

Workplace wellbeing in emergency departments in Aotearoa New Zealand 2020

Mike Nicholls, Suzanne Hamilton, Peter Jones, Chris Frampton, Natalie Anderson, Marama Tauranga, Sierra Beck, Alastair Cadzow, Natalie Cadzow, Arthur Chiang, Eugene Fayerberg, Luke Hayward, Alastair MacLean, Adam McLeay, Suzanne Moran, Alexandra Muthu, Alice Rogan, Nikki Rolton, Mark Sagarin, Eunicia Tan, Fay Tomlin, Kim Yates, Vanessa Selak

ABSTRACT

AIM: To quantify staff burnout and wellbeing in emergency departments (EDs) throughout New Zealand (NZ).

METHODS: A national cross sectional electronic survey of New Zealand clinical and non-clinical ED staff was conducted between 9 March and 3 April 2020. Burnout and wellbeing were assessed using the Copenhagen Burnout Inventory (CBI) and a variety of quantitative measures. Differences between measures were assessed by demography and work role using univariate analyses. Multivariate analyses assessed associations between burnout and wellbeing.

RESULTS: 1,372 staff responded from 22 EDs around New Zealand (response rate 43%). Most were female (n=678, 63%), NZ European (n=799, 59%), aged 20–39 years (n=743, 54%) and nurses (n=711, 52%). The overall prevalence of personal burnout was 60%, work-related burnout 55% and patient-related burnout 19%. There was a wide variation of burnout across all EDs. Females and nurses showed the highest degree of burnout by gender and role, respectively. Measures of wellbeing with significant negative correlations with burnout were work-related happiness, work-life balance, job satisfaction and perceived workplace excellence. Work stress had significant positive correlation with burnout.

CONCLUSION: New Zealand ED staff have a high degree of burnout. Safety, financial sustainability and quality of care are likely being adversely affected. Stakeholders can be informed by findings from this study to inspire meaningful interventions in EDs and throughout the New Zealand healthcare system.

Emergency department (ED) work involves high-pressure shift work, high patient volume, unsociable hours and critical decision-making with limited information. Patients and whānau are often physically and psychologically vulnerable in this environment and have rights to effective communication and services of an appropriate standard.¹ A culture of compassionate healthcare is critical to positive patient outcomes despite ED workplace challenges. The ED provides a perfect storm for staff burnout.²

Burnout is defined as “a state of vital exhaustion” in the International Classification of Diseases (ICD-11)³ and is considered the most useful measure of barriers to professional wellbeing.⁴ The importance of

work to workers’ health was illustrated by a 2018 New Zealand government inquiry into mental health, which identified that all workplaces have a critical role in promoting wellbeing.^{5,6} This is enshrined in legislation that requires New Zealand employers to provide a mentally healthy workplace.⁷

Unlike for burnout, there is no universal definition of wellbeing or consistent way of measuring different constructs of wellbeing at work.⁴ Te Whare Tapa Whā, a Māori vision of health, originally documented by Mason Durie in 1982, may be useful for ED staff in Aotearoa. This vision of wellbeing includes attention to taha tinana (the physical dimension), taha whānau (family health), taha hinengaro (mental health) and taha wairua (spiritual health).⁸

Current literature identifies that ED doctors have high levels of burnout compared to other specialties, up to 60% in some studies.⁹ For example, a 2016 study of senior doctors in New Zealand (n=1,487) assessed burnout using the Copenhagen Burnout Inventory (CBI).¹⁰ Along with psychiatrists, emergency physicians (n=102) had significantly higher mean work-related burnout scores than colleagues from other specialties.¹⁰ A 2017 meta-analysis of international studies of ED nurses (n=1,588) estimated that 30% met at least one of the criteria for burnout as per the Maslach Burnout Inventory (MBI).¹¹ Other ED workgroups are less well studied: this was considered an important gap in the literature, and hence this study sought to include all staff groups within the ED.¹²

This work follows a 2018 pilot study (n=187) that measured burnout at Auckland City Hospital ED (AED).¹³ Participants included doctors, nurses, clerical staff, orderlies and others. The proportion with high personal burnout was 42.1% (35.1%–49.3%, 95%CI), work-related burnout 35.0% (28.4%–42.1%, 95%CI) and patient-related burnout 27.9% (21.9%–34.8%, 95%CI). Of the doctors in this cohort (n=40), 30% met criteria for high personal burnout, and nurses (n=110) had the greatest proportion (50.9%) of personal burnout relative to other work groups. To the authors' knowledge, this remains the only peer-reviewed study involving all workgroups in a New Zealand ED.

The aim of this study was to assess burnout and wellbeing across New Zealand ED staff and identify subgroups with the greatest need of intervention. The design of the study allows repetition at future intervals to assess responses to wellbeing initiatives.

Methods

A national cross-sectional electronic survey of New Zealand ED staff, Workplace Wellbeing in Emergency Departments in Aotearoa New Zealand (WoWe@NZEDs 2020), was conducted between 9 March and 3 April 2020. The primary objective of the study was to quantify burnout in this national ED population. Secondary objectives were to measure ED staff wellbeing and identify at-risk subgroups.

A local site coordinator at each participating ED was recruited to promote the study, support and maximise participation and develop a sense of local ownership of the project. They were eligible for funding of up to NZ\$1,500 per site. The survey was advertised three times in the Australasian College for Emergency Medicine (ACEM) bulletin, a weekly electronic newsletter sent to ACEM membership.

Participants were categorised into four work groups: nurse; doctor; other clinical (healthcare assistant, radiographer, phlebotomist, physiotherapist social worker); or non-clinical (cleaner, administration, orderly, security, others). EDs were categorised into ACEM training designation (major referral, regional referral, urban district, other) and patient census (based on annual presentation numbers, with ranges determined by the study authors).

The WoWe@NZEDs 2020 survey consisted of five sections: participant information and consent; demographic questions; burnout questions; other wellbeing questions; and a qualitative section constituted by six questions requiring open-ended responses (Supplement 1). This survey was based upon the survey instrument used in the 2018 pilot study in Auckland ED.¹³ The qualitative results are reported separately.¹⁴

The CBI was used to assess three domains of burnout:

- Personal burnout: the degree of physical and psychological fatigue and exhaustion experienced by the person.
- Work-related burnout: the degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to his/her work.
- Client-related burnout: the degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to his/her work with clients.

Unlike other tools, the CBI enables participants to attribute the source of their exhaustion to work or other factors, including specifically to "clients" (patients) if relevant.¹⁵ The CBI has previously been used in workforce studies in Australasia.^{10,13} Participants were classified as having domain-related burnout if they scored 50 or more in that domain.

Wellbeing was measured against a variety of standards, including the Net Promoter Score (NPS). The NPS is based upon the question, “How likely are you to recommend this ED as a place to work?” A score of zero suggests respondents would warn people away from applying, and a score of 10 suggests that they would tell everyone they know to apply immediately. Scores of zero to six are designated as “detractors,” seven and eight as “passives” and nine and ten are “promoters.” Ultimately, $NPS = (\# \text{ of promoters} - \# \text{ of detractors}) / \text{total } \# \text{ of respondents}$.¹⁶ Other measures of wellbeing were assessed using the questions shown in Supplement 1.

Burnout and wellbeing measures were compared between subgroups (demography, work group, ED ACEM designation and patient census) using Chi-squared or Fisher’s exact tests for categorical variables and 1-way ANOVA or Wilcoxon summed rank tests for continuous variables. A two-tailed p-value <0.05 was taken to indicate statistical significance.

Ethics approval was granted by Auckland Health Research Ethics Committee (ref AH1164) and locality approvals were gained for each participating site. To ensure departmental anonymity, results were presented as percentages rather than absolute numbers. Departments were anonymised using sequential letters of the alphabet (letters A to V). The department with the highest prevalence of personal burnout was department A, and the department with the lowest prevalence department V (Figure 1).

The survey was accessed anonymously by participants using an electronic link emailed to local investigators for distribution electronically or in paper form. Survey data were stored on a REDCap (REDCap 9.4.1, 2020, Vanderbilt University, Nashville, Tennessee, USA) database, located on a secure server at the University of Auckland.

Results

A total of 1,372 participants from all staff groups responded from 22 EDs around New Zealand. The estimated response rate was 43% (see Supplement 2 for more details). Most participants were female (n=1,071, 78%), NZ European (n=799, 59%) and aged 20–39 years (n=743, 54%). Over half the

cohort were nurses (n=711, 52%), and 7% were Māori (n=102). Demographic data for participants are shown in Table 1.

The overall prevalence of burnout was:

- Personal: 816/1,372, 59.5% (95%CI 56.9, 62.0)
- Work-related: 750/1,371, 54.7% (95%CI 52.1, 57.3)
- Patient-related: 265/1,366, 19.4% (95%CI 17.4, 21.6)

Mean burnout was:

- Personal: 51.5 (95%CI 50.5, 52.4)
- Work-related: 49.9 (95%CI 48.9, 50.9)
- Patient-related: 31.0 (95%CI 30.0, 32.0)

Table 2 shows the prevalence of burnout by demographic factors. Continuous data are provided in Supplement 4.

Annual census of patient presentations per annum and ACEM accreditation status of departments are reported in Supplement 3. Six EDs had an annual patient census over 50,000 (large), nine had 25,000–50,000 (medium) and the remaining seven had fewer than 25,000 (low). Although participants from large census departments had the highest prevalence of burnout in each domain, differences between departments, based upon annual census, were not statistically significant. Prevalence of burnout was similar in departments with medium and low annual patient census.

Staff working in major referral hospitals had the highest proportion of burnout in each domain and those in urban district departments had the lowest. These results were statistically significant for each burnout domain.

Burnout by gender showed statistically significant higher prevalence in females than males for personal and work-related burnout. The highest prevalence in all three burnout domains was in the “other” group (encompassing those identifying as transgender, non-binary, gender-diverse and those who preferred not to answer), although numbers in this group were small, which led to wide confidence intervals for burnout prevalence estimates. Participants with missing data for gender are not shown.

NZ Europeans had the highest proportion of participants with personal (63.0%) and work-related (57.9%) burnout. Māori

Table 1: Demographic data.

Participants		
Gender identity	n	%
Female	1,071	78.1
Male	287	20.9
Other	10	0.7
Missing	4	0.3
Total	1,372	100
Ethnicity		
NZ European	799	58.5
Other	322	23.6
Māori	102	7.5
Asian	101	7.4
Pasifika	41	3
Total	1,365	100
Age groups, years		
20–29	378	27.6
30–39	365	26.6
40–49	287	20.9
50–59	249	18.2
60 or above	87	6.3
Prefer not to answer	6	0.4
Total	1,372	100
Profession		
Nurse	711	51.8
Doctor	364	26.5
Clerical	158	11.5
Other	65	4.7
Healthcare assistant	41	3
Security	16	1.2
Orderly	12	0.9
Cleaner	3	0.2
Missing	2	0.2
Total	1,372	100

Table 1: Demographic data (continued).

Participants		
Doctor role		
Specialist	142	39.2
Registrar	102	28.2
House surgeon	89	24.6
MOSS*	19	5.2
Fellow	7	1.9
Other	3	0.8
Missing	2	0.6
Total	364	100
Medical specialty		
Emergency medicine	319	88.1
Other	32	8.8
Rural hospital generalist	11	3
Missing	2	0.6
Total	364	100
Nurse role		
Level 4	235	33.2
Level 3	158	22.3
Level 2	112	15.8
Senior nurse (eg, NUM)	103	14.6
Advanced nurse (eg, NP, CNS)	55	7.8
Other	24	3.4
New graduate	18	2.5
Enrolled nurse	2	0.3
Missing	4	0.6
Total	711	100

*MOSS = Medical Officer of Specialist Scale. NUM = Nurse unit manager. NP = Nurse practitioner. CNS = Clinical nurse specialist

Table 2: Prevalence of burnout.

	Personal n % (95%CI)	Work-related n % (95%CI)	Patient-related n % (95%CI)
Department census			
>50,000 (large)	445/698 63.8% (60.1, 67.3)	416/697 59.7% (55.9, 63.4)	154/695 22.2% (19.1, 25.4)
25,000–50,000 (medium)	286/505 56.6% (52.2, 61.0)	259/505 51.3% (46.8, 55.7)	79/503 15.7% (12.6, 19.2)
<25,000 (low)	85/169 50.3% (42.5, 58.1)	75/169 44.4% (36.8, 52.2)	32/168 19.0% (13.4, 25.8)
p=	p=0.19	p=0.08	p=0.07
ACEM designation			
Major referral	394/605 65.1% (62.2, 68.0)	371/604 61.4% (58.5, 64.3)	144/602 23.9% (21.3, 26.5)
Urban district	126/243 51.9% (45.8, 58.0)	100/243 41.2% (35.2, 47.2)	26/241 10.8% (7.0, 14.6)
Regional referral	222/383 58.0% (53.23, 62.8)	209/383 54.6% (49.8, 59.4)	65/383 17.0% (13.4, 20.6)
Other	74/141 52.5% (44.4, 60.6)	70/141 49.6% (41.5, 57.7)	30/140 21.4% (14.7, 28.1)
p=	p=0.001	p<0.001	p<0.001
Gender			
Male	128/287 44.6% (39.1, 50.2)	131/287 45.6% (40.0, 51.2)	56/286 19.6% (15.2, 24.0)
Female	678/1,071 63.3% (60.8, 65.8)	609/1,070 56.9% (54.3, 59.5)	202/1,066 18.9% (16.9, 20.9)
Other	7/10 70.0% (41.6, 98.4)	7/10 70.0% (41.6, 98.4)	5/10 50.0% (19.0, 81.0)
p=	p<0.001	p=0.002	p=0.046

Table 2: Prevalence of burnout (continued).

	Personal n % (95%CI)	Work-related n % (95%CI)	Patient-related n % (95%CI)
Ethnicity			
NZ European	503/799 63.0% (60.0, 66.1)	463/799 57.9% (54.8, 61.0)	152/796 19.1% (16.6, 21.6)
Māori	51/102 50.0% (40.4, 59.6)	49/101 48.5% (38.9, 58.1)	12/100 12.0% (5.8, 18.2)
Asian	52/101 51.5% (41.9, 61.2)	46/101 45.5% (35.9, 55.1)	16/101 15.8% (8.8, 22.8)
Pasifika	23/41 56.1% (41.0, 71.2)	23/41 56.1% (41.0, 71.2)	10/41 24.4% (11.3, 37.5)
Other	182/322 56.5% (51.3, 61.7)	163/322 50.6% (45.3, 55.9)	72/321 22.4% (18.0, 26.8)
p=	p=0.019	p=0.032	p=0.140
Age			
20–29	223/378 59.0% (54.2, 63.8)	204/377 54.1% (49.3, 58.9)	83/375 22.1% (18.1, 26.1)
30–39	231/365 63.3% (58.5, 68.1)	203/365 55.6% (50.7, 60.5)	74/364 20.3% (16.3, 24.3)
40–49	176/287 61.3% (55.8, 66.8)	159/287 55.4% (49.8, 61.0)	54/286 18.9% (14.5, 23.3)
50–59	141/249 56.6% (50.6, 62.6)	139/249 55.8% (50.0, 61.8)	41/249 16.5% (12.0, 21.0)
60+	41/87 47.1% (36.7, 57.5)	41/87 47.1% (36.7, 57.5)	12/86 14.0% (6.8, 21.2)
p=	p=0.061	p=0.668	p=0.283

Table 2: Prevalence of burnout (continued).

	Personal n % (95%CI)	Work-related n % (95%CI)	Patient-related n % (95%CI)
Role			
Nurse	489/711 68.8% (65.7, 72.0)	447/710 63.0% (59.7, 66.3)	183/709 25.8% (22.8, 28.8)
Doctor	184/364 50.5% (45.6, 55.5)	174/364 47.8% (42.9, 52.7)	49/362 13.5% (10.1, 16.9)
Non-clinical	92/192 47.9% (41.0, 54.8)	87/192 45.3% (38.4, 52.2)	25/190 13.2% (8.5, 17.9)
Other clinical	49/103 47.6% (38.1, 57.2)	40/103 38.8% (29.5, 48.1)	8/103 7.8% (2.7, 12.9)
p=	p<0.001	p<0.001	p<0.001

had the lowest proportion of participants with personal burnout (50.0%), and Asian participants had the lowest proportion of work-related burnout (45.5%). Pasifika participants had the highest proportion of patient-related burnout, although differences in patient-related burnout by ethnicity were not statistically significant.

Age-related prevalence of burnout was not statistically significant. Participants aged 60 years and over showed the lowest rates of burnout in all three domains.

Differences in the proportion of burnout between workgroups were statistically significant for all burnout domains. In each domain, nurses had the highest proportion of burnout (68.8% personal burnout, 63% work-related burnout, 25.8% patient-related burnout), followed by doctors and non-clinical staff, with other clinical staff having the lowest proportion.

Figure 1 shows the range of prevalence of burnout across individual departments. There was a wide range in the prevalence of personal burnout, from 39% (95%CI 22–59) in department V to 87% (95%CI 52–98) in department A.

As outlined in the methods section, the Net Promoter Score (NPS) is based upon the question, “How likely are you to recommend

this ED as a place to work?” There were 472 (35.8%) detractors, 494 neutrals and 353 (26.8%) promoters, giving an NPS of -9.0% (26.8%–35.8%). Table 3 demonstrates that those with burnout (“yes”) scored the NPS question lower than those without burnout (“no”) in all domains of burnout.

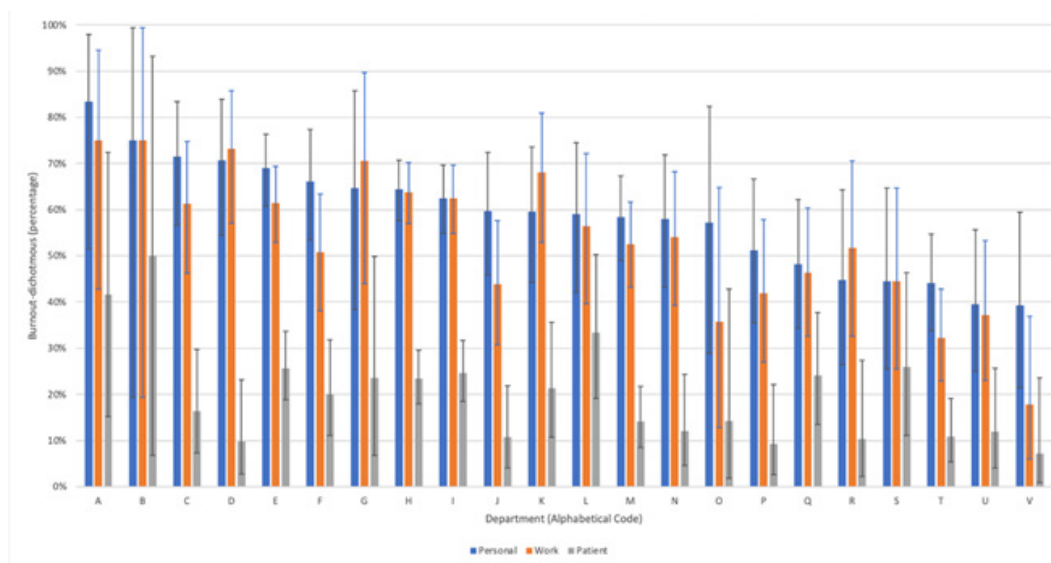
When compared to burnout, participant responses to the NPS question were inversely correlated with all domains of burnout (all $p < 0.001$):

- Personal: $n=1,319$, $r=-0.465$
- Work-related: $n=1,319$, $r=-0.538$
- Patient-related: $n=1,318$, $r=-0.373$

That is, as mean burnout scores increased, scores on the NPS question decreased. The results of other wellbeing questions and their correlations with mean burnout are found in Supplement 5. Of these measures, the negative correlation between happiness and personal burnout showed the largest magnitude (Figure 2).

Measures of wellbeing with clinically and statistically significant negative correlations to work-related burnout were work-related happiness, work-life balance, job satisfaction and perceived workplace excellence, whereas work stress had a significant positive correlation (ie, as work stress scores increased, work-related burnout

Figure 1: Prevalence of burnout in each emergency department.



scores increased). Work motivation was significantly negatively correlated with patient-related burnout.

Discussion

Staff burnout is considered a risk to the provision of safe high-quality healthcare.¹⁷ Although personal resilience factors must be optimal, system approaches are considered necessary for meaningfully and sustainably addressing burnout in healthcare.¹⁷ This study demonstrates a high prevalence of burnout in New Zealand EDs. The highest rates of personal burnout were reported in nurses, NZ Europeans, those working in major referral centres or larger departments and respondents whose gender identity was female or other.

Burnout in this study (personal burnout 59.5%, work-related 54.7%, patient-re-

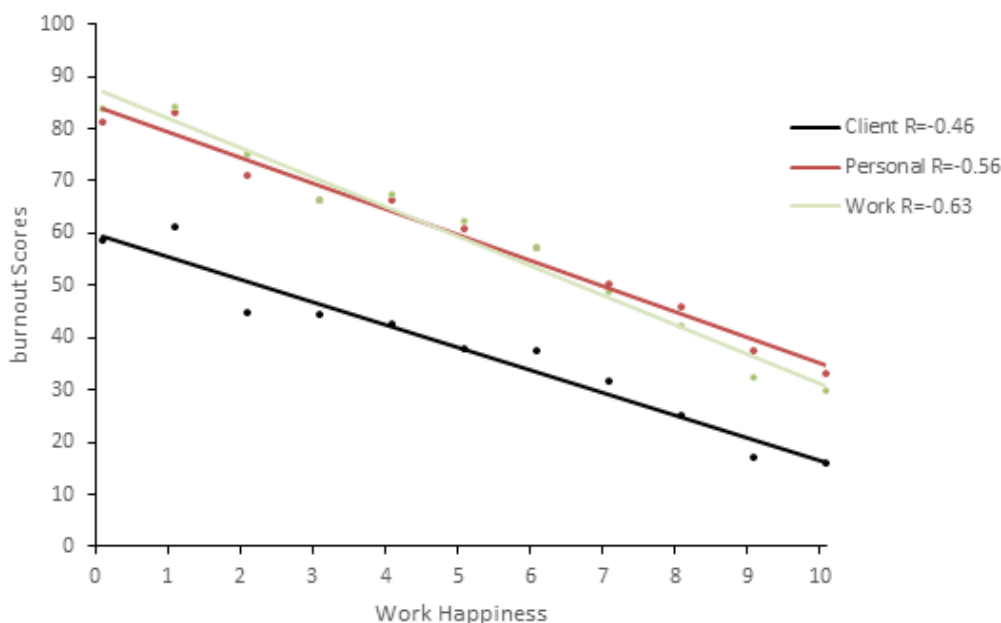
lated 19.4%) was higher than other recent studies using the CBI. The 2019 ACEM workforce survey (n=749) demonstrated a high prevalence of personal burnout (45%), work-related burnout (50%) and patient-related burnout (13%).¹⁸ The 2015 Association of Salaried Medical Specialists (ASMS) survey (n=1,487) found burnout prevalence in each domain was 50%, 42% and 15% respectively.¹⁰ And a single site NZ ED study (n=187) from 2018 demonstrated burnout prevalence was 42%, 35% and 28%.¹³

Of particular concern to the authors is the very high prevalence of work-related burnout (63.0% 95%CI 59.7, 66.3) in the nursing cohort (n=711). Given the relative size of this workforce (52%) in New Zealand EDs and the importance of excellent nursing in the provision of high-quality patient care, this must be of concern to all stakeholders. In addition to the clinical, moral and ethical

Table 3: Net Promoter Score and correlation with burnout.

	Type of burnout								
	Personal			Work-related			Patient-related		
	Yes	No	p	Yes	No	p	Yes	No	p
Mean (SD) score (0–10)	6.2 (2.5)	7.9 (2.0)	<0.001	5.9 (2.5)	8.0 (1.8)	<0.001	5.6 (2.4)	7.2 (2.4)	<0.001

Figure 2: Work happiness and burnout.



concerns of the largest group in the New Zealand ED workplace demonstrating such a high prevalence of burnout, the financial burden of nurse turnover, although difficult to assess,¹⁹ means the current state of burnout in the New Zealand ED workforce may be financially unsustainable. Investment that improves the wellbeing of New Zealand ED staff, particularly nurses, may make financial sense. As far as the authors are aware, the legal implications of district health boards providing what are arguably mentally unhealthy workplaces are untested.^{5,7}

The authors are not aware of any similar multi-centre ED study on burnout with which to compare these results. This gap in the literature relating to the need to include all workgroups, as highlighted by Dyrbye,¹² was one of the inspirations for the study. A strength of this study is that all ED staff groups were eligible and encouraged to participate, unlike other studies, which have focused only on individual staff groups. Despite this, staff who were neither nurses nor doctors were under-represented in this survey, with only three cleaners and 16 orderlies having responded. These findings likely reflect a systematic problem with engaging some staff groups in the research, which should be addressed in future research efforts.

Those who identified as female or grouped as other reported significantly higher rates of burnout compared to their male colleagues. The gender distribution of the population from which the sample was taken was not collected in this study. Only 8% of nurses in New Zealand identified as male in the latest report from the New Zealand Nurses Organisation (NZNO).²⁰ That 52% of respondents in this survey were nurses (a numerically female dominated occupation) explains the high proportion of females (n=678, 63%) in this study.

Other studies have demonstrated that females are more at risk of work-related burnout compared to male colleagues.^{21–23} Females are more likely to be dissatisfied with their work–life balance and experience anxiety and depression relating to work stressors.^{22,23} Female physicians are more at risk of gender discrimination, sexual harassment, imposter syndrome (the inability to believe that one's skills, knowledge or

success is deserved) and depression, all of which predispose them to burnout.²³ Furthermore, women are more likely to have partners in full-time employment, to perform domestic household tasks and to provide childcare, all of which increase time pressures and reduce self-care opportunities.²²

An important limitation regarding gender differences and burnout in the available literature is the use of gender as a predominantly binary variable. This does not necessarily recognise the unique challenges of the ED workforce who are members of the LGBTQI+ community. Evidence shows these groups are at increased risk of discrimination and harassment²⁴ that likely increase risk of burnout; further research is needed in this area. Transgender, non-binary and gender-diverse staff with supportive supervisors have increased job satisfaction, highlighting the need to promote inclusive workplace cultures.²⁵

The timing of this study is a noteworthy limitation to the generalisability of these results. The first nationwide COVID-19 pandemic lockdowns occurred during the study period. This likely had some effect on the results; however, it is debatable whether the lockdowns worsened or improved burnout. Regardless, the effects of the pandemic are still ongoing in New Zealand, and the authors suspect work conditions in New Zealand EDs are unlikely to have improved since the period of study. A repeat study, planned in 2022, may help clarify this.

Non-responder bias is an important limitation of this study, but neither the magnitude nor the direction of this bias is clear. Denominator data from the participating EDs were challenging to obtain and incomplete for 14 of the 22 participating EDs. At the eight sites where denominator information was available, the response rate was high (613/1,425, 43%) compared to similar studies.^{10,13,18}

This first nationwide study of New Zealand ED staff found a high degree of burnout, particularly among nurses. Burnout is likely having a deleterious effect on the quality of care provided. Workplace wellbeing in healthcare must be of concern to staff themselves as well as to patients, whānau, employers, policymakers and government. Employers have a legal obligation to provide a healthy working environment.⁷ At a

minimum, these results may provide some degree of objectivity to inform discussions among stakeholders about burnout and wellbeing in the health sector. Although an investigation of potential solutions is beyond the scope of this study, it is hoped that these findings may help inform and inspire much-needed meaningful interventions in New Zealand EDs and elsewhere throughout the New Zealand healthcare system. This is particularly timely given upcoming health system reforms.

Author contributions

MN conceived and designed the study and supervised data collection. This formed the

basis of a dissertation for a Master of Health Sciences at the University of Auckland. CF performed all data analysis. SH drafted the manuscript, and all authors contributed to previous versions. All authors read and approved the final draft.

Supplementary material

- Supplements 1, 2 and 3: [survey questions, response rate and departments](#)
- Supplement 4: [continuous data](#)
- Supplement 5: [burnout \(mean\) and wellbeing correlations](#)

Competing interests:

Nil.

Acknowledgements:

Thank you to the Australasian College for Emergency Medicine for supporting the research with the 2019 Morson Taylor Research Grant and the A+ Trust Research Grant Review Board for financial support for this research. Thanks to Derryl Hayman from University of Auckland library for assistance with the literature search; the team from Cactuslab for website design (www.woweated.com); Dr Emma Batistich for help with infographics; Graham Keane for REDCap assistance, design and troubleshooting; Dr Alexandra Muthu for occupational health input, in the middle of a pandemic. Thank you to all local site investigators and research assistants for working hard in your workplaces to recruit colleagues; thank you to all participants for taking the time to share your perspectives - we hope this is merely a point along our road towards improvement for ourselves, each other, our whānau and our patients. Ngā mihi nui. The WoWe@NZEDs 2020 study is dedicated to friends and colleagues
Dr Justine Cooper and Dr Chris Cresswell.

Author information:

Mike Nicholls: Emergency Department, Auckland City Hospital,
Auckland District Health Board.

Suzanne Hamilton: Emergency Department,
Christchurch Public Hospital, Canterbury District Health Board.

Peter Jones: Emergency Department, Auckland City Hospital, Auckland District Health Board
and Dept of Surgery, Faculty of Medical and Health Sciences, University of Auckland.

Chris Frampton: Professor Biostatistics, University of Otago.

Natalie Anderson: Emergency Department, Auckland City Hospital,
Auckland District Health Board and School of Nursing, Faculty of Medical
and Health Sciences, University of Auckland.

Marama Tauranga: Taranaki, Ngāti Maniapoto, Tainui; Manukura:
Executive Director Toi, Bay of Plenty District Health Board.

Sierra Beck: Emergency Department, Dunedin Hospital SDHB;
and Department of Medicine, University of Otago.

Alastair Cadzow: Emergency Department, Timaru Hospital,
South Canterbury District Health Board.

Natalie Cadzow: Emergency Department, Timaru Hospital,
South Canterbury District Health Board.

Arthur Chiang: Emergency Department, Timaru Hospital, South Canterbury
District Health Board; Department of Medicine, University of Otago.

Eugene Fayerberg: Emergency Department, Whangarei Hospital, Northland DHB.

Luke Hayward: Emergency Department Hutt Hospital, HVDHB.

Alastair MacLean: Emergency Department, Tauranga Hospital,
Bay of Plenty District Health Board.

Adam McLeay: Emergency Department, Southland Hospital,
Southern District Health Board.

Suzanne Moran: Emergency Department Rotorua Hospital, Lakes DHB.

Alexandra Muthu: Occupational and Environmental Physician,
Auckland District Health Board.

Alice Rogan: Emergency Department, Wellington Regional Hospital, CCDHB;
Emergency Department Hutt Hospital, HVDHB; and Department of Surgery and
Anaesthesia, University of Otago, Wellington.

Nikki Rolton: Emergency Department, Wairau Hospital,
Nelson Marlborough District Health Board.

Mark Sagarin: Emergency Departments Hawera and Taranaki Base Hospitals,
Taranaki District Health Board.

Eunicia Tan: Emergency Department, Middlemore Hospital, Counties Manukau Health;
and Department of Surgery, Faculty of Medical and Health Sciences,
University of Auckland.

Fay Tomlin: Wairarapa Hospital, Wairarapa District Health Board.
 Kim Yates: Emergency Departments North Shore & Waitakere Hospitals,
 Waitematā District Health Board and Centre for Medical and Health Science Education,
 Faculty of Medical and Health Sciences, University of Auckland.
 Vanessa Selak: Senior Lecturer and Public Health Physician, University of Auckland.

Corresponding author:

Dr Suzanne Hamilton, Consultant Emergency Physician, Emergency Department, Christchurch Hospital, 2 Riccarton Ave, 8011, 0210321669
 suzanne.hamilton@cdhb.health.nz

URL:

www.nzma.org.nz/journal-articles/workplace-wellbeing-in-emergency-departments-in-aotearoa-new-zealand-2020

REFERENCES

- Muthu AH. Advocating for the advocates, caring for the caregivers: physician health and wellbeing. *N Z Med J*. 2019 May 17;132(1495):7-12. PMID: 31095539.
- Shanafelt TD, Sloan JA, Habermann TM. The well-being of physicians. *Am J Med*. 2003 Apr 15;114(6):513-9. doi: 10.1016/s0002-9343(03)00117-7. PMID: 12727590.
- ICD-11 [Internet]. ICD-11 for Mortality and Morbidity Statistics [cited 2021 Jan 20]. Available from: <https://icd.who.int/browse11/l-m/en>
- Jarden RJ, Sandham M, Siegert RJ, Koziol-McLain J. Quality appraisal of workers' wellbeing measures: a systematic review protocol. *Syst Rev*. 2018 Dec 20;7(1):240. doi: 10.1186/s13643-018-0905-4. PMID: 30572952; PMCID: PMC6300880.
- NZ Government [Internet]. Health and Safety at Work Act. Wellington: Ministry of Business, Innovation and Employment. NZ Government 2015 [cited 2021 Jan 18]. Available from: <https://www.worksafe.govt.nz/managing-health-and-safety/getting-started/introduction-hswa-special-guide/>
- Ministry of Health [Internet]. He Ara Oranga: A report of the Government Inquiry into Mental Health and Addiction. NZ Government 2018 [cited 2021 Jan 20]. Available from: <https://mentalhealth.inquiry.govt.nz/inquiry-report/he-ara-oranga/>
- Worksafe Mahi Haumarua Aotearoa [Internet]. Supporting mentally healthy work[cited 2021 Jan 21]. Available from: <https://www.worksafe.govt.nz/laws-and-regulations/operational-policy-framework/worksafe-positions/supporting-mentally-healthy-work>
- Ministry of Health [Internet]. Maori Health Models – Te Whare Tapa Wha. Ministry of Health 2017 [cited 2021 Jan 22]. Available from: <https://www.health.govt.nz/our-work/populations/maori-health/maori-health-models-te-whare-tapa-wha>
- Shanafelt TD, Boone S, Tan L, Dyrbye LN, Sotile W, Satele D, West CP, Sloan J, Oreskovich MR. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med*. 2012 Oct 8;172(18):1377-85. doi: 10.1001/archinternmed.2012.3199. PMID: 22911330.
- Chambers CN, Frampton CM, Barclay M, McKee M. Burnout prevalence in New Zealand's public hospital senior medical workforce: a cross-sectional mixed methods study. *BMJ Open*. 2016 Nov 23;6(11):e013947. doi: 10.1136/bmjopen-2016-013947. PMID: 27881531; PMCID: PMC5168491.
- Gómez-Urquiza JL, De la Fuente-Solana EI, Albendín-García L, Vargas-Pecino C, Ortega-Campos EM, Cañas-De la Fuente GA. Prevalence of Burnout Syndrome in Emergency Nurses: A Meta-Analysis. *Crit Care Nurse*. 2017 Oct;37(5):e1-e9. doi: 10.4037/ccn2017508. PMID: 28966203.
- Dyrbye LN, Trockel M, Frank E, Olson K, Linzer M, Lemaire J, Swensen S, Shanafelt T, Sinsky CA. Development of a Research Agenda to Identify Evidence-Based Strategies to Improve Physician Wellness and Reduce Burnout. *Ann Intern Med*. 2017 May 16;166(10):743-744. doi: 10.7326/M16-2956. Epub 2017 Apr 18. PMID: 28418518.
- Kumar R, Pio F, Brewer J, Frampton C, Nicholls M. Workplace wellbeing in an urban emergency department in Aotearoa New Zealand. *Emerg*

- Med Australas. 2019 Aug;31(4):619-625. doi: 10.1111/1742-6723.13262. Epub 2019 Feb 27. PMID: 30811901.
14. Anderson N, Pio F, Jones P, et al. Facilitators, barriers and opportunities in workplace wellbeing: A national survey of emergency department staff. *International Emergency Nursing* 2021;57:101046.
 15. Kristensen TS, Borritz M, Villadsen E, Christensen KB. The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress*. 2005;19(3):192-207.
 16. Perlo J, Balik B, Swensen S, Kabcenell A, Landsman J, Feeley D. IHI Framework for Improving Joy in Work. IHI White Paper. Cambridge, Massachusetts: Institute for Healthcare Improvement; 2017
 17. Taking action against clinician burnout: A systems approach to professional well-being. National Academies of Sciences, Engineering, and Medicine. 2019. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25521>.
 18. ACEM [Internet]. Sustainable Workforce Survey, 2019 [cited 2021 Feb 2]. Available from: <https://acem.org.au/Content-Sources/Advancing-Emergency-Medicine/Sustaining-our-workforce/Workforce-sustainability> accessed 2 Feb 2021
 19. North N, Leung W, Ashton T, Rasmussen E, Hughes F, Finlayson M. Nurse turnover in New Zealand: costs and relationships with staffing practises and patient outcomes. *J Nurs Manag*. 2013 Apr;21(3):419-28. doi: 10.1111/j.1365-2834.2012.01371.x. Epub 2012 May 4. PMID: 23405958.
 20. New Zealand Nurses Organisation [Internet]. Nursing workforce. The nursing workforce: a good investment [cited 2020 July 3]. Available from https://www.nurses.org.nz/nursing_workforce
 21. Templeton K, Bernstein J, Sukhera L, Nora LM et al. Gender-Based Differences in Burnout: Issues Faced by Women Physicians. Discussion paper, National Academy of Medicine, Washington DC [Internet]. 2019 [cited 2021 Feb 20]. Available: from <https://nam.edu/gender-based-differences-in-burnout-issues-faced-by-women-physicians/>
 22. Robinson GE. Stresses on women physicians: Consequences and coping techniques. *Depression and Anxiety*. 2003;17(3):180-189. doi:10.1002/da.10069
 23. Adesoye T, Mangurian C, Choo EK, Girgis C, Sabry-Elnaggar H, Linos E. Perceived discrimination experienced by physician mothers and desired workplace changes: A cross-sectional survey. *JAMA Internal Medicine*. 2017;177(7):1033-1036. doi:10.1001/jamainternmed.2017.1394
 24. Eliason MJ, Dibble SL, Robertson PA. Lesbian, Gay, Bisexual, and Transgender (LGBT) Physicians' Experiences in the Workplace. *Journal of Homosexuality*. 2011;58(10):1355-1371. doi:10.1080/00918369.2011.614902
 25. Huffman AH, Mills MJ, Howes SS, Albritton D. Workplace support and affirming behaviors: Moving toward a transgender, gender diverse, and non-binary friendly workplace, *International Journal of Transgender Health*, 2020. DOI: 10.1080/26895269.2020.1861575