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Perceived Occupational Stress in Nurses Working in Ireland

Abstract

Background

This study examines perceived stress and its potential causal factors in nurses. Stress has been seen as a routine and accepted part of the healthcare worker's role. The lack of research on stress in nurses in Ireland motivated this study.

Aims

The aims of this study are to examine the level of stress experienced by nurses working in an Irish teaching hospital, and investigate differences in perceived stress levels by ward area and associations with work characteristics.

Method

A cross-sectional study design was employed, with a two-stage cluster sampling process. A self-administered questionnaire was used to collect the data and nurses were investigated across ten different wards using the Nursing Stress Scale and the Demand Control Support Scales.

Results

The response rate was 62%. Using outpatients as a reference ward, perceived stress levels were found to be significantly higher in the medical ward, accident and emergency, intensive care unit and paediatric wards ($p<0.05$). There was no significant difference between the wards with regard to job strain, however, differences did occur with levels of support; the day unit and paediatric ward reporting the lowest level of supervisor support ($p<0.01$). A significant association was seen between the wards and perceived stress even after adjustment ($p<0.05$).

Conclusion

The findings suggest that perceived stress does vary within different work areas in the same hospital. Work factors, such as demand and support are important with regard to perceived stress. Job control was not found to play an important role.

Perceived Occupational Stress in Nurses Working in Ireland

Introduction

Nursing in Ireland has changed significantly in the last six years with the promotion of higher standards of care and professionalism through legislation [1] and advanced educational attainments. This development in Irish nursing may result in an increased level of stress for the nurse[2]. Little research has been done on occupational stress in nurses in Ireland. This paucity of research necessitates the present study.

Work pressures are seen as part of everyday life for health professionals. Cox *et al.* [3] described the stress response as being a mismatch between the perceived demands and the ability of the individual to cope with these demands. Prevalence rates of stress among nursing staff vary across studies with researchers reporting rates of 29% to 40%. [4,5]

Health care workers have been recognised as experiencing occupational stress[6,7]. Nursing places a range of different demands on the person. These include physical (high workload), emotional (issues to do with death and dying), and social demands (conflict with colleagues)[8]. The Nursing Stress Scale (NSS), examines the perceived causes of stress in the physical, psychological and social environment specific to nursing[8]. The Job Content Questionnaire (JCQ), which is based on the demand-control model[9] compliments the use of the NSS in the present study. The scales are generic and not specific to any job. This more objective measure of job stressors, as characteristics of the job, postulates that when psychological demands in the workplace are high and the control of the worker is low, then psychological stress or strain will occur.

A third dimension, support, was added to the original demand-control model[10] – demand control support (DCS) model High levels of support and clear channels of communication have been found to buffer against negative job characteristics[11]. In the workplace, emotional (being able to share inner feelings with someone) and instrumental support (someone to help if there is a lack of material resources)[12] are the most relevant with regard to stress reduction[13] .

Substantial research is available on the stress encountered by accident and emergency nurses, intensive care nurses, and psychiatric nurses[14,-16] but few have compared the experience of nurses across different wards. The NSS measures factors innate to the nurse's role. The demands of the nurse's job will persist but control over work practices and support in the workplace can reduce job strain. This could in turn reduce stress encountered in the physical, psychological and social work environment of the nurse. The present study investigates differences in perceived stress by work area, in the same hospital and work factors associated with perceived stress. The study also evaluates whether job characteristics such as job demands, job control and lack of support vary by ward. These factors may point to specific work organisational issues. Finally, the study will investigate how perceived stress and work characteristics are associated.

Methods

The present study was conducted in a teaching hospital located in the second largest city in Ireland. Approval for the study was granted from the Clinical Research Ethics Committee and the Executive Management Board of the hospital studied. The population chosen for this study were all full or part-time qualified

nurses working both day and/or night shift. Approximately 350 nurses working in the hospital fulfilled the inclusion criteria.

A two-stage cluster sampling process was adopted. The first stage involved the selection of ten different areas within the hospital. The hospital had more than one ward covering medical and surgical specialities. The researchers only included one of each of these areas with one combined ward (medical/surgical). The areas included a medical/surgical private ward, medical and surgical public wards, intensive care unit (ICU), Accident and Emergency (A&E), general outpatients, paediatrics, theatre/recovery, care of the elderly, and a day unit. A random sample of nurses from each of these areas was selected. This sample included qualified nurses, junior ward managers (Clinical Nurse Manager 1 – CNM1) and senior ward managers (Clinical Nurse Manager 2 – CNM2, and Clinical Nurse Manager 3 – CNM3). The number of questionnaires distributed on each ward reflected the staffing levels of those wards.

Data collection was by means of self-administered questionnaires.

The structured questionnaire used consisted of demographic questions and the combination of two previously validated instruments - the Nursing Stress Scale (NSS)[8] and the Job Content Questionnaire (JCQ)[9](here after referred to as DCS).

The NSS measures potential stress sources originating from the physical (work load), psychological (death and dying, inadequate preparation, lack of support, uncertainty concerning treatment) and social (conflict with physicians, conflict with other nurses) environment. The scale is composed of thirty four likert style questions to be answered using the options of; never, occasionally, frequently or very frequently. Responses were summed up into the three

potential stress sources (physical, psychological and social environment) and into one total score resulting in four scores. Internal consistency (Cronbach α) for the physical environment was 0.87, psychological environment was 0.87 and social environment was 0.83. The DCS scales are composed of seventeen individual questions with three subscales as the name suggests: demand, control and support. The support subscale was further measured as supervisor support and co-worker support. A likert response format was employed for the DCS, using often, sometimes, seldom and never/almost never as the options. Cronbach α for the individual subscales were; job demands=0.66, job control=0.55, supervisor support=0.93 and co-worker support=0.78.

The mean stress level (as measured by the NSS) was attained for each ward. The quotient of demands/control was used as a measure of job strain.

All analysis was carried out using SPSS™ version 15. One-way ANOVA was conducted to compare the mean scores on the NSS and DCS by individual wards. Dunnett post-hoc test was used to show significance between the individual areas using outpatients as a control. Spearman's correlation coefficient was carried out to assess the relationship between the total perceived stress, its components and the DCS and its components. Length qualified was excluded from the analysis as it was highly correlated with age (*rho*=0.87). The independent effect of work areas was then assessed. In order to do this, eight dummy variables were created for the nine wards. The outpatients department had one of the highest response rates. In view of this, and because it is fundamentally different to other areas studied; patients are not admitted there, this area was used as a reference ward. A multiple regression model was built

adjusting for the potential confounders; job strain, support (sum of supervisor and co-worker support), and age.

Results

Of the 186 questionnaires that were distributed, 117 were returned. One partially completed, was omitted from the analysis, so the overall response rate was 62%. The response rate across the wards varied considerably; consequently some wards were under-represented in the final sample (see table 1). The response rate from the surgical wards was only 28% so the surgical ward data was deleted from the analysis, as it was deemed non-representative.

The majority of the sample comprised of females (91%) with 75% aged 24-40 years of age. Almost half of the sample, (46%) were qualified ten years or less and 76% of them worked as qualified nurses (table 2).

Table 3 shows mean scores for overall perceived stress levels and its components in addition to the mean scores for job strain levels and its components. The mean score for perceived stress and for psychological environment was highest in the paediatric ward and lowest in theatre and recovery. Physical environment scores were highest in the medical ward, and lowest for the care of the elderly ward and outpatients. The day unit had the highest score with regard to social environment and the care of the elderly had the lowest. There was no significant difference between the wards with regard to the total score for job strain and job control. Nevertheless, looking at other components of job strain, job demands were highest in the medical ward and lowest in care of the elderly and outpatients. Of note the care of the elderly ward

and outpatients reported the highest mean supervisor support with the paediatric ward having the lowest.

Table 4 shows the association of each of the component of the NSS and the DCS in addition to the total perceived stress levels and job strain. Total perceived stress positively correlated with job strain and its component, job demands ($p<0.01$). In addition, there was a strong positive correlation between job demands due to the physical environment ($r=0.61$, $p<0.01$). Small, but significant, positive correlations were found between the psychological environment due to job strain and job demands ($p<0.01$), and the social environment with job strain and job demands ($p<0.01$). All items of the NSS were negatively correlated with support, this being strongest for the physical environment and supervisor support ($r=-0.38$, $p<0.01$). No correlation was found between perceived stress or its components, physical, psychological, social environment, and job control.

A log transformation, (log10), was conducted on the total perceived stress scale owing to its skewed distribution. Dummy variables were used for the wards with outpatients as the reference group. Table 5 shows results for two linear regression models; model I included the different ward areas as independent variables and model II has additional adjustment for job stain support and age. The model explained 20% of the variation in the log of perceived stress. Statistically significant differences were found between the log of perceived stress levels in the individual wards ($p<0.01$). However, these differences were lost in model II when adjustment for job strain, support and age was made. The adjusted model explained 28% of the variation in the log of

perceived stress ($p<0.05$). Job strain was the greatest contributor to the model (beta=0.25, $p<0.01$).

When the individual components of the NSS were analysed the adjusted models all remained significant (physical environment $R^2=0.37$; $p<0.05$, psychological environment $R^2=0.18$; $p<0.05$, social environment $R^2=0.17$; $p<0.05$). Neither age nor support were independently significant in any of the NSS component models. Job strain, on the other hand, remained highly significant for the physical environment contributing most to the model (beta=0.28, $p<0.01$). At a ward level, significant differences remained for the medical ward ($p<0.05$) and A&E ($p<0.05$) but were lost for the day unit and paediatrics.

The medical ward, ICU and A&E remained significantly different from outpatients in the adjusted model for the psychological environment with ICU and A&E contributing most to the model (beta 0.33, $p<0.05$). No work area was significant for the social environment in the adjusted model.

Discussion

The respondents in this study comprised mainly of female qualified nurses, with only 5% of the sample being male. This reflects the gender distribution within nursing, with 5% of the active general nurses in Ireland being male[18]. Perceived stress levels were found to be higher in the medical ward, A&E and paediatrics than in theatre and recovery. This would be consistent with prior studies for the A&E environment[14]. Although the NSS was used on

theatre/recovery nurses prior to this, [19] there is a question of its appropriateness for this area. A relationship between the patient and the nurse was implied by the questionnaire, which the nurse in the theatre/recovery area may not necessarily experience.

A&E, paediatrics and the medical ward reported the highest stress from the physical environment. This component of the NSS looks at organisational factors such as work load and staffing which are known to cause stress for the nurse[15]. Ensuring an adequate staffing level, assessed through patient need, for each area can reduce stress caused by the physical environment.

Interestingly the day unit had the highest stress caused by the social environment, which focuses on interactions with other health professionals (other nurses and physicians). In addition, there was a low level of supervisor support in this area. The importance of supervisor support for the reduction of stress has been shown[20]. These issues could be resolved through encouragement from senior nurses aiming to enhance the multidisciplinary team relationship. Clear work practices and policies, for both the physicians and nurses, can reduce any conflict within their work roles.

There was no difference between the wards with regard to self-reported job strain. Nevertheless, job demands were higher in the medical ward where interestingly co-worker support was lowest. There is a paucity of research on stress levels in the medical ward with ICU and A&E being areas focused on more commonly. Advances in medicine may have seen an increase in stress levels for the nurse on the medical ward. Care of the elderly nurses had one of the lowest reported levels of job demand and also reported one of the highest co-

worker support levels. Job control did not vary by ward and this may be indicative of hospital work practices.

Job strain and its individual component, job demands, were positively associated with perceived stress levels. The use of these two measures (DCS and NSS) allowed us to show a relationship between the nurse's subjective stress experiences with a more objective measure of job characteristics. The results of this present study showed that perceived stress levels reduced with better supervisor and co-worker support. Support levels varied by ward. Support is an important buffer against negative effects of stress[11,12]. House[12] discussed the emotional and instrumental categories of support with Karesek &Theorell[13] believing these to be of great relevance in the workplace. Our study alludes to this. Interestingly, job control was not significantly associated with perceived stress levels. Previous nursing studies have found that stress can be caused by a lack of control in areas of staffing and unfamiliar situations[21,22]. This was not confirmed in our study.

This study showed that the experience of the nurse is different depending on their work area within the one hospital. However, even after adjusting for age, job stain and support, there is still a significant association between the wards and all the four measures of the NSS. The association between the individual ward areas and the total perceived stress levels is attenuated when generic job characteristics are taken into account. This occurs to some extent with the components of the NSS as well. This is essential information for a hospital to possess when providing support for their staff. The use of primary interventions to reduce stress can be very effective in the workplace [23] and this study can help pinpoint areas like A&E, ICU and the medical ward as most in need. Tertiary

interventions can allow the nurse, who may feel unsupported, to avail of debriefing and individual level interventions. This in combination with primary interventions may prove successful in reducing the stress experienced.

The response rate of the study was good at 62%, this being achieved within a work culture where additional paperwork is unwelcome. Similar studies on nurses reaped on average a response rate of 28-38%. [17] Researchers for this present study only included wards with a response rate greater than 38%.

Studies on perceived stress levels for an individual hospital are rare, let alone in the Irish hospital setting. Nonetheless, interpretation of this study is limited by the small sample size; in particular the sampling of male nurses. This is unfortunate as women are found to experience more physiological symptoms from stress[24] and express stress more readily than men[25]. Nonetheless, the gender difference in this sample is representative of Irish nursing.

In this study, questions relating to occupational stress were only asked of those currently in employment in the hospital. This may create a selection bias; the healthy workers phenomenon. Use of data from prior hospital employees, such as nurses' exit interview data, was not possible. In addition, the researchers were unable to access information from nurses on sick leave. These factors, if overcome, could have greatly benefitted our study. A second distribution of the questionnaire within the same hospital was not possible due to hospital constraints. This study showed a need for greater surveillance of factors that cause the nurse stress. A stress reduction policy, in line with the Safety, Health and Welfare at Work Act[26], was in place in the hospital when the study was carried out. In an emotionally demanding profession such as nursing, the need for support to cope with stressful events is fundamental. It is a profession that

requires commitment and dedication, in pursuit of the idea of the "good nurse". The demands put on the nurse to meet societal, personal and colleagues' expectations impose added pressures. The interest and enthusiasm that prompted the individual to enter the profession should be nurtured.

Key Points from Paper
This study showed a need for greater surveillance of factors that contribute to stress in nurses.
Perceived stress differs depending on work area within the one hospital.
Provision for nurses to deal with job demands at work could reduce perceived stress and maintain a high standard of care.

Table 1: Wards/units where nurses were sampled.

	No. of Questionnaires Distributed n(%)	No. of Questionnaires Completed n(%)	Response Rate of Ward/Unit
Surgical	21(11)	6(5)	28%
Medical	21(11)	11(9)	52%
ICU	21(11)	16(14)	76%
A&E	18(10)	11(9)	61%
Day Unit	18(10)	11(9)	61%
Theatre/Recovery	21(11)	12(11)	57%
Paediatrics	17(9)	8(7)	47%
Care of the Elderly	20(11)	17(15)	85%
Medical/Surgical	12(7)	10(9)	83%
Out-patients	17(9)	14(12)	82%
Total	186(100)	116(100)	

Table 2: Demographic Details of Sample

Demographic Details	*n*=116(%)
Age	
21-30	24(22)
31-40	58(53)
41-50	16(15)
51-60	4(4)
Marital Status	
Single	47(40)
Married	60(52)
Living with Partner	5(4)
Separated/divorced/widowed	3(3)
Children	
1 Child	58(50)
2 Children	19(16)
3 Children	16(14)
More than 3 Children	5(4)
Length Qualified	
0-10 years	50(46)
11-20 years	40(36)
21-30 years	16(15)
Over 30 years	3(3)
Position	
Qualified Nurse	88(76)
Sister (CNM1/CNM2/CNM3)	27(23)

Note: Number varying due to missing values

Table 3: Mean and Standard Deviation (SD) of wards, perceived stress and its components, job strain and its components

	Medical	ICU	A&E	Day Unit	Paediatrics	Care of the Elderly	Medical / Surgical	Outpatients	Theatre / recovery	Overall *p*-value
Perceived Stress	47.9(12.8) **	44.3(15.2) *	48.2(13.9) **	44.9(14.9)	49.4(13.9) *	32.8(8.8)	42.5(13.0)	30.5(15.6)	28.3(13.0)	<0.01
Physical Envir.	12.8(2.8) **	8.4(4.8)	12.5(3.4) **	11.5(3.5) *	12.4(3.9) **	7.1(3.0)	11.3(3.9)	7.1(3.5)	7.8(4.2)	<0.01
Psychol Envir.	24.7(8.1) **	23.9(6.0) **	24.8(7.9) **	20.5(7.4)	24.9(10.1) **	19.6(4.1)	21.6(7.3)	14.3(8.4)	13.4(8.4)	<0.01
Social Envir.	10.4(3.6)	12.0(5.9)	10.9(5.0)	13.0(5.7)	12.1(2.2)	6.1(3.5)	9.6(3.9)	9.1(6.5)	7.1(4.1)	<0.01
Job Strain	0.6(0.1)	0.5(0.1)	0.6(0.1)	0.6(0.2)	0.5(0.1)	0.5(0.1)	0.6(0.1)	0.5(0.2)	0.5(0.1)	0.09
Job Demands	10.9(0.9) **	9.2(1.0)	10.5(0.8) **	9.5(1.5)	10.1(1.1)	8.8(1.7)	9.8(1.9)	8.8(1.4)	9.3(1.6)	<0.01
Job Control	17.7(2.1)	18.8(2.2)	18.0(1.7)	16.7(3.0)	18.9(1.0)	17.2(1.7)	17.7(2.4)	17.6(3.6)	18.7(1.4)	0.27
Supervisor Support	11.5(4.1)	11.5(2.9)	11.4(4.3)	8.7(2.9) **	8.1(2.0) **	12.6(2.7)	11.0(2.6)	14.3(2.2)	12.0(2.4)	<0.01
Co-worker Support	12.8(2.4)**	13.1(1.7) **	13.7(1.4)	13.2(2.6) *	15.1(1.7)	15.0(1.1)	14.2(1.1)	15.1(1.0)	14.7(1.6)	<0.01

***(*p*<0.05) ** (*p*<0.01)**

Dunnett post-hoc test using outpatients as a control

Table 4: Correlation between perceived stress and its components and the DCS scale and its components

	Job Strain	Job Demand	Job Control	Supervisor Support	Co-worker Support
Perceived Stress	0.38**	0.45**	-0.07	-0.30**	-0.36**
Physical Environment	0.54**	0.61**	-0.13	-0.38**	-0.33**
Psychological Environment	0.29**	0.32**	-0.10	-0.19*	-0.32**
Social Environment	0.27*	0.34**	-0.001	-0.32**	-0.28**

***($p<0.05$) ** ($p<0.01$)**

Table 5: Association of wards and NSS with the DCS, unadjusted model I and adjusted for job strain, support and age model II

Variable	Perceived Stress total β	Perceived stress: Physical Environment β	Perceived stress: Psychological Environment β	Perceived stress: Social Environment β
Model 1				
Medical	0.33 **	0.41**	0.38**	0.07
ICU	0.31 ***	0.11	0.41**	0.20
A&E	0.33 **	0.38**	0.38**	0.10
Day Unit	0.28 *	0.31**	0.23*	0.23*
Paediatrics	0.30**	0.32**	0.33**	0.15
Care of the Elderly	0.10	-0.001	0.23*	-0.21
Medical /Surgical	0.23*	0.29**	0.26*	0.03
Theatre / recovery	-0.12	0.06	-0.03	-0.13
Overall *p-value*	***p*<0.01**	***p*<0.01**	***p*<0.01**	***p*<0.01**
Adjusted R^2	**0.18**	**0.23**	**0.16**	**0.16**
Model 11				
Medical	0.20	0.25 *	0.31*	0.002
ICU	0.19	-0.03	0.33*	0.09
A&E	0.22	0.25 *	0.33* *	0.05
Day Unit	0.14	0.11	0.15	0.21
Paediatrics	0.16	0.15	0.22	0.09
Care of the Elderly	0.05	-0.05	0.19	-0.25
Medical /Surgical	0.16	0.19	0.21	0.02
Theatre / recovery	-0.16	0.01	-0.07	-0.15
Job Strain	0.25**	0.28**	0.17	0.14
Support	-0.21	-0.27	-0.10	-0.12
Age	0.07	0.04	0.10	0.04
Overall *p-value*	***p*<0.05**	***p*<0.05**	***p*<0.05**	***p*<0.05**
Adjusted R^2	**0.28**	**0.37**	**0.18**	**0.17**

*=$p<0.05$,**=$p<0.01$

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