


ORIGINAL RESEARCH

Morale, stress and coping strategies of staff working in the emergency department: A comparison of two different-sized departments

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Abstract

Objective: Clinical staff in EDs are subject to a range of stressors. The objective of this study was to describe and compare clinical staff perceptions of their ED's working environment across two different Australian EDs.

Methods: This was a cross-sectional, descriptive, research design that included distribution of three survey tools to clinical staff in two Australian EDs in 2016. Descriptive statistics were reported to characterise workplace stressors, coping styles and the ED environment. These data were compared by hospital and the employee's clinical role (nurse or physician).

Results: In total, 146 ED nurses and doctors completed the survey (response rate: 67%). Despite geographical variation, the staff at the two locations had similar demographic profiles in terms of age, sex and years of experience. Staff

reported moderate levels of workload and self-realisation but low levels of conflict or nervousness in the workplace. Nurses and physicians reported similar perceptions of the work environment, although nurses reported slightly higher median levels of workload. Staff rated the death or sexual abuse of a child as most stressful, followed by workplace violence and heavy workload. Staff used a large range of coping strategies, and these were similar across both sites.

Conclusion: These findings are the first multi-site and multidisciplinary examinations of Australian ED staff perceptions, improving our understanding of staff stressors and coping strategies and highlighting similarities across different EDs. These data support the development and implementation of strategies to improve ED working environments to help ensure professional longevity of ED staff.

Key findings

- ED staff in two different-sized departments within the same healthcare system have similar perceptions of the stressors relating to their work environment.
- Stressors tend to revolve around system and resource concerns.
- Staff within the two departments utilise a wide range of coping mechanisms, which mostly have a positive effect on the perception and management of stress in the workplace.

Key words: coping, morale, stress, survey tools, working environment.

Introduction

Healthcare environments can be stressful places to work^{1,2} as there are a multitude of potential stressors, including psychosocial, work-related and environmental factors. These stressors can impact staff morale and performance, contributing to increased absenteeism, burnout,^{3,4} poor staff retention and decreased job satisfaction,^{5,6} and recent media attention on doctors' suicides in Australia has emphasised the need for a focus on wellness.⁷ Such factors can be detrimental to patient satisfaction and care.^{8–10}

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Public EDs in Australia have seen large increases in the numbers of presentations in recent years, with attendances increasing an average 4.5% per year, a rate three times that of the growth in population.¹¹ The resultant strain on ED services is well recognised¹² and has led to the development of government initiatives to address the increased demand, such as the National Emergency Access Target (NEAT). Both the increasing numbers of presentations and the implementation of NEAT can potentially impact stressors experienced by ED staff and thus affect ED staff well-being.

Studies examining the effect of burnout on staff in EDs^{13–15} have been undertaken in the USA and Australasia, but research regarding the nature of workplace stressors has been limited. The aim of the present study was to describe the ED working environment as perceived by medical and nursing staff working in two different-sized EDs within the same healthcare service. This was a planned sub-study of a larger international project.

Methods

Design

A cross-sectional, descriptive, study design was used.

Sample and setting

This study was undertaken in two public hospital EDs within the same Hospital and Health Service in Queensland, Australia. All medical (Hospital A: $n = 28$; Hospital B: $n = 49$) and nursing (Hospital A: $n = 41$; Hospital B: $n = 78$) staff working in these two EDs were invited to participate in the study. Hospital A is a small regional facility that had approximately 30 000 annual patient presentations to ED, and Hospital B is a larger regional facility that had approximately 50 000 presentations. Hospital B is the major referral centre for the Hospital and Health Service, with multiple medical specialties, paediatrics, orthopaedics and intensive care on site. Hospital A does not have the

same services available, meaning that some patients are transferred from Hospital A to Hospital B. The sites are approximately 30 km apart, with junior medical staff (interns, residents and registrars) rotating through both EDs but very limited interchange among nursing staff and senior medical staff. The survey asked them to respond according to their experiences in their current placement and position.

Following an introductory email about the study from the ED medical and nursing director, study information sessions and questionnaire distribution (in person and via internal mail) were undertaken by a study investigator over a 2 week period in March 2016.

Data collection

Data were collected via a self-completed questionnaire, which was distributed to all medical and nursing staff within the two departments via teaching sessions and handover meetings during the 2 week period. Completed unidentified questionnaires were returned via post in reply-paid envelopes. Consent was implied upon return of a completed questionnaire. The study received human research ethics committee approval.

Measures

The questionnaire contained three instruments: the Working Environment Scale-10 (WES-10),¹⁶ the Jalowiec Coping Scale part A (JCS-A)¹⁷ and workplace stressors. Demographic information pertaining to age, sex, professional role and clinical experience were also collected.

The WES-10 was used to describe staff satisfaction with their working environment in terms of morale and stress. This is a validated tool¹⁸ that comprises 10 items assessing four aspects of the working environment: (i) self-realisation, or the extent to which workers feel supported in the work environment (four items); (ii) workload, or the number of tasks assigned to employees and the degree to which they believe they must undertake multiple tasks at once (two items); (iii) conflict, or the

degree to which employees have interpersonal conflicts and loyalty problems on the job (two items); and (iv) nervousness, the extent of worry, nervousness and tension workers feel on the job (two items). Scores for each item range from 1 to 5, with higher scores indicating a higher level of that construct.

Confirmatory factor analysis of the WES-10 scale was undertaken. Model fit was assessed using the likelihood ratio chi-square, the comparative fit index (CFI), Tucker–Lewis Index (TLI; both preferably above 0.95), root mean square error of approximation (RMSEA, preferably below 0.08) and standardised root mean square residual (SRMR, preferably below 0.08).¹⁹ The hypothesised four-factor structure provided a reasonable fit to the data ($\chi^2 = 42.9$, $P = 0.05$, TLI = 0.93, CFI = 0.94, RMSEA = 0.06, SRMR = 0.07) and was retained for the present study. Cronbach's alpha for the self-realisation scale was 0.73. Spearman-Brown correlations were 0.747 for workload, 0.58 for conflict and 0.53 for nervousness.

The JCS-A was used to assess coping strategies of ED clinical personnel. It has been previously used with patients^{20,21} and hospital (surgical unit) staff.²² The JCS comprises 60 items incorporating coping strategies such as facing the problem, avoiding the problem, positive thinking, pessimistic thinking, emotive coping, doing things to make yourself feel better and using support systems. Respondents report how often they have used each coping method, with scores for each item ranging from 0 (*never used*) to 3 (*often used*). Factor analysis of the JCS showed that the hypothesised eight-factor model provided a poor fit to the data ($\chi^2 = 3001$, $P < 0.01$, TLI = 0.44, CFI = 0.47, RMSEA = 0.08, SRMR = 0.11). We were unable to find a suitable alternative factor structure, and previous validation studies have also failed to find support for an eight-factor structure.^{20–22} As such, the JCS items were not combined into subscales, and items were considered individually within the present study.

Workplace stressors were assessed using the scale developed by Ross-Adjie and colleagues in a study identifying stress-evoking experiences in ED

TABLE 1. Baseline characteristics of the sample by hospital and position†

Characteristic	Hospital A (n = 44)			Hospital B (n = 85)		
	All staff (n = 44)	Doctors (n = 16)	Nurses (n = 27)	All staff (n = 85)	Doctors (n = 27)	Nurses (n = 53)
Median age (IQR) (years)	38 (33–45)	35 (30–43)	43 (35–48)	36 (30–45)	32 (29–42)	36 (31–46)
Female sex, n (%)	28 (70.0)	4 (30.8)	23 (88.5)	56 (73.7)	8 (32.0)	45 (93.8)
Job title, n (%)						
Enrolled nurse	2 (4.6)	0 (0.0)	2 (7.4)	0 (0.0)	0 (0.0)	0 (0.0)
Registered nurse	23 (52.3)	0 (0.0)	23 (85.2)	51 (60.0)	0 (0.0)	51 (96.2)
Nurse practitioner	2 (4.6)	0 (0.0)	2 (7.4)	2 (2.4)	0 (0.0)	2 (3.8)
Intern	2 (4.6)	2 (12.5)	0 (0.0)	2 (2.4)	2 (7.4)	0 (0.0)
Registrar	9 (20.5)	9 (56.3)	0 (0.0)	16 (18.8)	16 (59.3)	
Consultant	5 (11.4)	5 (31.3)	0 (0.0)	9 (10.6)	9 (33.3)	0 (0.0)
Other/not reported	1 (2.3)	0 (0.0)	0 (0.0)	5 (5.9)	0 (0.0)	0 (0.0)
Median years working as a clinician (IQR)	11 (6–13)	9 (3–14)	11 (7–13)	11 (6–13)	7 (3–13)	11 (7–14)
Median years working in current role (IQR)	5 (2–11)	2.5 (0–8.5)	6 (4–12)	5 (2–10)	3 (1–5)	6 (3–10)
Current FTE, n (%)						
≤0.5	3 (7.5)	2 (14.3)	1 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)
0.5–0.79	16 (40)	2 (14.3)	13 (52.0)	30 (37.5)	3 (11.5)	25 (49.0)
0.8–0.99	5 (12.5)	0 (0.0)	5 (20.0)	21 (26.3)	1 (3.9)	19 (37.3)
1.0	16 (40.0)	10 (71.4)	6 (24.0)	29 (36.3)	22 (84.6)	7 (13.7)

†Data were missing for job title (n = 6), age (n = 5), sex (n = 13), years working as a clinician (n = 5), years working in current role (n = 4), current FTE (n = 9).

nursing staff.²³ Respondents were provided with a list of 15 events, such as workplace violence, high acuity patients and dealing with the media, and asked to rate how stressful they would find each event on a scale of 1–15.

Data analysis

Data were analysed using Stata version 14 (StataCorp, College Station, TX, USA). Descriptive statistics were used to characterise the sample in terms of demographics and professional experience. Such characteristics were grouped by study site and the employee's clinical role (doctor or nurse).

Descriptive data on the WES, JCS and work stress items were provided to characterise the workplace environment. Such data were categorised by hospital and employee's clinical role. The WES and JCS items displayed a

skewed distribution, and so, medians with interquartile range (IQR) were reported to provide a measure of central tendency and range. Mann–Whitney *U*-tests were used to compare medians by hospital and clinical role. For JCS items, the proportion of staff who reported that they 'always' used a particular coping strategy was calculated to provide information about the most commonly used strategies. χ^2 tests, or Fisher's exact tests (where expected cell values were less than 5) were utilised to compare across hospital and clinical role.

Results

Response rates

From Hospital A, questionnaires were returned from 27 of the 41 (66%) nursing staff, 16 of the 28 (61%) medical staff and one individual who did

not report their job title. The total response rate from Hospital A was 63.8%. From Hospital B, questionnaires were returned from 53 of the 78 (68%) nursing staff, 27 of the 49 (55%) medical staff and five staff who did not specify their job title. The total response rate from Hospital B was 66.9%.

Demographic characteristics by hospital are provided in Table 1. Respondents from the two hospitals were similar in terms of baseline characteristics. The majority of participants were female (72.4%) and registered nurses (57.4%). The median time working as a clinician was 11 years, with individuals working a variety of hours each week. Doctors were less likely to be female, more likely to work full time and had fewer years of experience compared to nurses.

TABLE 2. WES subscales by hospital and position†

WES subscale	Hospital A (n = 44)	Hospital B (n = 85)	P	Nurses (n = 80)	Doctors (n = 43)	P
Self-realisation	2.5 (2.25–3.0)	3.0 (2.5–3.25)	<0.01	2.75 (2.25–3.25)	3.0 (2.5–3.25)	0.43
Workload	2.5 (2.0–3.0)	3.0 (2.5–3.5)	0.01	3.0 (3.0–3.5)	2.5 (2.0–3.0)	<0.01
Conflict	1.0 (0.5–1.5)	1.0 (0.5–2.0)	0.83	1.0 (0.5–2.0)	1.0 (0.5–1.5)	1.00
Nervousness	1.5 (1.0–2.0)	1.5 (1.0–2.0)	0.99	1.5 (1.0–2.0)	1.5 (1.0–2.0)	0.69

†Data are median (IQR).

Data on the WES subscales by hospital are provided in Table 2. Staff reported moderate levels of workload but low levels of conflict or nervousness in their workplace. Staff also reported moderate levels of self-realisation. Staff reported slightly higher levels of self-realisation and workload in Hospital B compared to Hospital A. Nurses and doctors reported similar perceptions of the work environment. One exception was that nurses reported slightly higher median levels of workload compared to doctors.

Data on 15 work stressors are provided in Table 3. Staff rated the death or sexual abuse of a child as most stressful, followed by workplace violence and heavy workload. Administrative or budgetary concerns and dealing with the media were ranked least stressful. Compared to doctors, nurses reported that they found the following factors more stressful: workplace violence, heavy workload, high acuity patients, inability to provide optimal care, environmental concerns, infectious diseases exposure and concerns about a critically injured or dying family member.

Data on coping strategies used by staff are provided in Table S1. Each of the 60 coping strategies listed was reported as being used by at least one responding staff member. The six most and least frequently reported coping strategies, reported as 'always used', are summarised in Table 4. These were similar across both sites. Thinking out different ways to handle the situation, talking the problem over with family or friends and trying to keep a sense of humour were the most commonly reported coping strategies.

Discussion

To our knowledge, this is the first multi-site and multidisciplinary study of its kind to be undertaken in Australian EDs. Staff reported moderate levels of perceived workload, a moderate belief that the department supports their professional growth, low levels of conflict and low levels of nervousness or tension. They used a large range of coping strategies. These findings were similar across sites and professional groups.

The WES-10 results indicate that staff in both EDs experience more concerns regarding workload rather than nervousness or conflict. 'Workload' as the factor impacting most on staff is a finding noted in other ED-based studies undertaken in Australia and Spain.^{24,25} Staff reported that the environment provides moderate support for their professional growth and development (self-realisation). However, the findings here are lower than reported in previous studies.^{16,26}

A wide range of coping strategies was reported as being used by ED staff. The main coping strategies employed by staff are generally positive/active coping strategies, which have been shown to have a positive effect on the perception and management of stress and overall performance in the workplace.^{27,28} Frequently used strategies emphasise the importance of social support and problem solving, both of which are processes health institutions and educational processes can support and enhance. It has been suggested in other literature that coping styles of

ED professionals might have an effect on the risk of burnout.²⁹ There have been studies suggesting that resilience training might be beneficial to staff working in stressful environments, such as first responders,^{30,31} but there is minimal literature regarding the use of resilience training for ED staff. By examining the coping strategies of ED staff further, it might be possible to develop resilience training/inoculation interventions to prevent potential burnout by testing of different strategies to manage the identified stressors. However, this does not discount the need for organisational recognition of and response to underlying causes of staff stress. Indeed, there is recent literature suggesting that organisational strategies can be used to improve staff well-being, including strategies focussed on culture change, team building and leadership.³²

When ranking individual stressors, the results indicate that the two departments have similar perceptions of the stressors they experience within the ED environment. The top three stressors for both departments were heavy workload/poor skill mix, death/sexual abuse of a child and inability to provide optimum care, findings that are in keeping with previous research.^{23,24} Stressors that ranked lower included administration/budgetary concerns/dealing with the media. It might be that this finding reflects the small number of respondents who have to deal with these aspects as part of their daily responsibilities. The biggest difference seen between sites was concern for delivery of care to high acuity patients (8.5 at Hospital A and 10 at

TABLE 3. *Work stressors by hospital and position†*

Stressors	Hospital A (<i>n</i> = 44)	Hospital B (<i>n</i> = 85)	<i>P</i>	Nurses (<i>n</i> = 80)	Doctors (<i>n</i> = 43)	<i>P</i>
1. Workplace violence	12 (6–13)	12 (9–13)	0.83	12 (10–13)	11 (4–12)	0.02
2. Heavy workload and poor skill mix	12 (10–14)	12 (11–14)	0.54	13 (12–14)	11 (8–13)	<0.01
3. Mass casualty incident	11 (7–14)	11 (8–13)	0.97	11.5 (8–14)	10 (6–13)	0.21
4. Death or sexual abuse of a child	13 (10–15)	14 (11–15)	0.76	13.5 (11–15)	13 (10–14)	0.31
5. High acuity patients	8.5 (5–11.5)	10 (8–12)	0.14	10 (7–12)	9 (6–10)	<0.01
6. Inability to provide optimum care	11 (9–13)	12 (10–13)	0.33	12 (10–14)	8 (5–10)	<0.01
7. Environmental concerns (e.g. overcrowding)	10.5 (8–12)	11 (10–13)	0.18	12 (9–13.5)	11 (7–12)	0.03
8. Poor professional relations	11 (8.5–13)	10 (6–12)	0.27	10 (6–12)	10 (7–12)	0.86
9. Crisis management and bereavement	9 (5.5–11.5)	9 (6–11)	0.84	10 (6–12)	9 (5–11)	0.09
10. Infectious diseases exposure	8 (4–11)	7 (5–10)	0.73	8.5 (5–10.5)	5 (4–10)	0.02
11. Medico-legal concerns	10 (6–12.5)	10 (5–12)	0.98	10 (5.5–11)	10 (5–13)	0.52
12. Concerns about professional development	8 (5–11.5)	9 (5–11)	0.58	10 (5–11)	8 (6–11)	0.47
13. Concerns about a critically injured or dying family member and friend	10 (7–14)	12 (6–14)	0.98	12 (8–14)	9 (5–13)	<0.01
14. Administrative or budgetary concerns	5 (2–9.5)	5 (2–9)	0.75	5 (2–10)	5 (2–9)	0.60
15. Dealing with the media	4 (1.5–8.5)	4 (2–7)	0.82	3 (1–7)	4 (3–7)	0.27

†Data are median (IQR). There were missing data for workplace violence (*n* = 3), death or sexual abuse of a child (*n* = 2), high acuity patients (*n* = 2), inability to provide optimum care (*n* = 1), concerns about a dying family member (*n* = 1) and administrative or budgetary concerns (*n* = 1).

Hospital B) and likely reflects the increased incidence of higher acuity of patients presenting to Hospital B. Despite the two departments being different sizes, with fewer numbers and generally lower acuity patients presenting to Hospital A, the experiences of stressors at work as perceived by the staff are very similar. It

is possible that the work culture across the two EDs cross pollinates, even allowing for the perceived differences with high acuity patients.

Study limitations

The present study, part of a larger international project that aims to

describe and evaluate staff perceptions of working in the ED cross-culturally, was performed at two sites within the same hospital and healthcare system. There is some overlap of staff working at both sites, mainly junior doctors and, less frequently, nursing staff and senior medical staff.

TABLE 4. *Most and least frequently reported coping strategies used by ED staff across both sites*

Most frequently reported coping strategies	Least frequently reported coping strategies
Thought out different ways to handle the situation (58.9%)	Took out your emotions on someone else (0.77%)
Talked the problem over with family or friends (57.4%)	Told yourself that the problem was someone else's fault (0.77%)
Tried to keep a sense of humour (56.5%)	Took medication to reduce tension (1.5%)
Tried to look at the problem objectively and see all sides (51.2%)	Did something impulsive or risky that you would not normally do (1.5%)
Tried to keep your life as normal as possible and not let the problem interfere (48.8%)	Told yourself you were just having some bad luck (1.5%)

The similarities between the general distribution of coping strategies across the two sites suggests that either cross-pollination or similar mentor support/previous educational interventions might have directed such coping or that these are the most effective strategies utilised within ED environments; further research on differences between big and small hospitals should include hospitals that are not part of the same network to determine the impact of hospital size compared to belonging to a singular network.

The Ross-Adjie scale was developed to assess workplace stressors in ED nursing staff and has not been validated or utilised for medical staff. It does provide a range of stressors that might be commonly perceived by both medical and nursing staff in ED, but there might be other sources of stress not identified by the scale. Likewise, there might be other coping strategies employed by staff that do not form part of the JCS-A.

The response rate in the present study was high (60–70%), but there is the possibility of response bias; non-responders might have had different perceptions to those reported here. Further work employing a larger sample size is required to identify whether there are differences in perceptions of working environment, stressors and coping strategies by sex, profession and length of experience. Factor analysis was not able to yield a suitable factor structure for the JCS scale, possibly due to a small sample size in comparison to the number of items.

Overall, the current approach to identifying stressors and coping mechanisms, by giving respondents a list and getting them to rate them, might result in stressors and coping styles being identified that would not be reported without prompting. There might also be causes of stress and coping strategies that are not on the list and are, therefore, totally missed. Our planned larger international study will undertake further methodological work in this area and might overcome this limitation; however, further work in this area is required to understand the stressors and types of coping strategies employed by ED staff.

Conclusion

The present study has demonstrated that staff in two different-sized EDs within the same healthcare district have similar perceptions of stressors within the ED environment, as well as similar strategies for managing them. These stressors tend to revolve around system and resource concerns. Further research into system-based solutions to enhance staff coping as well as the staff perceptions of workplace stressors in EDs in different healthcare systems is required to elicit whether these findings are common among ED staff in general.

Competing interests

None declared.

References

- Olofsson B, Bengtsson C, Brink E. Absence of response: a study of nurses' experience of stress in the workplace. *J. Nurs. Manag.* 2003; 11: 351–8.
- Hare J, Pratt CC, Andrews D. Predictors of burnout in professional and paraprofessional nurses working in hospitals and nursing homes. *Int. J. Nurs. Stud.* 1988; 25: 105–15.
- Portoghese I, Galletta M, Coppola RC, Finco G, Campagna M. Burnout and workload among health care workers: the moderating role of job control. *Saf. Health Work* 2014; 5: 152–7.
- Wu S, Li H, Zhu W, Lin S, Chai W, Wang X. Effect of work stressors, personal strain, and coping resources on burnout in Chinese medical professionals: a structural equation model. *Ind. Health* 2012; 50: 279–87.
- Ramirez AJ, Graham J, Richards MA, Cull A, Gregory WM. Mental health of hospital consultants: the effects of stress and satisfaction at work. *Lancet* 1996; 347: 724–8.
- Li L, Hu H, Zhou H *et al.* Work stress, work motivation and their effects on job satisfaction in community health workers: a cross-sectional survey in China. *BMJ Open* 2014; 4: e004897.
- Worthington E, MacKenzie P. More doctor suicides prompt calls for

overhaul of mandatory reporting laws. 2017. [Cited 18 May 2017.] Available from URL: <http://www.abc.net.au/news/2017-04-13/doctor-suicides-prompt-calls-for-overhaul/8443842>

- Rossberg JI, Melle I, Opjordsmoen S, Friis S. The relationship between staff members' working conditions and patients' perceptions of the treatment environment. *Int. J. Soc. Psychiatry* 2008; 54: 437–46.
- Marine A, Ruotsalainen J, Serra C, Verbeek J. Preventing occupational stress in healthcare workers. *Cochrane Database Syst. Rev.* 2006; CD002892.
- Leiter MP, Harvie P, Frizzell C. The correspondence of patient satisfaction and nurse burnout. *Soc. Sci. Med.* 1998; 47: 1611–7.
- Australian Institute of Health and Welfare. Emergency Department Care 2014–2015: Australian Hospital Statistics. Canberra; 2015.
- Richardson DB. Increase in patient mortality at 10 days associated with emergency department overcrowding. *Med. J. Aust.* 2006; 184: 213–6.
- Goh L, Cameron PA, Mark P. Burnout in emergency physicians and trainees in Australasia. *Emerg. Med.* 1999; 11: 250–7.
- Goldberg R, Boss RW, Chan L *et al.* Burnout and its correlates in emergency physicians: four years' experience with a wellness booth. *Acad. Emerg. Med.* 1996; 3: 1156–64.
- Popa F, Arafat R, Purcarea VL, Lala A, Popa-Velea O, Bobirnac G. Occupational burnout levels in emergency medicine—a stage 2 nationwide study and analysis. *J. Med. Life* 2010; 3: 449–53.
- Rossberg JI, Eiring O, Friis S. Work environment and job satisfaction. A psychometric evaluation of the working environment scale-10. *Soc. Psychiatry Psychiatr. Epidemiol.* 2004; 39: 576–80.
- Jalowiec A, Murphy SP, Powers MJ. Psychometric assessment of the Jalowiec coping scale. *Nurs. Res.* 1984; 33: 157–61.
- Rossberg JI, Friis S. Patients' and staff's perceptions of the psychiatric ward environment. *Psychiatr. Serv.* 2004; 55: 798–803.

19. Schreiber JB, Nora A, Stage FK, Barlow EA, King J. Reporting structural equation modeling and confirmatory factor analysis results: a review. *J. Educ. Res.* 2006; **99**: 323–38.
20. Lindqvist R, Carlsson M, Sjoden PO. Coping strategies and quality of life among patients on hemodialysis and continuous ambulatory peritoneal dialysis. *Scand. J. Caring Sci.* 1998; **12**: 223–30.
21. Tu HY, Shao JH, Wu FJ, Chen SH, Chuang YH. Stressors and coping strategies of 20-45-year-old hemodialysis patients. *Collegian* 2014; **21**: 185–92.
22. Wang W, Kong AW, Chair SY. Relationship between job stress level and coping strategies used by Hong Kong nurses working in an acute surgical unit. *Appl. Nurs. Res.* 2011; **24**: 238–43.
23. Ross-Adjie GM, Leslie G, Gillman L. Occupational stress in the ED: what matters to nurses? *Australas. Emerg. Nurs. J.* 2007; **10**: 117–23.
24. Crilly J, Greenslade J, Lincoln C, Timms J, Fisher A. Measuring the impact of the working environment on emergency department nurses: a cross-sectional pilot study. *Int. Emerg. Nurs.* 2017; **31**: 9–14.
25. Garcia-Izquierdo M, Rios-Risquez MI. The relationship between psychosocial job stress and burnout in emergency departments: an exploratory study. *Nurs. Outlook* 2012; **60**: 322–9.
26. Ostermann T, Bertram M, Bussing A. A pilot study on the effects of a team building process on the perception of work environment in an integrative hospital for neurological rehabilitation. *BMC Complement. Altern. Med.* 2010; **10**: 10.
27. Chang EM, Bidewell JW, Huntington AD *et al.* A survey of role stress, coping and health in Australian and New Zealand hospital nurses. *Int. J. Nurs. Stud.* 2007; **44**: 1354–62.
28. Williams S, Dale J, Glucksman E, Wellesley A. Senior house officers' work related stressors, psychological distress, and confidence in performing clinical tasks in accident and emergency: a questionnaire study. *BMJ* 1997; **314**: 713–8.
29. Howlett M, Doody K, Murray J, LeBlanc-Duchin D, Fraser J, Atkinson PR. Burnout in emergency department healthcare professionals is associated with coping style: a cross-sectional survey. *Emerg. Med. J.* 2015; **32**: 722–7.
30. Varker T, Devilly GJ. An analogue trial of inoculation/resilience training for emergency services personnel: proof of concept. *J. Anxiety Disord.* 2012; **26**: 696–701.
31. Gunderson J, Grill M, Callahan P, Marks M. Responder resilience. *JEMS* 2014; **39**: 57–61.
32. Ng JL, Johnson A, Nguyen H, Groth M. Workplace culture improvements: a review of the literature. [Cited 4 Sep 2017.] Available from URL: <http://www.springboard.health.nsw.gov.au/content/uploads/2014/08/FINAL-Workplace-Culture-Lit-Review.pdf>

Supporting information

Additional supporting information may be found in the online version of this article at the publisher's web site:

Table S1. Coping strategies by hospital and position.