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# Nursing Environments: Nurses Perspectives

*Natasha Khamisa*

## Abstract

Nurses have been found to experience higher burnout levels compared with other health professionals owing to the nature of their work. High burnout levels among nurses have been attributed to their stressful working environments. Prolonged exposure to work-related stress leading to burnout has negative consequences for job satisfaction and general health of nurses. This has wider implications on the health system, such as high turnover rates and compromised patient care. There is a significant gap in research focusing on the relationship between work-related stress, burnout, job satisfaction and general health of nurses in developing countries such as South Africa. A study exploring the relationships between work-related stress, burnout, job satisfaction and general health among South African nurses over time was conducted in order to inform how best to improve nursing environments while enabling quality nursing practice and patient care. A total of 895 nurses participated in the study at baseline and 277 of these individuals were followed up with a year later. Findings showed that although stress related to security risks in the workplace predicts job satisfaction as well as general health, stress related to patient care and nursing shortages better predict job satisfaction and general health over time. Burnout better predicts job satisfaction than general health over time.

**Keywords:** work-related stress, burnout, job satisfaction, general health, nurses, South Africa

## 1. Introduction

The health service industry is increasingly becoming more globalized and liberalized, thereby resulting in a higher demand for skilled health workers. Interdependency and interconnectedness among global societies has led to increased mobility among skilled health workers, resulting in a shortage of health professionals in the health care systems of some countries. South Africa in particular has recently been affected by this trend in international migration of professional nurses, migration of nurses from rural to urban areas as well as migration of nurses from the public sector to the private sector [1]. According to the South African Nursing Council (SANC) the nurse to population ratio is recorded at 197:1 [2].

Given South Africa's nurse driven health system, a shortage of nurses (the gap between supply and demand of 18,758 nurses) makes managing the country's quadruple burden of disease (HIV/AIDS, TB, infectious diseases and under nutrition) challenging [1]. Nurses are forced to adapt to as well as cope with shortages

by learning new skills, expanding their capabilities and assuming additional responsibilities, among other coping mechanisms. Such adaptation and adjustment contribute to work-related stress, thereby leading to high levels of burnout, low job satisfaction as well as poor physical and mental wellbeing [3].

Difficult working environments pose serious challenges for patient care and safety while favorable working environments are associated with better job satisfaction, decreased burnout and improved wellbeing of nurses [4]. Healthy working conditions have been shown to improve nurse wellbeing and patient outcomes in developed countries. Several studies conducted in developing countries show that favorable working environments improve staffing levels, thereby improving nurse and patient outcomes [5].

Burnout, defined as long term exhaustion and reduced interest in work [6], is a global phenomenon and has been found to be prevalent among employees whose work is constantly demanding and requires intense interactions of a physical and emotional nature [7]. It is believed that burnout is a manifestation of disconnection between employees and their working environment, whereby primary areas of work life such as reward, control and workload are compromised [8]. Prolonged exposure to these stressors leads to feelings of depersonalisation, whereby nurses lose compassion and sensitivity toward their patients. Depersonalisation negatively affects their ability to evaluate their work in a positive way, resulting in feelings of incompetence and low personal accomplishment. Emotional exhaustion sets in, which makes these nurses feel as if they do not have the emotional energy or resources to cope with the situation [9].

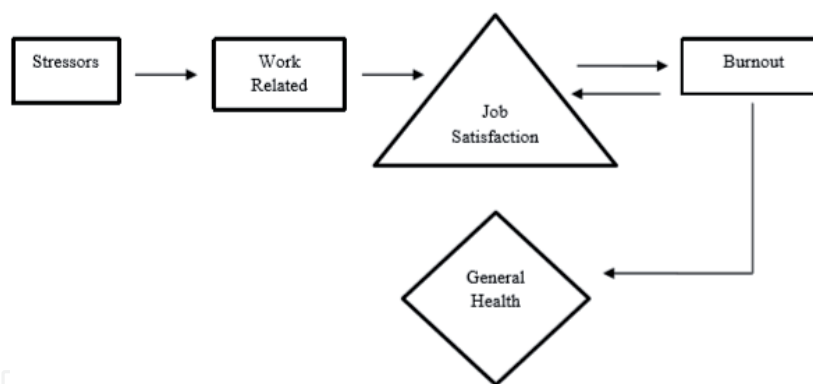
Highest levels of burnout are reported for South African nurses compared to nurses working in other low and middle income countries [10]. This is exacerbated by difficult working conditions characterized by high patient loads, a shortage of staff, increasing job demands and the quadruple burden of disease. Following factor analysis of various stress factors reported by South African nurses, researchers identified five specific stressors that contribute to burnout, namely patient care, staff issues, job demands, lack of support and overtime [11].

Work-related stress is a result of exposure to stressors within working environments that lead to burnout through the depletion of physical and mental resources needed for coping, which is determined by employees' perceptions as well as their emotional responses to levels of threat experienced [12]. Negative perception and appraisal of one's working environment affects job satisfaction [13]. Imbalance between stressful demands of the workplace and resources needed to cope with them affects physical and mental health outcomes (referred to as general health in this manuscript) [14].

Following depletion of physical and mental resources, one's ability to successfully perform tasks and achieve goals is compromised, which explains the association between burnout and job satisfaction. This leads to strain which manifests in the form of poor health outcomes, including headaches, insomnia and depression [3].

For the purpose of this study, the factors identified by Rothmann et al. [11] were referred to as work-related stressors and used to determine the extent to which each one contributes to burnout, job satisfaction and general health of nurses over time. A systematic review of existing literature revealed the following model illustrating relationships between contributing factors and health outcomes of burnout among nurses (**Figure 1**) [15].

Although studies have confirmed that both job satisfaction and burnout are effects of exposure to stressful working environments leading to health consequences [16], the causal nature and direction of these relationships remain



**Figure 1.**  
 Existing model illustrating relationships between contributing factors and health outcomes of burnout among nurses.

ambiguous, especially within developing contexts such as South Africa. This study aimed to identify the relationships between work-related stress, burnout, job satisfaction and general health of South African nurses in order to better understand these relationships thereby enabling improvement of working environments and patient care.

## 2. Methodology

### 2.1 Participants

Of 1200 invited nurses 895 participated in the baseline study (response rate = 75%). Of these, 277 nurses were followed up a year later. Participants were recruited from two public and two private hospitals using stratified random sampling. Demographic differences were noted between baseline and follow up whereby significant differences were found for age, experience and hours worked per week [17].

### 2.2 Measurement tools

All participants received five questionnaires to complete. The Socio Demographic Questionnaire consisted of questions pertaining to the age, gender, level of education, level of experience, population group and number of days/hours worked per week. The Nursing Stress Indicator was designed to specifically measure the frequency and severity of five specific stressors identified among South African nurses (patient care, staff issues, supervision/management issues, overtime and job demands). The Maslach Burnout Inventory –Human Services Survey was designed to measure burnout using three sub scales (emotional exhaustion, depersonalization and lack of personal accomplishment) among individuals working in the human services and health care occupations including nursing. The Job Satisfaction Survey measures job satisfaction on nine facets (pay, promotion, supervision, fringe benefits, operating conditions, contingent rewards, co-workers, nature of work and communication) within organisations in the social sector of employment. The General Health Questionnaire was used to detect psychiatric illness as well as current psychological states and perceived quality of life using four sub scales (somatic symptoms, anxiety and insomnia, social dysfunction and severe depression). All questionnaires were reliable and valid within the South African context [17].

### **2.3 Data collection**

Unit managers distributed invitation packs containing an explanatory statement, consent form, five questionnaires and a sealable envelope. Participants returned completed questionnaires and consent forms (including contact details for follow up 1 year later) in sealed envelopes which they placed in sealed boxes. This was accessed by the researcher to ensure privacy and confidentiality of responses. Participants consenting to follow up were contacted to arrange data collection a year later. Participants returned completed follow up questionnaires in a sealed envelope placed in sealed boxes situated around the hospital. These were stored together with respective questionnaires completed at baseline for each participant. Participants were given 3 weeks to complete the questionnaires at both time points with reminders being issued 2 weeks after initial questionnaire distribution [17].

### **2.4 Design and analysis**

The study design used was a longitudinal design. This design involves the collection of data from the same sample over time enabling the observation of changes in outcomes. Longitudinal designs are used to quantify trends, describe progression of events, identify patterns of change and test theory. For these reasons, this design was chosen to examine the relationship between work-related stress, burnout, job satisfaction and general health of nurses over time. This design is suitable because it enables the study of development and natural occurrence of events over time [17].

Data was entered into a statistical package (SPSS version 20) and analyzed using Generalised Estimation Equation analysis to determine the best predictors for each outcome over time. Predictors of work-related stress (patient care, staff issues, supervision/management issues, overtime and job demands) were entered into models with facets of burnout (emotional exhaustion, depersonalisation and personal accomplishment), job satisfaction (pay, promotion, supervision, fringe benefits, operating conditions, contingent rewards, co-workers, nature of work and communication) and general health (somatic symptoms, anxiety and insomnia, social dysfunction and severe depression) as outcomes. Facets of burnout were also entered as predictors into models with facets of job and general health as outcomes. Facets of job satisfaction were entered as predictors with facets of burnout and general health as outcomes. Odds Ratios (OR) were calculated as EXP (regression coefficient) and indicated the odds of predictors being associated with outcomes over time.

### **2.5 Ethical considerations**

Ethics approval was obtained from Monash University Human Research Ethics Committee (MUHREC), Human Sciences Research Council (HSRC) and Gauteng's Department of Health (DoH). Informed consent was obtained from all participants in the study and anonymity was ensured through coding of data as well as presentation of aggregate findings in all publications.

## **3. Results**

**Tables 1–3** show the results of the GEE analysis [17].



| Work Related Stress<br>Parameters | Burnout |           | Job Satisfaction |           | General Health |            |
|-----------------------------------|---------|-----------|------------------|-----------|----------------|------------|
|                                   | OR      | 95% CI    | OR               | 95% CI    | OR             | 95% CI     |
| Patient Care                      | 2.24    | 1.94-2.59 | 2.63             | 1.35-5.16 | 2.50           | 1.32-4.73  |
| Staff Issues                      | 4.18    | 2.93-5.96 | 2.04             | 1.02-4.09 | 3.88           | 1.41-10.73 |
| Job Demands                       | 1.80    | 0.97-3.32 | 1.20             | 1.06-1.35 | 2.83           | 1.63-4.90  |
| Lack of Support                   | 4.37    | 2.89-6.62 | 1.70             | 1.41-2.03 | 1.83           | 1.33-2.53  |
| Overtime                          | 2.12    | 1.78-2.53 | 1.89             | 1.48-2.40 | 1.15           | 1.02-1.30  |

All stressors except job demands significantly predict burnout. All five stressors are significant predictors of job satisfaction and general health. Lack of support best predicts burnout over time, patient care best predicts job satisfaction over time and staff issues best predict general health over time.

**Table 1.**  
GEE analysis of work-related stress as a predictor of burnout, job satisfaction and general health.

| Burnout<br>Parameters   | Job Satisfaction |           | General Health |           |
|-------------------------|------------------|-----------|----------------|-----------|
|                         | OR               | 95% CI    | OR             | 95% CI    |
| Emotional Exhaustion    | 2.37             | 2.13-2.63 | 1.93           | 1.81-2.06 |
| Depersonalisation       | 0.87             | 0.78-0.96 | 1.22           | 1.13-1.32 |
| Personal Accomplishment | 1.49             | 1.36-1.63 | 1.08           | 1.01-1.14 |

Emotional exhaustion is the most significant predictor of job satisfaction and general health.

**Table 2.**  
GEE analysis of burnout as a predictor of job satisfaction and general health.

| Job Satisfaction<br>Parameters | Burnout |           | General Health |           |
|--------------------------------|---------|-----------|----------------|-----------|
|                                | OR      | 95% CI    | OR             | 95% CI    |
| Pay                            | 1.07    | 0.99-1.15 | 0.91           | 0.84-0.99 |
| Promotion                      | 1.14    | 1.05-1.23 | 1.22           | 1.14-1.31 |
| Supervision                    | 1.10    | 0.98-1.23 | 0.93           | 0.86-1.01 |
| Fringe Benefits                | 1.03    | 0.97-1.10 | 1.08           | 1.01-1.15 |
| Operating Conditions           | 0.87    | 1.00-1.15 | 1.08           | 0.99-1.16 |
| Contingent Rewards             | 0.95    | 0.89-1.01 | 0.99           | 0.93-1.06 |
| Co-workers                     | 0.95    | 0.88-1.03 | 0.70           | 0.64-0.76 |
| Nature of Work                 | 1.07    | 0.96-1.20 | 1.34           | 1.21-1.49 |
| Communication                  | 0.92    | 0.85-0.98 | 0.85           | 0.79-0.93 |

Job satisfaction with promotion is the most significant predictor of burnout and job satisfaction with nature of work is the most significant predictor of general health.

**Table 3.**  
GEE analysis of job satisfaction as a predictor of burnout and general health.

#### 4. Discussion

This study longitudinally examined work-related stress in relation to burnout, job satisfaction and general health among South African nurses. The findings of this study suggest that of all the five stressors contributing to work-related stress, job demands do not have an effect on burnout, lack of support is the most significant predictor of burnout among nurses, stress related to patient care most significantly

predicts job satisfaction and stress related to staff issues best predicts general health. Although burnout and job satisfaction also predict general health of nurses, this study found that burnout is a better predictor. Emotional exhaustion best predicts general health over time but is a better predictor of job satisfaction. Burnout is also a better predictor of job satisfaction than vice versa [17].

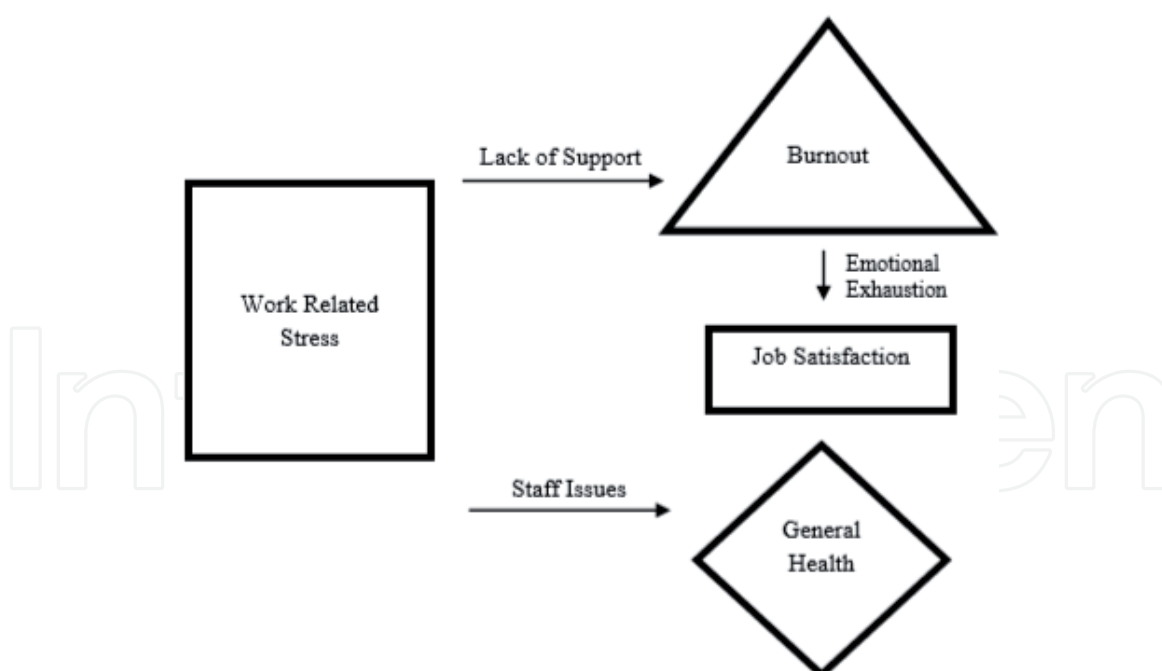
The findings also confirmed that security risk in the workplace was the most influential work-related stressor associated with job satisfaction and general health of nurses at baseline. However, over time, lack of support, patient care and staff issues became more influential work-related stressors affecting burnout, job satisfaction and general health of nurses respectively. Although burnout predicts general health over time, it is a stronger predictor of job satisfaction. More specifically, it was found that, over time, lack of support leads to burnout among nurses and staff issues compromise the general health of nurses. Emotional exhaustion in particular is important in determining job satisfaction levels of nurses [17].

These findings differ a little from the previously proposed model based on existing literature (**Figure 1**), suggesting that work-related stressors including inadequate resources, lack of recognition and autonomy as well as peer relationships are associated with job satisfaction [18–20]. Lower job satisfaction is shown to have a direct negative effect on burnout among nurses [21, 22], which impacts general health outcomes [10]. These findings are supported by various theories including one of the first occupational stress theories namely the role stress model, which suggests that stressful role expectations compromise job satisfaction, exhaust physical energy and result in poor health outcomes [23]. Similarly, process models such as Kahn and Byosiére's causal stress theory posits that stressors are associated with responses (job satisfaction) and consequences (burnout and illness) [24].

Despite empirical support for existing frameworks, it is important to note that these largely examine relationships between variables with less focus on the processes through which the variables interact with each other. For example, Karasek's demands-control model posits that high strain situations (high demands and low control) increase the likelihood of poor health outcomes (heart disease and depression) [25]. However, this view does not account for internal processes including appraisal of stressors affecting various outcomes. This is important given that stress is a subjective experience that may affect outcomes differentially. Siegrist's effort-reward imbalance model is one of the few contemporary models that considers the role of environmental influences and individual perceptions [26]. However, some researchers have alluded to the idea that the consideration of individual differences and internal processes are limited to intrinsic factors [27].

Modern work places are affected by multiple stressors that are dynamic in nature. These have the potential to affect a number of outcomes. However, existing stress models do not explore a multitude of independent variables affecting several outcomes. For example, Hackman and Oldham's theory focusing on the impact of job characteristics (task identity, task significant, autonomy) on outcomes (satisfaction, absenteeism) includes examination of a limited number of characteristics and outcomes [28]. This theory seems to limit the explanatory power of independent variables and their effect on a number of outcomes.

More recent stress models such as demand skill support model [29] also focus on a few factors affecting stress in multiple settings. This theory is based on the presumption that the effect of stressful work environments are similar across individuals and occupations, which prevents an in depth understanding of stress and its outcomes for individuals in different contexts with different characteristics [27]. A recent study showing that personal stress is a better predictor of burnout and general health than job satisfaction, which is better predicted by work stress, confirms this assertion [30].



**Figure 2.**  
 Proposed model illustrating the relationships between work-related stress, burnout, job satisfaction and general health over time.

Based on some of the shortcomings of existing theoretical models, a revised model reflecting the findings of this study is proposed in **Figure 2**.

Contrary to the existing model (**Figure 1**), the proposed model suggests that work-related stress is associated with job satisfaction through burnout. In differing from the previous model, this model also suggests that burnout leads to lower job satisfaction rather than vice versa. Although burnout is associated with general health of nurses, this model indicates a stronger relationship between stress related to staff issues and poor general health outcomes for nurses [17].

This model incorporates appraisal and perception of stressors that affect burn-out, job satisfaction and general health. Examination of the frequency and severity of stressors controls for the over-estimation of effects resulting from rare but highly stressful situations, while underestimating the effects of moderate but frequently occurring stressful situations [12]. This is important in determining whether stress is experienced considering that stressors may not contribute to stress unless they are perceived as such [31].

This model focuses on specific aspects of stress and burnout that affect job satisfaction and general health outcomes. Simultaneous examination of a multitude of contributing factors and outcomes provides an improved understanding of the complex processes through which stress affects burnout, job satisfaction and general health. This indicates a diversion from the one size fits all approach of several stress models in that it focuses specifically on how stressors contributing to stress among South African nurses affect burnout, job satisfaction and general health. It is important to know what stressful experiences are like for nurses working in difficult conditions, as well as the outcomes that are associated with this. This knowledge could inform the design of relevant interventions that are suitable to this population and other similar populations.

A key strength of this study is that it provides empirical evidence for relationships between work-related stress, burnout, job satisfaction and general health of nurses over time. Contribution of context specific findings, including the role of security risks in predicting job satisfaction and general health among South African nurses provides a foundation for further research examining work-related



stress, burnout, job satisfaction and general health of nurses in other South African provinces as well as other developing countries. Furthermore, the proposed model could be used as a foundation for further research exploring mediating/moderating roles of burnout and job satisfaction.

Existing policies and practices appear to discard the issue of difficult working environments in developing countries, whereby policy related to health workforce wellbeing is not prioritized and mostly lacking [32]. This is apparent in the South African context given the current strategic plan for health practice, which is heavily based on anecdotal evidence owing to limited empirical evidence [1]. McNerney and Suleman confirm that one of the major barriers in implementing evidence based practice in South Africa is insufficient evidence [33]. This lack of evidence prevents application of findings to other developing countries where limited research also prevents evidence based practice [34]. It is clear that such gaps in policy and practice are due to limited evidence focusing on working conditions among health workers in developing countries. Evidence based practice involves the use of evidence to support decision making processes within healthcare systems [35]. This requires broader application of many forms of evidence including empirical studies and reviews, thereby ensuring comprehensive research utilisation. This need for evidence emphasizes the importance of this study in providing strong empirical evidence to inform human resources for health policy and practice in developing countries.

Considering the findings of this study, the following strategies are recommended for addressing work-related stress, burnout, job satisfaction and general health of nurses in South Africa and other developing countries:

- Improving security for nurses in their working environment while promoting job satisfaction and general health of nurses. Such improvements can be achieved through increased presence of security personnel and training on violence prevention as well as aggressive behavior management. The WHO's framework for addressing security risks in the workplace suggests ensuring safe access to and from the workplace as well as installing alarm systems and surveillance cameras [36]. It is also important that the risks be assessed and mitigated in light of organisational context when creating safe work environments [37]. These interventions could be applied within South African hospitals following evaluation of their feasibility and effectiveness within this context.
- Support from supervisors and colleagues to reduce the impact of burnout on physical and mental health of nurses. This support can be achieved through various strategies involving recognition for good work as well as staff support programs focusing on counseling and career advancement [38]. Evaluation of these strategies within developing contexts is necessary to ensure effectiveness.
- Creating supportive environments to improve job performance and encourage a sense of personal accomplishment as well as job satisfaction. This can be achieved through availability of adequate resources as well as healthy relationships between supervisors and colleagues [38, 39].

Implementation of these would require a multi-sectoral approach involving the government, department of health, academic leaders and researchers, nursing associations, healthcare providers, non-governmental organisations and nurses themselves. This array of stakeholders with a range of aims, capabilities and interests will facilitate an interactive approach for conversion of recommendations to policy and practice [40].

## 5. Conclusion

This chapter offers a better understanding of relationships between work-related stress, burnout, job satisfaction and general health of nurses. Over time, burnout plays a more important role in influencing job satisfaction among nurses. Interventions aimed at improving job satisfaction among nurses may reduce the negative impact of burnout on nurses' health, thereby encouraging quality nursing practice and patient outcomes. Policies and practices aimed at reducing work-related stress and burnout, while improving job satisfaction and general health of nurses, should be informed by this knowledge.

## Acknowledgements

Sincere thanks to Professor Brian Oldenburg, Professor Karl Peltzer and Professor Dragan Ilic for their contribution to this study. A special thanks to the hospital management teams and nurse participants without whom this study would not have been possible.

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## References

- [1] Department of Health. Strategic plan for nurse education, training and practice 2012/13-2016/17. Available from: <http://www.sanc.co.za/archive/archive2013/NursingStrategy2013.html> [Accessed: 30 June 2019]
- [2] South African Nursing Council. Distribution of nursing manpower vs population in South Africa. Available from: <http://www.sanc.co.za/stats/stat2017/Year%202017%20Provincial%20Distribution%20Stats.pdf> [Accessed: 30 June 2019]
- [3] Jordan TR, Khubchandani J, Wiblishauser M. The impact of perceived stress and coping adequacy on the health of nurses: A pilot investigation. *Nursing Research & Practice*. 2016;**2016**:1-11. DOI: 10.1155/2016/5843256
- [4] Aiken LH, Sermeus W, Van den Heede K, Sloane DM, Busse R, McKee M, et al. Patient safety, satisfaction, and quality of hospital care: Cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. *BMJ*. 2012;**344**:1-14. DOI: 10.1136/bmj.e1717
- [5] Sherwood G, Barnsteiner J, editors. *Quality and Safety in Nursing: A Competency Approach to Improving Outcomes*. 2nd ed. New Jersey: John Wiley & Sons; 2017. 5 p
- [6] Freudenberger HJ. Staff burn-out. *Journal of Social Issues*. 1974;**30**:159-165. DOI: 10.1111/j.1540-4560.1974.tb00706.x
- [7] Maslach C. *Burnout: The Cost of Caring*. New Jersey: Prentice-Hall; 2006. 192 p. DOI: 10.1176/ps.34.7.650
- [8] Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annual Review of Psychology*. 2001;**52**:397-422. DOI: 10.1146/annurev.psych.52.1.397
- [9] Cooper CL, Dewe PJ, O'Driscoll MP. *Organizational Stress: A Review and Critique of Theory, Research, and Applications*. Thousand Oaks: Sage; 2001. 282 p. DOI: 10.4135/9781452231235
- [10] Dugani S, Afari H, Hirschhorn LR, Ratcliffe H, Veillard J, Martin G, et al. Prevalence and factors associated with burnout among frontline primary health care providers in low and middle income countries: A systematic review. *Gates Open Research*. 2018;**2**:4. DOI: 10.12688/gatesopenres.12779.3
- [11] Rothmann S, van der Colff JJ, Rothmann JC. Occupational stress of nurses in South Africa. *Curationis*. 2006;**29**:24-25. DOI: 10.4102/curationis.v29i2.1069
- [12] Spielberger CD, Vagg PR, Wasala CF. Occupational stress: Job pressures and lack of support. In: Quick JC, Tetrick LE, editors. *Handbook of Occupational Health Psychology*. Washington: American Psychological Association; 2003. pp. 185-200. DOI: 10.1037/10474-009
- [13] Spector PE. *Job Satisfaction: Application, Assessment, Causes and Consequences*. London: Sage Publications; 1997
- [14] Piko BF. Burnout, role conflict, job satisfaction and psychosocial health among Hungarian health care staff: A questionnaire survey. *International Journal of Nursing Studies*. 2006;**43**:311-318. DOI: 10.1016/j.ijnurstu.2005.05.003
- [15] Khamisa N, Peltzer K, Oldenburg B. Burnout in relation to specific contributing factors and health outcomes among nurses: A systematic review. *International Journal of Environmental Research and Public Health*. 2013;**10**:2214-2240. DOI: 10.3390/ijerph10062214

- [16] Jamal M, Baba VV. Job stress and burnout among Canadian managers and nurses: An empirical examination. *Canadian Journal of Public Health*. 2000;**91**:454-458. DOI: 10.1007/BF03404828
- [17] Khamisa N, Peltzer K, Ilic D, Oldenburg B. Work related stress, burnout, job satisfaction and general health of nurses: A follow up study. *International Journal of Nursing Practice*. 2016;**22**:538-545. DOI: 10.1111/ijn.12455
- [18] Djukic M, Kovner C, Budin WC, Norman R. Physical work environment: Testing an expanded model of job satisfaction in a sample of registered nurses. *Nursing Research*. 2010;**59**:441-451. DOI: 10.1097/NNR.0b013e3181fb2f25
- [19] Tourangeau AE, Patterson E, Saari M, Thomson H, Cranley L. Work-related factors influencing home care nurse intent to remain employed. *Health Care Management Review*. 2017;**42**:87-97. DOI: 10.1097/HMR.0000000000000093
- [20] Halcomb E, Smyth E, McInnes S. Job satisfaction and career intentions of registered nurses in primary health care: An integrative review. *BMC Family Practice*. 2018;**19**:136. DOI: 10.1186/s12875-018-0819-1
- [21] Fennessey AG. The relationship of burnout, work environment, and knowledge to self-reported performance of physical assessment by registered nurses. *Medical-Surgical Nursing*. 2016;**25**:346
- [22] Whitebird RR, Solberg LI, Crain AL, Rossom RC, Beck A, Neely C, et al. Clinician burnout and satisfaction with resources in caring for complex patients. *General Hospital Psychiatry*. 2017;**44**:91-95. DOI: 10.1016/j.genhosppsych.2016.03.004
- [23] Kahn RL, Wolfe DM, Quinn RP, Snoek JD. *Organizational Stress: Studies in Role Conflict and Ambiguity*. New York: Wiley; 1964
- [24] Kahn RL, Byosiére P. Stress in organisations: Overview, reflection and evaluation of the Kahn-Byosiére model. *International Journal of Psychology*. 2004;**39**:503
- [25] Karasek R. Job demands, job decision latitude and mental strain: Implications for job redesign. *Administrative Science Quarterly*. 1979;**24**:285-306. DOI: 10.2307/2392498
- [26] Siegrist J. Adverse health effects of high-effort/low-reward conditions. *Journal of Occupational Health Psychology*. 2006;**1**:27-41. DOI: 10.1037/1076-8998.1.1.27
- [27] Mark GM, Smith AP. Stress models: A review and suggested new direction. In: Houdmont J, Leka S, editors. *Occupational Health Psychology*. Nottingham: Nottingham University Press; 2008. pp. 111-144
- [28] Hackman JR, Oldham GR. *Work Redesign*. Massachusetts: Addison-Wesley; 1980
- [29] Van Veldhoven M, Taris TW, De Jonge J, Broersen S. The relationship between work characteristics and employee health and well-being: How much complexity do we really need? *International Journal of Stress Management*. 2005;**12**:3-28. DOI: 10.1037/1072-5245.12.1.3
- [30] Khamisa N, Peltzer K, Ilic D, Oldenburg B. Effect of personal and work stress on burnout, job satisfaction and general health of hospital nurses in South Africa. *Health SA Gesondheid*. 2017;**22**:252-258. DOI: 10.4102/hsag.v22i0.1011
- [31] Briner RB, Harris C, Daniels K. How do work stress and coping work? Toward a fundamental theoretical reappraisal. *British Journal of Guidance*



- and Counselling. 2004;**32**:223-234. DOI: 10.1080/03069880410001692256
- [32] Hornung S, Rousseau DM, Glaser J, Angerer P, Weigl M. Beyond top-down and bottom-up work redesign: Customizing job content through idiosyncratic deals. *Journal of Organizational Behavior*. 2010;**31**: 187-215. DOI: 10.1002/job.625
- [33] McInerney P, Suleman F. Exploring knowledge, attitudes, and barriers toward the use of evidence-based practice amongst academic health care practitioners in their teaching in a south African university: A pilot study. *Worldviews on Evidence-Based Nursing*. 2010;**7**:90-97. DOI: 10.1111/j.1741-6787.2009.00180.x
- [34] Majid S, Foo S, Luyt B, Zhang X, Theng YL, Chang YK, et al. Adopting evidence-based practice in clinical decision making: Nurses' perceptions, knowledge, and barriers. *Journal of the Medical Library Association*. 2011;**99**:229
- [35] Gordon HJ, Demerouti E, Le Blanc PM, Bakker AB, Bipp T, Verhagen MA. Individual job redesign: Job crafting interventions in healthcare. *Journal of Vocational Behavior*. 2018;**104**:98-114. DOI: 10.1016/j.jvb.2017.07.002
- [36] World Health Organization. Framework guidelines for addressing workplace violence in the health sector. Available from: [http://www.who.int/violence\\_injury\\_prevention/violence/activities/workplace/en/](http://www.who.int/violence_injury_prevention/violence/activities/workplace/en/) [Accessed on 02 July 2019]
- [37] Wressell JA, Rasmussen B, Driscoll A. Exploring the workplace violence risk profile for remote area nurses and the impact of organisational culture and risk management strategy. *Collegian*. 2018;**25**:601-606. DOI: 10.1016/j.colegn.2018.10.005
- [38] Kutney-Lee A, Wu ES, Sloane DM, Aiken LH. Changes in hospital nurse work environments and nurse job outcomes: An analysis of panel data. *International Journal of Nursing Studies*. 2013;**50**:195-201. DOI: 10.1016/j.ijnurstu.2012.07.014
- [39] Ulrich B, Barden C, Cassidy L, Varn-Davis N. Critical care nurse work environments 2018: Findings and implications. *Critical Care Nurse*. 2019;**39**:67-84. DOI: 10.4037/ccn2019605
- [40] Cho H, Han K. Associations among nursing work environment and health-promoting behaviors of nurses and nursing performance quality: A multilevel modeling approach. *Journal of Nursing Scholarship*. 2018;**50**: 403-410. DOI: 10.1111/jnu.12390