



LUND UNIVERSITY

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**The Association of Psychosocial Factors with Burnout among
Swedish Hospital Nurses**

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Abstract

Swedish nurses report high levels of burnout and report their psychosocial work environment to be inadequate. Psychosocial factors as well as individual coping strategies appear to be related to burnout. The aim of the current study is to examine the association between psychosocial factors, individual unfavorable coping strategies and burnout among Swedish hospital nurses.

Present study used a cross-sectional questionnaire with Swedish hospital nurses ($n=97$, 91% women). The Oldenburg Burnout Inventory (OLBI) was employed to measure burnout on the two dimensions: exhaustion and disengagement. The Questionnaire of Psychological and Social Factors at Work – Mismatch (QPS-M) was used to assess psychosocial strain in terms of demand, control, reward, values and community. The Theoretically Originated Measure of the Cognitive Activation Theory of Stress (TOMCATS) assessed unfavorable coping strategies. Logistic regression was employed to estimate the likelihood of being burnout, dependent on high ($n=31$), medium ($n=32$) or low ($n=34$) levels of psychosocial strain.

Main results showed that higher psychosocial strain was associated with a greater likelihood of reporting burnout (OR=31.5, CI=7.88-124.11). These results were robust also when adjusting for unfavorable coping strategies. The significant association between high vs. low psychosocial strain and burnout was reduced, nevertheless not eliminated (OR=18.48, CI=4.44-76.84).

This study indicates that the nurses' psychosocial environment need more focus in future burnout prevention strategies, which is in line with the studies of Shaufeli and Enzmann (1998). These findings support Leiter and Maslachs (1999) theory, that in particular the psychosocial factors; demand, control, community, reward, and values, should be improved.

Keywords: Nurses, Burnout, Psychosocial Strain, Exhaustion, Disengagement, Unfavorable Coping Strategies

Introduction

In Sweden nurses currently tops the long-term sick leave statistics and report high levels of severe stress and psychological strain (Swedish work environment authority, 2016; AFA, 2015). Burnout is a reaction to severe stress and the consequences of having nurses' being at the risk of burnout or already being burnout is a severe problem not only for the nurses themselves, but for the society. Both in terms of economical costs and loss of nurses. The development of burnout among nurses seems to evolve in the wrong direction. Since 2009-2014 the psychiatric diagnoses in Sweden, among them burnout, have doubled in professions like nursing (AFA, 2015). However, the situation is not unique for Swedish nurses. Also in Denmark nurses are known to report high levels of exhaustion, tiredness and sleep deprivation, as well as low control and influence over their work situation, weak collegial support and not having faith in their leadership (National Research Center for Work Environment in Denmark, 2016). Furthermore, burnout in nurses is related to the intention to quit and to lower patient safety (Halbesleben & Wheeler, 2008).

The Swedish nurses report that their psychosocial work environment is inadequate and they experience high levels of work related stress (Mc Vikar, 2003; Vingård, 2014). Kowalski, Ommen, Driller, Ernstmann, Wirts, Köhler et al (2010) suggest that psychosocial factors at work plays a big part in the development of burnout and argue that the role played by organizational factors in burnout need more attention in research, to be able to create effective interventions to decrease burnout.

In 2015 the Swedish Work Environment Authority released a report where employers from March 2016 were required to take more responsibility for their employees' psychosocial work environment. The employers were urged to prevent illness as caused by social and organizational work conditions, and was encouraged to cooperate with their employees (Swedish work environment authority, 2015). Despite this acknowledgement of psychosocial strain as something the employers should care about and prevent, the negative trend of sick leave, caused by severe stress at work, continues. Therefore there is a need for more research on the area of burnout and psychosocial factors at work.

The most common burnout interventions used by organizations have mostly focused on how to strengthen the individual's ability to cope with stress and difficult work conditions. Eriksen and

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Ursin (2004) claim that low levels of coping, i.e. unfavorable coping strategies are the most important reason for individuals becoming burnout. Although, unfavorable coping strategies are important for dealing with stress, the psychosocial strains experienced at work seem to be as important factors in burnout and is the main focus of present study (Leiter & Maslach, 2004).

From a societal perspective, if nothing is done to meet the concerns of the nurses, we might soon be seeing a reduced workforce of hospital nurses that provides us with lower health quality and who makes more mistakes (Aiken, Clarke, Sloane, Sochalski, Busse, Clarken et al, 2001).

Based on this daunting situation of the nurses, the main objective of the present study is to investigate the association between psychosocial strain and burnout. If psychosocial strain is high, burnout is hypothesized to be high as well. As part of the investigation this study will also examine the association between unfavorable coping strategies and burnout.

The remaining of this thesis is organized as follows. In the next section I discuss the concept of burnout. This includes a discussion of how the definition has changed over time, how burnout is measured as well as which individual and psychosocial factors are related to burnout. This discussion leads to the formulation of my research aim and hypothesis. Then I discuss my method and the statistical analysis applied to answer my research question. A result section, discussion and finally a conclusion follow that section.

The Concept of Burnout

In the following section I first discuss the concept of burnout leading to a discussion of the measure that has been chosen in the present thesis. Secondly the differences between burnout measures will be described.

First of all, burnout was developed for the purpose of better understanding psychological health of people-oriented professionals like nurses, doctors and teachers. However, the concept of burnout is controversial and meaning and existence still debated throughout the psychological and medicine literature. Bianchi, Schonfeld and Laurent (2015) argue that burnout is actually the same as depression while Maslach, Schaufeli and Leiter (2001) defines burnout specifically as a job related syndrome caused by situational factors at work.

The International Classification of Diseases (ICD-10) defines burnout as a "state of vital exhaustion" that influence health and get people to frequently visit health care services (Bainchi, et al., 2015). ICD-10 (Z73-0) describes burnout as a reaction to severe stress primarily caused by

continuing unpleasant circumstances, which create long lasting strain, and most importantly: the disorder would not have occurred without these unpleasant circumstances (World Health Organization, ICD-10, 2016).

In Sweden, the context of the present study, the concept of burnout does no longer exist. In 2005 The Swedish National Board of Health and Welfare terminated the use of burnout and created a different disorder, namely Exhaustion Disorder (ED). The termination of burnout was partly made because of the name, to be “burned out” seemed hopeless and impossible to recover from, seen from a metaphorical point of view. Another reason was that the dimension of exhaustion has been found as the core characteristic in burnout (Glise, 2013). A person with ED have a decreased activity level, need longer recovery after mental activity and exhibit diverse symptoms like for example sleeping problems, headaches and muscle pain.

The international definition of burnout, as defined above of the ICD-10, is still very close to ED, but the difference between burnout and ED is that burnout is a psychological reaction specifically towards negative work related factors, while ED is suppose to embrace the whole life of a person (Glise, 2013).

According to Maslach et al, (2001) burnout is a work-related stress syndrome that gradually increases as a response to chronic stress at work. Symptoms of burnout are exhaustion and distancing from work. In line with Maslach et al (2001), Demerouti, Bakker, Vardakao and Kantas (2003) define burnout as a syndrome of work-related negative experiences, resulting in feelings of exhaustion and disengagement from work.

To conclude the major differences between burnout and ED: the general level of exhaustion mainly defines ED, while the level of work-related exhaustion defines burnout. In addition to the level of work-related exhaustion, burnout also captures the individual’s relationship towards work, for example by measuring the level of disengagement (Petersen, Bergström, Demerouti, Gustavsson, Åsberg & Nygren, 2011) or level of cynicism (Maslach, 2003).

In the current study I choose to focus on the international definition of burnout, because it target explicitly the specific relationship between the nurse and her work, which is the main focus of this study. In the present study, I will use the particular definition of burnout, as defined above by Demerouti, et al (2003); burnout is a syndrome of work-related negative experiences, resulting in feelings of exhaustion and disengagement from work.

Measuring burnout.

To better be able to grasp the concept of burnout the following section present, compare and discusses the different methods of measuring burnout. Burnout is not a standardized diagnosis and is mostly measured by interviews and self-rating tests, which give indications of being at risk of burnout. The table below gives an overview of two main methods used to measure burnout.

Differences and similarities between the MBI and the OLBI.

Measurement and Reference	Kind of exhaustion measured	Kind of distancing from work	More differences
<i>The Maslach Burnout Inventory (MBI)</i> - Maslach, Jackson & Leiter (1996)	<i>Emotional exhaustion</i>	<i>Cynicism</i>	<i>Also measure reduced professional efficacy</i>
<i>The Oldenburg Burnout Inventory (OLBI)</i> - Demerouti et al (2001)	<i>Physical, cognitive & emotional exhaustion</i>	<i>Disengagement</i>	<i>Emotional, cognitive and physical aspects of exhaustion and disengagement are measured</i>

The most commonly used burnout measure is the Maslach Burnout Inventory (MBI) measuring burnout on three dimensions; emotional exhaustion, feelings of cynicism and perceived reduced professional efficacy (Maslach, 2003; Maslach, et al, 2001).

Shirom (2001) report from his review of burnout that previous research results consistently show that exhaustion is the core dimension of burnout. Exhaustion is much more related to burnout, compared to the other two components of MBI, cynicism and perceived reduced professional efficacy.

When exhausted, the individual tend to distance herself, emotionally and cognitive, from work, customers and patients.

Cynicism is the second dimension of the MBI and defined as general negative attitudes and distrust towards organization, persons, groups and objects.

High demands at the workplace, low social support from colleagues and a poor community seem to increase exhaustion and cynicism among employees (Maslach et al, 2001), and thereby potentially increase the risk of burnout. Shirom (2001) argue that the dimension of reduced professional efficacy in MBI should be excluded because it has not been supported in research, as

a crucial dimension of burnout.

The Oldenburg Burnout Inventory (OLBI) is a good alternative to the MBI and measure burnout on two dimensions; exhaustion and disengagement from work (Peterson, et al, 2011). It seems to be sufficient to measure burnout on the two dimensions of OLBI, because OLBI captures not only the emotional aspects of exhaustion, like the MBI does, but also the cognitive and physical aspects of exhaustion and disengagement (Peterson, et al, 2011).

The OLBI defines exhaustion as extreme fatigue caused by long-term exposure to emotional, cognitive and physical strain from work related conditions. In contrary to the MBI, which only measures affective aspects of exhaustion, the OLBI also captures the cognitive and physical aspects of exhaustion (Demerouti, Mostert & Bakker, 2010). The dimension of disengagement, according to the OLBI, captures the relationship between the employee and her work. Disengagement in the OLBI means distancing from work in general, from work object, work content, and involve an emotional, cognitive and behavioral rejection of the work (Demerouti, et al. 2010). Petersons et. al (2011) found support for the OLBI's good properties, in example to be able to help detect long-term absence as a reaction to severe stress or depression. They found that a high score on the exhaustion component of the OLBI increased the risk for long-term absence.

High disengagement indicates a risk of burnout and researchers often see work engagement as a hypothetical antipode to burnout, (Schaufeli & Bakker, 2004; Demerouti, et al, 2010; Maslach & Leiter, 1997; Maslach, et al, 2006), which supports the use of the OLBI because it measures disengagement.

In the present study burnout is measured in the two dimensions defined by OLBI, exhaustion and disengagement (Demerouti, Bakker, Nachreiner & Schaufeli, 2001). I chose the OLBI because it is more and more used and seems to be a valid measurement of burnout. Previous research findings support the two dimensions of OLBI as being strongly related to burnout. Below, an overview over the differences between the OLBI and the MBI is presented.

Individual factors related to burnout

An important question for managing burnout is to know to what extent burnout is related to factors within or outside the individual. Previous research findings suggest that burnout is related to both individual characteristics like for example coping with stress (Eriksen & Ursin, 2004) and to situational factors like the psychosocial strain experienced with different areas of work-life

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(Leiter & Maslach, 1999). The following section will present some research findings of how demographic, individual and psychosocial factors are related to burnout.

Demographical variables. Research findings on burnout and its association with gender, age and civil status are inconsistent. One difference between genders is that women tend to score higher on burnout scores than men. However the reason for this difference is plausibly a result of occupational confounding, meaning that women and men have different occupations, and therefore it is not possible to separate the effect of gender from the effect of profession (Arvidsson, Håkansson, Karlson, Björk & Persson, 2016). The results from Arvidsson et al, (2016) study show no gender differences among teachers in relationship to burnout, and suggest that the probable reason for this is because teaching is relatively similar for women and men.

Concerning age, some studies indicate that burnout is higher among younger employees under the age of 30-40, explained by that work experience seem to decrease the risk of burnout, while the risk appears to be larger earlier in the individual's career. Nevertheless, the results between age and burnout must be carefully interpreted because of the possibility that the individuals who burn out early might quit their jobs, which leave the people with lower levels of burnout behind (Maslach, et al, 2001; Halbesleben & Buckley, 2004).

Unmarried and single people seem to experience higher levels of burnout according to Maslach et al (2001). In contrast to the associations previously mentioned, Kowalski, et al (2010), did not find that age, gender, years of professional experience and job tenure had significant connections with burnout.

In conclusion, the results regarding the associations between burnout and demographics are inconsistent and there seem to be other factors having important associations with burnout. These other factors will be described below.

Coping. Some individual factors linked to lower burnout are a sense of control over events, the ability to cope with difficulties, openness to change, self-efficacy and sense of meaningfulness with work (Kowalski et al, 2010; Maslach, et al, 2001).

Furthermore, low ability to cope or unfavorable coping strategies is linked to higher prevalence of burnout and is therefore interesting to investigate further. According to Eriksen and Ursin (2004), the most common characteristic of individuals becoming burned out is low levels of coping, i.e. unfavorable coping strategies. Below follows a description of a theory that emphasize

coping and unfavorable coping strategies as determinant factors in the development of severe stress, which if sustained might lead to burnout.

According to the Cognitive activation theory of stress (CATS), coping is the expectancy and the belief of an individual that he or she will be able to cope with a difficult situation. Stress rise from a perception that the individual cannot or will not be able to cope with a specific situation. “If the individual expects that he or she will not cope with the situation or the demands, the activation may be sustained over time, which is associated with illness, disease and possible poor health.” (Ree, Odeén, Eriksen, Indahl, Ihlebæk, Hetland et al. 2013).

To experience stress for a short while is not dangerous. Although, when stress is sustained for a longer time combined with a perception of no or little control, the individual’s health is threatened (Ursin & Murison, 1983). The CATS explain the three types of expectancies an individual can have on own response and the outcome of that response; the response outcome expectancy (ROE). There are three ROE categories; positive, negative or uncertain ROE.

According to CATS, a positive ROE is identical with coping and implies that: I think I will be able to handle this situation with a positive result. Positive ROE also indicates low levels of arousal (Ree et al, 2013).

In contrast to positive ROE, negative and uncertain ROE increase the level of arousal and means that: “I perceive all my responses leading to a negative result” or “I expect that it doesn’t matter if I have a response or not”.

In the present study negative and uncertain ROE will continuously be merged into one single factor and further referred to as unfavorable coping strategies in line with Ree et al, (2013).

The CATS have been used in several organizational studies with the aim to explain the relationships between expectations of coping in relation to stress. For example Ree et al., (2013) hypothesized in a Norwegian survey study with 1746 municipal employees that coping is a stronger predictor to psychological health than subjective and objective status. In addition they found support for their hypothesis that unfavorable coping strategies are more important for psychological health than education and negative work characteristics. It is plausible that high levels of positive ROE make the employees more able to deal with adverse work environments and work aspects (Ree et al, 2013). Two previous studies confirmed their hypotheses that response outcome expectancies plays a bigger part in self health complaints and self-rated health, than perceived work load (Odeén, Westerlund, Theorell, Leineweber, Eriksen & Ursin, 2013; Ree,

et al, 2013).

The present study will assess unfavorable coping strategies with the Theoretically Originated Measure of the Cognitive Activation Theory of Stress (TOMCATS).

Psychosocial factors in relation to burnout.

The previous section addressed the role of individual factors in relation to burnout in terms of demographical factors and unfavorable coping. This section focus on psychosocial factors in relation to burnout. Although Ree et al (2013) suggest that individual coping strategies are more important to burnout than negative work characteristics, a wide range of researchers agree upon that situational and organizational factors are the most important factors to burnout (Shaufeli & Enzmann, 1998; Leiter & Maslach, 2004; Lasalvia, Bonetto, Bertani, Bissoli, Cristofalo, Marrella, et al. 2009).

Psychosocial Strain. Lovelace and Rosen (1996) found that the perception of strained working conditions was related to greater levels of stress, intention to quit and job dissatisfaction.

In line with previously described definition of burnout, as a syndrome of work-related negative experiences developing in the presence of chronic stress factors at work (Maslach et al, 2001), the following section specifically focus on describing the work factors that have consistently been identified as related to burnout. The current study will be doing so by using Leiter and Maslachs (1999) model of mismatch with work. The basic hypothesis for this model is; the greater mismatch between person and job, the higher risk of burnout. The model identifies six areas of work-life and each of them will be presented below.

Six areas of work-life: In burnout research six areas of work-life have consistently been identified as contributors to burnout, that is, high demand, low control, low community, low reward, low fairness and low value congruity (Leiter & Maslach, 1999; Lasalvia et al, 2009). Below follows a presentation of the six areas of work-life and their relationship to burnout according to the mismatch model.

The first area of work-life is high demand, which is the strongest related factor to the exhaustion dimension of burnout. It is not high demand in itself that increase the risk of burnout, rather it is a question of how long time one have been exposed to high demands and the possibility to rest and recover (Maslach, 2003). When high demands is a chronic job condition it

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leads to a decrease in work performance, which negatively affects collegial relationships. The workload should be manageable and compatible with the employee's expectations, not to be a factor of burnout (Leiter & Maslach, 2004).

The second area of work-life is control and the combination of high demand and low control has been seen to be especially stressful for the employee and increase the likelihood of becoming burnout. This is shown in a study with 105 full-time nurses finding that the nurses perceiving the lowest control and highest workload were those that had the highest prevalence of severe stress, sickness leave and were the highest burden to the health care system during a 5 year period (Ganster, Fox & Dwyer, 2001). Furthermore, Kowalski et al., (2010) report that lack of decision-making and control over work is strongly related to burnout.

The third area of work-life is community, which describes the quality of the organizations social environment. Mutual support, closeness and the capacity to work as a team, all belong to the area of community. The greatest threat to community is chronic and unresolved conflict with others at work.

Kowalski et al (2010) examined in a cross-sectional study with 959 nurses the relationship between organizational community and emotional exhaustion. The result revealed a relationship between low community and high emotional exhaustion but the strongest predictor of emotional exhaustion was perceived workload. In addition to workload, low decision latitude predicted high emotional exhaustion (Kowalski, et al., 2010).

Collective values and mutual trust is seen as important resources helping people to cope with stress at work. This could explain why conflict with supervisor increases the employee's feelings of exhaustion (Leiter & Maslach, 1988).

The fourth area of work-life is reward. The degree of reward reflects the recognition employees get for their job contributions. Reward may be financial, institutional or social, however it is important for feelings of wellbeing and efficacy. Lack of reward can create inconsistency between what one expects to get and what one really gets (Leiter & Maslach, 2004), which might cause stress and increase people's vulnerability to burnout (Chappel & Novak, 1992).

The fifth area of work-life is values and refers to the correspondence between the principles and practice of the organization and the employees' personal and professional values (Lasalvia et al, 2009). An example of conflicting values is unmet expectations regarding the possibility of advancement, or the perception of not being able to live up to personal ethics. On the other side,

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when value congruity exist between the values that are prevalent at the workplace and the worker, the individual's motivation and personal ideals can thrive, which also allows the worker to engage more in their work (Leiter & Maslach, 2004). In addition, conflicting values is related to all dimensions of burnout according to the MBI; exhaustion, cynicism and perceived reduced professional efficacy, with results indicating associations between perceived low value congruity with work and high burnout (Leiter & Maslach, 1999).

The last area of work-life is fairness. Unfair treatment is emotionally upsetting, exhausting and fuels a deep sense of cynicism about the workplace (Leiter & Maslach, 2004).

In a study by Aiken et al (2001) a total of 43.329 nurses answered a questionnaire regarding job satisfaction, feelings of burnout and intention to leave. The result showed that 30-40 percent of the nurses had high scores on the burnout dimension emotional exhaustion. Less than 50 % of all nurses reported that they got the support they needed from their closest boss. In addition, another 50 % perceived lacking the possibility to influence decision-making and missed being rewarded with appreciation for their job contribution. A minority of the nurses perceived that they had opportunities for advancement, clearly lacking reward from the organization (Aiken. et al., 2001).

To summarize the two previous sections of individual and situational factors pertaining burnout, both the perception of not being able to cope with a difficult situation, and the perceived psychosocial strain play important roles in burnout. Previous research findings report associations between both coping and burnout and between psychosocial factors and burnout. The level of stress is affected both by the employee's perception of the external work demands and her capability to cope with these (French, Caplan & Harrison, 1982). In particular high demands, low control, low value congruity, low reward and low fairness are psychosocial factors that are related to higher degrees of burnout.

The nurses themselves report that psychosocial factors play a crucial role in their perception of severe stress and burnout. Due to the nurses own reports of psychosocial factors as important and that most interventions has focused on improving their coping strategies, I choose to mainly focus on the perceived psychosocial strain of the nurses and the role played by psychosocial factors in relationship with burnout.

Research aim and hypotheses

Against previous research background that concerned the seemingly harsh working situation of nurses, which is presumed leading to a future shortage of nurses, the main aim is to study the association between the nurses' perceived psychosocial strain with work, their level of unfavorable coping strategies and burnout. Specifically, three hypotheses will be examined.

Hypothesis 1: There is an association between burnout in Swedish nurses and psychosocial strain. Psychosocial strain in terms of the five areas of work-life: demand, community, reward, control and values.

Hypothesis 2: There is an association between burnout in Swedish nurses and unfavorable coping strategies.

Hypothesis 3: The larger psychosocial strain among the nurses, the greater the likelihood of being burnout, also when adjusting for unfavorable coping strategies.

Method

Study procedure & ethical considerations

The present work is a cross sectional questionnaire study among Swedish nurses from three major hospitals in Sweden. The recruitment process started with sending an email to 17 different departments with information about the aim and procedure of the study. The head of the department passed forwarded the email to the nurses in their department. A week later they received a second email with the actual study. Furthermore they were informed that participation entailed answering a questionnaire, which would take about 10-15 minutes of their time. The nurses received a reminder by email a week after they got the questionnaire. The data collection went on for two and a half week. The questionnaire was created online at [surveymonkey.com](https://www.surveymonkey.com) (Appendix A). Ethical considerations were taken care of by informed consent, which contained information regarding voluntariness of participation, the right to abort at any time and that their data would be treated with confidentiality (Appendix B).

Participants

Three hundred and ninety Swedish nurses were invited to participate. Of these 117 nurses from 14 different departments choose to participate. The majority of the nurses (64%) came from the

departments: Children/Youth, Surgery/Urology and Intensive Care Unit. The rest of the participants (36%) came from ten different departments. Only nurses with complete data sets were included (n=97), among these were 88 women and 9 men ranging in age from 18-65 years old. Forty-three of the nurses had worked for >9 years and 54 of them had worked for ≤9 years. Almost all nurses had a permanent employment. A detailed presentation of the participants regarding demographics can be seen in table 1 in the result section.

Measures

The first part of the questionnaire contained a section of background information. Next followed separate sections where the nurses stated perceived levels of: burnout, psychosocial strain and unfavorable coping strategies.

Beneath follows a more detailed description of the sections and measures used.

Demographics. The demographical questions regarded age, gender, civil status, work experience, working hours, employment, satisfaction with working hours and physical training. The first questions regarded work; “How long have you worked as a nurse?”. The second question addressed their working hours; “What are your normal working hours?” Next followed a question regarding their employment status. After employment the participants were asked if they were satisfied with their working hours or not. In addition the participants reported age, gender and if they lived alone or not. Last question addressed the participants physical exercise performed per week by using Saltin-Grimby Physical Activity Level Scale (Grimby, Borjesson, Jonsdottir, Schnohr, Thelle & Saltin, 2015). Four alternatives was presented ranking from 1 (inactive leisure time) to 4 (regular hard physical training and competition (activity with high intensity)). The complete response alternatives of all demographical questions can be seen in the appendix. The reason for choosing specifically these demographical questions was because previous research reports that sometimes, but inconsistently, they have an association, or a meditational role, in regards to burnout or to stress in general.

The Oldenburg burnout inventory (OLBI). I use the OLBI to measure burnout. The OLBI consist of 16 item distributed across the two subscales *exhaustion* and *disengagement* (Demerouti et al. 2001). Each subscale has four positively and four negatively worded items. One example of an item of exhaustion was: “Some days I feel tired already before I go to work.” An example of an item of disengagement was: “It is more and more common that I speak of my work in a negative way”. The participants rated how they felt by choosing from the alternatives on a 4-

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point scale with 1 (totally disagree) to 4 (totally agree).

The Questionnaire for Psychological and Social Factors at Work – Mismatch (QPS-M). The QPS-M (Österberg, 2016) have used questions from the more comprehensive measurement Questionnaire for Psychological and social factors at work - Nordic (QPS-N) (Dallner, Lindström, Elo, Skogstad, Gamberale, Hottinen, et al, 2000) and arranged them according to Maslach and Leaters model for the development of burnout, focusing on the six areas of work-life; demand, control, reward, community, fairness and values (Leiter & Maslach, 1999). In the current study, I chose not to measure the dimension fairness (7 items) because it deemed less interesting, with regards to previous research on burnout. A total of 33 items measured 5 subscales of the QPS-M and each of them shall now be described more in depth. All items on the following subscales were rated on a 5-point scale from 1 (very seldom or never) to 5 (very often or always).

Demand. 6 items addressed how demanding the participants perceived their work to be. For example: “Do you have too much to do at work?” and “Does your work-load negatively interfere with your family/private life?”

Control. 8 items treated the participant’s perception of control at work. For example: “Do you have impact on important decisions regarding your work?” and “Can you affect the amount of work you get?”

Reward. 2 items addressed the participant’s perception of being appreciated and rewarded for their achievements. For example: “Are you being appreciated for the work you do by your closest boss?”

Community. The participants rated their perceived support and their work climate by answering 13 items. For example: “If you need, do you get support and help with your work by your colleagues?” and “If you need, do you get support and help with your work by your closest boss?”

Values. 4 items addressed the participant’s perception of values in relation to their work. An example is: “My own values are very much like the values of the organization”.

Theoretically Originated Measure of the Cognitive Activation Theory of Stress (TOMCATS).

The participants’ unfavorable coping strategies were measured with TOMCATS. The items 2-8 measured helplessness and hopelessness, which is equivalent to unfavorable coping strategies. As previously mentioned the present study treat helplessness and hopelessness as one single factor

called unfavorable coping strategies, in accordance with t Ree, et al. (2013). Two examples of these items was: “I wish I could change my life, but it’s not possible” and “All my attempts at making things better just makes them worse”.

The participants rated all items of TOMCATS on a 4-point scale with 1(not true at all) to 4(completely true) (Odeén, et al. 2013). Uni Health and the Stress Research Institute of Stockholm University had translated TOMCATS into Swedish.

Statistical Analysis.

The data was coded and analyzed by using the SPSS Statistics for Windows version 22.0 software. Regarding the size of the sample, 117 nurses answered the questionnaire but ten of them didn’t finish the survey ($n=107$). The possible reason for these losses will be reflected upon later in the discussion. Out of the 107 there were ten internal missing values, resulting in a total of 97 participants with complete datasets available for analysis.

The following section describes, in the order mentioned here, the treatment of the data, the Cronbachs alpha of all scales and how the total scores were computed. Besides this, in the end of the section, all analyses of the hypotheses will be explained.

OLBI. The eight negatively worded items in the OLBI were reversed before statistical analysis was performed. The Cronbachs alpha for the total OLBI was 0.9. Furthermore, the Cronbachs alpha for each subscale was 0.84 for disengagement and 0.85 for exhaustion. All alpha values, both for the total OLBI and the subscales, are preferable values indicating good internal consistency.

To calculate the total OLBI, all scores of the two subscales (disengagement and exhaustion) was summarized and then divided by eight to get the average value of each dimension. Finally, the two subscales was combined which gave a total value of burnout.

TOMCATS. The measurement of unfavorable coping strategies, TOMCATS, originally consisted of 8 questions, but question number 5 (hopelessness) was excluded because the alpha value was higher without it. The Cronbachs alpha for total unfavorable coping strategies (6 items) was 0.77, which indicated acceptable internal consistency.

Adding the 6 items and dividing the sum with 6, gave the total score of unfavorable coping strategies.

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QPS-M. Four items of the QPS-M were deleted (number 5 in control and 27-29 community) because they were originally supposed to be analyzed through the specific computer software LUQSUS-K (LUQSUS-K 2016), which I chose not to use due to time limitation. Several items from four subscales of the QPS-M (community, control, reward and values) had to be reversed before computation of total scores, so that a high score on the total QPS-M indicated high psychosocial strain.

The total QPS-M, showed a Cronbach alpha of 0.94, indicating good internal consistency. For the subscales (control, community, reward, control, values) all alpha values exceeded 0.76, which is considered as an acceptable internal consistency. To get the aggregated score of each subscale, all scores of each item from each subscale were added and then divided by the sum of total items. Further on, to get the total QPS-M, all total scores of the subscales was added and then divided by 5.

Demographics. The demographical variables age, work experience, working hours, employment and physical training were recoded and transformed into fewer categories. The reason for recoding was to have more people in each category to increase statistical power.

Hypothesis 1 & 2: Binary correlational analysis was conducted to test if there is an association between burnout in Swedish nurses and psychosocial strain, and between unfavorable coping strategies and burnout. I chose a correlational analysis to be able to describe the relational strength and direction between two variables. Correlations, means and standard deviations will be presented in table 2 in the result section. Partial correlations were performed to investigate the possible impact that demographical variables might have on the relationships between burnout, psychosocial strain and unfavorable coping strategies.

Hypothesis 3: To test the hypothesis that the larger psychosocial strain among the nurses, the greater the likelihood of being burnout, also when unfavorable coping strategies is adjusted for a direct logistic regression was performed (both crude and adjusted). Both in the crude and the adjusted model, psychosocial strain (QPS-M) was used as independent variable (the predictor) and burnout (OLBI) as the dependent variable (the outcome). Thus, the likelihood of being burnout more than average was the odds ratio (OR) with 95% confidence intervals (CI). The choice of reporting OR instead of probability is because of the constant effect that OR represent. OR is the constant effect of the psychosocial strain on the likelihood that burnout will occur. One

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change in the odds comes from a unit change in the predictor. This would not have been as easy to show in terms of probability.

I chose the average of the OLBI score was used as the cutoff, defining two groups, one group being burnout more than average (Group 1 > 2.29), and the other group being burnout less than average (Group 0 ≤ 2.28). Group 0 was used as the reference group. The reason for choosing a cutoff was based on previous burnout studies (e.g. Kogoj, et al. 2014) (see the Discussion for more reflections over cutoffs and its implications).

The total QPS-M was split into thirds and the three groups represented Low ≤ 2.58 ($n=34$), Medium 2.59-2.91 ($n=32$) and High 2.92+ ($n=31$) levels of psychosocial strain, respectively. The Low group was used as the reference group. The reason for divide the QPS-M into thirds is a practical way to get a meaningful and easy understandable effect size out of a continuous variable.

Before conducting the logistic regression outliers and multicollinearity was checked for. No outliers or multicollinearity should disrupt the interpretation of the analysis (Tabachnick & Fidell, 2014).

There were several reasons for choosing logistic regression instead of linear regression. First of all I found it easier to understand what is associated with burnout 1/0, rather than the degree of burnout on a continuous, non-linear scale. Because the aim was to estimate the likelihood of being more burnout than average, there seem to be a good reason for using a logistic regression. A logistic regression, compared to a linear regression, is a flexible technique, which makes no assumptions about the distribution of the predictor variables (Tabachnick & Fidell, 2004).

Result

This section describes the results of all statistical analyses, starting with table 1 presenting an overview of the demographics of all participants in number and percentage, as well as the demographics for the two burnout groups. Further follows the result of testing hypothesis 1-3.

Table 1. Demographic characteristics for the total sample and the two groups.

Variables	Burnout < average	Burnout > average	Total Number(%)
Gender			
Women	44	44	88 (90.7)
Men	7	2	9 (9.3)
Age			
18-39	29	27	56(57.7)
40-65	22	19	41(42.3)
Physical activity			
Inactive - Easy 4h/week	27	24	51(52.6)
Moderate – Intense	24	22	46(47.4)
Living with someone			
Yes	46	40	86(88.7)
No	6	5	11(11.3)
Employment			
Permanent	50	45	95(97.9)
Time limited	2	0	2(2.1)
Satisfaction work hours			
Yes	35	20	55(56.7)
No	14	28	42(43.3)
Number of years in nursing			
> 9 years	23	20	43(44.3)
≤ 9 years	27	27	54(55.7)
Working hours			
Day and evening	23	17	36(37.1)
Mixed (day, evening, night)	31	32	61(62.9)

As can be seen in table 1, double as many nurses in the burnout more than average group ($n=28$) are unsatisfied with their working hours, compared to the group burnout less than average ($n=14$).

Hypotheses 1 and 2.

Table 2 shows the means, standard deviations and correlation coefficients for burnout, psychosocial factors and unfavorable coping strategies.

As can be seen in table 2, all variables are significantly correlated, except from the correlation between reward and unfavorable coping strategies, $r = -.08$, $n = 97$, $p = 0.4$.

A strong positive correlation exist between burnout (total OLBI) and psychosocial strain (the total QPS-M), $r = 0.68$, $n = 97$, $p = <.001$, with high levels of burnout associated with high levels of psychosocial strain.

The correlation between the OLBI and unfavorable coping strategies has a large strength of relationship, $r = 0.53$, $n = 97$, $p = <0.001$ and between coping strategies and QPS-M a small strength of relationship, $r = 0.36$, $n = 97$, $p = <0.001$.

The four subscales of the QPS-M; demand, community, values and control all show large strength of relationship with the total OLBI, with all correlations exceeding $r = -0.5$ ($n = 97$, $p = <0.001$). The only subscale of the total QPS-M that only showed a medium strength of relationship with the OLBI was reward, $r = -.36$, $n = 97$, $p = <0.001$. For the subscales community, control, values and reward, the relationship is negative, indicating that when there are low community, control, value congruity and reward, burnout is high. The subscale control has a positive relationship with burnout, indicating that when demand is high, burnout is high as well.

The demographical variables did not influence the correlations between psychosocial strain, burnout and unfavorable coping strategies. These results will not be further presented.

Table 2. Means, standard deviations, and correlations for burnout, psychosocial factors and unfavorable coping strategies (demographical variables controlled for).

Variables	Mean (SD)	N	1	2	3	4	5	6	7	8	9	10
1. OLBI	2.28 (0.43)	97	-									
2. Sub Ex	2.53 (0.46)	97	.68*	-								
3. Sub Dis	2.0 (0.54)	97	.77*	.43*	-							
4. QPS-M	2.81 (0.61)	97	.68*	.62*	.57*	-						
5. Unf. Cope	1.47 (0.38)	97	.53*	.51*	.43*	.36*	-					
6. Control	3.31 (0.61)	97	-.62*	-.47*	-.49*	.84*	-.38	-				
7. Community	3.91 (0.67)	97	-.53*	-.32*	-.45*	-.81*	-.37*	.66*	-			
8. Reward	2.89 (1.04)	97	-.36*	-.20*	-.36*	-.76*	-.08	.46*	.52*	-		
9. Values	3.28 (0.87)	97	-.64*	-.40*	-.55*	-.83*	-.31*	.61*	.60*	.51*	-	
10. Demand	3.33 (0.68)	97	.55*	.49*	.35*	.70*	.31*	-.72*	-.44*	-.27*	-.52*	-

Note. * $p < 0.01$. (2-tailed)

Total OLBI is an aggregated score of the two subscales exhaustion and disengagement

Sub Ex and Sub Dis are the composite scores of the two subscales of the OLBI

QPS-M is an aggregated score of the five subscales demand, community, reward, control and demand

Unf. Cope = Unfavorable coping strategies is an aggregated score of the items in TOMCATS

Hypothesis 3.

Table 3 reports the results for testing hypothesis 3. The crude model in the logistic regression significantly differentiated burnout more than average from burnout less than average on QPS-M, also when adjusting for Unfavorable coping strategies (adjusted model).

The crude model explained between 30.6 % (Cox and Snell R square) and 40.9 % (Nagelkerke R Square) of the variance in the outcome burnout more than average. As can be seen in table 3, the each of Medium and High QPS-M make a unique statistically significant contribution to the model. The nurses in group Medium psychosocial strain have 3.2 higher odds (OR=3.19) to be

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burned out more than average, compared to the nurses in group Low QPS-M. This is significant on a 5% level ($p < .04$) since the lower bound of the 95% confidence interval is greater than 1.0 (95% CI 1.03-9.88).

The strongest predictor of reporting burnout more than average is the group High psychosocial strain (those scoring in the highest third of the total QPS-M). This group has, in comparison to group Low, more than 30 times higher odds for being burnout more than average (OR=31.5, $p < .000$). This is highly significant, since the lower limit of the 95% confidence interval is 7.995, which is much higher than 1.0 (CI 7.995-124.11).

In conclusion, the one third most strained nurses have 31.5 greater odds (association) with burnout than the third least strained (i.e., reference level).

Table 3 also reports the results from the adjusted model. The adjusted model also showed a significant goodness of fit $\chi^2 (3, N = 97) = 42.22, p < .001$. High scores on QPS-M significantly predicted the likelihood of being burnout more than average in both models, but when adjusting for unfavorable coping strategies the medium level of QPS-M was no longer significant with OR of 2.46 (95% CI 0.75-8.06). In addition, in the adjusted model, the OR of High QPS-M decreased from 31.5-18.48 (95% CI 4.44-76.84).

Table 3. Odds Ratios (OR) and Confidence intervals (CI) for the association between psychosocial strain and burnout greater than average. Logistic regression analyses were performed (Crude model) and were adjusted for Unfavorable Coping Strategies (Adjusted model) (N =97)

Variable	Crude OR (95% CI)	Adjusted for Unf.Cop OR (95% CI)
Low (n= 34)	Ref	Ref
Medium (n=32)	3.19 (1.03-9.88)	2.46 (0.75-8.06)
High (n=31)	31.5 (7.99-124.11)	18.48 (4.44-76.84)

Bold types indicate statistically significant ORs.

QPS-M in thirds: Low, Medium, High

Unf.Cop = Unfavorable Coping strategies

Discussion

The main aim of this study has been to examine the associations between the nurses' psychosocial strain, unfavorable coping strategies and burnout. Especially the connection between psychosocial strain and burnout has been addressed.

The most interesting result reveals that both medium and high psychosocial strain is significantly associated with being burnout more than average. This result confirm hypothesis 3 that there are associations between burnout and psychosocial factors and that, the larger psychosocial strain among the nurses, the greater the likelihood of being burnout. More specific, nurses with the highest level of psychosocial strain are 30 times more likely to be in the burnout more than average group, than nurses with lower levels of psychosocial strain, even when unfavorable coping strategies were adjusted for.

These results are similar to the studies of Kowalski et al. (2010), Leiter and Maslach (2004) and Lasalvia et al. (2009) reporting strong associations between burnout and high psychosocial strain.

The results indicate that psychosocial strain, as a combination of high demands, low community, low control, low reward and low value congruency, all together in the total QPS-M, creates a higher likelihood for a nurse to become burnout more than average.

The low correlation between burnout and the subscale reward is probably caused by the fact that only two items measured the nurses' perception of reward.

As expected, a positive relationship between psychosocial strain and burnout was found confirming hypothesis 1. In addition, a positive relationship was found between unfavorable coping strategies and burnout, confirming hypothesis 2.

Now follows a deeper analysis of the results of hypothesis 3. The role played by unfavorable coping strategies need to be discussed. Although the results of the logistic regression, when adjusting for unfavorable coping strategies are in line with the expectations, since unfavorable coping strategies could be expected to exacerbate the effect of psychosocial strain on burnout, it was surprising that the OR is almost 50% lower in the adjusted model. High scores on QPS-M significantly predicted the likelihood of being burnout more than average in both models, but when adjusting for unfavorable coping strategies the medium level of QPS-M was no longer significant with OR of 2.46 (95% CI 0.75-8.06). The OR of High QPS-M decreased from 31.5-18.48 in the adjusted model (95% CI 4.44-76.84).

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The confidence intervals in both models are very wide, probably caused by a too small sample size. Because of wide confidence intervals the actual OR is very uncertain and any conclusions drawn from this data need to be replicated with a larger sample size.

The result indicates that unfavorable coping strategies have a significant association with burnout. The question is if unfavorable coping strategies are a confounding or a mediating factor. If unfavorable coping strategies are a confounding variable, maybe due to content overlap, this causes a spurious relationship between the OLBI and the QPS-M, because it indicates that unfavorable coping strategies are related to both the OLBI and the QPS-M. If spuriousness is the case, then the validity of the results must be questioned.

On the other hand, assume that unfavorable coping strategies has a mediator role, this means that there could be two effects of the OLBI and the QPS-M. One is the direct effect of psychosocial strain on burnout, and the second is the indirect effect of psychosocial strain on burnout through unfavorable coping strategies. If unfavorable coping strategies is a mediator, then the relationship between burnout and psychosocial strain is mediated through increased levels of unfavorable coping strategies. In the case of the current study, increased level of unfavorable coping strategies decrease the effect of psychosocial strain, indicating that coping strategies is an important factor in the relationship between psychosocial strain and burnout.

In the present study's questionnaire there was a question if the nurses are happy with their working hours, and this question might not be a demographical question, because the question contains a subjective evaluation. However, the results showed that 28 out of 97 nurses in the burnout more than average group, were unsatisfied with their working hours, while in the group – burnout less than average – only 14 out of 97 nurses were unsatisfied. Perhaps this result could be seen as a part of the evaluation of burnout. There is a possibility that the 28 nurses more burnout than average are unsatisfied with working hours because they are unsatisfied with their work conditions in general. Lack of control and influence over decision-making regarding nurse's working hours have been shown by Kowalski et al., (2010) to be strongly related to burnout.

Although, it is tempting to discuss all these results in terms of psychosocial strain causing burnout, but the nature of cross-sectional designed studies make it impossible to explain causality and therefore only connections between variables are being presented. The current study has

established the likelihood that psychosocial strain is related to burnout, but do not imply that psychosocial strain cause burnout.

Practical implications

The findings of this study are not unique, but add to the knowledge that psychosocial strain is significantly associated with burnout. Cumulative research findings like this, might contribute to release some of the responsibility for being burnout from the nurses themselves, and put more of the responsibility on the heads of the hospitals. This is the reason why these findings might be of importance for the nurses. Lasalvia et al. (2009) conclude that nurses have less control over external stressors in the workplace with interruptions or demands from their boss. Therefore individual prevention strategies, like strengthen of coping strategies, are less efficient than interventions aiming to improve the strain perceived with areas of work-life.

The findings of the present study support Maslach and Leiters theory (1999) that interventions to prevent burnout, should address, not only the coping ability of the nurses, but in particular include improvement of the areas of work-life: work; demand, control, community, reward and values. Therefore, in line with the studies of Shaufeli and Enzmann (1998), more responsibility need to be on an organizational level rather than on an individual level to decrease burnout. It is possible to ease the effect of job stressors so that the burnout decreases, but that does not eliminate the cause to why one gets burned out (Leiter & Maslach, 2004). Therefore the interventions should focus on balancing the five areas of work-life by; reduce the workload, increase mutual support, give rewards, increase decision latitude and control, and start a dialogue with the nurse's to match their values. Probably there is a need for a combination of individual and managerial interventions to decrease burnout, which Maslach (2003) also suggest.

Strengths & Limitations

The novelty with this study is the combination of using the OLBI to measure burnout, the use of CATS definition regarding unfavorable coping strategies (measured with TOMCATS) and the way of arranging the QPS-M in low, medium and high psychosocial strain in the logistic regression.

The result of the present study is influenced by the cutoffs chosen for the OLBI and the QPS-M, and this should be carefully considered while interpreting the result. Burnout cannot be identified

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by the OLBI scores exclusively, but rather the scores indicate nurses being in the risk zone of being or becoming burnout (Kogoj, Cebasek-Travnik & Kragelj, 2014). Strength of the current study is the careful way to refer to the cutoff chosen for burnout through the description “to be burnout more than average” and not “to be burnout”.

Noticeably, there are no clinically validated cutoffs for the OLBI in Sweden and to choose cutoff based on for example MBI-scores or on another sample than a Swedish sample, is risky and the study might end up with invalid results.

Previous studies have used different methods to determine their cutoffs for burnout. Peterson, Bergström, Samuelsson, Åsberg and Nygren (2008) defined the participants above the 75th percentile as burnout and these cutoffs was determined to: ≥ 2.1 on disengagement and ≥ 2.25 on exhaustion. These points correspond to the mean score on the MBI of Dutch employees diagnosed as burnout by a physician (Schaufeli et al, 2001). The actual cutoffs chosen in current study used the same method as Kogoj et al, (2014), namely the average value of the total OLBI as the cut-off for burnout (i.e. to be burnout more than average). Kogoj et al (2014) argue that this is the most convenient method for statistics and that it is commonly used. However, to the specific cutoffs for this particular distribution, no allowance of comparisons with prevalence reports from others studies can be made.

A limitation of present study is that I did not use the OLBI as ordinal and made sensitivity analyses, analyzing the results of testing several other cutoffs levels.

Present study is made in a Swedish context with Swedish nurses coming from 14 different departments. Therefore the possibility to generalize the results to include nurses beyond Sweden or to a specific department is limited. With a larger sample of nurses coming from each of the different departments it would have been possible to look at eventual differences between departments with regards to burnout and psychosocial strain. This can advantageously be done by future studies so that prevention strategies for burnout can be more specific and better target the problems different departments struggle with and spot the needs of the nurses working there.

Out of 117 nurses answering the questionnaire, ten of them dropped out as the questionnaire proceeded. Interesting to notice is their common characteristics. All 10 perceived very low control with regards to affect the amount of work they got and they perceived that they were always or very often interrupted at work. Therefore, it is plausible that these ten might have been

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the most burnout ones. If this is the case then the largest issue in measuring burnout is revealed; the most burnout ones doesn't have the energy to participate in a study or worse, they are maybe not even at work anymore.

Future research should do more intervention studies, with pretest and posttest, to address the question of which factors are causing and/or decreasing burnout. Then it would be possible to investigate the effect organizational interventions might have on burnout. The best way to investigate this would be to use control and treatment groups, make an intervention in the control group, and then measure the difference.

More specific, one region at the hospitals could make a change in psychosocial factors, for example increase the nurse's control and decrease their demands, and make no change in another region. Burnout and psychosocial strain should have been measured before and after the intervention, and then the results between the two groups can be compared.

Women is overrepresented in the nursing profession and to be able to generalize the results to a bigger population current study needs to be replicated, including men and other occupations outside the health care sector, were men and women have equal working tasks. Current study would have benefited from a more evenly distributed sample across gender.

My study would have benefit from a larger sample size be able to make stronger conclusions out of the logistic regression according to Maxwell (2000). The small sample size also affects the interpretation of the odds ratio. Although the OR of the highest group of QPS-M was very high, from 18 ORs (adjusted model) – 30 ORs (crude model), the confidence interval in both cases was quite wide, which creates greater uncertainty of were the actual OR value in the population would be.

Conclusions

In conclusion, the results from current study shows that all the variables are related, more or less strongly, as seen in the correlation matrix. There is a strong association between high psychosocial strain and high scores on burnout. Which role unfavorable coping strategies play in the association between high burnout and high psychosocial strain needs further investigation. However, the results indicate that psychosocial factors and individual factors, both have strong associations with burnout.

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To summarize, there should be enough research evidence pointing at psychosocial factors as an important factor in terms of burnout. Hopefully, future burnout interventions, will address, not only the individual's ability to cope with strain at work, but also, the psychosocial strain the nurses' perceive at work.

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Appendix A

Link to the online questionnaire:

https://www.surveymonkey.com/create/?sm=rBCOuy_2BiHyBdAqy9MCSq2MmlrXHjGF6jrc_2FshH_2FvHKs_3D

Login: burnednurses

Password: burnednurses

Appendix B

Dear Nurse.

A couple of days ago you were informed of my study regarding the relationship between stress and nurses working situation. Today research reports that nurses are one of the most exposed groups in terms of stress and psychological strain. Your participation contributes to increased knowledge of what can be done to decrease these problems. Just click on the link below to start the study. Your participation is voluntarily and anonymous. The collected data will not be able to be tracked back to you and the results will be presented in group. If you have any questions before starting you are welcome to contact me at: jessica.naerer@gmail.com.

Your participation enables this study. Best Regards Jessica Naerer