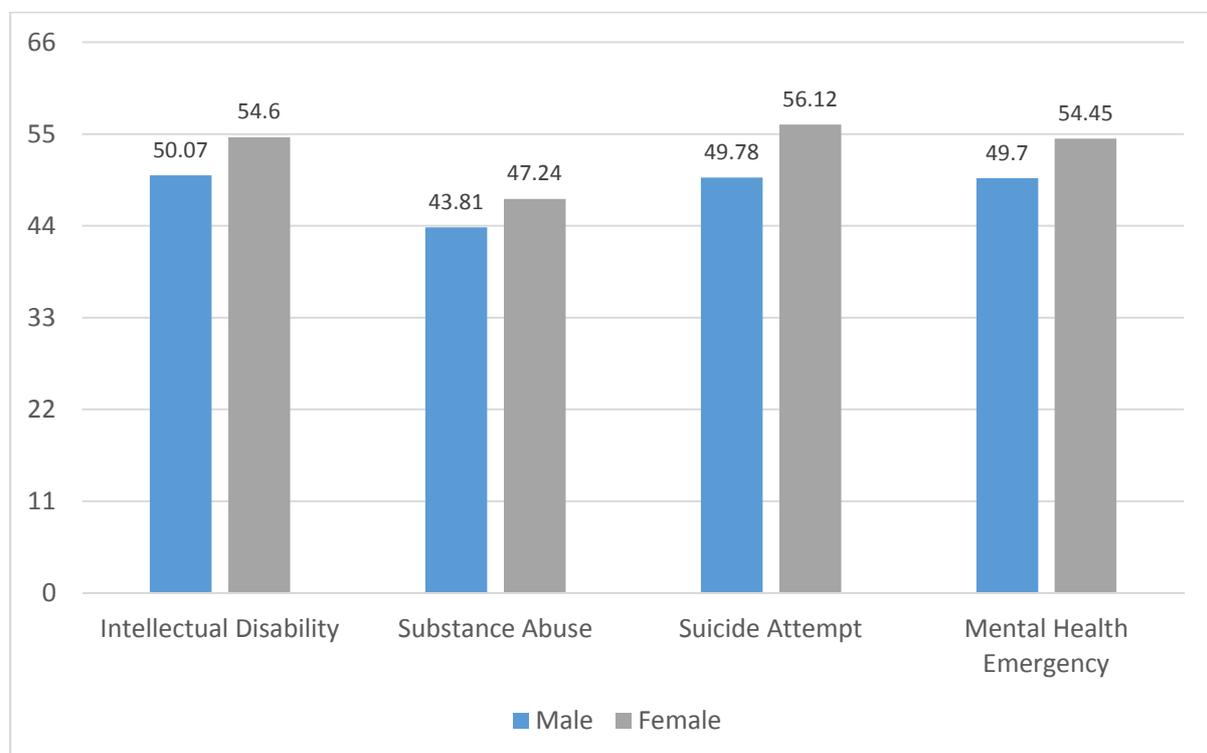


Figure 1. Mean scores per medical condition - by gender

Table 3. Mean Medical Condition Regard Scale scores by education

Medical condition	Previous PSE (SD)	No previous PSE (SD)
Intellectual Disability	56.76 (5.8)	50.31 (6.4)
Suicide Attempt	56.29 (5.51)	51.64 (7.06)
Substance Abuse	49.9 (3.63)	43.43 (7.84)
Mental Health Emergency	56.19 (5.11)	50.23 (6.88)

PSE=post-secondary education

Table 4. Mean Medical Condition Regard Scale scores by survey

Medical condition	November/17 (SD)	January/18 (SD)	March/18 (SD)	Trend
Intellectual Disability	54.4 (6.66)	53.1 (8.32)	50.2 (7.95)	↓
Suicide Attempt	54.55 (5.81)	54.4 (7.19)	50.85 (9.57)	↓
Substance Abuse	45.35 (8.2)	45.3 (8.65)	46.45 (7.04)	↑
Mental Health Emergency	53.35 (7.2)	52.1 (7.88)	51.5 (7.04)	↓

Empathy scores decreased over time in this and other studies (Nunes et al., 2011; Williams, Boyle, & Howard, 2016). There are many factors that may influence empathy towards patients, particularly in the context of education. These include rapid exposure to emotionally challenging learning material, the use of humour in the classroom, expectations versus reality and the influence of educators. Paramedic students are very quickly exposed to explicit and sometimes morbid examples of patients they may encounter, including photos of major traumas and serious illnesses. This may allow the students the opportunity to question if they can handle the gravity of the career they are pursuing. As their education progresses, these photos and stories become commonplace. Educators often attempt to bring humour into the classroom, which is acknowledged as a coping strategy for some of the stressful and traumatic situations paramedics encounter (Mildenhall, 2012; Rosenberg, 1991; Scott, 2007). In the educational context, students may develop the expectation that serious, high-acuity calls are more common. However, as the students begin their exposure to frontline ambulance clinical placements, they are exposed to the reality of paramedic practice. A large proportion of ambulance calls are to older adults, with falls the leading cause of injury, and exacerbation of chronic conditions are a common presentation. There therefore likely exists an incongruence

between students' perceptions of paramedic practice, and the reality.

Compassion fatigue occurs when healthcare providers experience decreased empathy towards patients from repeated exposures and the stress of their environment. Previous research among nurses demonstrated that compassion fatigue affects quality of care and quality of life (Peters, 2018; Zhang et al., 2018). The prevalence of suicide and mental health issues such as PTSD are higher among paramedics than the general population (Milner, Witt, Maheen, & Lamontagne, 2017; Vigil et al., 2018). Students, already exposed to stress, may be influenced by the stress of their educators (Barker, Howard, Villemaire-Krajden, & Galambos, 2018).

Previous studies demonstrated that females score higher than males on standardized empathy tests, and are more sensitive to recognizing others' emotions (Mestre, Samper, Frías, & Tur, 2009; Schulte-Rüther, Markowitsch, Shah, Fink, & Piefke, 2008). There is; however, room for clarification here – are females more empathetic due to nature or nurture? In other words, are females born more empathetic, or do they learn empathy from their environment?

Some studies suggest the difference is biological, and is evident even at a young age while others demonstrate evidence that females have a better ability to others emotions due to their own experiences (Derntl et al., 2010). Previous

studies have suggested that is the difference in how males and females process emotions that is responsible for the differences in empathy. Scans of brains in men and women have demonstrated stronger activation of areas responsible for emotional response in women. Males and females appear process emotion in very different manners, and this may go some way to explain their different empathic abilities in studies such as this.

Limitations

The use of convenience sampling although a simpler recruitment method, means that results may not be representative of paramedic students across our program, or the province. The small sample size of 20 precludes us from undertaking any statistical analyses, and thus results may not be generalisable. There is no data on those students who declined to participate. Those who did participate may have been more attuned to the study's purpose and felt obligated to participate. The MCERS is a self-reported questionnaire that while providing reliable data, does not account for participants' self-reporting bias. There may be variances in what participants reported, and how they actually conduct themselves in practice.

Conclusion

Our findings suggest that empathy decreases as one progresses through paramedic education, and can vary based on several factors including provider gender, age, and previous education, and the patient's presenting medical condition. The reasons for the differences demonstrated by paramedic students are unclear, but previous evidence from broader literature may go some way to explain some of these differences. Further research needs to be encouraged to study paramedic students in larger numbers, different regions, and their response to other medical conditions. Studies should also be undertaken to assess the empathy levels of qualified paramedics working in clinical environments. In the meantime, paramedic education programs should consider the implementation of empathy training and education in order to address some of the issues highlighted by this and previous studies in paramedic students.

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Place of study: Fanshawe College, 1001 Fanshawe College Blvd, London, ON N5Y5R6, Canada.

References

- Barker, E. T., Howard, A. L., Villemare-Krajden, R., & Galambos, N. L. (2018). The Rise and Fall of Depressive Symptoms and Academic Stress in Two Samples of University Students. *Journal of Youth and Adolescence*, 47(6), 1252–1266.
- Christison, G. W., Haviland, M. G., & Riggs, M. L. (2002). The Medical Condition Regard Scale. *Academic Medicine*, 77(3), 257–262.
- Derntl, B., Finkelmeyer, A., Eickhoff, S., Kellermann, T., Falkenberg, D. I., Schneider, F., & Habel, U. (2010). Multidimensional assessment of empathic abilities: Neural correlates and gender differences. *Psychoneuroendocrinology*, 35(1), 67–82.
- Hojat, M., Mangione, S., Nasca, T. J., Rattner, S., Erdmann, J. B., Gonnella, J. S., & Magee, M. (2004). An empirical study of decline in empathy in medical school. *Medical Education*, 38(9), 934–941.
- Kim, S. S., Kaplowitz, S., & Johnston, M. V. (2004). The effects of physician empathy on patient satisfaction and compliance. *Evaluation and the Health Professions*, 27(3), 237–251.
- Kus, L., Gosling, C., Wilson, T., & Batt, A. M. (2018). Empathy levels among Canadian paramedic students: a cross-sectional survey. *International Paramedic Practice*, 8(3), In press (Dec 2018).
- Mercer, S. W., & Reynolds, W. J. (2002). Empathy and quality of care. *British Journal of General Practice*, 52(SUPPL.), 9–12.
- Mestre, M. V., Samper, P., Frías, M. D., & Tur, A. M. (2009). Are women more empathetic than men? A longitudinal study in adolescence. *Spanish Journal of Psychology*, 12(1), 76–83.
- Mildenhall, J. (2012). Occupational stress, paramedic informal coping strategies: a review of the literature. *Journal of Paramedic Practice*, 4(6), 318–328.
- Milner, A., Witt, K., Maheen, H., & Lamontagne, A. D. (2017). Suicide among emergency and protective service workers: A retrospective mortality study in Australia, 2001 to 2012. *Work*, 57(2), 281–287.
- Nunes, P., Williams, S., Sa, B., & Stevenson, K. (2011). A study of empathy decline in students from five health disciplines during their first year of training. *International Journal of Medical Education*, 2, 12–17.
- Peters, E. (2018). Compassion fatigue in nursing: A concept analysis. *Nursing Forum*. 53(4):466-480.
- Rosenberg, L. (1991). A qualitative investigation of the use of humor by emergency personnel as a strategy for coping with stress. *Journal of*

- Emergency Nursing, 17(4), 197–202.
- Schulte-Rüther, M., Markowitsch, H. J., Shah, N. J., Fink, G. R., & Piefke, M. (2008). Gender differences in brain networks supporting empathy. *NeuroImage*, 42(1), 393–403.
- Scott, T. (2007). Expression of humour by emergency personnel involved in sudden deathwork. *Mortality*, 12(4), 350–364.
- Vigil, N. H., Grant, A. R., Perez, O., Blust, R. N., Chikani, V., Vadeboncoeur, T. F., Spaite D.W., Bobrow, B. J. (2018). Death by Suicide-The EMS Profession Compared to the General Public. *Prehospital Emergency Care : Official Journal of the National Association of EMS Physicians and the National Association of State EMS Directors*, 14, 1–6.
- Williams, B., Boyle, M., Brightwell, R., Devenish, S., Hartley, P., McCall, M., McMullen, P, Munro, G, O'Meara, P., & Webb, V. (2012). An assessment of undergraduate paramedic students' empathy levels. *International Journal of Medical Education*, 3, 98–102.
- Williams, B., Boyle, M., Brightwell, R., Devenish, S., Hartley, P., McCall, M., Weber, A. (2013). Undergraduate paramedic students' empathy levels: A two-year longitudinal study. *Australasian Journal of Paramedicine*, 10(3), 4–5.
- Williams, B., Boyle, M., & Earl, T. (2013). Measurement of empathy levels in undergraduate paramedic students. *Prehospital and Disaster Medicine*, 28(2), 145–149.
- Williams, B., Boyle, M., & Howard, S. (2015a). Attitudes of Paramedic Students towards Specific Medical Conditions : A Four-Year Study. *Internet Journal of Allied Health Sciences and Practice*, 13(2).
- Williams, B., Boyle, M., & Howard, S. (2015b). Empathy levels in undergraduate paramedic students. *International Journal of Caring Sciences*, 8(1), 59–68.
- Williams, B., Boyle, M., & Howard, S. (2016). Empathy levels in undergraduate paramedic students. *Nurse Education in Practice*, 16(1), 86–90.
- Williams, B., Brown, T., Boyle, M., McKenna, L., Palermo, C., & Etherington, J. (2014). Levels of empathy in undergraduate emergency health, nursing, and midwifery students: a longitudinal study. *Advances in Medical Education and Practice*, 5, 299–306.
- Williams, B., Lau, R., Thornton, E., & Olney, L. (2017). The relationship between empathy and burnout & lessons for paramedics: a scoping review. *Psychology Research and Behavior Management*, Volume 10(November), 329–337.
- Zhang, Y.Y., Han, W-L., Qin, W., Yin, H.X., Zhang, C.F., Kong, C., & Wang, Y.L. (2018). Extent of compassion satisfaction, compassion fatigue and burnout in nursing: A meta-analysis. *Journal of Nursing Management*, 26(7):810-819