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Perceived stress among nursing staff in psychiatric in-patient care:
The influence of perceptions of the ward atmosphere and the
psychosocial work environment

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Abstract

The aims of this study were to investigate (1) perceived stress as felt by the nursing staff working in psychiatric in-patient care, (2) possible differences between nurses and nurse assistants, and (3) associations between individual characteristics, the ward atmosphere, the psychosocial work environment, and perceived stress. Ninety-three members of the nursing staff completed three instruments – one each measuring perceived stress, the ward atmosphere, and the psychosocial work environment. There were no differences among the staff groups concerning perceived stress. Multivariate analysis showed that the ward atmosphere factor “Involvement” and the psychosocial work environment factor “Role Clarity” were indicators of perceived stress. Improvements in these factors could help to prevent stress among the staff.

Introduction

In spite of an extensive body of research about psychiatric nursing staff and stress, the ward atmosphere, and the psychosocial work environment, little research has examined how staff perceptions of these phenomena are interrelated in psychiatric in-patient care. When studying perceived stress in this setting, including the ward atmosphere and the psychosocial work environment as factors of potential importance may be important. Increased knowledge of the potential relationship between these aspects could be of importance when seeking measures aimed at making improvements and reduce stress in the nursing staff's workplace.

Stress at work has attracted great interest in recent years, among scientists as well as the general public (Lazarus, 2006). Despite this interest and the voluminous body of literature in the area, the concept of stress is far from clarified. Several different definitions exist (Lyon, 2000) but there is no agreement concerning these definitions (Khoozani & Hadzic, 2010). The concept of stress is difficult to distinguish from other concepts, such as psychological distress and burnout. Moreover, previous studies of stress have used several different theories and operationalised the phenomenon with various types of measurements (Jenkins & Elliot, 2004; Sogaard, Ryan & Dawson, 2010), which complicates a review of the field. In general, definitions of stress have concentrated on three different aspects; the stressor or the stimulus, the response or the reaction caused by the stressor, and a transactional or relational focus (Lazarus, 2006). For the present study, stress is understood as a phenomenon comprising all of those three aspects, involving a subjective view of psychological stress and emphasizing interplay in the environment and within the person (Lazarus, 2006).

Stress among nursing staff in the field of psychiatric in-patient care has received less research attention than that in the field of community psychiatry and in other clinical nursing settings

(Currid, 2008; Jenkins & Elliot, 2004). The use of different contexts, research methods and ways of measuring stress makes it difficult to compare the different studies and the findings from existing research seem to be inconsistent (Richards et al., 2006). However, studies have reported findings of the stressful nature of work in psychiatric in-patient care, both in interview studies (Currid, 2008; Currid, 2009; Taylor & Barling, 2004) and in different survey studies (Sørgaard et al., 2010; Happell, Martin & Pinikahana, 2003). Moreover, studies have found that psychiatric nurses are less stressed than general nurses (Muscroft & Hicks, 1998), that there are no differences between psychiatric in-patient staff and psychiatric community staff regarding burnout (Sørgaard, Ryan, Hill & Dawson, 2007) and, yet, that mainstream psychiatric care is more stressful than forensic psychiatric care (Happell et al., 2003). Thus, although some different research has been performed in the area of stress in psychiatric care, very little has focused specifically on in-patient care and findings, so far, are inconclusive.

The phenomenon of the ward atmosphere involves the physical environment, social structures and social interaction (Eklund & Hansson, 1997). The relationship between the ward atmosphere and stress among psychiatric nursing staff has only been the focus of a few studies, however, two areas of the ward atmosphere have gained some interest in relation to the staff's perceived stress and burnout. One concerns the occurrence of intense relationships between the staff and patients. For example, Lasalvia, Bonetto, Bertani, Bissoli, Cristofalo et al (2009) found that close relationships with patients predicted burnout among psychiatric staff. Patient-related issues were also found to be a common source of stress in a systematic review focusing on psychiatric nurses (Edwards & Burnard, 2003). Another ward atmosphere area that has received much attention involves patient aggression and violence, which according to interview studies have been found to be a stressor for psychiatric nurses (Currid, 2008; Currid, 2009; Taylor & Barling, 2004). Thus, there are indications of a relationship

between certain aspects of the ward atmosphere and the psychiatric nursing staff's perceived stress, but much of this relationship still remains largely unknown and calls for further investigation. Knowing more about how the ward atmosphere is associated with perceived stress would be of interest since awareness of positive and negative influences on the nursing staffs' perceived stress may pave the way for improvements of their working conditions.

Several variables in the psychosocial work environment have been found to relate to stress in psychiatric nursing. For example, workload, under-resourcing, and pressures from managers were commonly experienced as stressors by psychiatric nurses in a qualitative study (Currid, 2009), in a survey study of nurses in acute psychiatric care (Jenkins & Elliot, 2004) and among staff in community psychiatric care (Lasalvia et al., 2009). In a recent study, role ambiguity and lack of role clarity was found to impact on psychiatric nursing staffs' workload and to cause stress (Gibb, Cameron, Hamilton, Murphy & Naji, 2010). There is thus extensive evidence of relationships between the staff's psychosocial work environment and their perceptions of stress, suggesting that such factors need to be addressed when studying perceived stress.

The association between individual variables and stress has also been investigated and stress has been found to increase with the length of employment in community psychiatry, with a higher risk for burnout for staff employed more than 12 years (Lasalvia et al., 2009). Furthermore, in a meta-analysis of various occupational groups, Purvanova and Muros (2010) found gender differences in reported burnout, with females reporting higher emotional exhaustion and men higher depersonalization.

Few studies have investigated differences in stress among nurses and nurse assistants in psychiatric in-patient care. Sorgaard et al. (2010) found few and small differences between nurses and nurse assistants regarding both stress and burnout. A study by Jenkins and Elliot (2004) found that the main stressor for nurses was a lack of resources and for nurse assistants client-related difficulties. The differences in stressors may illustrate that nurses often have responsibilities for medical and administrative tasks and nurse assistants for face to face interaction with patients. A previous study by Tuveesson, Wann-Hansson and Eklund (2011) found no differences between nurses and nurse assistants in psychiatric in-patient care, regarding their perceptions of the ward atmosphere and the work environment. Further knowledge of similarities and differences between the groups regarding their perceived levels of stress may serve as a foundation for how to prevent stress and how to accomplish changes that are beneficial for both nurses and nurse assistants in psychiatric in-patient care.

Furthermore, proceeding from the idea that the ward atmosphere and the psychosocial work environment are important for perceived stress among nursing staff, which research seems to confirm, it seems important to examine how these factors are associated. Such knowledge may in turn open pathways for how to improve the working conditions for nursing staff. Thus, the aim of the present study was to investigate perceived stress in nursing staff working in psychiatric in-patient care and possible differences between the perceptions of nurses and nurse assistants. A further aim was to investigate associations between individual characteristics, the ward atmosphere, the psychosocial work environment and Perceived Stress.

Methods

Design and setting

The present study was a cross-sectional survey conducted at 12 psychiatric acute in-patient wards in southern Sweden, all of which agreed to participate. In Sweden, psychiatric care is organized in geographical areas, and the 12 units in the present study were each responsible for the psychiatric adult in-patient care for a specific area. The units comprised 13-16 beds, but were often admitting patients above their stipulated capacity. All units were general in nature, and admitted a mix of adult patients, with different diagnoses and problems, such as psychosis, depression, personality disorders, eating disorders, suicidal behavior and, sometimes, substance abuse. The care was either voluntary or coercive by law. All units were equally staffed, in terms of the number and type of staff.

Participants

Approval from the clinical directors and the unit managers was obtained in order to gain access to the participants. The nursing staff in Sweden includes registered nurses with a minimum of three years of university studies, and nurse assistants with formal education varying from high school education with a nursing profile to two years of training after high school, or with no formal education at all within the nursing field. All nurses and nurse assistants who worked daytime and had worked at the unit for at least two months were eligible for the study. Those who only worked night shifts were excluded in order to avoid any possible influence from that specific viewpoint in the analyses. No previous studies exist that could be used as a proper basis for a power analysis. However, a sample large enough to detect a medium effect size, of 0.5, between nurses and nurse assistants with 80% power at $p < 0.05$ was desired. Based on Cohen (1988), this required at least 100 participants. A total of 179 participants received the questionnaire (70 nurses and 109 nurse assistants), and 93

participants completed and returned it. This was a response rate of 52.3%, represented by 38 nurses and 55 nurse assistants. The mean age of the participants was 48 years.

Data collection and ethical approval

An information meeting was held at each ward, inviting all potential nursing staff to participate. At this point, questionnaires, including an information letter, an informed consent blank and a self-addressed return envelope, were distributed to the nursing staff. In order to obtain as many participants as possible, an effort was made to meet the nursing staff in person. Where this was not possible, the questionnaire and the accompanying material were given to the nursing staff by the ward manager. The nursing staff was asked to complete the questionnaire within 3 weeks and post them back to the authors in sealed envelopes, together with the signed consent blank. Three reminders were sent to the wards, asking the managers to prompt potential participants to respond, and the data collection stretched over a period of 4 months.

The principles of confidentiality, voluntary participation and informed consent were applied. The study complied with stipulations in the Swedish act regulating research ethics, the Ethical Review of Research Involving Humans, and approval was obtained from the Regional Ethical Review Board (No. 380/2008).

Instruments

This study was based on three self-report questionnaires, targeting Perceived Stress, the ward atmosphere, and the psychosocial work environment. Furthermore individual information and work experience were obtained by six questions, involving age, gender, type of employment,

occupational belonging, length of experience from working in the actual unit, and length of experience from working in psychiatric care.

Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS) was developed by Cohen, Kamarck and Mermelstein (1983) and measures the degree to which a person experiences his/her life as unpredictable, uncontrollable and overloaded. The PSS is assumed to be an appropriate measurement when studying factors influencing appraised stress, and its general and global nature makes it suitable to measure stress without focusing on specific situations (Cohen & Williamson, 1988). The PSS comprises 14 items with a five-point scale, ranging from Never (0) to Very often (4) and higher scores (maximum score=56) represent higher levels of perceived stress. The PSS has been used in several studies and various settings, such as, dementia care (Testad, Mikkelsen, Ballard & Aaarsland, 2010), among psychology students (González Ramirez & Landero Hernández, 2007), and among cardiac patients (Leung, Lam, & Chan, 2010). Good internal consistency has previously been shown, as indicated by Cronbach's alpha values of 0.84, 0.85 and 0.86 in three samples (Cohen et al., 1983). The Swedish version of PSS has also demonstrated good internal consistency (Cronbach's alpha = 0.82) (Eskin & Parr, 1996). Cronbach's alpha for the PSS in the present study was 0.83. Description of the 14 items of the Perceived Stress Scale is found in Table 1. Further on, Perceived Stress with capitalization will be used to denote the variable estimated by the PSS.

Ward Atmosphere Scale (WAS)

The Ward Atmosphere Scale (WAS) was used to investigate different aspects of the ward atmosphere (Moos, 1997). A revised Norwegian version of the WAS has previously been found to have improved psychometric properties in terms on internal consistency (Røssberg &

Friis, 2003a; Røssberg & Friis, 2003b). A revised and updated Swedish version of the WAS, based on the work of Røssberg and Friis, was used for the present study (Tu vesson, Wann-Hansson & Eklund, 2010). The Swedish version comprises 83 items which are answered on a four-point scale ranging from Totally disagree (0) to Totally agree (3), and the revised WAS includes eleven subscales, which are to be analyzed separately. However, due to low internal consistency ($\alpha < 0.5$), five of the subscales (Support, Spontaneous Behavior, Autonomy, Staff Control and Staff Attitude to Expressed Feelings) were excluded in the present study. The included subscales were; Involvement, Practical Orientation, Personal Problem Orientation, Angry and Aggressive Behavior, Order and Organization, and Program Clarity. Involvement assesses patient energy and activity in the ward, Practical Orientation the extent to which patients learn practical skills and are prepared for discharge, and Personal Problem Orientation the scope of which patients seek to understand their feelings and personal problems. The Angry and Aggressive Behavior subscale measures the level of which patients argue, become openly angry or display other aggressive behaviors, Order and Organization how important such aspects are in the ward, and Program Clarity taps patients' understanding of what to expect and how they perceive the clarity of ward rules (Moos, 1997).

QPS Nordic 34+

Psychological and social factors of the work environment were assessed using questions from the short version (QPSNordic 34+) of the General Nordic Questionnaire for Psychological and Social Factors at Work (QPSNordic) (Dallner, Elo, Gamberale, Hottinen, Knardahl, et al., 2000; Lindström, Dallner, Elo, Gamberale, Knardahl, et al., 1997; Lindström, Elo, Skogstad, Dallner, Gamberale, et al., 2000). The QPSNordic 34+ comprises 37 items which are answered on a five-point scale, ranging from Very seldom or never (1) to Very often or always (5). In its original form, the QPSNordic comprises 118 items, out of which 80 items

are included in 26 subscales and 38 items are used as single items. The full version of the QPSNordic has been used and tested in several studies, with Cronbach's alpha values for subscales ranging from 0.62 to 0.86 (Dallner, et al., 2000), and 0.52 to 0.88 (Wännström, Peterson, Åsberg, Nygren, & Gustavsson, 2008). Since the questionnaires used for the present study were quite time consuming, the short version, QPSNordic 34+, was considered appropriate for the study purpose. However, the psychometric properties of the short version do not appear to have been previously tested and no subscales have been proposed. Sets of items corresponding to subscales of the full version of the QPS Nordic were thus tested for internal consistency according to the criterion of a Cronbach's alpha value of > 0.70 . This procedure identified five subscales: Empowering Leadership (2 items; Cronbach's alpha = 0.85), Role Clarity (2 items; Cronbach's alpha = 0.79), Control at Work (4 items; Cronbach's alpha = 0.72), Support from Superiors (2 items; Cronbach's alpha = 0.8), and Organizational Climate (6 items; Cronbach's alpha = 0.77).

Data analysis

Descriptive statistics were used in order to analyze characteristics of the participants and to investigate the response distribution from the Perceived Stress Scale. The Mann-Whitney *U*-test was used to analyze differences between groups and in order to assess bivariate relationships between subscales, Spearman rank correlations were used. The purpose of these tests was also to identify variables that could be used as independent variables in multivariate analysis. A *p*-value of 0.1 or lower was set for inclusion in a forward stepwise conditional logistic regression analysis with Perceived Stress as the dependent variable. For the logistic regression analysis, the ward atmosphere, work environment and stress subscales were all transformed into categorical variables, by dichotomizing the total group according to the median and in that arriving at a high and a low group on each variable. A *p*-value of $p = <$

0.05 was considered statistically significant and all analyses were performed with the statistical software package SPSS (version 17.0).

Results

Nursing staff characteristics

A total of 93 staff members (response rate = 52.3%), 38 nurses and 55 nurse assistants (40.1 % nurses), agreed to participate and returned the questionnaires. The mean age was 48 years (21-65 years) and a majority of the participants were female (72) with a permanent employment. The participants' average length of experience in psychiatric care was 18 years and the average length of employment at the actual ward was 9 years. The mean age of the nurse assistants was higher (50 years) than that of the nurses (45 years) and they also had longer mean experience in working in psychiatry (20 years), compared to the nurses (15 years) (Table 2).

Nursing staffs' perceived stress

The result showed that the mean score of the Perceived Stress Scale was 22.6 (SD 7.5; Range 7-40). The mean scores for each of the 14 items of the Perceived Stress Scale are presented in Table 2. The participants rated most of the items according to the medium alternative. A somewhat higher mean score, indicating more stress, was seen for items number 5 and 12, and a somewhat lower mean score for items number, 2, 6, 10 and 14.

There were no significant differences between registered nurses and nurse assistants, concerning Perceived Stress, nor were there any associations between any of the individual characteristics and Perceived Stress.

Nursing staffs' perceptions of the ward atmosphere and the psychosocial work environment

The response distribution for the Ward Atmosphere Scale showed that the participants chose the medium alternatives for most of the subscales, with mean values of 1.8 for Program Clarity, 1.79 for Practical Orientation, 1.63 for Order and Organization and 1.48 for Involvement. A slightly higher medium score was found for Personal Problem Orientation (2.1) and a slightly lower score for Angry and Aggressive Behavior (1.08). The mean scores for the subscales of the work environment (QPSNordic34+) were 3.76 for Role Clarity, 3.3 for Empowering Leadership, 3.1 for Organizational Climate and 2.97 for Control at work. A lower mean score was found for Support from Superiors (1.7).

Associations between the ward atmosphere, the psychosocial work environment and Perceived Stress

There were statistically significant correlations between three of the ward atmosphere factors, Involvement, Order and Organization and Program Clarity, and Perceived Stress. There were also significant correlations between the work environmental variables of Role Clarity and Organizational Climate on the one hand and Perceived Stress on the other. Length of working experience in psychiatry, attributed a relationship of $p < 0.1$ with Perceived Stress and was kept as a variable for the logistic regression analysis (Table 3).

The five variables that showed a relationship to Perceived Stress ($p \leq 0.1$) (cf. Table 3) were entered in a forward stepwise conditional logistic regression. The model indicated two significant factors: Involvement (WAS) and Role Clarity (QPSNordic34+). Low scores in both these respects were significantly associated with a high level of Perceived Stress. Both

variables were highly significant and odds ratios of six or more were indicated. Together, these factors explained 32.4% of the variance in Perceived Stress (Nagelkerke R^2). The model exhibited acceptable goodness-of-fit (Hosmer-Lemeshow test, $p > 0.05$) (Table 4).

Discussion

This study did not indicate any differences between nurses and nurse assistants regarding Perceived Stress, which concurs with previous research (Jenkins & Elliot, 2004; Sorgaard et al., 2010). The most prominent findings were that low scores on the ward atmosphere factor Involvement and the psychosocial work environmental aspect of Role Clarity were significantly related to high levels of Perceived Stress in the staff group as a whole. These factors together explained more than a third of the variation in Perceived Stress.

Involvement proved to be the only ward atmosphere factor related to Perceived Stress. According to Moos (1997) the subscale of Involvement measures the degree of activity, engagement and energy among the patients in the ward. This includes aspects of enthusiasm, daily social activities and group spirit. Several studies have investigated involvement and patient activity in psychiatric settings (Sharac, McCrone, Sabes-Figuera, Csipke, Wood et al., 2010). One study found that reducing the formal observations on an acute psychiatric ward and introducing a structured program of individualized activity for patients led to a reduction in, for example, self-harm and violence and an increase in patient-reported quality of care, as well as a reduction in staff sickness (Dodds & Bowles, 2001). This may indicate that an increased patient activity and involvement could also affect the staff's conditions and, as the present study suggests, be an important factor in reducing stress among the staff. In previous studies, intense and close relationships between the staff and the patients (Lasalvia et al., 2009), and difficulties in such relationships (Edwards & Burnard, 2003), seem to have

increased stress and burnout. The relationship between the staff and the patients could possibly be experienced both negatively and positively by the staff. In the present study, high levels of activity and engagement among the patients, as well as between the staff and the patients, seemed to be appraised as rewarding by the staff and reducing stress.

It is interesting to note that Angry and Aggressive Behavior in the present study was not related to Perceived Stress among the staff. This finding seems inconsistent with previous research since aggressive and violent behavior has long been recognized as associated with appraised stress and burnout among psychiatric staff (Currid, 2008; Currid, 2009). However, in a literature review of nursing staff stress in adult acute psychiatric in-patient care, Richards et al. (2006) challenged the view that violence and assaults create high levels of stress. They found substantial variation between studies and discussed the possibility that staff stress may be influenced by other factors, for example management and ward environment factors.

The findings from the present study suggest that a low sense of Role Clarity was related to a high level of Perceived Stress. In the QPSNordic 34+, Role Clarity refers to what extent the work role is understood by the professional; if there are clear goals for the work performed, and if the professionals know what is expected of them. A relationship between a lack of clarity regarding professional roles and stress has also been demonstrated by a number of previous studies within psychiatric care (Gibb et al., 2010; Gulliver, Towell & Peck, 2003). For example, role uncertainty and ambiguity were found to be a cause of stress for psychiatric staff in both in-patient and community care (Gibb et al., 2010), and psychiatric nurses' job satisfaction has been found to be positively related to role clarity (Gulliver et al., 2003). The findings of the present study proffer important insights regarding the need to focus on improvements that clarify the nursing staffs' role, such as formulation of clear goals and

expectations. Such measures could help to prevent stress among staff in psychiatric in-patient care.

The Perceived Stress Scale (PSS) items that were rated the highest and the lowest did not reflect any particular aspect of perceived stress. Mean scores on the PSS for the entire sample in this study were 22.6, which is moderate and below the hypothetical mean score of 28 for the instrument. This was somewhat higher than in an American, adult population, which had a mean score of 19.6 on the PSS. On the other hand, the mean scores on perceived stress in the present sample were lower than those reported by unemployed and disabled persons in the American sample (Cohen & Williamson, 1988). This could be compared to a Swedish ongoing study of women with stress-related disorders, where the mean rating was 26.4 when the women were back at work (Eklund & Erlandsson, 2011). A number of studies have explored stress in psychiatric care, but differences in designs and use of measurements make comparisons difficult. However, in comparison with other studies based on the same instrument, the level of Perceived Stress in the present study seemed fairly low. The reasons for this could be several. It is possible that the high mean age or long experience of work in psychiatric care may have worked as protective factors against stress, however, the present study could not detect any differences between individual characteristics and Perceived Stress, which is in concordance with Lasalvia et al (2009).

This study has some limitations. The response rate was not optimal (52.3%), despite several reminders, and the possibility that selection bias in the sample may have influenced the results cannot be excluded. However, both the mean age and the proportion of nurses and nurse assistants corresponded to the situation among all approached 178 staff members, indicating that in these respects the participants were representative of the staff at the 12 wards. Another

important methodological concern is the reliability of the Ward Atmosphere Scale (WAS). The WAS is a widely used instrument, but several studies have shown some instability of the WAS, especially regarding the factor structure (Denny, Costello & Cochran, 1984) and the internal consistency for some of the subscales, also for the revised version (Røssberg & Friis, 2003a; Røssberg & Friis, 2003b). This was apparent in the present study as well. Five of the WAS subscales had to be excluded from the analysis because of difficulties achieving acceptable internal consistency. Since the present study were based on aggregated data, the other six WAS subscales were kept for analysis if they reached a Cronbach's alpha value of ≥ 0.5 , as suggested by Røssberg and Friis (2003b). The instrument used to assess psychological and social factors at work, QPSNordic 34+, has to our knowledge not been psychometrically tested before. In the present study, the identified subscales reached acceptable internal consistency. Further studies are, however, warranted in order to establish the reliability of these subscales. It can also be said that, in spite of Involvement and Role Clarity explaining more than one third of the variation in Perceived Stress, it is reasonable to expect that there are other factors of importance impacting Perceived Stress, such as workload and staffing levels. Future research should consider the impact of such factors, but the fact that those conditions were the same at all wards included in the present study indicates that they should not constitute a methodological problem in the present study. The aim of the present study was, as stated above, not to investigate all possible predictors of perceived stress, but to specifically focus the roles of the ward atmosphere and the psychosocial work environment.

Conclusions

The findings of the present study proffer valuable insights into the working conditions, specifically Perceived Stress, of nursing staff in psychiatric in-patient care. In summary, the staff in the present study appeared to perceive fairly low levels of Perceived Stress. The ward

atmosphere factor Involvement and the psychosocial work environment factor Role Clarity were significantly related to Perceived Stress. These findings may have important implications for efforts to improve the working conditions of the nursing staff. A possible way of preventing stress among the nursing staff in psychiatric in-patient care could be to focus on the ward atmosphere, and especially on patient activity and mutual engagement among patients and staff. It is also reasonable to conclude that the nursing management should emphasize the development of clear goals for the staff's work and clarify the management's expectations, in order to make the role of the psychiatric nursing staff more visible and explicit, and thus prevent high levels of stress among the staff. Another conclusion is that nurses and nurse assistants seem to perceive similar levels of stress. Further studies are needed that focus on other potentially influential factors impacting Perceived Stress in psychiatric in-patient care.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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Tables

Table 1: Mean value for the Perceived Stress Scale items (minimum=0; maximum=4). The items are given in abbreviated form.

	Mean	Mean	Mean
	Total sample (n=93)	Nurses (n=38)	Nurse assistants (n=55)
1. Upset because something happened unexpectedly.	1.77	1.73	1.80
2. Unable to control the important things in life.	1.35	1.24	1.43
3. Felt nervous and “stressed”.	1.79	1.87	1.74
4. Successfully dealt with irritating life hassles.	1.66	1.73	1.61
5. Effectively coped with important changes that were occurring in life.	2.29	2.32	2.28
6. Confident about ability to handle personal problems.	1.22	1.29	1.67
7. Felt that things were going your way.	1.46	1.53	1.41
8. Could not cope with things that you had to do.	1.59	1.75	1.47
9. Able to control irritations in life.	1.52	1.61	1.46
10. Felt that you were on top of things.	1.18	1.26	1.13
11. Angered because of things that happened that were outside of your control.	1.58	1.68	1.50
12. Thinking about things that you have to accomplish.	2.54	2.59	2.51
13. Control the way you spend your time.	1.38	1.47	1.31
14. Difficulties so high that you could not overcome them.	1.10	1.07	1.13

Table 2: Individual characteristics of the sample

Characteristics	Total sample (n: 93)	Nurses (n: 38)	Nurse assistants (n: 55)
Sex (female/male)	72/20 (missing value: 1)	28/9 (missing value: 1)	44/11
Mean age (range, SD)	48 (21 – 65, 11) (missing value: 2)	45 (25 - 65, 11) (missing value: 1)	50 (21 – 64, 11)* (missing value: 1)
Employment (permanent/temporary)	80/8 (missing value: 5)	37/1	43/7 (missing value: 5)
Mean years on actual ward (range, SD)	9 (0.17 – 30, 8)	8 (0.17 – 30, 8)	9 (0.25 – 30, 8)
Mean years of experience in psychiatry (range, SD)	18 (0.17 – 41, 13) (missing value: 1)	15 (0.17 – 37, 12)	20 (0.25 – 41, 14)* (missing value: 1)

* $p \leq 0.05$

Table 3: Correlations between Perceived Stress, individual characteristics, ward atmosphere and work environment factors

Variables	<i>r</i> -values
Individual characteristics	
Age	- .032
Experience on actual ward	- .171
Experience in psychiatry	- .198*
WAS	
Involvement	- .341***
Practical Orientation	- .056
Personal Problem Orientation	- .086
Anger and Aggressive Behavior	- .037
Order and Organization	- .288***
Program Clarity	- .246**
QPS 34+	
Empowering Leadership	- .172
Role Clarity	- .302***
Control at Work	- .136
Support from Superior	- .114
Organizational Climate	- .265**

* $p < .10$, ** $p < .05$, *** $p < .01$,
Spearman rank correlation

Table 4: Ward atmosphere and work environment factors of importance to Perceived Stress

Dependent variable	Independent variable	p	OR	95% CI for OR
Perceived stress	Involvement	0.000	6.884	2.402 – 19.728
	Role Clarity	0.001	5.984	2.072 – 17.283

Note: analyses based on a forward stepwise conditional logistic regression ($p = < 0.05$)