The psychological effects of organizational restructuring on nurses

Citation for published version (APA):

Brown, H., Zijlstra, F. R. H., & Lyons, E. (2006). The psychological effects of organizational restructuring on nurses. *Journal of Advanced Nursing*, 53, 344-357. <https://doi.org/10.1111/j.1365-2648.2006.03723.x>

Document status and date:

Published: 01/01/2006

DOI:

[10.1111/j.1365-2648.2006.03723.x](https://doi.org/10.1111/j.1365-2648.2006.03723.x)

Document Version:

Publisher's PDF, also known as Version of record

Document license:

Taverne

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

The psychological effects of organizational restructuring on nurses

Hilary Brown PhD

Student Counselling Service, Bournemouth University, Dorset, UK

Fred Zijlstra PhD

Professor of Organizational Psychology, Psychology Department, University of Surrey, Surrey, UK

Evanthia Lyons PhD

Senior Lecturer, Social Psychology, Psychology Department, University of Surrey, Surrey, UK

Accepted for publication 9 June 2005

Correspondence:

Hilary Brown,
Student Counselling Service,
Student Centre,
Talbot Campus,
Fern Barrow,
Poole,
Dorset BH12 5BB,
UK.
E-mail:
hilarybrown@salisbury46.freemove.co.uk

BROWN H., ZIJLSTRA F. & LYONS E. (2006) *Journal of Advanced Nursing* 53(3), 344–357

The psychological effects of organizational restructuring on nurses

Aim. This paper reports a comparison of nurses affected by the restructuring associated with healthcare organization mergers (1998–2000) in the United Kingdom and those of non-affected nurses in the UK.

Background. Restructuring, a feature of healthcare organizations for decades, has been associated internationally with negative outcomes for nurses. Despite this, no model to evaluate management of change factors and psychological stress processes has been operationalized and tested.

Method. A sample of 351 Registered Nurses was recruited from southern England. Participants either worked in organizations that were within 6 months of merging or were not affected by mergers. On two occasions, 6 months apart, all were sent a questionnaire that had been formulated for the study. Questions related to the parts of the model being tested: restructuring initiatives (i.e. stressors) information and participation, coping action, and coping effectiveness (i.e. outcomes). The data were collected between 1998 and 2000.

Findings. Nurses affected by mergers reported statistically significantly higher restructuring initiatives before and after an event than non-affected nurses. Moreover, up to 12 months after an event some affected nurses reported lower information and participation, and lower coping effectiveness (i.e. higher job insecurity, job stress, job pressure, lower job satisfaction, physical, psychological, and environmental quality of life) than non-affected nurses, which was consistent with the model's proposals. However, there was no difference between affected and non-affected nurses' coping action.

Conclusion. The psychological effects of restructuring are linked with perceptions of low information and participation, and with negative outcomes for nurses. Managers, therefore, need to communicate information and encourage staff to participate in decisions about restructuring events.

Keywords: healthcare organizations, management, nursing, questionnaire, restructuring, theoretical model test

Introduction

Healthcare systems in Canada and United States of America (USA) were expanded in capacity beyond reasonable demand during the 1980s (Coddington & Moore 1987). Furthermore, a major funding change in the USA forced hospitals to re-evaluate their role, making it necessary for them to overhaul entire operations. Political and economic pressures forced both systems to decrease costs, increase productivity and efficiency, and maintain or improve the quality of patient care (Doyle-Driedger 1997). By the mid-1990s mergers were an initiative many hospitals had taken or planned to take in an effort to sustain this process. Such events, with their emphasis on outpatient services and reduced patient 'stays', decreased bed availability and had a corresponding impact on staffing (Dialogue 1996, Schaefer & Moos 1996). In effect, they were downsizing.

In the United Kingdom (UK), between 1981 and 2000 the National Health Service (NHS) was subject to unprecedented demands and expectations. A rising population [Office of Health Economics (OHE) 2002] was associated with demands for significant increases in healthcare provision, particularly for older people [Department of Health (DoH) 2000a, OHE 2002, p. 17]. Many large, Victorian institutions closed as long-term mentally ill and learning disabled people moved into the community. Furthermore, community hospitals closed and fewer places were available in NHS nursing/residential homes (DoH 2000d). Overall, there were 207,000 fewer beds (OHE 2002). Concurrently, there was a large increase in community care, numbers of inpatients, day cases (DoH 2000c), and a decline in the duration of inpatient 'stays' (DoH 2000b).

Expectations of efficient provision, alongside rising costs, underpinned NHS organizational changes. The NHS and Community Care Act (1990) instituted major management restructuring, and reorganization. NHS hospitals and community healthcare providers became NHS trusts, i.e. self-governing, publicly owned bodies accountable to the NHS Executive. However, initial grouping of hospitals into NHS trusts was unsatisfactory (Crail 1999). Thus, in 1998 there began a period of NHS trust mergers.

It was likely that the demands of organizational change would adversely affect nurses' psychological well-being. Specifically, NHS trust mergers might increase nurses' job stress, job dissatisfaction, and/or their intention to leave the NHS.

Background

Nurses' perceptions of organizational change

Major studies conducted in Canada (Greenglass & Burke 1997, Blythe *et al.* 2001, Spence Laschinger *et al.* 2001), and the USA (Shindul-Rothschild *et al.* 1997) illustrated how organizational change affected nurses.

Most nurses reported restructuring initiatives, i.e. budget cuts and staff lay-offs, beds closures, bumping (i.e. appointing less qualified nurses to higher grade posts), and many reported early retirement incentives (Greenglass & Burke 1997). Redeployment, and job change had a negative impact on working conditions and practices (Baumann *et al.* 2001). Although half the nurses who responded reported that their organization had closed beds or units, similar numbers reported additional services (Shindul-Rothschild *et al.* 1997).

In contrast, there was limited evidence of NHS nurses perceptions of organizational change, although the situation was characterized as an imbalance, with too many patients, not enough beds, insufficient equipment, staff, or trained staff (Taylor *et al.* 1999).

Factors influencing nurses responses to organizational change

Although North American and UK evidence indicated the benefits of communication (e.g. Arndt & Duchemin 1993, Rout 2000), no literature quantified the significance of having information during organizational change, but a vision of the hospitals future was related to positive outcomes (Greenglass & Burke 1997). Reasons for perceived information deficit included that US managers did not understand the situation, or how the organization would be affected in the future (Spence Laschinger *et al.* 2001). Furthermore, over 60% of English nurses reported that administrators did not listen to their concerns (Aiken *et al.* 2001).

Elsewhere, perceived benefits of participating in decision-making related to job satisfaction and patient outcomes (e.g. Kivimaki *et al.* 1994). Less participation during organizational change was associated with mobility (e.g. Dencker *et al.* 1989), and in Canada with a change from a participative to a more authoritarian non-democratic style' (Spence Laschinger *et al.* 2001, p. 10).

In addition to the perceived benefits of managing change through timely information, and participation in decision-making, NHS manager support was pivotal in terms of job satisfaction, and lower intention to leave (Perryman &

Robinson 2003). Elsewhere, on units where managers promoted peer support, levels of staff morale were higher (Gaynor *et al.* 1995, cited in Spence Laschinger *et al.* 2001, p. 12), and regular performance feedback contributed to job satisfaction (Tonges *et al.* 1998). However, there were widespread perceptions of lack of support during organizational change (e.g. Corey-Lisle *et al.* 1999, Aiken *et al.* 2001, Spence Laschinger *et al.* 2001), which contributed to stress in the NHS (Taylor *et al.* 1999). Furthermore, there was equivocal North American evidence regarding the benefits of social support (e.g., Lees 2001, Beehr *et al.* 2003), from co-workers (e.g. Arndt & Duchemin 1993), unions, and organization (e.g. Burke & Greenglass 2001) during organizational change; and variations between NHS trusts (McClenahan *et al.* 1999, p. 12).

Nurses' responses to organizational change

Research conducted mainly in North America concerning nurses' responses to organizational change tended to evaluate findings in terms of threat perception. High-threat perceptions were associated with increased work demands (Spence Laschinger *et al.* 2001). These arose from increased workload associated with perceptions of higher restructuring initiatives (Greenglass & Burke 1997), and job relocation (Baumann *et al.* 2001). Work-related injuries (Shindul-Rothschild *et al.* 1997), attributed to understaffing may have also accounted for greater risk of violence (Canavan 1996), complaints by patients (Baumann *et al.* 2001), and poor staff relationships (Armstrong *et al.* 1996). Job stress levels rose because nurses were assigned more patients, throughput was faster, and nurses replaced by unqualified staff required supervision (Shindul-Rothschild *et al.* 1997, Corey-Lisle *et al.* 1999). In the NHS, there was intense pressure to keep the system going, by acquiescing to managers and doctors' requests (Taylor *et al.* 1999).

Considerable evidence of the relationship between organizational change and job satisfaction existed. For example, nurses reported lower job satisfaction was associated with increased workload following job change (Baumann *et al.* 2001), increased patient acuity, negative work relationships (Corey-Lisle *et al.* 1999), and poor instrumental communication (Davidson *et al.* 1997). However, others reported little such effect, but compared with pre-event, a significant deterioration in satisfaction with career future, supervision, and co-workers (Armstrong *et al.* 1996). Post-event, job satisfaction increased (Burke 2002).

During organizational change intentions to quit were predicted by perceptions of little promotional opportunity, low-decision latitude, and poor communication (Davidson

et al. 1997), and not enough time to do the job well, while others reported intentions to remain (Baumann *et al.* 2001).

Nurses reported job insecurity as the result of the threat of downsizing (Greenglass & Burke 2000). Research suggested that this was greater before and during downsizing (e.g. Shindul-Rothschild *et al.* 1997, Corey-Lisle *et al.* 1999, Spence Laschinger *et al.* 2001), and that subsequently job security increased (Burke 2001).

A major theme was perceptions of lower quality of patient care (Spence Laschinger *et al.* 2001). Contributory factors included fewer resources, staff mix changes, workplace/patient safety, nursing knowledge not valued, and economic effects. However, there was also evidence that certain objective patient care indicators were not adversely affected (Roos & Shapiro 1995).

The predominantly North American literature review indicated that healthcare organizational change had been associated with perceptions of stressors, affected by information, and participation in decision-making, coping, and social support, and resulted in various negative outcomes.

Theoretical model

The above review suggested that the factors that underlie organizational change, and how these may influence nurses' responses, might be explained from management and psychological perspectives. Several such theoretical perspectives were evaluated in terms of their efficacy to evaluate outcomes as a result of restructuring stressors, information, participation in decision-making, and coping (Brown 2003). Developed from the cognitive-phenomenological model of stress (Lazarus & Folkman 1984), a conceptual framework for assessing organization, work group, and individual effectiveness during and after downsizing (Shaw & Barrett-Power 1997) was selected.

The cognitive phenomenological model of stress (Lazarus & Folkman 1984) was based on the belief that the coincidence of external demands and individual's susceptibility characteristics influenced how situations were cognitively appraised. If evaluated as stressful, a situation was appraised in terms of challenge, harm/loss, or threat. Subsequent appraisal of resources evaluated the extent to which cognitive and behavioural efforts were galvanized to manage internal and external demands in order to adapt to the situation. Adaptation was associated with psychological well-being, and influenced subsequent appraisal. Thus this model had considerable merit as a theoretical framework for the study. Specifically, the concepts could be applied flexibly, the

processes offered an explanation of change over time, and it had been used in studies of nurses (e.g. Lam *et al.* 1999).

The conceptual framework proposed by Shaw and Barrett-Power (1997) represented an attempt to integrate management of change factors with psychological stress processes in order to explain responses to restructuring, i.e. a major aspect of downsizing (Coddington & Moore 1987). It proposed that perceptions of threat would be associated with lower appraisal effectiveness hereafter labelled information and participation, i.e. threat rigidity syndrome (Staw *et al.* 1981), which would have a negative impact on coping action, and coping effectiveness. The researchers believed that it offered an appropriate theoretical focus for the study. However, an initial exploratory study was undertaken in order to evaluate its suitability (Brown 2003). Specifically, because the model had not been tested, and concepts of appraisal effectiveness, and coping action had not been operationalized. On the basis of satisfactory results the researchers reanalysed the data using a quasi-experimental design.

The study

Aim

The aim of the study was to compare the responses of affected and non-affected nurses regarding the management of change factors, and psychological stress processes described in the Shaw and Barrett-Power (1997) model (Figure 1).

We hypothesized that, between 6 months before and 12 months after a restructuring event, when compared with non-affected nurses, affected nurses would report:

H_1 . Higher restructuring initiatives.

H_2 . Lower information and participation, coping action, and coping effectiveness.

Design

A quasi-experimental design was chosen, because we wanted to test for causality. This was a good approach to use in a natural setting in which it was impossible to randomly allocate participants to groups. A restructuring event was the *independent* variable, and information and participation, coping action, and coping effectiveness were *dependent* variables. Responses of nurses affected by a restructuring event would be compared with nurses in a non-equivalent control group who had not been affected. Both *affected*, and *non-affected* nurses would be sampled on *two* occasions, 6 months apart. The data were collected by survey between 1998 and 2000.

Participants

Power calculation

Group size was to represent a medium effect, and a power analysis using GPOWER (Faul & Erdfelder 1992) indicated that a total sample of 290 was estimated to have 95% power, $d = 0.5$, $\alpha = 0.01$, two-tailed, based on a mean score difference of 0.5 on the Job Stress Index (JS-X) (Spielberger & Reheiser 1994).

Type

The strategy was to recruit two equal groups (i.e. affected and non-affected), so that it would be possible to conduct a quasi-experimental study. Groups were to be recruited directly from NHS trusts. Letters was sent to the 23 Chief Executives whose NHS trusts were merging between September 1998 and 1999. Each of the 18 responses led to contact with the Directors of Nursing in hospitals in southern England. They directed us to managers whose units they believed would be interested in participating. We met these managers, and eight

Figure 1 Summary model of stress coping-based dependent variables in downsizing situations (reproduced with permission from Shaw & Barrett-Power 1997).

agreed to the confidential participation of their nurses (Table 1).

Because insufficient participants were recruited in this way (i.e. 204), the sample was supplemented from other NHS trusts via the Royal College of Nursing (RCN), which is the UK's largest professional organization for nurses. The RCN randomly selected 2000 nurses (10% male) from their membership database (Table 2), with numbers and geographical areas specified by us.

Size

The total sample was 666 (i.e. 68% unit non-response), and a sub-set was used to assess the effects of restructuring *around the time of an event*.

The sample size at time 1 was 351, and at time 2 it was 160 (54% unit non-response; Table 3). Participants were assigned to either group A (1–6 months pre-event, $n = 71$), group B (1–6 months post-event, $n = 188$) or group C (not affected by an event, $n = 92$). Groups A and B would be/had been affected by at least one of the following: management changes, relocation of part of/unit, and dispersion of work group.

Table 1 Direct recruitment from National Health Service (NHS) trusts

NHS trust	Pre-event			Post-event			Non-affected		
	S	R	%	S	R	%	S	R	%
1	–	–	–	11	10	91	6	5	83
2	26	20	77	28	24	86	10	7	70
3	–	–	–	17	17	100	–	–	–
4	54	37	69	–	–	–	29	17	59
5	32	10	31	43	14	33	33	19	58
6	29	2	7	–	–	–	1	1	100
7	20	12	60	–	–	–	10	3	30
8	–	–	–	–	–	–	20	6	30
Group sub-totals	161	81	50	99	65	66	109	58	53

S, selected; R, responded.

Table 2 Recruitment from the Royal College of Nursing (RCN)

RCN area	Questionnaires		Pre-event		Post-event		Non-affected	
	Mailed	Usable	R	%	R	%	R	%
1	400	399	0	0	94	24	26	7
2	500	246	34	14	6	2	5	2
3	300	293	88	30	8	3	2	<1
4	300	292	5	2	66	23	0	–
5	250	246	0	0	81	33	0	–
6	250	250	2	<1	44	18	1	<1
Group sub-totals	2000	1726	129	7	299	17	34	2

R, responded.

Table 3 Time 1: study participants (n)

	Group A (1–6 months pre-event)	Group B (1–6 months post-event)	Group C (not affected by event)
National Health Service (NHS) trust			
1	–	–	5
2	7	24	7
3	–	17	–
4	37	–	17
5	10	14	19
6	–	–	1
7	12	–	3
8	–	–	6
Royal College of Nursing (RCN) area			
1	–	3	26
2	2	5	5
3	–	4	2
4	1	40	–
5	–	50	–
6	2	31	1
Group totals	71	188	92

There were statistically significant differences in non-response at time 2 in three NHS trusts/RCN areas: NHS trusts 5 and 7 (fewer), and RCN area 5 (more). The Pearson χ^2 was 0.008, but 63% of cells had an expected count of < 5 (because of the large number of NHS trusts within the RCN areas).

Description

Participants were Registered Nurses (94% female) aged 22–68 (mean 38.55 years) and their characteristics were consistent with the UK nurse population (Smith & Secombe, 1998). Demographic and professional characteristics indicated that the groups were quite similar. However, there were six statistically significant differences: the affected groups reported more years in grade ($t = 3.291$, $P = 0.001$), years on ward ($t = 3.795$, $P = 0.001$), and in hospital ($t = 4.351$, $P = 0.001$). They were older ($t = 3.917$, $P = 0.001$), had more D grades (first grade of Registered Nurse) (Pearson $\chi^2 = 0.006$), and less previous experience of restructuring (Pearson $\chi^2 = 0.001$).

Questionnaire

A questionnaire was devised, comprising the instruments selected, modified or devised to measure the parts of the model as follows.

Restructuring initiatives

A list of 16 potential restructuring events was compiled: 12 derived from Greenglass and Burke (1997), three derived from conversations with nurse managers, and one free choice

option. Dichotomous responses were coded yes = 1; no = 0; these were added to compute a restructuring scale score (minimum, 0; maximum, 16). A high score represented high restructuring initiatives.

Information and participation

An 11-item information and participation instrument comprised of semantic differential statements (Osgood *et al.* 1957) was used to quantify information search and utilization activities. It was based on Shaw and Barrett-Power's (1997) construct elaboration of restriction of information processing, and constriction in control. Five items were derived from Greenglass and Burke (1997); the remainder were devised for this study. Responses were given on an 11-point scale, with zero representing 'not applicable' and 10 representing the maximum on the positive pole. Responses were added to compute an information and participation scale score (minimum, 0; maximum, 110). A high score represented high information and participation.

Coping action

A 10-item semantic differential coping action instrument was used to quantify group coping, union, and organizational support. The group coping measure was derived from Latack and Havlovic (1992), and elaborated by Shaw and Barrett-Power (1997). The union activity and morale boosting measures were derived from Greenglass and Burke (1997). Responses were added to compute a coping action scale score (minimum, 0; maximum 100). A high score represented high group coping action, union activity and morale boosting.

Coping effectiveness

Two standard measures were selected, and four sub-scales were modified or devised to quantify three coping effectiveness criteria, as specified by Shaw and Barrett-Power (1997).

A two-item semantic differential job insecurity sub-scale, derived from Greenglass and Burke (1997) was used to assess the criterion '*directly alleviated significant causes of stress*'. Responses were added to compute the scale score (minimum, 0; maximum, 20). A high score represented high job insecurity.

A four-item semantic differential job satisfaction sub-scale, derived from the Nurse Stress Index (Harris 1989), was used to assess the variable '*maintenance of psychological equilibrium*'. Responses were added to compute the scale score (minimum, 0; maximum 40). A high score represented high job satisfaction.

The Job Stress Survey (JSS; Spielberger & Reheiser 1994) and WHOQOL-Brev (World Health Organization 1996) were used, and intention to quit and impact of restructuring

sub-scales were devised to assess the extent to which coping action '*minimized negative and unintended outcomes*'.

The JSS quantified stress (scale of 0–10) in terms of overall job stress (JS-X; 60 items), job pressure (JP-X; 20 items), and lack of support (LS-X; 20 items). Responses were computed according to the manual's instructions (Spielberger & Vagg 1998). A high score represented high stress/pressure/lack of support.

WHOQOL-Brev quantified Quality of life (QOL) in four domains: physical health (QOL1: seven items), psychological functioning (QOL2: eight items), social relationships (QOL3: three items), and environment (QOL4: eight items). Responses were computed according to the original authors' instructions. Potential scores for each domain ranged from 0 to 100. A high score represented a high domain level, e.g. excellent physical health.

A four-item semantic differential 'intention to quit' sub-scale was derived from two job satisfaction scales (Harris 1989, Greenglass & Burke 1997). Responses were added to compute the scale score (minimum, 0; maximum, 40). A high score represented high intention to quit.

A four-item semantic differential 'impact of restructuring' (i.e. patient care) sub-scale was derived from Greenglass and Burke (1997). Responses were added to compute the scale score (minimum, 0; maximum, 40). A high score represented high impact of restructuring.

Pilot study

A pilot study was conducted with 15 nurses from one unit in a previously restructured trust. They indicated that the information sheet was comprehensive and that the questionnaire was understandable; it took 20–30 minutes to complete.

Validity and reliability

A number of issues posed a threat to the integrity of the study during the planning and execution stages: validity, reliability and operationalization.

Attempts were made to address threats to external validity. The decision to approach all NHS trusts that were merging was taken to prevent a *selection effect*. No attempt was made to avoid *setting* or *history effects*. Similar events are likely to occur in the future, and findings from this study could be relevant to them. A *construct effect* was deemed acceptable because the concepts had not been tested previously, and so limiting the study to one occupational group was considered an appropriate decision.

Attempts were also made to address threats to internal validity, i.e. to select two equal and representative groups of nurses (i.e. affected and non-affected by restructuring). Although recruitment difficulties prevented exclusive prepost examination, this had the benefit of allowing evaluation over time. However, the researchers had little influence over participants in between data collections, which had the potential for a type 11 error. Another threat to the integrity of the study was the researchers' relationship with participants. Although everyone received information regarding the study, there were differences between that sent to RCN participants, and that given and discussed with those directly recruited from NHS trusts.

Attempts were made to ensure that measures were reliable, and that potential errors and biases were addressed. Logical and factor-analytic approaches (Black 1999) were adopted to the construct validity of the modified/devised instruments. The latter was used to justify the instruments validity. Instruments' reliability was evaluated by test-retest measures on the non-affected group, and found satisfactory.

Ethical considerations

The appropriate NHS research ethics committees approved the study. At prearranged times the researcher (HB) met informally with potential participants and gave each an information sheet and details of what participation would involve. She asked participants to sign a consent form and return it to her with the completed questionnaire in the envelope provided.

Ethics approval was not required for the RCN survey. The RCN mailed the questionnaires, details of the study, and a stamped addressed envelope for their return to the researcher.

Data analysis

The data were screened for missing data, outliers, and normality. Data missing from the source were randomly distributed. Means, standard deviations, and normality were calculated for each instrument, or sub-scale for each group (Table 4).

Because there were <5% missing values on items, and sub-scales, the former were imputed with the mean for continuous variables with a normal distribution, the median for those with non-normal distribution, and the mode for categorical variables (Harrell 2001, p. 49). Time 2 missing values were estimated by the multiple imputation technique (Little & Rubin 1989).

Using SPSS, version 10, differences between the groups were tested using one-way MANOVA (i.e. multivariate

Table 4 Time 1 groups A, B and C: means, SD, and normality

Variable	Group A: 1–6 months pre-event (<i>n</i> = 71)						Group B: 1–6 months post-event (<i>n</i> = 188)						Group C: not affected by event (<i>n</i> = 92)					
	Mean	sd	Minimum	Maximum	Skew	Kurtosis	Mean	sd	Minimum	Maximum	Skew	Kurtosis	Mean	sd	Minimum	Maximum	Skew	Kurtosis
RI	7.09	2.85	2.00	13.00	−0.02	−0.70	6.79	2.71	0	14.00	−0.00	0.10	5.92	2.36	0	13.00	0.20	0.38
I&P	58.97	16.74	35.00	102.00	0.41	−0.96	51.99	17.09	0	103.00	−0.27	0.43	58.86	16.93	18.00	109.00	−0.28	0.22
CA	38.67	15.70	4.00	72.58	−0.16	−0.66	39.01	16.79	0	81.00	−0.15	−0.11	42.36	17.23	11.00	78.00	0.14	−0.94
JIN	5.75	5.30	0	18.00	0.46	−0.77	7.32	5.17	0	20.00	0.21	−0.74	5.68	4.97	0	19.00	0.52	−0.55
JS	21.30	7.65	8.00	40.00	0.27	−0.77	21.64	7.60	0	39.00	−0.06	−0.23	23.39	8.20	0	39.00	−0.54	0.21
JS-X	25.63	13.10	2.40	53.68	0.20	−0.72	25.90	11.88	1.14	63.17	0.27	−0.30	21.71	13.01	0.70	63.15	0.96	0.95
JP-X	30.87	14.34	0	53.53	−0.25	−1.00	31.25	14.00	1.16	75.68	0.22	−0.32	27.29	15.89	0.72	73.87	0.69	0.24
LS-X	23.76	17.36	0.66	65.70	0.71	−0.50	23.91	15.16	0	68.80	0.63	0.03	19.42	14.36	0.26	66.60	1.21	1.34
QOL 1	79.78	12.50	50.00	100.00	−0.77	−0.22	76.65	15.63	17.86	100.00	−0.98	0.90	81.11	11.79	42.86	100.00	−0.73	0.81
QOL 2	67.58	14.57	29.17	100.00	−0.54	0.01	67.13	15.64	8.33	95.83	−1.07	1.82	72.73	13.46	33.33	100.00	−0.47	0.64
QOL 3	75.35	17.79	33.33	100.00	−0.42	−0.50	71.10	20.63	0	100.00	−0.79	0.88	75.58	18.89	8.33	100.00	−0.80	0.75
QOL 4	68.50	14.30	15.63	96.88	−0.91	2.10	66.65	14.44	18.75	96.88	−0.62	0.55	71.84	11.45	46.88	100.00	0.01	−0.16
ITQ	22.90	10.00	0	40.00	−0.34	−0.48	23.29	10.92	0	40.00	−0.17	−0.99	23.18	10.73	0	40.00	−0.35	−0.78
IR	16.33	6.50	0	34.00	0.13	0.20	17.04	7.25	0	40.00	0.15	0.03	20.08	8.73	0	37.00	−0.43	0.06

sd, standard deviation; RI, restructuring initiatives; I&P, information and participation; CA, coping action; JIN, job insecurity; JS, job satisfaction; JS-X, Job Stress Index; JP-X, Job Pressure Index; LS-X, Lack of Support Index; QOL, Quality of Life; QOL1, physical; QOL2, psychological; QOL3, social; QOL4, environment; ITQ, intention to quit; IR, impact of restructuring.

SD, standard deviation; RI, restructuring initiatives; I&P, information and participation; CA, coping action; JIN, job insecurity; JS, job satisfaction; JS-X, Job Stress Index; JP-X, Job Pressure Index; LS-X, Lack of Support Index; QOL, Quality of Life; QOL1, physical; QOL2, psychological; QOL3, social; QOL4, environmental; ITQ, intention to quit; IR, impact of restructuring.

analysis of variance). Differences between groups and over time were analysed using repeated measures MANOVAS and follow-up repeated measures ANOVAS (i.e. analysis of variance).

Results

Differences between the independent variable [i.e. the three groups: A (i.e. 1–6 months pre-event and 1–6 months post-event), B (i.e. 1–6 and 7–12 months post-event), and C (i.e. non-affected)], and each of the dependent variables over time (i.e. time 1, and time 2) were evaluated. The multivariate criterion of Wilks' lambda (Λ) was used, and the significance level reduced to <0.01 . Statistically significant differences were found between variable means, $\Lambda = 0.015$, $F(16, 333) = 1381.260$, $P \sim 0$; there was a variable $\times$ group interaction, $\Lambda = 0.797$, $F(32, 666) = 2.505$, $P \sim 0$; and a variable $\times$ time interaction, $\Lambda = 0.828$, $F(16, 333) = 4.320$, $P \sim 0$. However, the observed covariance matrices were not equal across the groups, $F(1190, 136,119.7) = 1.50$, $P \sim 0$. This may have been due to violation of the multivariate normality assumption so further interpretation of this MANOVA was invalid.

Hypothesis 1

Hypothesis 1 stated that nurses affected by a restructuring event would report higher restructuring initiatives than non-affected nurses between 6 months pre-event and 12 months post-event (i.e. times 1 and 2).

Groups A and B reported higher mean scores than Group C (Table 4). The MANOVA was statistically significant, $F(4, 694) = 3.375$, $P < 0.01$, so *post hoc* comparisons were conducted. There was a group effect at time 1, $F(2, 348) = 4.709$, $P < 0.01$, and at time 2, $F(2, 348) = 6.551$, $P \sim 0$. At both times 1 and 2 groups A and B differed statistically significantly from group C but not between each other (Table 5).

Thus, the first hypothesis was accepted. Between 6 months pre- and 12 months post- a restructuring event affected nurses reported higher restructuring initiatives than non-affected nurses.

Because the observed covariance matrices were not equal across any combination a series of repeated measures MANOVAS was conducted to evaluate the relationship between the independent, and dependent variables for hypothesis 2 (Table 6). Group mean scores for each analysis are found in Table 4.

Hypothesis 2

Hypothesis 2 stated that nurses affected by a restructuring event would report lower information and participation, coping action, and coping effectiveness between 6 months pre-event and 12 months post-event, compared with non-affected nurses.

Information and participation and coping action

Results of follow-up repeated measures ANOVAS indicated that for information and participation there were two main effects and an interaction (Table 7). *Post hoc* comparisons revealed statistically significant lower information and participation for group B compared with group C (Table 8). For coping action there was a main effect of time, and an interaction (Table 7).

Job insecurity and job satisfaction

There was a group effect for both variables (Table 7). Group B reported statistically significant higher job insecurity than group C, and group A reported statistically significant lower job satisfaction than group C (Table 8).

Job Stress Index, Job Pressure Index, and Lack of Support Index

There was a group effect for JS-X, and for JP-X (Table 7). Groups A and B reported statistically significant higher JS-X, and JP-X than group C (Table 8).

Table 5 Times 1 and 2 restructuring initiatives: *post hoc* comparisons (hypothesis 1)

Group	<i>n</i>	Compared with	Time 1			Time 2		
			Mean difference	SE	Significance	Mean difference	SE	Significance
A	71	B	0.29	0.37	NS	0.22	0.30	NS
		C	1.17*	0.42	0.02	1.07**	0.34	0.01
B	188	A	-0.29	0.37	NS	-0.22	0.30	NS
		C	0.87*	0.34	0.03	0.86**	0.27	0.01
C	92	A	-1.17*	0.42	0.02	-1.07**	0.34	0.01
		B	-0.87*	0.34	0.03	0.86**	0.27	0.01

n, Number; SE, standard error; **mean difference significant at 0.01 level; *significant at 0.05 level.

Table 6 Repeated measures MANOVAs ($n = 351$) (hypothesis 2)

Variables in MANOVA	Differences between variables means		Time effect		Variable $\times$ group interaction		Variable $\times$ time $\times$ group interaction	
	Wilks' Δ	P value	Wilks' Δ	P value	Wilks' Δ	P value	Wilks' Δ	P value
1 I&P CA	0.490, $F(1, 348) = 361.494$	~ 0	0.962, $F(1, 348) = 13.717$	~ 0	0.982, $F(2, 348) = 3.121$	< 0.05	0.979, $F(2, 348) = 3.765$	< 0.03
2 JIN JS	0.189, $F(1, 348) = 1493.039$	~ 0		NS	0.971, $F(2, 348) = 5.242$	< 0.01		NS
3 JS-X JP-X LS-X	0.551, $F(2, 347) = 141.62$	~ 0		NS		NS		NS
4 QOL1 QOL2 QOL3 QOL4	0.529, $F(2, 347) = 154.529$	~ 0		NS		NS		NS
5 ITQ IR	0.864, $F(1, 348) = 54.845$	~ 0	0.979, $F(1, 348) = 7.542$	~ 0		NS		NS

I&P, information and participation; CA, coping action; JIN, job insecurity; JS, job satisfaction; JS-X, Job Stress Index; JP-X, Job Pressure Index; LS-X, Lack of Support Index; QOL, Quality of Life; QOL1, physical; QOL2, psychological; QOL3, social; QOL4, environment; ITQ, intention to quit; IR, impact of restructuring.

Table 7 Follow-up repeated measures ANOVAs ($n = 351$) (hypothesis 2)

Variables	Time effect		Group effect		Time $\times$ group interaction	
	Δ	P value	Δ	P value	Δ	P value
1 I&P CA	0.961, $F(1, 348) = 14.29$ 0.988, $F(1, 348) = 4.07$	~ 0 < 0.05	$F(2, 348) = 6.329$ NS	~ 0 NS	0.982 (2, 348) = 3.231 0.996 (2, 348) = 0.730	< 0.04 < 0.04
2 JIN JS		NS NS	$F(2, 348) = 4.885$ $F(2, 348) = 3.316$	< 0.01 < 0.04		NS NS
3 JS-X JP-X LS-X		NS NS NS	$F(2, 348) = 4.766$ $F(2, 348) = 4.108$ NS	< 0.01 < 0.02 NS		NS NS NS
4 QOL1 QOL2 QOL3 QOL4		NS NS NS NS	$F(2, 348) = 3.566$ $F(2, 348) = 4.450$ NS $F(2, 348) = 3.653$	< 0.03 < 0.01 NS < 0.03		NS NS NS NS
5 ITQ IR		NS 0.985, $F(1, 348) = 5.227$	NS $F(2, 348) = 7.322$	NS ~ 0		NS NS

Sig: significant at 0.01 level (two-tailed); RI, restructuring initiatives; I&P, information and participation; CA, coping action; JIN, job insecurity; JS, job satisfaction; JS-X, Job Stress Index; JP-X, Job Pressure Index; LS-X, Lack of Support Index; QOL, Quality of Life; QOL1, physical; QOL2, psychological; QOL3, social; QOL4, environment; ITQ, intention to quit; IR, impact of restructuring.

Quality of Life

There were group effects for QOL1, 2, and 4 (Table 7). Group B reported statistically significant lower QOL1, QOL2, and QOL4 than group C (Table 8).

Intention to quit and impact of restructuring

There were two main effects for impact of restructuring (Table 7). Both affected groups reported statistically significant lower impact of restructuring compared with group C (Table 8).

Thus there was mixed support for H_2 . *Up to 12 months post-event* some affected nurses reported lower information and participation, and coping effectiveness compared with non-affected nurses. Specifically, compared with non-affected nurses:

Group A reported lower job satisfaction *for up to 6 months after an event*.

Group B reported lower information and participation, higher job insecurity, JS-X, JP-X, lower QOL1, 2 and 4, and impact of restructuring *during the 12 months after an event*.

Table 8 Times 1 & 2: *Post hoc* comparisons ($n = 351$) (hypothesis 2)

Variable	Group	Compared with	Time 1 – Time 2		
			Mean difference	SE	Sig
Information and participation	A	B	4.83	2.09	NS
		C	-1.43	2.37	NS
	B	A	-4.83	2.09	NS
		C	-6.25**	1.91	0.00
Job insecurity	C	A	1.43	2.37	NS
		B	6.25**	1.91	0.00
	A	B	-1.09	0.55	NS
		C	0.37	0.62	NS
	B	A	1.09	0.55	NS
		C	1.46**	0.50	0.01
Job satisfaction	C	A	-0.37	0.62	NS
		B	-1.46**	0.50	0.01
	A	B	-0.65	0.78	NS
		C	-2.13*	0.88	0.05
	B	A	0.65	0.78	NS
		C	-1.48	0.71	NS
JS-X (Job Stress Index)	C	A	2.13*	0.88	0.05
		B	1.48	0.71	NS
	A	B	0.51	1.53	NS
		C	4.45*	1.73	0.03
	B	A	-0.51	1.53	NS
		C	3.94*	1.39	0.02
JP-X (Job Pressure Index)	C	A	-4.45*	1.73	0.03
		B	-3.94*	1.39	0.02
	A	B	0.68	1.74	NS
		C	4.80*	1.97	0.05
	B	A	-0.68	1.74	NS
		C	4.11*	1.59	0.03
QOL1 (Physical)	C	A	-4.80*	1.97	0.05
		B	-4.11*	1.59	0.03
	A	B	2.77	1.66	NS
		C	-1.01	1.89	NS
	B	A	-2.77	1.66	NS
		C	-3.78*	1.52	0.04
QOL2 (Psychological)	C	A	1.01	1.89	NS
		B	3.78*	1.52	0.04
	A	B	0.16	1.81	NS
		C	-4.59	2.05	NS
	B	A	-0.16	1.81	NS
		C	-4.75**	1.65	0.01
QOL4 (Environment)	C	A	4.59	2.05	NS
		B	4.75**	1.65	0.01
	A	B	1.82	1.70	NS
		C	-2.36	1.93	NS
	B	A	-1.82	1.70	NS
		C	-4.18*	1.56	0.02
Impact of restructuring	C	A	2.36	1.93	NS
		B	4.18*	1.56	0.02
	A	B	-0.96	0.80	NS
		C	-3.23**	0.91	0.00
	B	A	0.96	0.80	NS
		C	-2.27**	0.73	0.01
	C	A	3.23**	0.91	0.00
		B	2.27**	0.73	0.01

*Mean difference significant at 0.05 level; **mean difference significant at 0.01 level; QOL: Quality of life.

There was no support for H₂ regarding coping action, LS-X, QOL3, and intention to quit.

Discussion

Methodological limitations to this study relate to recruitment, planning, and execution. The researchers had limited control over direct NHS Trust recruitment, and less regarding RCN. The latter resulted, not only in limited participation, but also minimal nurses per NHS Trust. Naturally, we had no control between data collections. The potential for positive, and negative experiences to influence time 2 responses could have been attributed to the 6-month time-span between data collections, which in turn may have contributed to time 2 mortality. That demographic difference between study groups was not accounted for, there were differences in researcher contact between recruitment sources, and the unreliability of results when effects of hierarchical levels on each other are ignored (Goldstein & Spiegelhalter 1996), especially in organizational stress (e.g. Morrison *et al.* 2003) were other methodological limitations.

Theoretical limitations relate to the researchers operationalization of the conceptual framework. Specifically, demographic and professional characteristics were omitted, which was inconsistent with the cognitive theory of stress (Lazarus & Folkman 1984), and two coping effectiveness criteria, which was inconsistent with Shaw and Barrett-Power (1997). Regarding the former, correlations in the exploratory study (Brown 2003) were small (i.e. <0.5), suggesting that other factors contributed to the situation. The variables *motivate those involved towards action* and *enhance self-efficacy* were sacrificed in the interests of brevity.

Theoretically, the result was attributed to differences in appraisal of stressors. Although no evidence comparing restructuring initiatives between affected and non-affected nurses was found, there was evidence among affected nurses (Greenglass & Burke 1997). Nurses in the latter reported more restructuring initiatives (i.e. mean 9.57), than those in this study (i.e. means 6.46–7.09); there were also qualitative differences (Table 9).

Among initiatives compared in both studies ‘vacancies for qualified nurses not filled’ was most commonly reported by affected nurses in the current study (82%), which compared with 80% in the Canadian study. There were many *similarities* between the NHS groups, which suggested that these occurrences were not directly associated with restructuring. One event distinguished groups A and C from group B: *relocation*. In addition, four events differentiated affected groups from non-affected, i.e. *unit closures*, *discontinuation of specialty services*, *HCA's replacing nurses*, and *working*

Table 9 Time 1 Restructuring initiatives: comparison between Greenglass and Burke (1997), and current study (affected and non-affected groups)

Greenglass and Burke (1997)		Brown (2003)				
Restructuring initiative	%	Restructuring initiative	Affected		Non-affected	
1. Staff layoffs	94	–	A&B (<i>n</i> = 259)	A (<i>n</i> = 71)	B (<i>n</i> = 188)	C (<i>n</i> = 92)
2. Beds closed	91	Beds closed	48	55	46	52
3. Unit closed	75	Unit closed	33	38	31	13
4. Wage freeze	< 70	–	–	–	–	–
5. Hiring freeze	< 70	–	–	–	–	–
6. Wage rollback	5	–	–	–	–	–
7. Budget cuts	95	Budget cuts	69	69	69	70
8. Early retirement incentives	84	Early retirement incentives	11	13	11	14
9. Job sharing	44	Job sharing	24	30	22	26
10. Switching to part-time	50	Switching to part-time work	48	54	46	47
11. Overtime restrictions	50	Overtime restrictions	34	32	35	39
12. Shortened working week	10	Shortened working week	5	4	5	4
13. Shortened working year	10	–	–	–	–	–
14. Not filling job vacancies	80	Vacancies for qualified nurses not filled	82	79	83	72
15. Bumping nurses following a layoff notice from units of choice	88	Nurses on lower grades have replaced those on higher grades	74	86	70	76
16. Discontinued specialty service	42	Discontinuation of specialty service	21	28	19	11
–	–	HCA's or volunteers replacing nurses	41	44	40	16
–	–	Working with nurses from other wards	60	63	59	49
–	–	Working in a different building	29	9	37	8

A: group A, i.e. 1–6 months pre-event; B: group B, i.e. 1–6 months post-event; C: group C, i.e. not affected by event; HCA: healthcare assistant.

with nurses from other wards. These five events characterized the 1998–2000 NHS Trust mergers in this study.

The result also provided evidence that perceptions of heightened stressors were associated not only with cognitive/motivational manifestations, such that information and participation declined (Staw *et al.* 1981), but also that there were behavioural consequences (Shaw & Barrett-Power 1997). In particular, affected nurses job stress, and job pressure was not only significantly higher than non-affected nurses, which supported North American findings of increased work demands (e.g. Spence Laschinger *et al.* 2001), but also mean scores were considerably higher than North American norms (Spielberger & Reheiser 1994). Similarly, there was support for North American studies insofar as lower job satisfaction (e.g. Davidson *et al.* 1997, Baumann *et al.* 2001), higher job insecurity (e.g. Greenglass & Burke 2000), lower impact of restructuring (e.g. Spence Laschinger *et al.* 2001), physical, psychological (e.g. Shindul-Rothschild *et al.* 1997), and environmental (Canavan 1996) QOL.

However, there were no significant differences between affected and non-affected nurses regarding coping action, lack of support, social QOL, and intention to quit. Contrary to expectation this suggested that affected nurses perceptions of coping action did not change in severity, complexity, or flexibility, in response to an increase in stressors (Lazarus &

Folkman 1984, p. 180), or a decrease in information and participation as Shaw and Barrett-Power (1997) proposed. However, they accorded with North American studies that reported nurses coped less well, used less social support than other healthcare professionals (Lees 2001), and reported low levels of organizational and union support (Burke & Greenglass 2001). Alternatively, the results may have reflected congruence between the sources of stress, and of support (Beehr *et al.* 2003).

Conclusion

Although the level of reported restructuring initiatives among NHS nurses was lower during restructuring than in the Canadian study, the current results demonstrate similar negative outcomes and equivocal results to those found previously. Such a situation might be unsustainable if organizational change continued, unless measures to improve information and participation among nurses were taken.

Despite its limitations, we believe that the study has made major methodological and theoretical contributions to the literature. Specifically, it was an attempt to study nurses during NHS restructuring and, unlike other studies, compared affected with non-affected nurses. Moreover, previous attempts to model the effects of restructuring have been

What is already known about this topic

- Internationally, healthcare organizations have experienced considerable organizational restructuring in recent decades and this has been associated with reports of negative outcomes for the nurses affected.
- Models to evaluate organizational change have focused on management factors, but have used concepts inherent in psychological stress literature.
- No conceptual framework which integrates management of change factors, and psychological stress processes has yet to be operationalized and tested.

What this paper adds

- Concepts that integrated management of change factors and psychological stress processes were operationalized in a conceptual framework.
- There were statistically significant differences between the nurses affected by change and those not affected in terms of stressors, information and participation and most of the outcomes measured, but not in terms of coping action.

limited to organizational issues, and studies of psychological effects have involved only individual outcomes such as unemployment. Our study addressed both these issues: it incorporated concepts in the cognitive theory of stress, and described psychological stress processes and responses to restructuring in terms of threat perception. We also evaluated adaptation up to 1 year after restructuring.

Our recommendations relate both to methodological and theoretical issues. The former concern the unreliability of results when the effects of hierarchical levels are ignored. This could be addressed by using multilevel modelling, which would not only enable identification of where and how effects were occurring in the hierarchy, but would also deal with inequalities within and between levels. Theoretically, the model could usefully be tested for its predictive power, and could include demographic and professional characteristics.

Management recommendations relate to the potential for restructuring to represent a threat, and be associated with perceptions of lower information and participation, which has a negative impact on job security, satisfaction, stress, and QOL. This situation may arise not only at the individual level from nurses' perceptions of managers not listening to their concerns, a limited vision of their future within the organization, or an authoritarian management style, but also at other organizational levels.

Acknowledgements

The authors would like to thank The King's Fund, London, the Department of Social Statistics at Southampton University and those nurses who participated in this study.

Author contributions

HB contributed to the study conception and design, data collection and analysis, drafting of the manuscript and critical revisions of the manuscript for important intellectual content. HB contributed statistical expertise and obtained funding for the study. FZ and EL supervised the study.

References

- Aiken L.H., Clarke S., Sloane D.M., Sochalski J.A., Busse R., Clarke H., Giovannetti P., Hunt J., Rafferty A.M. & Sharmian J. (2001) Nurses' reports on hospital care in five countries. *Health Affairs* 20(3), 43–53.
- Armstrong S.M., Cameron S.J. & Horsburgh M.E. (1996) The impact of organizational downsizing on the job satisfaction of nurses. *Canadian Journal of Nursing Administration* 9(4), 8–32.
- Arndt E.M. & Duchemin K.F. (1993) More than 'Band-aids': emotional support and education during the downsizing process. *Healthcare Management Forum* 6(3), 5–10.
- Baumann A., Giovannetti P., O'Brien-Pallas L., Mallette C., Deber R., Blythe J., Hibberd J. & DiCenso A. (2001) Healthcare restructuring: the impact of job change. *Canadian Journal of Nursing Leadership* 14(1), 14–20.
- Beehr T.A., Farmer S.J., Glazer S., Gudanowski D.M. & Nair V.N. (2003) The enigma of social support and occupational stress: source congruence and gender role effects. *Journal of Occupational Health Psychology* 8(3), 171–180.
- Black T.R. (1999) *Doing Quantitative Research in the Social Sciences: An Integrative Approach to Research Design, Measurement and Statistics*. Sage Publications, London.
- Blythe J., Baumann A. & Giovannetti P. (2001) Nurses' experiences of restructuring in three Ontario hospitals. *Journal of Nursing Scholarship* 33(1), 61–68.
- Brown H. (2003) The psychological effects of restructuring among nurses. PhD Thesis, University of Surrey, Guildford.
- Burke R.J. (2001) Surviving hospital restructuring. *Journal of Nursing Administration* 31(4), 169–172.
- Burke R.J. (2002) Work experiences and psychological well-being of former hospital-based nurses now employed elsewhere. *Psychological Reports* 91(3, part 2), 1059–1064.
- Burke R.J. & Greenglass E.R. (2001) Hospital restructuring and nursing staff well-being: the role of perceived hospital and union support. *Anxiety, Stress and Coping* 14, 93–115.
- Canavan K. (1996) Steps taken to protect health care workers from violence. *Nevada RNformation* 5(3), 17.
- Coddington D.C. & Moore K.D. (1987) Downsizing, Chapter 14. In *Market-Driven Strategies in Health Care* (Coddington D.C. & Moore K.D., eds), Jossey-Bass Inc., Publishers, San Francisco, CA, pp. 202–215.

- Corey-Lisle P., Tarzian A.J., Cohen M.Z. & Trinkoff A.M. (1999) Healthcare reform: its effects on nurses. *Journal of Nursing Administration* 29(3), 30–37.
- Crail M. (1999) Bitter pill: fourty nine trusts working towards merger. *Health Services Journal* 109(5638), 10–11.
- Davidson H., Folcarelli P.H., Crawford S., Duprat L.J. & Clifford J.C. (1997) The effects of health care reforms on job satisfaction and voluntary turnover among hospital-based nurses. *Medical Care* 35(6), 634–645.
- Dencker K., Gottfries C.G. & Landstroem H. (1989) Short-term nursing staff reactions to the closure of a major psychiatric hospital. *Nordisk Psykiatrisk Tidsskrift* 43(5), 401–410.
- Dialogue E. (1996) *Dialogue on Health Reform*. Ontario Nurses Association, Toronto.
- DoH (1990). *National Health Service and Community Care Act* (1990). HMSO, London.
- DoH (2000a) *Hospital and Community Health Service Expenditure: By Age of Recipient, 1998–99. Dataset Name: 8.5*. Retrieved from <http://www.statistics.gov.uk/statbase/ssdataset.asp?vlnk=5034>, on 16 May 2005.
- DoH (2000b) *National Health Service activity for sick and disabled people: Accident and emergency, And Acute Out-patients and Day Cases, 1981, 1986, 1991–92, 1996–97 and 1997–98: Social Trends. Dataset Name: ST30815*. Retrieved from <http://www.statistics.gov.uk/statbase/ssdataset.asp?vlnk=551&pos=3&colrank=2&rank=272> on 16 May 2005.
- DoH (2000c) *NHS Outpatient, Community and Day Care Contacts for People With a Mental Illness, 1987–88 to 1997–98 (Selected years): Social Trends Dataset. Dataset Name: ST30816*. Retrieved from <http://www.statistics.gov.uk/statbase/ssdataset.asp?vlnk=552> on 16 May 2005.
- DoH (2000d) *Places Available in Residential Care Homes: By Sector. Dataset Name: 8.11*. Retrieved from <http://www.statistics.gov.uk/statbase/ssdataset.asp?vlnk=3512> on 16 May 2005.
- Doyle-Driedger S. (1997) The nurses. *Maclean's* 110, 24–27.
- Faul F. & Erdfelder E. (1992) *GPOWER: A Priori, Post Hoc, and Compromise Power Analyses for MS-DOS (Computer Programme)*. Bonn University, Department of Psychology, Bonn.
- Gaynor S.E., Verdin J.A. & Bucko J.P. (1995) Peer support: a key to caregiver morale and satisfaction. *Journal of Nursing Administration* 25(11), 23–28.
- Goldstein H. & Spiegelhalter D.J. (1996) League tables and their limitations: statistical issues in comparisons of institutional performance. *Journal of the Royal Statistical Society* 159, 385–443.
- Greenglass E.R. & Burke R.J. (1997) *Hospital Restructuring, Anger and Hostility in Nurses*. Presented at: 11th Conference of the European Health Psychology Society, Bordeaux.
- Greenglass E.R. & Burke R.J. (2000) Hospital downsizing, individual resources, and occupational stressors in nurses. *Anxiety, Stress and Coping: An International Journal* 13, 371–390.
- Harrell F.E. (2001) Missing data. In *Regression Modeling Strategies* (Bickel P., Diggle P., Fienberg S., Gather U., Olkin I. & Zeger S., eds), Springer-Verlag Inc, New York, pp. 41–52.
- Harris P.E. (1989) The Nurse Stress Index. *Work and Stress* 3(4), 335–346.
- Kivimaki M., Kalimo R. & Lindstrom K. (1994) Contributors to satisfaction with management in hospital wards. *Journal of Nursing Management* 2, 229–234.
- Lam L.T., Ross F.I., Cass D.T., Quine S. & Lazarus R. (1999) The impact of work related trauma on the psychological health of nursing staff: a cross sectional study. *Australian Journal of Advanced Nursing* 16(3), 14–20.
- Latack J.C. & Havlovic S.J. (1992) Coping with job stress: a conceptual evaluation framework for coping measures. *Journal of Organizational Behavior* 13(5), 479–508.
- Lazarus R.S. & Folkman S. (1984) *Stress, Appraisal and Coping*. Springer, New York.
- Lees G.M.J. (2001) A comparative analysis of the survivor's syndrome responses of administrators, managers, nurses, and emergency physicians in a downsizing of the Ontario hospital industry. Dissertation Abstracts International Section A: Humanities and Social Sciences, vol. 62 (2-A), 668, PhD, Walden University, Minneapolis, MN, USA.
- Little R.J.A. & Rubin D.A. (1989) The analysis of social science data with missing values. *Sociological Methods and Research* 18(2 & 3), 292–326.
- McClenahan J., Howard L. & Macknight A. (1999) *Healthy Ever After? Supporting Staff Through Merger and Beyond*. Health Education Authority, London.
- Morrison D., Payne R.L. & Wall T.D. (2003) Is job a viable unit of analysis? A multilevel analysis of demands-control-support models. *Journal of Occupational Health Psychology* 8(3), 209–219.
- Office of Health Economics (OHE) (2002) *Compendium of Health Statistics*, 14th edn. OHE, London.
- Osgood C.E., Suci G.J. & Tannenbaum P.H. (1957) *The Measurement of Meaning*. University of Illinois Press, Urbana, IL.
- Perryman S. & Robinson D. (2003) Down the line. *Health Services Journal* 113(5851), 26–28.
- Roos N.P. & Shapiro E. (1995) Using the information system to assess change: the impact of downsizing the acute sector. *Medical Care* 33(Suppl. 12), DS109–DS126.
- Rout U.R. (2000) Stress amongst district nurses: a preliminary investigation. *Journal of Clinical Nursing* 9(2), 303–309.
- Schaefer J.A. & Moos R.H. (1996) Effects of work stressors and work climate on long-term care staff's job morale and functioning. *Research in Nursing and Health* 19, 63–73.
- Shaw J.B. & Barrett-Power E. (1997) A conceptual framework for assessing organization, work group, and individual effectiveness during and after downsizing. *Human Relations* 50(2), 109–127.
- Shindul-Rothschild J., Berry D. & Long-Middleton E. (1997) Where have all the nurses gone? Final results of AJN's patient care survey. *The American Journal of Maternal/Child Nursing* 22(1), 33–47.
- Smith G. & Secombe G. (1998) *Changing Times: A Survey of Registered Nurses in 1998*. Report no. 351. The Institute for Employment Studies, London.
- Spence Laschinger H.K., Sabiston J.A., Finegan J. & Shamian J. (2001) Voices from the trenches: nurses' experiences of hospital restructuring in Ontario. *Canadian Journal of Nursing Leadership* 14(1), 6–13.
- Spielberger C.D. & Reheiser E.C. (1994) The Job Stress Survey: measuring gender differences in occupational stress. *Journal of Social Behavior and Personality* 9(2), 199–218.
- Spielberger C.D. & Vagg P.R. (1998) *Professional Manual for the Job Stress Survey*, Research edn. University of South Florida, Tampa, FL.

- Staw B.M., Sandelands L.E. & Dutton J.E. (1981) Threat-rigidity effects in organizational behavior: a multilevel analysis. *Administrative Science Quarterly* 26(4), 501–524.
- Taylor S., White B. & Muncer S. (1999) Nurses' cognitive structural models of work-based stress. *Journal of Advanced Nursing* 29(4), 974–983.
- Tonges M.C., Rothstein H. & Carter H.K. (1998) Sources of satisfaction in hospital nursing practice: a guide to effective job design. *Journal of Nursing Administration* 28(5), 47–61.
- World Health Organization (1996) *WHOQOL-BREV Programme on Mental Health*. WHO, Geneva.