

Nurses' cognitive structural models of work-based stress

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This study examined the causes of stress experienced by National Health Service nurses in England over the course of a single week with the aim of generating a cognitive structural model. Qualitative data served as the foundation of a network study which employed inductive eliminative analysis. These data were also analysed using conventional qualitative methods and by content analysis.

The results were consistent with previous studies that identified a number of primary sources of stress. However, the network study indicated that two systems of causation were operating. The first centres on inadequate staffing levels, which were seen as leading to poor attitudes and abilities among colleagues, multiple work roles and lack of support. Lack of support also contributed to powerlessness and poor attitudes and abilities. The behaviour of managers was strongly endorsed as a direct cause of stress, but the strongest explanatory link was through staffing levels and powerlessness. The second system of causation related patients' suffering to stress. The qualitative data validated the network study results through elaborating the understanding of the respondents' nominated causes. Discussion focused on the pressure and frustration experienced by nurses because of organizational factors and interaction effects with the caring nature of nursing work. It is suggested that nursing discourse is subordinated to managerial and biomedical discourse reflecting the relative powerlessness of nurses. The extent to which such powerlessness is primarily a result of the failure of nurses to assert themselves or intrinsic organizational factors is not clear. The consequences of a stressed and demoralized nursing workforce on the quality of patient care and risk profile are identified as the focus for future research.

Keywords: stress, nursing, care, network analysis, inductive eliminative analysis, qualitative, discourse

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INTRODUCTION AND BACKGROUND

This study explores the complex and contingent factors that contribute to registered nurses' experience of stress. Previous studies did not formally measure the interrelationships between the discrete causes identified. This study takes into account the subjects' conceptions of what causes stress and utilizes such data to develop a more multifaceted account of the cause of stress in the form of a network study based upon qualitative and quantitative data. The qualitative data, separately analysed, add a dimension of meaning to the network study. The study addresses the continuing need to develop a sound understanding of the core causes of work-based stress and their interrelationships, thus broadening the existing literature. The aim was to develop a causal network model of work-based stressors appropriate to Registered Nurses in England. The findings, based on data from the North-east of England, will be useful in understanding, preventing and managing work-based stress for other National Health Service (NHS) nurses and managers.

This study is premised on three main issues. First, a belief that this approach will add a new dimension to the literature. Secondly, stress in nursing is continuing to impact on the quality of care, care outcomes, nurses' wellbeing and work satisfaction. Thirdly, the emotional and person-centred nature of nursing (Phillips 1996) is increasingly regarded as secondary to the mechanistic and instrumental approaches to care demanded by the economic, management and medical discourses (Strong & Robinson 1990). Stress and its effects contribute to the lack of a firm nursing power base. Bullying and harassment at work have recently been discussed (Long 1996) as examples of the causes of work-based stress in the NHS. Such experiences will impact on the nursing role.

The literature on stress and nursing supports the above premises. There is an abundance of citations of stress in nursing questioning the need for further study. The Cumulative Index for Nursing and Allied Health Literature (CINAHL) database, alone, offered 638 entries related to occupational stress and burn-out during the period 1986–96. Of these, 136 focused on issues of prevention and control. Stress in nursing is global, although much of the work is North American with fewer British contributions. Recent British contributions include the work of Tyler & Cushway (1995), Wheeler (1997a,b,c,d, 1998a,b), Kennedy & Grey (1997) and Farrington (1997).

In his recent series Wheeler has, however, offered examples of methodological and theoretical shortfalls in the work in this field to date. In particular he suggests that the actual levels of stress in nursing have not been established, with most attention being on the causes of stress. Certainly this has been a major focus (Gray-Toft & Anderson 1981, Power & Sharp 1988, McGrath *et al.* 1989,

Tyler & Ellison 1994). Many studies have reported similar findings and despite Wheeler's suggestion that this may be due to the use of similar measuring tools, there is a clear picture of widespread negative experiences (Potts *et al.* 1995, Ackroyd 1993, Kennedy & Grey 1997). Many studies have employed the Nurses Stress Scale (Gray-Toft & Anderson 1981), which may not reflect nurses' own conceptions of stress. There is a general agreement in the literature, however, on the main causal factors. Such factors include: inappropriate advice from junior and inexperienced staff, conflicts within the multidisciplinary team, bureaucracy, inadequacies of nursing care by others, verbal abuse from patients and relatives, physical abuse from patients, dealing with death and dying, shift work, lack of emotional support, conflict with doctors and uncertainty due to political issues (Gray-Toft & Anderson 1981, McGrath *et al.* 1989, Tyler & Ellison 1994, Tyler & Cushway 1995, Farrington 1997). Despite the lack of work on the prevalence of stress among National Health Service nurses, indicators such as the rate of early retirement and staff turnover suggest that stress is a significant problem (Moore 1996, Royal College of Nursing (RCN) 1998). Furthermore there is evidence which indicates that NHS staff do experience more stress than other workers generally (Institute of Work Psychology 1996).

Some studies have expanded the focus of investigation, considering factors outside the workplace that may cause stress at work. The call by Wheeler (1997c) for more research into this relationship is reasonable and acknowledges the holistic nature of being and the complexity of stress. Some have studied these issues (Hingley *et al.* 1986, Michie *et al.* 1996, Kennedy & Grey 1997). Tyler & Ellison (1994) found that nurses with no children had higher stress scores than those with children (as measured by the Nurses' Stress Scale). While important, such a focus may detract from the major impact organizational issues have on nurses as an occupational group.

The Director of the Institute of Health Service Management (quoted in Scott 1998) claims the NHS does not take the causes of stress within the organization seriously. Of course it is important to help people manage stress, but such management might involve nurses increasing their psychological distance from patients in contradiction to the contemporary value placed on empathy, partnership and engagement with patients. If managers and nurses understand work-based stress then nurses, whatever their personal predisposition to stress, have more chance of their concerns being dealt with. Effective action, however, requires understanding of the causal mechanisms by those with relevant influence, a real desire to act thereon but also, crucially, the power to implement what could be radical organizational, economic or cultural changes.

THE STUDY

This study employed network and qualitative analyses of nurses' written descriptions of their work-based stress to investigate the causal relationships between the stressors identified. This combination of qualitative and quantitative methods to investigate the perceived casual structures of stress in the workplace acknowledges the importance of respondents freely nominating such causes. The qualitative data were used in two ways. First they were used to generate the prospective causes (stage one of the network study) and secondly as a source of rich insights into workplace stress which could be used to help interpret and support evidence produced from network analysis. The respondents used the term 'stress' in its everyday sense. No attempt was made to impose a precise and technical definition. Rather, the general notion was used of an unpleasant experience resulting from demands being made that are near, on or beyond the level that can be met comfortably. This conception of stress as maladaptive rather than a positive motivating factor was clearly evident in the qualitative data that formed the basis of both parts of the study.

Network analysis has been modified from its more frequent uses in sociology and anthropology, for studying social relationships, to investigate the causal models lay people have for various social phenomena and therefore it is an appropriate method for this study. Network studies originally utilized minimum systems' criteria and/or cause to link ratio criteria (Lunt 1988, Campbell & Muncer 1990, Lunt & Livingstone 1991, Muncer & Gillen 1992, Muncer *et al.* 1992, Heaven 1994, Gillen & Muncer 1995, Muncer 1995). Debate has ensued since the early network studies on two issues: first, the value of the network being consensual and secondly, the importance of subjects being able to nominate direct links between a cause and the target social phenomenon, in this case stress. Muncer & Gillen (1997) have developed these concepts. Muncer & Gillen (1992) have utilized inductive eliminative analysis to construct networks that are consensual. This process requires that each participant's endorsement is checked as each new causal link is added. A network with around a 50% endorsement level is regarded as consensual. The present study has employed the use of inductive eliminative analysis and has allowed the participants to nominate both direct and non-direct causal links to stress.

Method

Subjects

Seventy nurses, enrolled at an English University on a part-time post-registration degree programme, participated voluntarily in the study.

Procedure

In the present study we investigated the perceived causal structure of stress in the workplace by first asking participants to freely nominate causes of stress. The participants kept a diary of the stressful incidents that took place at work for a 1-week period. They were asked to identify the cause of stress.

Seventy written responses were submitted, varying from a sentence to three pages of narrative. Predominantly the data were in list form, items on the list representing specific sources of stress described by a sentence or a paragraph.

The 70 submissions were independently content-analysed by the authors, who then reviewed and discussed all the categories generated. These were reduced to 11 core categories for the network study. (Detailed analysis was subsequently carried out.) The 11 nominated causes were: inadequate support, multiple roles, patients and relatives' behaviour, patient suffering, powerlessness, interruptions, attitude and ability of staff, behaviour of managers, behaviour of doctors and shift patterns. Stress was added to these causes to permit the possibility of perceived direct links to be indicated.

Participants in the network study (which took place 1 week later) were given a two-page form. The first page contained the following instructions.

Over the page you will find a grid with 12 causes and effects printed. I want you to think about these as explanations for why somebody may be stressed. Your task is to judge how likely the causes are to bring about the effects. For example, how likely is it that *shift patterns* will cause *staffing levels*? If you think it is highly likely then put a '5' in the box. Choose whichever of the answers best represented your opinion and put the corresponding number in the appropriate box. At the top of the page there is a scale of numbers from 1 to 5. Each of these represents one possible answer. Please make sure you fill in all the open boxes. The 12 causes are:

- **stress** — your feelings of stress;
- **inadequate support** — lack of resources and personnel to support care;
- **multiple roles** — conflicting demands of different roles;
- **patient's and relatives' behaviour** — their demands and expectations;
- **staffing levels** — too few staff;
- **powerlessness** — feeling that one has no influence on decisions;
- **interruptions** — issues preventing execution of main role, telephone calls, etc.;
- **attitude and ability of staff** — competence and attitude of colleagues;
- **behaviour of managers** — lack of support from;
- **behaviour of doctors** — their attitude and abilities;
- **shift patterns** — the intensity of shift rotation.

The second page consisted of a grid with the 12 causes listed down one side, labelled as causes, and across the top labelled as effects. The scale from 1 (impossible) — 5 (highly likely) appeared in the top left of the page along with a reminder to 'Please make sure to fill in every box'. The grid was presented in two forms with the order of causes being reversed for the second form; this is to balance for possible order effects.

Participants were allowed to complete the form in their own time and were debriefed when all forms had been collected.

Results

The data from 50 participants' useable completed grids were aggregated and the mean rating for each possible network connection appears in Table 1.

Construction of the network under inductive eliminative analysis proceeds by including the highest rated cause in the network and then adding causes in order of their strength, in this case the mean rating level. The criterion for inclusion in the network is initially set at five, which is the highest possible rating of the likelihood of the connection. In this case the highest rated causal link was between *staffing levels* and *stress* with a mean rating of 4.52. The first two causal links included in the network were *staffing levels* to *stress* and *inadequate support* to *stress*. After each cause has been added, each subject checks the entire network of causal links for endorsement. The subject is assumed to endorse the network if he/she has rated each and every link in it at a level of 3 or higher (Muncer & Gillen 1997). The first network was endorsed by 92% of subjects. Causal links were added according to the mean likelihood of a connection, with the criterion for inclusion being reduced by 0.1 on each occasion. The order of inclusion of links and overall endorsement level

of each network are given in Table 2. The final network is presented in diagrammatic form in Figure 1.

Network construction initially stopped when the endorsement level dropped near to 50% at this point the network is no longer a consensual interpretation (Muncer & Gillen 1997). The final network includes both direct causal links, which are seen as having a direct impact on stress, and indirect links in which the cause is linked to another possible cause of stress. For example, there is a direct link from *patient suffering* to *stress* and an indirect link from *staffing levels* to *multiple roles* to *stress*. Another method of describing the network diagram is to divide the causes into distal (which are seen as beginning a causal sequence) and mediating (which are seen as intermediate steps in a causal sequence) (Lunt 1988). Distal causes have arrows leaving but not incoming, mediating have both incoming and outgoing. In this case, the distal causes of stress are *staffing levels*, *manager's behaviour* and *patient suffering*. *Multiple roles*, the attitude and ability of staff, *inadequate support* and *powerlessness* are mediating causes.

It is tempting to see the three distal causes of stress as being distinct and separate causes of stress. Further analysis suggested that this might be misleading. The *behaviour of managers* has a mean likelihood rating of 3.98 with both *staffing levels* and *powerlessness*, which suggests that the behaviour of managers is better seen as the distal cause of stress, affecting as it does *staffing levels* and *powerlessness*, which then become mediating causes of stress. Although when these causal links are added to the network the endorsement level drops to 44%, it still seems more parsimonious to view the causes of stress as being from two systems. The first is related to *staffing levels* which are caused by managers and affect the attitude and ability of staff, make staff adopt multiple roles, deprive them of adequate support which in turn

Table 1 Mean strength of each causal link

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---------------------------------------|-------|-------|-------|-------------|-------|-------------|-------|-------|-------|-------------|-------------|-------------|
| 1. Shift patterns | xxxxx | 2.40 | 2.70 | 3.26 | 2.30 | 2.54 | 3.76 | 2.76 | 2.34 | 3.08 | 3.14 | 3.52 |
| 2. Behaviour of doctors | 1.88 | xxxxx | 2.92 | 3.18 | 2.82 | 3.12 | 2.22 | 3.66 | 3.62 | 3.12 | 3.06 | 3.84 |
| 3. Behaviour of managers | 2.84 | 2.88 | xxxxx | 3.80 | 2.66 | 3.98 | 3.98 | 2.84 | 2.80 | 3.68 | 3.94 | 4.14 |
| 4. Attitude and ability of staff | 2.70 | 3.36 | 3.58 | xxxxx | 2.72 | 3.28 | 3.30 | 3.78 | 3.72 | 3.64 | 3.70 | 4.04 |
| 5. Interruptions | 2.00 | 2.90 | 3.58 | 2.94 | xxxxx | 2.70 | 2.84 | 3.18 | 3.08 | 2.76 | 2.52 | 3.88 |
| 6. Powerlessness | 2.40 | 3.12 | 2.64 | 3.74 | 2.38 | xxxxx | 3.14 | 3.14 | 2.90 | 2.90 | 3.38 | 4.10 |
| 7. Staffing levels | 3.76 | 2.94 | 3.52 | 4.00 | 3.36 | 3.74 | xxxxx | 3.84 | 3.5 | 4.16 | 4.06 | 4.52 |
| 8. Patient suffering | 2.08 | 3.20 | 2.68 | 3.60 | 2.68 | 3.54 | 2.74 | xxxxx | 3.94 | 2.86 | 2.96 | 4.18 |
| 9. Patients' and relatives' behaviour | 1.84 | 2.86 | 2.66 | 3.36 | 3.32 | 3.14 | 2.30 | 3.16 | xxxxx | 2.60 | 2.56 | 3.98 |
| 10. Multiple roles | 2.54 | 3.12 | 3.32 | 3.68 | 2.96 | 3.24 | 3.38 | 3.12 | 2.90 | xxxxx | 3.42 | 4.28 |
| 11. Inadequate support | 2.66 | 3.36 | 3.56 | 4.02 | 2.66 | 4.04 | 3.98 | 3.74 | 3.36 | 3.56 | xxxxx | 4.34 |
| 12. Stress | 2.69 | 3.40 | 3.64 | 3.77 | 3.06 | 4.02 | 3.91 | 3.87 | 3.54 | 3.21 | 3.31 | xxxxx |

Table 2 Order of causal links added to the network

| Network | Causes added | Mean rating | Endorsement of network |
|---------|---|-------------|------------------------|
| 1 | Staffing levels to stress | 4.52 | 92% |
| | Inadequate support to stress | 4.34 | |
| 2 | Multiple roles to stress | 4.28 | 86% |
| 3 | Patient suffering to stress | 4.18 | 82% |
| | Staffing levels to multiple roles | 4.16 | |
| 4 | Behaviour of managers to stress | 4.14 | 72% |
| | Powerlessness to stress | 4.10 | |
| | Staffing levels to lack of support | 4.06 | |
| 5 | Attitude and ability of staff to stress | 4.04 | 46% |
| | Inadequate support to powerlessness | 4.04 | |
| | Stress to powerlessness | 4.02 | |
| | Inadequate support to attitude and ability of staff | 4.02 | |
| | Staffing levels to attitude and ability of staff | 4.00 | |

effects their attitude and ability and also leads to feelings of powerlessness. The second system concerns patient suffering which is a direct cause of stress. Patient suffering appears to have no important indirect causal links, as the highest likelihood of the indirect links is *patient suffering to patients' and relatives' behaviour* with a mean of 3.94. If this link is included a further four links with a higher rating would also have to be included and the network endorsement level would drop to 34%. This network is shown in Figure 2.

The causal links that do not appear on the first network include *shift patterns*, *behaviour of doctors*, *interruptions* and *patients' and relatives' behaviour* (although this appears on the last network). For three of these causes the highest causal link was a direct link with stress and for

shift patterns the highest causal link was with *staffing levels*.

Qualitative analysis

An additional qualitative analysis was carried out. Essentially the data were read and re-read accompanied by the recording of thoughts and ideas and the generation of themes considered useful in communication of inherent meanings.

The data strongly indicate a particular picture of nursing/midwifery located within a very demanding and complex health industry setting. Three broad themes were identified; the first refers to *the imbalance between work demanded and resources available*. Resources are taken to

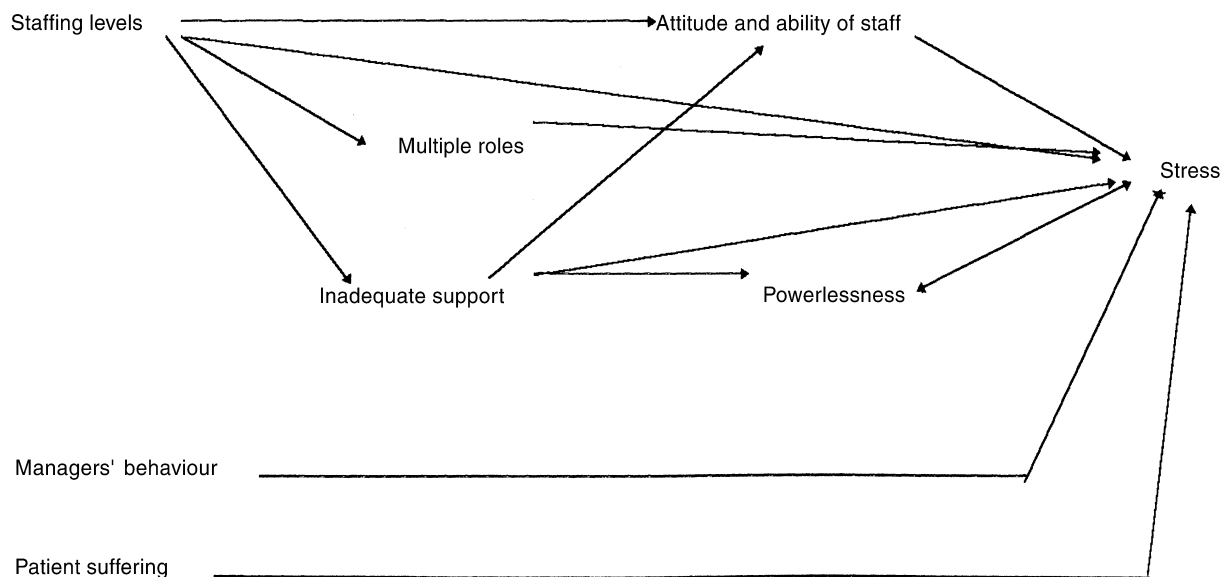


Figure 1 Network of perceived causes of stress. Each causal link has a scale rating of at least 4 on a five-point scale. The entire network is endorsed by 46% of subjects.

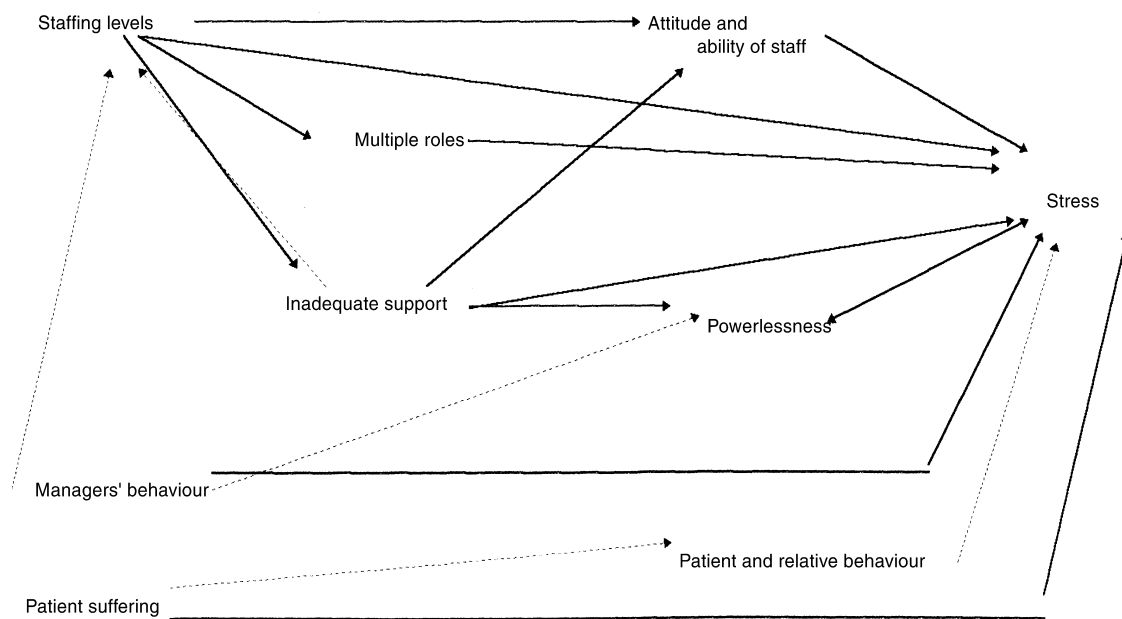


Figure 2 Network of perceived causes of stress. Each causal link has a scale rating of at least 3.94 on a five-point scale. The entire network is endorsed by 34% of subjects.

mean numbers of staff, their capabilities and physical resources such as beds and equipment. A typical submission covered a number of points but is useful to see as a whole:

Was senior sister for 30 beds; increased to 60

- finance; cost cutting
- staffing below minimal safe levels
- looking for staff cover for night shift
- meeting objectives — appraisal for staff
- meeting everybody's expectations
- time to spend (quality) with patients and staff

The role of support staff is important here as an element in the range of resources available to meet the demands placed upon individuals and departments.

Not having the support from office staff—not being able to find the relevant notes which wastes time that could be spent with patients.

This situation of imbalance was characterized either on the basis of too many patients (too many beds), not enough beds (for patients being cared for), insufficient equipment or insufficient staff. Inadequacies of organizational systems and capabilities of staff were also part of the imbalance between work demanded and resources available.

Incompetent management

Others not doing their job

Poor communication — not informed of additional personnel joining the department.

No senior medical staff at out-patient clinic — self and junior doctor left in vulnerable position if problem beyond our capabilities.

Forces beyond the control of the nurses/midwives concerned brought about this imbalance. Mainly it related to the actions of managers and medical staff responsible for the admission and discharge of patients and the level of resources. Often their priorities seemed at odds with those of the nurses.

Juggling beds again — too many patients, not enough beds.

Situation concerning 14–16-year-olds having choice as to whether they are admitted to children's services or adult wards. Doctors don't understand that it is at the children or their parents' choice. Medical and A&E staff are using this hospital policy to manipulate bed management.

The consequences for the nursing group were not only on the experience of dealing with too many patients but also on disruption to their personal lives through having to stay at work beyond their paid hours.

Long shift — angry because I'm here for 14 hours but getting paid for 13. I'm supposed to get 2 × 10-minute breaks and 1 hour lunch break — only manage 20 minutes at 2 p.m.

Managing staff of a department was repeatedly cited as a cause of stress through having to contact their colleagues at unsocial hours or while they were on days off or holiday to persuade them to work extra shifts. Those under pressure to work extra shifts also found this stressful.

Covering sickness on the duty rota with staff who are already overworked.

Pressure to prioritize work demands over personal life was indicated.

Being late going off-duty knowing my child was waiting at school.

Always have to stay at work after span of duty finished.

Report was requested Friday at 4 p.m. with deadline Monday 9 a.m. I had a full weekend organized but had to go home and produce report ready for Monday a.m. ...I had to totally re-organize my weekend.

Another aspect of the nurses' experiences of stress related to the lack of resources to meet demand is constant interruptions, especially by the telephone and a noisy cluttered environment.

Too much background noise, alarms going, telephone ringing, someone requesting admittance to the unit when I was busy completing some other task.

Untidy colleagues — things not returned to where they belong.

A final quote is offered to emphasize the striking picture of a stressful environment.

Monday afternoon — only qualified nurse on the ward — 3 critically ill people all needing direct attention — 4 discharges — needing paperwork, etc. to leave — 4 admissions — acute medical problems, all needing admitting. Tel. non-stop about other patients. Off-duty problems — 2 staff gone off sick. Work from 2 ward rounds to sort out before 5 p.m. Most stress was being only qualified nurse at the time.

The second theme, *control over one's professional work*, is an integral part of the first, but an important aspect of it in terms of understanding why it occurs and how it can be addressed. Some participants referred specifically to powerlessness, but many indicated frustration at not being able to do anything about their situation.

Sent a letter of complaint to clinical director re. an incident at a community clinic that occurred the previous week. Whilst I had pen to paper I took the opportunity of questioning my growing, impossible workload. After which I worried about whether I was right to send it.

This respondent went on to describe how she had felt intimidated by her manager and had subsequently cried and worried over raising this issue.

One participant in a long narrative described her responsibilities for dealing with admissions to a medical and surgical unit. She was on duty for a 12-hour shift and 39 patients were admitted, sometimes before an actual bed was available. She came under great pressure from three managers to get a cremation certificate completed, because a patient who had died the previous week was due to be cremated the next day and this would have to be cancelled if the certificate was not signed by two consultants. Rather than say this is a medical responsibility she spent from

11 a.m. until 3 p.m. pursuing the consultants with the certificate. She finishes the story with a telling quote:

The funeral went ahead. The general office (the three managers) stopped a serious complaint and both doctors received a fee for filling in the form.

It is likely that other professional groups in the NHS would also express feelings of powerlessness, given the pressures on them to process so many cases and to be aware at the same time that should anything go wrong a legal defence would be required. Perhaps those in the most senior ranks of each professional group within each trust feel more able to make decisions concerning the demands on them, but for most staff the pressure to keep the system going is probably perceived as intense. Nurses particularly may feel this more, however, because they have to deal with patients that are admitted and discharged by others.

In theory, nurses can refuse to accept patients beyond what they judge to be an acceptable number, but in practice their ability to resist the judgements of the medical staff and managers is weak. Many quotes were submitted which indicated that staffing levels were inadequate for acceptable levels of safety or quality of care, yet nurses seem powerless to counter this situation. It is clear that nurses are relatively powerless in relation to managers and medical staff, but what is not so clear is whether the primary reason for this is to be found within the characteristics of nurses or whether it is more within the organizational structure. It probably reflects an interaction between these two factors, evidence of which was abundant within the data generated in this study.

The third theme is the *nature of the work* done by the National Health Service and in particular by nurses. Many references were made to the frustration at not being able to give the quality of care desired with the consequent guilt at patient's suffering.

Concern over level of pain and discomfort child with fractured femur suffered. Analgesia and muscle relaxant given, but child hallucinated and vomited. Worried about Mother who appeared exhausted and also had a 7-month baby at home to see to. I would have liked to use a Patient Controlled Administration system for control of pain, which I have seen used in other hospitals (which we don't have). Better pain management all round for children.

Patients experiencing pain, disability and death with all the consequent psychological trauma involved make the work more harrowing than if it was some other line of business.

Relatives of a terminally ill patient becoming hysterical at his death, draping themselves over his body and refusing to leave the hospital or allowing the body to be taken to the morgue.

The satisfaction available when things go well should not be discounted. However, the potential for disaster is also greater, leading to more stress when unable to work as one would like.

As an additional check, the original coding of the qualitative data was content analysed. Thirty-five categories were originally constructed by one of the authors and a count was made of the number of times; each of these categories was identified by the 70 respondents. The 12 most frequently quoted categories were:

| | |
|--|----|
| Work demands unrealistic (excessive) | 29 |
| Poor skills, knowledge or attitude from others (excluding medical staff) | 23 |
| Inadequate staff numbers | 18 |
| Telephone, interruptions and noisy environment | 17 |
| Poor knowledge, skills or attitudes from medical staff | 16 |
| Inefficiencies in internal and external organization | 16 |
| Work's effects on bodily rhythms, family and social life | 15 |
| Patients' and relatives' behaviour | 14 |
| Inadequate physical resources | 11 |
| Poor communication | 11 |
| Conflict with medical staff | 10 |
| Dealing with patients' personal and social problems and suffering | 10 |

DISCUSSION

Data from the qualitative analysis, the content analysis, the network study and the literature demonstrate notable consistencies. The principle findings from the literature identified organizational factors such as *workload*, *relationships with superiors* and *conflicts within the multi-disciplinary team* as key factors contributing to stress. Other sources included *bureaucracy*, *inadequacies of colleagues* and *the nature of nursing work*. The qualitative study supported this literature and identified specifically *workload*, *lack of control over own work* and *the nature of nursing work* as major sources of stress. Similarly, the content analysis reinforced previous findings.

The network study focused on the causal relationships between 12 factors (derived from the above and including stress itself). The four highest rated factors had direct causal links to stress (Table 2) and were *staffing levels*, *inadequate support*, *multiple roles* and *patient suffering*. The majority of respondents endorsed other factors seen as directly causing stress; these were *behaviour of managers* and *powerlessness*. The top two causal links between factors other than stress were between *staffing levels — multiple roles* and *staffing levels — lack of support*. Again the picture is very much one of a nursing work force stretched beyond reasonable limits unable to resist

because of the power of other groups. The nature of the work, involving as it does peoples' suffering, is also a significant source of stress.

Four aspects of stress are clearly important to nursing. These are its nature, prevalence, causes and effects. The causes of stress have been the subject of this paper. The findings have contributed to the literature on stress in nursing by exploring further the causal chains of work based stress. The contrasting methods of data analysis complement and validate one and another, thus enhancing the validity of the findings. The subjects' conceptions of stress are clearly evident and the authors feel the study has achieved a satisfactory degree of construct validity. A consensual network has been identified (46%) and the causal links have been illuminated by the qualitative data; thus the meanings of the subjects' endorsements are apparent.

The causes of stress that need to be discussed and explored further should now be clear to the reader. Organizational and management factors are central to the nurses' perceived causes of stress. Managers were the main distal cause of stress. They were identified as having a direct influence on stress, but there was also strong support for the influence of managers on the other key sources of stress, that is, staffing levels and powerlessness. Both staffing levels and powerlessness were themselves seen as influential directly and through mediating causes (attitude and ability of staff, multiple roles and inadequate support). The qualitative data illuminate this causal chain under the theme resources vs. demands, highlighting how multiple roles are affected by staffing levels. This theme captures the image of too many demands, the adoption of multiple roles; caring work, clerical work, duty rostering work, telephonists' work and work generated by the visit of the medical profession (the ward round). The adoption of multiple roles and having to endure inadequate staffing levels has contributed to a crisis in nurses' morale (Adomat & Killingworth 1994). The undermining of nurses' professional values and priorities and the hegemony of managerial and economic discourse are impacting on nursing discourse in a negative manner. Nurses' commitment has been judged by other professional groups on their willingness to offer over and above their contracted hours and undertaking to extend their contracted role. Conflicts over working beyond shift times, irregular and extra shifts at work are evidenced strongly in the data. Fox (1991), in a study of a surgical department, quoted a theatre manager thus:

Surgeons will try to take advantage day after day, and will use emotional blackmail to try to keep the staff on late. One of the surgeons in plastic (theatre) says that if you want to be a theatre nurse you must not have a life of your own...

Such comments need to be considered in the context of other studies that suggest nurses who have family or social

support suffer less from burn-out and score less on stress rating scales (Gray-Toft & Anderson 1981, Dolan 1987, Tyler & Ellison 1994). If this is true then organizational issues and unreasonable demands on nurses will surely be impacting on private aspects of their lives as family and friends suffer. This study suggests that leaving work late and taking on extra shifts causes conflict between the public and private aspects of self. Michie *et al.* (1996) reported home-work interactions as a factor contributing to stress.

The impact of the market approach to health care with its focus on productivity is evident. Global trends towards the scientific development of cost-effectiveness are influential within the health care industry with the resultant establishment of a dominant managerial/economics discourse and organizational structure. This has created stress and undermined collaborative approaches to the implementation of the changes that have resulted from policy initiatives. Differing perspectives on dilemmas such as the management of throughput, waiting lists, staffing and skill mix, etc. have not been sought; rather, a managerial perspective has been imposed (Obgikzer & Roberts 1994). McGrath *et al.* (1989) highlighted that nurses had too little time to perform duties to their satisfaction and that rationing of scarce services or resources and meeting deadlines imposed, by others, caused severe or moderate stress. They listed the sources of their respondents' stress ($n = 171$) in a strikingly similar way to the data in this study.

In conclusion, the causes of stress in nursing appear to originate from two primary sources, organizational factors and the caring element of nursing work. Such causes are clearly factors that would interfere with effective and efficient care. The future focus of research on stress in nursing should be on these effects. Such knowledge may act as a catalyst for a genuine consensual strategy to reduce stress levels in nursing.

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