International Journal of Nursing Studies 90 (2019) 1–10

Contents lists available at ScienceDirect

International Journal of Nursing Studies

journal homepage: www.elsevier.com/ijns

# Variation in the barriers to compassion across healthcare training and disciplines: A cross-sectional study of doctors, nurses, and medical students

Vinayak Dev[a], Antonio T. Fernando III[a], James N. Kirby[b], Nathan S. Consedine[c,*]

[a] Department of Psychological Medicine, University of Auckland, New Zealand
[b] School of Psychology, University of Queensland, Australia
[c] Department of Psychological Medicine, University of Auckland, Private Bag 92019, Auckland 1142, New Zealand

ARTICLE INFO

*Article history:*
Received 5 June 2018
Received in revised form 21 August 2018
Accepted 28 September 2018

*Keywords:*
Healthcare
Compassion
Barriers
Nurses
Physicians
Students
Comparison

ABSTRACT

*Background:* Despite the established importance of compassion in health, studies examining the specific barriers to compassionate care in healthcare are few. Recent work suggests that examining differences as a function of professional development and identifying variation in barriers to compassionate care across professions may highlight the origins of barriers and inform the development of compassion-enhancing interventions suited to the unique challenges of different professions and stages of training.

*Objectives:* To explore whether the barriers to compassion vary (a) between physicians and nurses and (b) across samples of physicians and medical students (i.e., as a function of development and clinical experience). It was expected that medical students would report greater barriers than physicians and that nurses would generally report lower barriers to compassion, other than for external barriers.

*Methods:* Registered nurses, physicians, and medical students were recruited using convenience sampling in New Zealand. Following consent, 1700 participants (801 nurses, 516 physicians, and 383 medical students) completed a survey including the Copenhagen Burnout Inventory and the Barriers to Physician Compassion questionnaire.

*Results:* As expected, medical students reported greater barriers to compassion than physicians and nurses, with both professions generally reporting lower barriers. However, and also consistent with hypotheses, nurses reported greater work-environment-related barriers relative to physicians.

*Discussion:* Students reported greater barriers than physicians. While nurses generally reported lower barriers than physicians, they specifically reported greater work environment-related barriers. For nurses, results highlight the importance of implementing interventions that reduce external barriers to compassion, specifically the need to alleviate the structural barriers and restrictions that nurses face. For medical students and younger healthcare professionals, the results highlight the importance of mentorship, support, and ongoing professional and emotional development.



### What is already known about the topic?

- Compassion is important for quality healthcare but is constantly challenged.
- Compassion fatigue and burnout are common, particularly in younger professionals.
- Nursing and medicine systemically differ across selection and training, roles and responsibilities, and underlying traditions.

### What this paper adds

- Nurses generally report lower barriers to compassion than physicians.
- Nurses report greater work environment-related barriers than physicians.
- Medical students report greater barriers to compassion than physicians.

* Corresponding author.
*E-mail addresses:* vdev514@aucklanduni.ac.nz (V. Dev), a.fernando@auckland.ac.nz (A.T. Fernando), j.kirby@psy.uq.edu.au (J.N. Kirby), n.consedine@auckland.ac.nz (N.S. Consedine).

https://doi.org/10.1016/j.ijnurstu.2018.09.015
0020-7489/

- Greater experience as a healthcare professional generally predicts fewer barriers.
- Underscores the importance of implementing interventions that enhance compassion in healthcare, and the importance of mentorship, support, and ongoing professional development.

## 1. Introduction

### 1.1. Background

Compassion can be defined as the desire to alleviate suffering (Dewar, 2013; Goetz et al., 2010; Schantz, 2007). Despite being regularly confused with terms such as care, empathy, sympathy, and concern (Schantz, 2007), compassion is distinguished by its emphasis on suffering and its orientation towards action (Sinclair et al., 2016a). Compassion is widely seen as important for healthcare professionals (Schantz, 2007; Sinclair et al., 2016b). Accumulating evidence suggests compassion has a positive impact in healthcare (Bakker et al., 2001; Fogarty et al., 1999; Sinclair et al., 2016b); it is regularly cited in policies surrounding quality of care (Dewar, 2013; Fotaki, 2015) and, for some, is the 'cornerstone for quality healthcare' (Sinclair et al., 2016a). Greater compassion predicts lower patient anxiety (Fogarty et al., 1999), better patient relationships (Bakker et al., 2001; Lown et al., 2011), greater healthcare satisfaction (Flocke et al., 2002), improved recovery, and a greater health-related responsibility and control (Lloyd and Carson, 2011). For physicians, compassionate care is associated with deriving greater pleasure from their work, a phenomenon known as 'compassion satisfaction' (Gleichgerrcht and Decety, 2013, 2014).

Ironically then, most research does not study compassion or the factors that might enhance or interfere with its expression (Fernando and Consedine, 2014a,b). Instead, research focuses on compassion-fatigue, an outcome variable reflecting the subjective experience of feeling "tired of caring". Although compassion-fatigue is common across professions (Figley, 1995; Hooper et al., 2010), the construct is problematic (Sinclair et al., 2017). Historically, a focus on compassion fatigue has encouraged the study of clinician-centric factors rather than capacitating a systemic evaluation of the factors that may enhance or deter compassion (Fernando and Consedine, 2014a).

More recently, work conducted within the framework provided by the Transactional Model of Physician Compassion (Fernando and Consedine, 2014a) has suggested that compassion in health is a systemic problem that requires systemic solutions. In this view, compassion emerges (or does not emerge) as a function of barriers and facilitators that can be broadly grouped as reflecting physician (carer), patient, clinical, and environmental factors (Fernando and Consedine, 2014a, 2017). In theory, the organising framework offered by the Transactional Model of Physician Compassion thus capacitates the development of evidence-based interventions suited to the particular barriers experienced in different groups (Fernando and Consedine, 2014b).

However, to tailor interventions to the particular challenges in different groups and settings, variation in the barriers to compassion within and across healthcare professions must be documented. While research has begun to examine how barriers vary amongst specialist physicians (Fernando and Consedine, 2017), and begun to study barriers in nursing (Dev et al., 2018), several issues remain unclear. First, despite systemic disciplinary differences in selection, training, normative professional roles/responsibilities, and underlying traditions, it is unclear whether the barriers to compassion vary between physicians and nurses. There are three broad reasons to suspect the presence of such variations across disciplines. First, relative to medicine, nursing emphasises compassion – deeming it to be the central tenet of clinical practice (Boyle, 2011). While compassion forms a part of the professional mandate in medicine (Taylor, 1997), the tradition has tended to view illnesses and symptoms biomedically (Mead and Bower, 2000). Relative to physicians, nurses consider having a supportive supervisor important, prefer and endorse team-based work environments, perceive institutional shortcomings as explaining variability in clinical practice, and experience following protocols as enhancing autonomy (Degeling et al., 2001). Conversely, *medical* trainees tend to see clinical work as the individual's responsibility while nursing students endorse a collective decisional perspective (Horsburgh et al., 2006). Such differences in professional "culture" may precede enrolling in training programs (Perkins et al., 2008) and provide grounds for the general expectation that the types of factors experienced as interfering with compassion will differ across disciplines.

Compounding such variations are differences in the persons self-selecting/being selected for different training programmes and the hierarchies of reporting and responsibility in healthcare. Individuals with different personalities are differentially likely to choose particular professions (Consedine et al., 2013; Hardigan and Cohen, 1999), a dynamic that is widely studied in medicine and has some grounding in nursing (Gambles et al., 2003). Such differences may well be reflected in the ways health professionals "see" their roles and experience their patients and work environments, thus impacting barriers to compassion (Fernando and Consedine, 2017).

Perhaps most importantly, nurses and physicians typically occupy different power and status positions in health, varying in their caseloads, schedules, and work-related challenges. Relative to physicians, nurses typically occupy positions seen as having lower status or institutional power (Daiski, 2004), a difference that is reinforced by organisational structures and may be particularly salient in ward environments (Mantzoukas and Jasper, 2004) and for more junior trainees (Law and Chan, 2015). Because they have less control over many aspects of their work including daily tasks, schedules and shifts, the timing of breaks, more recent graduates or healthcare staff occupying lower "rungs" in organisational ladders are likely to differentially experience particular types of barriers to compassion. Overall, the possibility that nurses (relative to physicians) have less control over work environments suggests that they might experience fewer barriers overall but may more commonly experience external factors as interfering with compassion.

A second area in which insight is lacking regards consideration of whether barriers to compassion vary as a function of professional training and development. Interestingly, early work suggests that compassion fatigue is lower amongst older physicians (Cameron et al., 2015; Easter and Beach, 2004) and nurses (Dev et al., 2018). Equally, younger clinicians report greater burnout (Dev et al., 2018; Kamal et al., 2016) and lower compassion satisfaction (Gleichgerrcht and Decety, 2014). Conversely, professional development and the ageing process see the emergence of greater seniority and autonomy as well as more positive emotion and a better ability to regulate emotional responses (Consedine and Magai, 2006). Such changes may allow more experienced clinicians to manage burnout and other barriers, with two recent studies suggesting lower barriers among more experienced physicians (Fernando and Consedine, 2017) and more experienced nurses (Dev et al., 2018). Thus, it may be that either those prone to compassion fatigue and barriers transition away from the helping professions or, more likely, professionals use experience to find ways of managing their resources and environments such that compassion is maintained.

### 1.2. Objectives

Despite the importance of compassion in healthcare, studies of the specific barriers to compassionate care are few. Identifying more precise barriers and how they vary across different types of healthcare professions and experience should enable us to (a) identify the origins of barriers and (b) develop compassion-enhancing interventions suited to the unique challenges of different professions and individuals. This report used a combined sample of physicians, nurses, and medical trainees to address two research questions: (a) do the barriers to compassion vary between physicians and nurses? And (b) do the barriers vary between physicians and medical students (i.e., as a function of development and experience)? Our expectation was that medical students would report greater barriers than physicians but that nurses would generally report lower barriers than physicians. However, given the relative lack of organisational control amongst nurses, we expected that this group would report greater *external* barriers to compassion.

## 2. Method

### 2.1. Study design and setting

Permission to conduct the studies contributing to this report was obtained from the University of Auckland Human Participants Ethics Committee (Approval Number: 7640). Recruitment employed non-random convenience sampling, with the three samples accessed via a lecture series conducted by one of the authors (A. F.) at medical meetings and grand rounds (i.e., the study was announced at lectures and participation was encouraged), contacts and referrals in hospitals and clinics in New Zealand, and e-mails distributed via professional organisations. Inclusion criteria required that participants were practicing as medical professionals, were registered nurses, or were enrolled as medical students (in their clinical years) in New Zealand at the time of the study. Prospective participants were sent an invitation email containing a link to a detailed description of the study, and the survey. After providing informed consent, a 20-min survey including questions indexing demographics, characteristics of clinical practice, attitudes, and emotions and behaviours regarding patient care was administered. Participation in each of the three studies was voluntary and anonymous. Participants who completed questionnaires were invited to enter a draw to win an iPad or one of seven $100 vouchers. Data regarding the prize draw were collected separately such that identifying information was dissociated from primary data.

### 2.2. Participants

Participants were drawn from three large scale studies of compassion in healthcare, one of physicians (Fernando and Consedine, 2017), one of nurses (Dev et al., 2018) and one amongst medical students. Of the 1700 participants included in this report (Table 1), 47.10% were nurses, 30.40% were physicians, and 22.50% were medical students. Across samples, 74.20% were female. The average age of nurses was 45.46 years, of physicians was 43.62 years, and of medical students was 24.07 years. Nurses averaged 26.11 years of clinical experience, physicians 27.02 years, and medical students 1.06 years. Participants predominantly identified as New Zealanders (57.17%), followed by British (11.57%), Chinese (4.27%), Indian (3.60%), South African (2.97%), Filipino (1.83%), and Other (19.0%).

### 2.3. Variables and data measurement

#### 2.3.1. Background characteristics

Participants identified as 'male or female' and self-assigned to ethnic categories (see Table 1). Questions asking, 'how would you characterize your overall workload?', and 'how would you characterize your current patient load?' were marked on a 5-point scale assessed overall workload and patient load, respectively. Years of clinical experience was calculated by subtracting the participants' self-reported year of graduation from the current year (2018) and adding two years to it (as physicians and nurses begin patient contact in the final two years of training in the New Zealand context).

#### 2.3.2. Burnout

Professional burnout was assessed using the widely-used Copenhagen Burnout Inventory (Kristensen et al., 2005). This

**Table 1**
Demographic Characteristics of the Three Professional Subsamples.

| Variable | Nurses ($n$ = 801) | Physicians ($n$ = 516) | Medical Students ($n$ = 383) | Difference ($F$) | Post Hoc |
|---|---|---|---|---|---|
| Ethnicity | | | | | |
| New Zealander | 67.80% | 42.60% | 61.10% | | |
| British | 12.90% | 20.50% | 1.30% | | |
| Chinese | 1.50% | 0.60% | 10.70% | | |
| Indian | 2.50% | 4.10% | 4.20% | | |
| South African | 2.10% | 5.20% | 1.60% | | |
| Filipino | 3.70% | 1.00% | 0.80% | | |
| Other | 9.00% | 26.00% | 20.00% | | |
| % Female | 93.90% | 52.70% | 62.10% | | |
| Age | 45.46 (11.80) | 43.62 (11.57) | 24.07 (3.31) | 587.74** | N > P > S |
| Years of clinical experience | 26.11 (12.75) | 27.02 (11.63) | 1.06 (0.82) | 814.32** | P, N > S |
| Patient load# | 3.61 (0.86) | 3.44 (0.79) | 2.88 (0.71) | 106.02** | N > P > S |
| Workload# | 3.81 (0.86) | 3.73 (0.77) | 3.43 (0.71) | 30.07** | N, P > S |
| Burnout# | 2.74 (0.66) | 2.57 (0.56) | 2.59 (0.53) | 14.63** | N > S, P |
| Barriers to compassion | | | | | |
| Burnout-related$ | 3.81 (1.58) | 3.75 (1.45) | 4.10 (1.34) | 6.83** | S > N, P |
| Environmental$ | 3.23 (1.24) | 2.99 (1.11) | 3.20 (1.05) | 7.47** | N, S > P |
| Patient and family-related $ | 2.80 (1.32) | 3.11 (1.26) | 3.36 (1.28) | 26.07** | S > P > N |
| Clinical$ | 2.22 (0.94) | 2.54 (0.96) | 2.83 (1.02) | 54.49** | S > P > N |

*Note.* *$p < 0.05$, **$p < 0.01$, # = measured on a 5-point scale from low to high, $ = measured on a 7-point scale from 'minimal' to 'a great deal', and 'N' = nurses, 'P' = physicians and 'S' = medical students.

scale captures elements of exhaustion, negative job attitudes, and a loss of concern and feeling for patients. Items are rated on a 5-point rating scale from 1 (never) to 5 (always), and the scale has robust psychometric properties (Kristensen et al., 2005). Internal reliability is commonly above .80 (Cronbach's α = .85–.87) and the measure has high face, convergent, divergent, and predictive validity (Kristensen et al., 2005; Robinson et al., 2008). Internal reliability for the total score was strong in the current report (Cronbach's α = .91).

#### 2.3.3. Barriers to compassion

Barriers to compassion were assessed using the 34 item Barriers to Physician Compassion Questionnaire (Fernando and Consedine, 2014b). In this measure, a series of possible barriers are presented and the extent to which each is subjectively experienced as interfering with compassion is rated on a scale of 1 (minimal) to 7 (great deal) scale. Component analyses suggest the presence of four distinct barriers: an inability to care because of stress/burnout (e.g., having too many patients to see in a limited time), interference from environmental factors (e.g., pages, phone calls, texts or other interruptions during a consult), the experience of patient and family-related barriers to compassion (e.g., concern that patients may complain or sue), and barriers related to the clinical picture (e.g., presence of unexpected side effects). The measure has previously shown high internal reliability (Cronbach's α = .75–.91) and adequate face, content, convergent, and divergent validity (Fernando and Consedine, 2014b, 2017). However, because the working conditions and modal responsibilities of physicians and nurses differ, a pilot sample of academic and clinical nurses trialled the items and provided feedback. Although some issues specific to compassion in nursing were noted, items indexing the four domains were seen as face and content valid as well as being likely to capture the same variance; no major omissions were noted. Early data also suggest adequate reliability and convergent validity among nurses (Dev et al., 2018). Across samples, all subscales had high internal reliabilities in the current report (Cronbach's α = .87–.91).

### 2.4. Bias and sample size

Attempts to control bias included: consultation with a senior academic staff and colleagues to ensure study measurement addressed issues of relevance to practicing nurses, physicians, and medical students, anonymous participation (reducing selection and reporting biases), and the use of validated measures that are known to have discriminant validity from demographics and clinical practice variables. The sample sizes were based on convenience sampling.

### 2.5. Statistical methods

Missing data were imputed using means from the original subsamples. First, Pearson's and Spearman's correlations tested the associations between primary variables and possible confounds (gender, patient load, workload, and burnout) (Table 2). Confounds were chosen because age has been associated with lower (and workload with greater) barriers (Dev et al., 2018; Fernando and Consedine, 2017) and empathy is greater in female doctors (Hojat et al., 2002). Second, multiple regressions tested for differences across the three groups and mean scores on each of the four barriers. In line with research questions, regressions contrasted (a) medical students with physicians (Table 3) and (b) physicians with nurses (see Table 4). Although clinical experience is related to lower barriers in doctors (Fernando and Consedine, 2017), it was not modelled in the contrast between medical students and physicians. In addition to obscuring the research question (i.e., effectively "controlling" for developmental differences), this variable was conflated with the student-physician age difference, creating the strong likelihood of multicollinearities in the model.

## 3. Results

### 3.1. Descriptive and univariate analyses

Comparisons revealed differences across the three groups on all analysed variables (Table 1). The proportion of male/female participants varied across the groups, $\chi^2(2) = 315.92$, $p < .001$. Hays' standardised residuals indicated fewer males in the nursing group (−11.00), and fewer females in the physician (−5.70) and medical student (−2.70) groups than would be expected by chance (Figs. 1 and 2).

Correlational analysis (Table 2) showed that lower age and experience as well as greater burnout, were all associated with greater barriers. Greater patient load and a greater workload were associated with greater burnout-related and environmental barriers. Being female was associated with reporting greater burnout-related barriers, but lower patient/family and clinical barriers. Being a nurse was associated with lower patient/family and clinical barriers, but greater environmental barriers, while being a physician was associated with lower burnout-related and environmental barriers, but greater patient/family and clinical

**Table 2**
Correlations between Demographics, Clinical Factors, and Barriers to Compassion.

| | Age | Clinical Experience | Gender | Nurses | Physicians | Students | Patient load | Workload | Burnout | Burnout-related | Environmental | Patient/Family | Clinical barriers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age | – | .92** | .10** | .38** | .19** | −.66** | .19** | .10** | −.12** | −.28** | −.18** | −.27** | −.30** |
| Experience | | – | .09** | .35** | .28** | −.72** | .20** | .10** | −.11** | −.26** | −.17** | −.24** | −.27** |
| Gender# | | | – | .42** | −.33** | −.15** | .11** | .11** | .12** | .05* | .02 | −.08** | −.10** |
| Nurses# | | | | – | – | – | .25** | .13** | .12** | −.03 | .05* | −.17** | −.23** |
| Physicians# | | | | | – | – | .04 | .03 | −.09** | −.05* | −.09** | .05* | .07** |
| Students# | | | | | | – | −.33** | −.19** | −.05* | .09** | .03 | .15** | .21** |
| Patient load | | | | | | | – | .65** | .33** | .22** | .14** | −.03 | −.03 |
| Workload | | | | | | | | – | .38** | .26** | .18** | −.03 | .02 |
| Burnout | | | | | | | | | – | .46** | .42** | .28** | .33** |
| Burnout-related | | | | | | | | | | – | .72** | .54** | .59** |
| Environmental | | | | | | | | | | | – | .65** | .66** |
| Patient and family-related | | | | | | | | | | | | – | .74** |
| Clinical | | | | | | | | | | | | | – |

*Note.* *$p < 0.05$, **$p < 0.01$; #Spearman's Rank-Order correlation; gender coded such that 0 = male and 1 = female; specializations dummy coded such that 0 = not a physician, nurse or student and 1 = physician, nurse, or student.

**Table 3**
Results for Multiple Regression Analysis Associated with Barriers to Compassion across Physicians and Medical Students.

| Model | B | Standard Error | Standardised Beta | Squared Part Correlations |
|---|---|---|---|---|
| | Burnout-Related Barriers | | | |
| | −0.46 | .37 | | |
| Student[$] | 0.36 | .09 | .12** | 0.0132 |
| Gender[#] | 0.20 | .09 | .07* | 0.0047 |
| Patient load | 0.11 | .07 | .06 | 0.0023 |
| Workload | −0.02 | .07 | −.01 | 0.0001 |
| Burnout | 1.13 | .08 | .44** | 0.1596 |
| | Patient and Family-Related Barriers | | | |
| (Constant) | 1.87 | .36 | | |
| Student[$] | 0.14 | .09 | .06 | 0.0026 |
| Gender[#] | −0.02 | .08 | −.01 | 0.0000 |
| Patient load | −0.01 | .06 | −.01 | 0.0000 |
| Workload | −0.27 | .07 | −.16** | 0.0166 |
| Burnout | 0.79 | .08 | .34** | 0.0957 |
| Model | B | Standard Error | Standardised Beta | Squared Part Correlations |
| | Environmental Barriers | | | |
| (Constant) | 0.93 | .30 | | |
| Student[$] | 0.18 | .07 | .08* | 0.0060 |
| Gender[#] | −0.05 | .07 | −.02 | 0.0005 |
| Patient load | −0.01 | .05 | −.01 | 0.0001 |
| Workload | −0.04 | .06 | −.02 | 0.0004 |
| Burnout | 0.76 | .07 | .38** | 0.1202 |
| | Clinical Barriers | | | |
| (Constant) | 0.59 | .27 | | |
| Student[$] | 0.25 | .07 | .12** | 0.0128 |
| Gender[#] | −0.05 | .06 | −.03 | 0.0006 |
| Patient load | −0.02 | .05 | −.02 | 0.0002 |
| Workload | −0.08 | .05 | −.06 | 0.0025 |
| Burnout | 0.75 | .06 | .41** | 0.1398 |

*Note.* *$p < 0.05$, **$p < 0.01$; [$]profession coded with physician as the referent group, [#]gender coded such that 0 = male and 1 = female.

barriers. Being a medical student was associated with greater burnout-related, patient/family, and clinical barriers to compassion.

### 3.2. Main results

#### 3.2.1. Differences between physicians and medical students

*3.2.1.1. Individual barriers relating to feeling burnt out.* The model explained 23.46% of the variance in burnout-related barriers, $F(5,893) = 54.74$, $p < .01$. As expected, greater burnout was associated with reports of greater burnout-related barriers. Being a student (relative to being a physician) and being female predicted greater burnout-related barriers (see Table 3).

*3.2.1.2. Barriers relating to the work environment.* The model explained 14.54% of the variance in environment-related barriers, $F(5,893) = 30.38$, $p < .01$. Being a student (relative to being a physician) and reporting greater burnout both predicted greater environmental barriers (see Table 3).

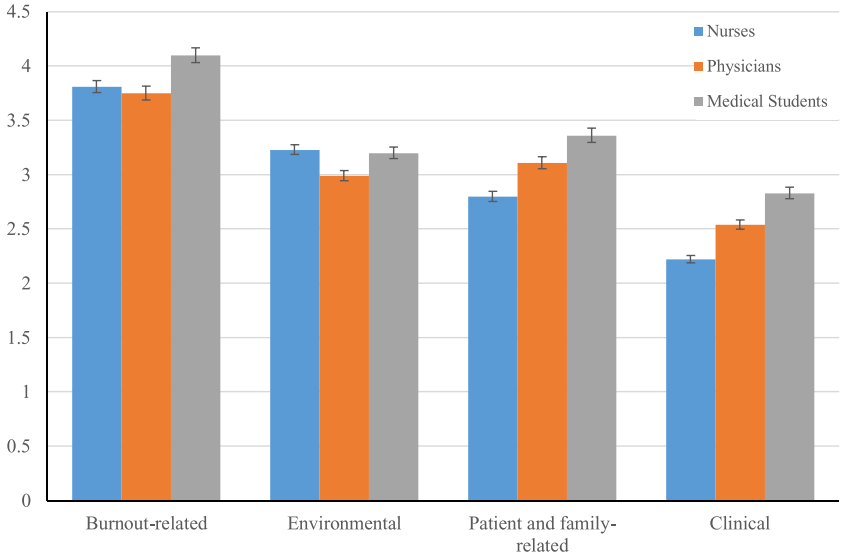


**Fig. 1.** Bar graph demonstrating means scores for the four barriers to compassion between physicians, nurses, and medical students.

**Table 4**
Results for Multiple Regression Analysis Associated with Barriers to Compassion across Nurses and Physicians.

| Model | B | Standard Error | Standardised Beta | Squared Part Correlations |
|---|---|---|---|---|
| | Burnout-Related Barriers | | | |
| (Constant) | 0.50 | .33 | | |
| Nurse[$] | −0.17 | .08 | −.06* | 0.0023 |
| Gender[#] | 0.01 | .10 | .00 | 0.0000 |
| Experience | −0.03 | .00 | −.22** | 0.0452 |
| Patient load | 0.20 | .06 | .11** | 0.0057 |
| Workload | 0.14 | .06 | .08* | 0.0028 |
| Burnout | 0.94 | .06 | .39** | 0.1185 |
| | Patient and Family-Related Barriers | | | |
| (Constant) | 1.78 | .31 | | |
| Nurse[$] | −0.40 | .08 | −.15** | 0.0171 |
| Gender[#] | −0.07 | .09 | −.02 | 0.0004 |
| Experience | −0.02 | .00 | −.17** | 0.0269 |
| Patient load | −0.04 | .06 | −.03 | 0.0003 |
| Workload | −0.15 | .06 | −.09** | 0.0044 |
| Burnout | 0.71 | .06 | .34** | 0.0919 |
| Model | B | Standard Error | Standardised Beta | Squared Part Correlations |
| | Environmental Barriers | | | |
| (Constant) | 1.69 | .27 | | |
| Nurse[$] | 0.17 | .07 | .07* | 0.0036 |
| Gender[#] | −0.18 | .08 | −.06* | 0.0029 |
| Experience | −0.02 | .00 | −.15** | 0.0218 |
| Patient load | −0.01 | .05 | −.00 | 0.0000 |
| Workload | 0.10 | .05 | .07* | 0.0023 |
| Burnout | 0.76 | .05 | .40** | 0.1273 |
| | Clinical Barriers | | | |
| (Constant) | 1.07 | .23 | | |
| Nurse[$] | −0.37 | .06 | −.19** | 0.0271 |
| Gender[#] | −0.09 | .07 | −.04 | 0.0013 |
| Experience | −0.01 | .00 | −.14** | 0.0179 |
| Patient load | −0.02 | .04 | −.02 | 0.0002 |
| Workload | −0.07 | .04 | −.06 | 0.0019 |
| Burnout | 0.59 | .04 | .38** | 0.1160 |

*Note.* *$p < 0.05$, **$p < 0.01$; [$]profession coded with physician as the referent group, [#]gender coded such that 0 = male and 1 = female.

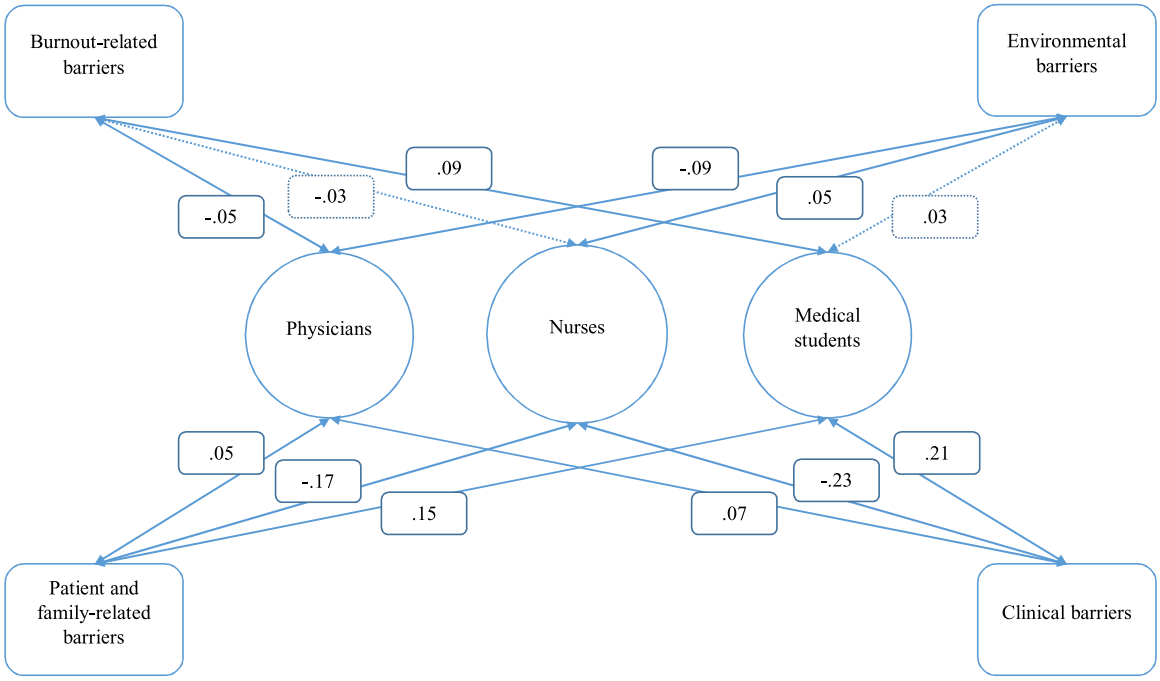


**Fig. 2.** Visual representation of the univariate Pearson's and Spearman's associations between healthcare professions and four barriers to compassion. Solid lines represent significant associations ($p < .05$), while dotted lines represent non-significant associations ($p > .05$). Note that a positive association indicates that a barrier is greater in the relevant group.

*3.2.1.3. Barriers relating to patient and family.* The model explained 10.86% of the variance in patient and family barriers, $F(5,893) = 21.75$, $p < .01$. Students versus physicians did not differ on this barrier while lower workload and greater burnout both predicted reports of greater patient and family-related barriers (see Table 3).

*3.2.1.4. Barriers relating to the clinical picture.* The regression model explained 17.09% of the variance in clinical barriers to compassion, $F(5,893) = 36.81$, $p < .01$. Being a student (relative to being a physician) and reporting greater burnout both predicted greater clinical barriers (see Table 3).

*3.2.2. Differences between physicians and nurses*

*3.2.2.1. Barriers relating to feeling burnt out.* The model explained 31.17% of the variance in burnout-related barriers, $F(6,1310) = 98.87$, $p < .01$. As expected, greater burnout predicted greater burnout-related barriers and being a nurse (relative to being a physician) predicted lower burnout-related barriers. Greater clinical experience predicted lower barriers scores, while reports of a greater patient load and a greater overall workload both predicted greater burnout-related barriers (see Table 4).

*3.2.2.2. Barriers relating to the work environment.* The model explained 24.05% of the variance in work environment-related barriers, $F(6,1310) = 69.15$, $p < .01$. As expected, being a nurse (relative to being a physician) predicted greater environmental barriers. Being female predicted lower environmental barriers as did greater experience, lower overall workload, and lower burnout (see Table 4).

*3.2.2.3. Barriers relating to patient and family.* The regression model explained 16.28% of the variance in patient and family-related barriers, $F(6,1310) = 42.47$, $p < .01$. Being a nurse (relative to being a physician) predicted lower patient and family-related barriers. Similarly, even in this contrast amongst experienced professionals, lower clinical experience predicted greater patient and family related barriers as did a lower workload and greater burnout (see Table 4).

*3.2.2.4. Barriers relating to the clinical picture.* The regression model explained 19.28% of the variance in clinical barriers, $F(6,1310) = 52.15$, $p < .01$. Being a nurse (relative to being a physician) predicted lower clinical barriers. Again, lower clinical experience and greater burnout predicted greater clinical barriers (see Table 4).

## 4. Discussion

### *4.1. Key results and interpretation*

Compassion is a critical component of quality healthcare. In extending prior research, this report makes two salient contributions. First, analyses uncovered the expected pattern in which medical students reported greater barriers than physicians; the finding that more experience predicted fewer barriers was replicated in analyses contrasting physicians and nurses attests to the robustness of this "developmental" phenomenon. Second, as expected given differences in self-selection, training, institutional tasks, and normative responsibilities, nurses generally reported lower barriers than physicians. As predicted, however, they specifically reported greater work environment-related barriers. These findings are revisited in greater detail below, some early interpretations are offered, and future directions and practical implications are given.

Perhaps the most consistent finding here reflects the fact that in analyses contrasting both (a) medical students with physicians and (b) physicians with nurses, greater (clinical) experience consistently predicted *lower* barriers. Empirically, this developmentally-graded pattern is consistent with prior work on barriers (Fernando and Consedine, 2017; Singh et al., 2018), compassion-fatigue (Bray et al., 2014; Cameron et al., 2015; Easter and Beach, 2004), and burnout (Deckard et al., 1994; Kamal et al., 2016), which are all lower in older groups, as well as with findings of lower compassion satisfaction in younger physicians (Gleichgerrcht and Decety, 2013). Why this pattern occurs remains unclear (and more qualitative work is clearly required), although a few possibilities are evident. First, it may be that persons prone to compassion fatigue or barriers transition away from the helping professions. More likely, however, is that more experienced professionals develop a greater appreciation of suffering that facilitates the provision of compassion and/or develop ways of managing resources and environments such that compassion is maintained (Singh et al., 2018). Increases in seniority and occupational autonomy that accompany professional experience may also be relevant. Compared to both trainees and junior physicians as well as to nurses, more senior doctors have greater power, status, and autonomy in their work. This dynamic combined with greater clinical confidence, the fact that core roles and tasks are less mundane and may permit greater "headspace" for care (Tierney et al., 2018), and greater interpersonal continuity within teams, may make it easier for more senior physicians to maintain compassion.

However, if this line of reasoning were sufficient, experience might have been expected to matter more for environmental and/or clinical barriers. Because experience was *broadly* associated with lower barriers, an explanation based solely in developmental changes in work dynamics is likely incomplete. A further possibility is that the lifespan changes that occur alongside changes in professional functioning also contribute to a reduction in barriers. Adult development brings with it a greater ability to tolerate uncertainty (Basevitz et al., 2008), a characteristic that increases across medical training (Nevalainen, 2014) and is associated with greater wellbeing (Strout et al., 2018). Equally, aging brings increases in general prosociality (Sze et al., 2012) and the ability to regulate emotions (Magai et al., 2006), both of which may be relevant. Finally, more experienced (older) doctors likely have a greater experience of personal ill health which may make compassion easier (Roberts et al., 2011). In combination, such changes may allow experienced clinicians to more effectively manage the barriers to compassion that arise in healthcare settings. Coupled with professional changes, developmental changes of this kind may provide insight into the targets for interventions designed to alleviate the generally higher barriers reported by more junior professionals.

The second major question reflects an emphasis on the possibility that the barriers to compassion are experienced differently by physicians and nurses. With one exception, nurses reported lower barriers. There are two factors that can be suspected as underpinning this trend. First, this trend may reflect differences in the types of individuals that self-select into nursing versus medical training. Particular personalities are differentially likely to choose particular professions (Hardigan and Cohen, 1999). Such differences may be reflected in how health professionals "see" their roles and experience their patients and work environments, thus impacting reports of barriers to compassion (Fernando and Consedine, 2017). Second, in contrast to medicine, nursing has a tradition of emphasising compassion, deeming it the central tenet of clinical practice (Boyle, 2011; Fry et al., 2013). Conversely, while medicine recognises compassion as important component (Rakel, 2000; Wear and Zarconi, 2008), the tradition has

nonetheless tended to emphasise pathology, illness, and symptoms (Larivaara et al., 2001; Mead and Bower, 2000). This background difference in the underlying cultures and traditions may be foundational in the way barriers to compassion are differentially experienced by nurses and physicians.

Testament to the importance that environments can have on compassion in medicine, the exception to this trend was the finding that nurses reported *greater* environment-related barriers, despite generally reporting lower barriers. Relative to physicians, nurses typically occupy positions with lower power (Daiski, 2004), a factor that is reinforced by the hierarchical nature of healthcare and ward environments (Mantzoukas and Jasper, 2004). Relative to physicians, nurses may have less control over daily tasks, schedules and shifts, breaks, vacations, and the like, a dynamic that increases work environment-related barriers, despite generally lower barriers overall.

Finally, although compassion fatigue may not illuminate the origins of the lack of compassion in medicine (Fernando and Consedine, 2014a,b), burnout consistently predicted greater barriers. While this pattern is consistent with prior work (e.g. Hooper et al., 2010; Maytum et al., 2004; Ray et al., 2013), reports of a greater workload were periodically associated with greater barriers but were also associated with *lower* patient/family barriers in both contrasts (see Tables 3 and 4). Thus, while the subjective experience of feeling overwhelmed (burned out) predicted greater barriers, such effects are not necessarily related to having a subjectively high workload per se. Although causality is unclear, for some individuals, the fact that a high workload *specifically* predicts lower patient/family barriers may reflect the derivation of satisfaction from compassionate patient contact (Gleichgerrcht and Decety, 2013, 2014) and enable the maintenance of a high workload. Studies of the associations between the barriers to compassion and measures of compassion satisfaction are unknown.

### 4.2. Limitations and generalisability

Although this examination of the barriers to compassion in a very large sample of healthcare trainees and professionals is useful, it has several limitations. First, the report relies on convenience samples completing self-report measures and employed a cross-sectional design. Second, the available samples do not permit contrasts between nurses and nursing students or between and nursing and medical students. Three, the associations amongst self-report measures may be exaggerated by method factors (Podsakoff et al., 2012) or by social desirability, self-presentational, and recall biases (Podsakoff and Organ, 1986). Given our design precluded quantification of response rates, is also possible that persons electing to participate differ in some ways from those who did not. Finally, these data do not enable us to speak to the causal associations between measures and experimental or interventional designs are needed.

Such limitations noted, however, this report provides early evidence of developmental and interdisciplinary variation in the barriers to compassion in healthcare. Such data have the potential to inform understanding of why barriers to compassion are experienced differently and how we might mitigate them. Certainly, interventions to enhance compassion in health care may need to be tailored to the barriers confronting different groups. Universal training programs may not be the most cost- or outcome-effective way to intervene, with differences in barriers across professions potentially reducing both engagement and effectiveness. For nurses in particular, where burnout is high, these data highlight the potential benefit that self-compassion and stress reduction interventions could have in alleviating burnout (Aycock and Boyle, 2009; Birnie et al., 2010). However, the implementation of such an approach would need to be tempered with the awareness that workplace interventions can send two inadvertent messages, (1) that nurses are not mentally "tough" enough (hence their need for the program), or (2) that interventions help improve productivity, highlighting fears that the organisation is more interested in productivity than the health and wellbeing of their staff (West and Chowla, 2017). How interventions designed to alleviate barriers are deployed within organisations requires careful planning.

Additionally, given that nurses experience greater external barriers to compassion (and assuming that greater predictability and control in work underpins such differences), the data also highlight the importance of implementing interventions that help alleviate the structural barriers and restrictions that nurses face in being able to control their working environments. Recent data suggest that a heightened focus on managing and processing patients to reach targets – a production line – compromises compassion in nurses (Crawford et al., 2013).

For physicians and medicine in general, one intriguing possibility is that physicians and nurses can co-educate one another regarding how burnout and external barriers can be managed such that compassion is less impacted. It is, however, possible that resistances might emerge if nurses are taught by physicians and vice-versa; it will be important that the intervention's 'messenger' does not act as an additional (involuntary) barrier. For medical students and younger professionals, the study highlights the importance of mentorship, support, and ongoing professional development. Developing the capacity to tolerate uncertainty and regulate the negative emotions arising with respect to challenging patients as well as actively constructing supportive work environments may lead to more junior carers becoming better equipped to sustain compassionate care. A recent trial involving ten 90-minute sessions of Cognitively-Based Compassion Training (CBCT) increased compassion and decreased depressive symptoms and loneliness amongst medical students (Mascaro et al., 2018), with the more depressed deriving greater benefits from the active treatment.

Overall, this study highlights, and provides the first evidence for, barriers to compassion varying as a function of healthcare professionals' (a) profession and (b) development and experience. It extends prior compassion research in healthcare and provides a foundation for the examination of the origins and mechanisms underlying the barriers to compassion, as well as for the development of compassion-enhancing interventions suited to the unique and ongoing challenges of compassion in health.

## Funding and declaration

General support for the study was provided by the University of Auckland. However, the organisation had no input into study design, research questions, data collection, analyses, or interpretation. We hereby declare that all authors meet the criteria for authorship, have approved the final article and that all those entitled to authorship are listed as authors.

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