The relationship between workplace stress, coping strategies and health status in New Zealand nurses

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This study was part of an international project examining workplace stress among nurses and their coping strategies, and the relationship between stress, coping and health in the Asia-Pacific region. The aim of the present study was to identify dominant workplace stressors for New Zealand nurses, their most used coping strategies, and variables that best predict their mental and physical health. Postal surveys were sent to 190 randomly selected New Zealand nurses employed in clinical areas. Workload was the most common stressor, while "planful" problem-solving, seeking social support, and self-controlling were the most frequently used ways of coping. The link between stressors such as workload and reduced mental health is concerning, especially as effective coping strategies such as problem-solving are already predominantly used by nurses. The findings suggest that nurses' mental health could benefit from a workload that minimises stress, and from increased support in the workplace and encouragement of planned problem-solving.

Introduction

Workplace stress is an increasingly important area of research in this time of persistent global shortages in the nursing workforce. Enduring and unresolved workplace stress affects work satisfaction and contributes to ongoing recruitment and retention problems.[1] The last 30 years have seen a growing interest from researchers in this area, possibly reflecting concerns about the effect on nurses of recent health service restructuring, and the increasingly critical nursing shortages.[1]

This study was part of an international project which used standardised methods to identify sources of workplace stress among nurses, their coping strategies, and the association between nurses' stress, coping and health.[2-6] The data reported on in this article were collected as a part of the Australian and New Zealand combined project which aimed to: (1) determine the relationship between stress, ways of coping with stress, nurse demographic characteristics, and physical and mental health; and (2) identify which of the above factors best predicts physical and mental health.[2,3] Study participants were from Australia and New Zealand. This article presents the data obtained from the 190 New Zealand participants, as research on nurses' workplace stress in New Zealand is lacking. The focus is on identifying the relationship between sources of workplace stress, coping strategies and physical and mental health. A cross-national comparison of nurses' stress and coping is presented in Chang et al.[2]

Literature review

Psychological stress involves a relationship between a person and the environment, whereby demands may strain or exceed that person's resources.[7] Lazarus has suggested that stress can be categorised as harm (psychological damage has occurred), threat (the anticipation of harm) and challenge (difficulties that can be managed through effective coping strategies).[8] "Role stress" is the response to the difference between a person's perceptions of a role's characteristics, and what the person is actually able to do within the role.[4]

The international literature has identified factors which may affect nursing role stress, with the main stressor for nurses being poor workplace conditions.[9] This includes high workloads, understaffing, organisational concerns, a lack of resources, and consequent anxiety about maintaining standards of care.[3,10-16] Other important influences on levels of nursing stress are health service restructuring and relationships with other staff members.[16-18] There is also evidence that dealing with death and dying is a major source of stress for many nurses.[5,6,19]

"Coping" is defined by Folkman and Lazarus as the "cognitive and behavioural efforts to manage specific external and internal demands that are appraised as taxing or exceeding the resources of the person".[20] Folkman and Lazarus have suggested that coping involves either altering the stressor (problem-focused coping) or regulating the stress response by changing internal perceptions of the stressor (emotion-focused coping), or both.

Folkman and Lazarus have identified eight coping strategies.[21] *Confrontive coping* takes an assertive approach to change, while *distancing* involves detachment and minimisation of the significance of the stressor. *Self-controlling* demands regulation of feelings and actions. *Seeking social support* involves taking action to get information, material and emotional support. *Accepting responsibility* is defined as acknowledging personal roles when trying to resolve a problem. *Escape-avoidance* involves wishful thinking and efforts to avoid the issue. *Planful problem-solving* combines an analytical problem-solving approach with deliberate efforts to alter the situation. Finally, *positive reappraisal* focuses on personal growth and creating a positive meaning in response to the situation. Distancing, self-controlling, accepting responsibility, and escape-avoidance are considered as emotion-focused forms of coping, while confrontive coping, seeking social support, planful problem-solving and positive reappraisal are all problem-focused forms of coping.

Studies examining nurses' work stressors, coping strategies and health associations in the Asia-Pacific

region have used a number of common questionnaires, including: (1) the Nursing Stress Scale (NSS) to measure sources of workplace stress; (2) the Ways of Coping Questionnaire (WAYS) to measure processes of coping with stress; and (3) the SF-36 Health Survey Version 2 (SF-36) to measure physical and mental health (which may be affected by stress).[21] [23]

Using the above measures, research has found that the leading stressors for Chinese head nurses are workload, death and dying, and conflict with physicians.[6] The nurses' preferred coping strategies were positive reappraisal, planful problem-solving and self-control. A significant negative correlation was found between mental health and the use of escape-avoidance as a coping strategy. Similarly, nurses in Japan, Thailand, South Korea and Hawaii ranked workload and death and dying as the leading stressors, and their preferred methods of coping were self-control, seeking social support, planful problem-solving and positive reappraisal.[5] Mental health scores for Thai nurses were much lower than scores for nurses from other nations, with conflict with physicians being a predictor of decreased mental health (although this finding could simply reflect local cultural interpretations of the survey, rather than reflecting on the state of nursing in Thailand). As in other studies, workload and death and dying were the most common sources of stress for Australian nurses. Planful problem-solving, self-control and seeking social support were the most commonly used coping strategies.[3] Lower mental health scores were predicted with the use of self-control and escape-avoidance coping strategies. Chang et al compared the role stress, coping strategies and health of Australian and New Zealand nurses, and the data obtained from the New Zealand participants are subject to separate, detailed analysis in the present study.[2]

This study contributes to the empirical literature by examining New Zealand nurses' stress, their coping strategies, and the relationship between stress, coping and health. The research aims were to identify:

1. major workplace stressors affecting New Zealand nurses;

2. the coping strategies that New Zealand nurses most commonly use; and

3. the workplace stressors and ways of coping that best predict the mental and physical health of New Zealand nurses, after controlling for age and experience.

Method

This study used the methodology (including measurement instruments) established by Lambert et al, that is, a postal survey using four questionnaires.[4,5] The research was approved by the Massey University Human Ethics Committee.

Sample

Registered nurses were recruited for the study through the Nursing Council of New Zealand registration database using simple random sampling without replacement. The Nursing Council of New Zealand selected 300 nurses who were employed in clinical areas and posted the surveys on behalf of the researchers (who had no access to the names and addresses of potential participants). The nurses received an introductory letter containing information about the survey background and its purpose, a reply-paid envelope, and the four questionnaires. Every mail-out recipient received a reminder letter approximately one month after the survey was sent. The response rate was 63% (n = 190).

Instruments

Four instruments were used: the NSS; the WAYS; the SF-36; and a demographic questionnaire. The demographic questionnaire, adapted from Lambert et al, requested participants' gender, age, nursing education, years employed as a nurse, years employed in the current clinical unit, and type of clinical unit, and asked whether they intended to leave their current job or the nursing profession within next 12 months.[4,5]

The NSS inventory lists commonly occurring situations that nurses may perceive as stressful.[22] The 34 situations are categorised into seven subscales: workload; death and dying; inadequate preparation to meet the emotional needs of patients and family; lack of support; uncertainty about treatment; conflict with physicians; and conflict with other nurses and supervisors. Frequency of exposure to these is measured on a four-point scale ranging from never (0), occasionally (1), frequently (2), to very frequently (3). Scores on each subscale are the sum score of its constituent items, with more frequent stressors giving higher scores. The total score across all subscales gives a general, aggregate NSS scale, indicating the general frequency of work-related stressful situations. Four measures of internal consistency coefficients reported by Gray-Toft and Anderson ranged from 0.79 to 0.89, which is satisfactory.[22]

The WAYS questionnaire, developed by Folkman and Lazarus, has 66 items that focus on cognitive and behavioural ways of coping with stressful situations.[21] Responses to each item are linked to one of eight scales indicating different ways of coping: confrontive coping; distancing; self-controlling; seeking social support; accepting responsibility; escape-avoidance; planful problem-solving; and positive reappraisal. Responses on four-point scales indicate the extent to which the coping strategies are used, ranging from does not apply (0), used somewhat (1), used quite a bit (2), to used a great deal (3). Raw scores for each scale indicate coping effort for each of the eight ways of coping. Internal consistency alpha coefficients of 0.61 to 0.79 have been reported, which are acceptable.[21] Total scores on emotion-focused and problem-focused coping can be calculated but, as with the NSS, the current study works mainly with the constituent scales to increase the interpretative value.

The SF-36 has 36 items grouped into eight scales: physical functioning; role-physical; bodily pain; general health; vitality; social functioning; role-emotional; and mental health. The total scores on

physical and mental health are calculated using a supplied algorithm, and these two aggregate scales were used for the current study.[23]

Data analysis

Sample characteristics were summarised descriptively. Descriptive statistics were also calculated for the NSS workplace subscale stressors and the total scale score, the eight WAYS coping styles, and the SF-36 physical and mental health scales. The NSS and WAYS subscale score descriptive statistics were based on the average across items, to account for the differing number of items per scale.

Hierarchical linear regressions with pair-wise deletion of missing data were performed to establish: the relationship between frequency of workplace stressors and health, while controlling for the nurses' age and experience at the workplace; and the relationship between the eight coping styles and health, while controlling for the nurses' age and experience, and the frequency of workplace stressors. For the regression equations, the NSS and WAYS scales were calculated by summing items, as per the inventory manuals. The first regression analysis used physical health as the dependent variable, while the second regression analysis used mental health as the outcome. Age and experience measured in years were entered in the first step, followed by workplace stressors in the second step of each hierarchical regression, and the eight coping styles in the third and final step.

Results

Sample description

Of the respondents, 93% (n = 188 valid answers) were female, which is a higher proportion of females than in the total New Zealand nursing and midwifery workforce, of which 90.9% are female.[24] The respondents' mean age was 44.99 years (standard deviation (SD) = 10.23; range = 22–75

years; n = 186), while the median age for New Zealand nurses is 45 years.[25] The mean years of nursing experience was 20.35 years (SD = 11.26; range = 1–50 years; n = 186), and the mean in the current place of work was 5.28 years (SD = 4.99; range = 0–22 years; n = 182). Twenty-four per cent of respondents intended to leave their current job in the next 12 months. Forty-seven per cent had a diploma as their highest qualification, 35% a Bachelor's degree, and 6% a Master's degree. Sixty per cent worked in acute care areas (such as medical or surgical wards, intensive care and emergency units), 13% in mental health settings, 17% in long-term aged care, 3% in assessment and rehabilitation, and 5% in community health.

Table 1 shows the descriptive statistics for the NSS subscales based on item means, the NSS total scale based on item sums, the WAYS coping styles based on item means, and the SF-36 physical and mental health scales. Workload stands out as the most common stressor, with an average equivalent to between occasionally and frequently on the scale. The means for other stressors corresponded to occasionally on the scale. The minimum ratings indicated no occurrence of the stressor. The maximum results were in the region of very frequently. On average, many of the stressors occurred occasionally. Results for the 85th percentiles were between occasionally and frequently on the scale, meaning that a small minority of participants reported workplace stressors as a common occurrence at their workplace.

The most frequent way of coping was planful problem-solving, followed by seeking social support and self-controlling. The least frequent was escape avoidance. Confrontive coping, distancing, accepting responsibility and positive reappraisal were rated as intermediate in frequency of use, compared with other WAYS scales.

The total SF-36 physical health score was slightly above the United States norm, and the total mental health score was about half a standard deviation below the US norm (New Zealand norms being unavailable for the SF-36).

Predictions of health from stress, coping and demographic characteristics

Table 2 shows the overall results for the two regression analyses predicting SF-36 physical and mental health from nurses' age and experience, the NSS and the WAYS scales. According to these two analyses, participants' age, years worked in the unit, frequency of workplace stressors, and coping strategies do not predict physical health but, in combination, are strongly correlated with mental health, accounting for a substantial 41% of mental health variance. Only the regression involving mental health was significant.

None of the three stages of the hierarchical regression predicting physical health were significant. The multiple regression of 0.03 from age and experience alone was non-significant (p = 0.9125). Adding workplace stressors to the model gave no significant increase in predictability of physical health (p = 0.1512), and the further addition of coping styles again offered no significant increase in the prediction of physical health (p = 0.1944).

Table 3 shows the results for the final, third step of the physical health analysis, with age, experience, workplace stressors and coping styles all included. Although regression coefficients (Beta values) were significant for the death and dying stressor, and the accepting responsibility coping style, the lack of significance of the overall model permits these findings to be discounted. Values for sr show semi-partial correlations between the predictors and physical health (that is, correlations between the respective predictor and physical health), while controlling for other predictors. The semi-partial correlations reveal the incremental effect of each predictor on physical health, and for every predictor that effect is low, indicating that each measure independently contributed little to the prediction of physical health. Values for r in Table 3 show zero-order correlations between each predictor and physical health, that is, the correlation, while not controlling for other variables, and these correlations are also low. The overall conclusion from this analysis

TABLE 1
NSS, WAYS and SF-36 scale descriptive statistics

Scale	Mean	Standard deviation	Minimum	Maximum	85th percentile	Median	Number
NSS death and dying	1.17	0.57	0.00	2.71	1.86	1.14	187
NSS conflict with physicians	1.10	0.51	0.00	2.75	1.60	1.00	186
NSS inadequate preparation	1.07	0.59	0.00	3.00	1.67	1.00	186
NSS lack of support	0.89	0.68	0.00	3.00	1.67	1.00	186
NSS conflict with other nurses/supervisors	1.02	0.61	0.00	2.80	1.60	1.00	186
NSS workload	1.61	0.68	0.00	3.00	2.33	1.67	185
NSS uncertainty about treatment	1.09	0.57	0.00	3.00	1.60	1.00	186
NSS total	39.52	15.29	0.00	84.00	57.00	37.00	186
WAYS confrontive coping	0.84	0.55	0.00	3.00	1.33	0.83	184
WAYS distancing	0.89	0.57	0.00	3.00	1.50	0.83	184
WAYS self-controlling	1.25	0.61	0.00	3.00	1.86	1.14	184
WAYS seeking social support	1.31	0.66	0.00	2.83	2.00	1.33	184
WAYS accepting responsibility	0.80	0.70	0.00	3.00	1.50	0.75	184
WAYS escape-avoidance	0.63	0.54	0.00	2.38	1.13	0.50	183
WAYS planful problem-solving	1.53	0.62	0.17	2.83	2.33	1.50	183
WAYS positive reappraisal	0.95	0.64	0.00	3.00	1.57	0.86	182
SF-36 physical health	52.44	6.74	32.22	66.12	58.67	53.48	183
SF-36 mental health	45.46	10.32	8.29	63.48	55.63	47.20	183

is that age, experience in the unit, frequency of nursing workplace stressors, and stress coping styles did not significantly predict physical health.

A different picture emerges for mental health, which was strongly predicted by age, experience, workplace stressors and coping styles (see Table 2). When only age and experience were included in the model, age alone significantly predicted mental health (p = 0.0295). Increased age was associated with better mental health. Adding the NSS scales to the model for the second step of the analysis added significant predictive capacity to the model (p = < 0.0001). At this second step, instead of age, three of the stressors were significant (p = < 0.05),

with more frequent occurrence of lack of support, workload and uncertainty about treatment being associated with reduced mental health. Adding the eight coping styles in the model's third step further and significantly improved the model's prediction of mental health (p = < 0.001). The value of R^2 shows that more than 40% of variation in mental health scores was predicted by the NSS workload and the WAYS coping responses — which is, perhaps surprisingly, high.

Table 4 sets out the results for the final stage of the mental health hierarchical regression. Higher occurrence of lack of support and workload stress, along with escape-avoidance and planful problem-

TABLE 2
Hierarchical regression summary tables

SF-36	Multiple regression	Adjusted R^2	Standard error estimate	$F_{(17, 142)}$
Physical health	0.37	0.03	6.63	1.34
Mental health	0.69	0.41	7.90	7.63*

* $p < 0.0001$.

solving, were significantly associated with mental health outcomes. Semi-partial correlations indicate a weak and negative relationship between lack of support, escape-avoidance and mental health. Higher frequency of these stressors and greater use of escape-avoidance were associated with reduced mental health outcomes. Planful problem-solving was associated with improved mental health. It should be emphasised that escape-avoidance and planful problem-solving influenced mental health in opposite directions. Escape-avoidance (which is an emotion-focused coping style) affected mental health negatively, while planful problem-solving (which is a problem-focused coping style) had a positive effect on mental health.

Discussion

The finding that workload and death and dying are the most frequent stressors for the New Zealand nurses in this study matches the findings of other studies carried out in the Asia-Pacific region.[3-6] The everyday work of nurses is complex and intense, with unpredictable care requirements shaped by the most serious events of human existence: death, dying and serious illness. The NSS items relating to workload include questions about the organisational issues that affect the core aspects of nursing: lack of time to provide emotional support; lack of time to complete essential tasks; and inadequate staff to provide care. The NSS items relating to death and dying also focused on critical aspects of nursing work: discussing with patients their impending death; witnessing suffering; and the personal loss resulting from the death of patients. Individual nurses have limited control over the frequency of both workload and death and dying stressors in the

institutional health workplace. Nurses have limited control over the stressful situations reported with moderate frequency, that is, conflict with physicians and other nurses, along with uncertainty concerning treatment. Therefore, it is not surprising to find that nurses often have — or perceive that they have — little control and autonomy in the workplace, both in New Zealand and other countries.[10,11,16]

Across a number of cultures, conflict with physicians and uncertainty concerning treatment were identified as stressors of immediate frequency for nurses. These were identified not only in New Zealand, but also in Australia, China, Japan, Thailand, South Korea and Hawaii.[3,5,6] It appears that hospital environments internationally or, at the very least, in the Pacific rim nations, produce similar nursing work stressors.[5]

The most frequent way of coping with stressful situations by nurses in this study was planful problem-solving, followed by seeking social support and self-controlling — again, similar to findings from the other Asia-Pacific studies.[3-6] Positive reappraisal was used moderately by New Zealand, Australian and Japanese respondents, whereas South Korean, Thai and Chinese nurses reported using this approach frequently.[3,5,6] This apparent difference could possibly be attributed to cultural values highlighting the need for harmony.[5]

There was a significant correlation in the current study between job stress (such as lack of support and workload) and reduced mental health. A large US study of female registered nurses (n = 21,290) reported significant positive correlations between physical functioning and mental health (as reported by the SF-36).[26] A three-year longitudinal study of 382 Dutch hospital nurses also found that

TABLE 3
Physical health hierarchical regression results

	Beta	Standard error of Beta	sr	r	t (142)
Age	0.00	0.09	0.00	0.01	−0.02
Years in unit	0.01	0.08	0.01	0.03	0.11
NSS death and dying	−0.23	0.12	−0.16	−0.15	−2.01*
NSS conflict with physicians	0.05	0.12	0.03	−0.08	0.39
NSS inadequate preparation	0.11	0.11	0.08	−0.06	1.04
NSS lack of support	−0.15	0.11	−0.11	−0.17	−1.45
NSS conflict with other nurses/supervisors	0.20	0.11	0.14	−0.00	1.83
NSS workload	0.07	0.10	0.05	−0.07	0.65
NSS uncertainty about treatment	−0.09	0.11	−0.06	−0.11	−0.80
WAYS confrontive coping	0.08	0.10	0.06	−0.03	0.75
WAYS distancing	0.10	0.10	0.08	−0.05	0.97
WAYS self-controlling	−0.06	0.11	−0.04	−0.12	−0.51
WAYS seeking social support	0.10	0.09	0.08	0.07	1.04
WAYS accepting responsibility	−0.21	0.10	−0.16	−0.21	−2.08*
WAYS escape-avoidance	−0.12	0.11	−0.09	−0.17	−1.12
WAYS planful problem-solving	−0.11	0.10	−0.08	−0.06	−1.07
WAYS positive reappraisal	0.14	0.10	0.11	0.02	1.35

* p < 0 05

emotional exhaustion was most strongly predicted by workload and physical demands.[27] Cheng et al noted that individually targeted interventions for stress, such as lifestyle changes, are aimed at symptoms rather than the underlying cause, and they suggested that hospitals may need to "focus their strategies for health promotion on the redesign of jobs".[28]

Linking stress with individual characteristics such as personality, self-esteem, physical fitness, or psychological strength (effectively blaming the nurse) is unproductive in the context of high workloads and poor workplace conditions.[15] The organisational and social structures affect employees' behaviour to a greater extent than individual personality attributes and, as Kanter noted: "[R]esponses to work are a function of basic structural issues, such as the constraints imposed by roles and the effects of opportunity, power, and numbers. Attention to *these* issues would require organizations — not people — to change."[29]

The theory of work adjustment defines "work" as an interaction between individuals and their work environment.[30] Work adjustment requires a correspondence between environmental and individual requirements, that is, the individual and the organisation must mutually adapt to each other. Adjustment is indicated by satisfaction of the individual with the work environment, along with the work environment's satisfaction with the person and their performance.

Managers in the health care sector also need to recognise the transformation of nursing work in the current information age, with its new demands as well as opportunities. Hammer and Champy's argument that contemporary forces have created new business environments and a need to learn different ways of working rather than simply working harder applies to health care.[31] Hammer and Champy have suggested that people cannot be conceptualised as a conglomerate mass market but, rather, are individuals who demand a high-quality

TABLE 4
Mental health hierarchical regression results

	Beta	Standard error of Beta	sr	r	t (142)
Age	0.11	0.07	0.09	0.20	1.43
Years in unit	0.04	0.06	0.04	0.14	0.62
NSS death and dying	0.03	0.09	0.02	−0.30	0.32
NSS conflict with physicians	−0.01	0.10	−0.00	−0.34	−0.06
NSS inadequate preparation	−0.03	0.08	−0.02	−0.28	−0.41
NSS lack of support	−0.30	0.08	−0.22	−0.51	−3.64*
NSS conflict with other nurses/supervisors	−0.09	0.09	−0.06	−0.36	−1.03
NSS workload	−0.26	0.08	−0.20	−0.44	−3.27**
NSS uncertainty about treatment	0.17	0.09	0.12	−0.19	1.92
WAYS confrontive coping	−0.05	0.08	−0.04	−0.28	−0.62
WAYS distancing	0.06	0.08	0.04	−0.18	0.69
WAYS self-controlling	0.01	0.08	0.01	−0.23	0.15
WAYS seeking social support	−0.07	0.07	−0.06	−0.12	−0.98
WAYS accepting responsibility	−0.04	0.08	−0.03	−0.32	−0.53
WAYS escape-avoidance	−0.32	0.09	−0.23	−0.50	−3.75*
WAYS planful problem-solving	0.17	0.08	0.13	−0.03	2.16***
WAYS positive reappraisal	−0.04	0.08	−0.03	−0.07	−0.55

* $p < 0.001$
** $p < 0.01$
*** $p < 0.05$

service in every aspect of life. They argue that power has shifted from seller to buyer (or provider to patient), propelled by increased consumer knowledge through access to information facilitated by media, such as the Internet.

The notion of the knowledgeable consumer demanding individually tailored services is very familiar in the health care context. According to Henwood et al, health policy in the United Kingdom states that greater availability of health information on the Internet "will lead to the emergence of more informed patients who are better able to assess the risks and benefits of different treatments for themselves".[32] Nurses are frontline service providers. They have a key role collectively and as individuals in adapting institutional services to individual needs — a stressful requirement when workload and lack of organisational support can impair nurses' capacity to provide services that meet professional standards of care.

The Magnet Recognition Program is an example of organisational adaptation which creates an environment that is supportive of nursing practice. Evidence from the US indicates that nurses have reduced stress and increased job satisfaction when they work in hospitals that are organised according to Magnet hospital characteristics.[33,34] The Magnet Recognition Program was established in the 1990s by the American Nurses' Association to acknowledge hospitals that provided excellent nurse care. Hospitals are judged using a range of criteria called "forces of magnetism". The term "magnet" refers to the capacity of some hospitals to attract and retain staff. Key organisational elements in these hospitals include visible nursing leadership, a decentralised structure enabling unit level decision-making, flexible staffing models with minimal shift rotation, staffing levels that enable high quality care, respectful interdisciplinary relationships, and nursing involvement in policy development.[35]

Conclusion

The shaping of nursing work by organisational and professional imperatives affects nurses as they continually respond to unpredictable individual health needs. Nursing workforce shortages will continue to affect the viability of health care organisations internationally. The link in many countries between stressors such as workload and reduced mental health status must be of concern, especially as individual nurses predominantly employ coping strategies such as problem-solving. Any mismatch between the workplace resources that are available to individual nurses and professional standards of care is a potential source of workplace stress. To improve the mental health of nurses, job redesign is required which increases support for nurses, maintains reasonable workloads, and supports nurses in planful problem-solving.

Acknowledgments

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