MJN

RELATION BETWEEN BURNOUT AND PSYCHOSOMATIC SYMPTOMS AMONG STAFF NURSES IN INTENSIVE CARE UNITS

Safaa Abdelazem Osman Ali[1], Asmaa Kamal Ahmed Eissa[2*]

[1]*Faculty of Nursing, Suez Canal University, Egypt*
[2]*Faculty of Nursing, Fayoum University, Egypt*

[*]*Corresponding Author's Email: asma_assy@yahoo.com*

ABSTRACT

Nurses working in critical care units have high vulnerability to burnout . As a result they are experiencing high levels of emotional strain. The aim of this study was to assess the relation between burnout and psychosomatic symptoms among staff nurses working in Intensive Care Units (ICUs). The study was conducted on 86 staff nurses working in the ICUs of Fayoum University and Fayoum General Hospitals using a cross-sectional analytic study design. A self-administered questionnaire including scales for assessment of burnout and psychosomatic symptoms was used. The fieldwork was done from September to December, 2016. The nurses' age ranged between 20 and 54 years, with a majority having diploma (89.5%). Total, 29.1% had burnout and 65.1% had psychosomatic symptoms. The psychosomatic score had significant positive correlations with all burnout domains except personal achievement. The scores of personal achievement had positive correlations with total and current years of experience (r=0.217 and 0.226 respectively). In multivariate analysis, the nurses' marital status was the only statistically significant independent positive predictor of burnout score, whereas the positive predictors of psychosomatic symptoms score were the burnout score and the total experience years, while the practice of regular physical exercises was a negative predictor. In conclusion, ICU nurses have high burnout and the psychosomatic symptoms are highly prevalent among them, and are closely related to their burnout. In this respect the study recommends the improvements in the work environment, with more support for and empowerment of staff nurses.

Keywords: Burnout, Psychosomatic symptoms, ICU, Staff nurses

INTRODUCTION

Burnout has been early defined as a muddle of emotional exhaustion, depersonalization and low personal achievement. Emotional exhaustion arises when emotional resources are lost in a stressful situation. Depersonalization reflects negative and pessimistic attitudes towards clients. A reduced sense of personal accomplishment indicates lowered feelings of competence and efficiency (Maslach, 1998). Meanwhile, Shorofi & Karimzade (2015) classified burnout symptoms into five categories namely affective, cognitive, physical, behavioral and motivational symptoms.

The interest in burnout has risen in nursing due to the nature of their work exposing them to physical as well as psychological stress. Their stressful working environment with high job demands and low resources increase their risk of burnout. Burnout leads to lower efficiency, loss of manpower, more sick-leaves, frequent errors, injury and carelessness leading to depression, low morale and low motivation (Lizano, 2015), development of physical and mental problems and psychosomatic symptoms (Mousavi *et al.*, 2017). Moreover, these nurses have higher rates of hypertension, heart attacks, gastric and peptic ulcers, irritable bowel syndrome, headache, back pain and psychogenic impotence (Khamisa *et al.*, 2015). They also may suffer from severe pain without any organic cause (Gholami *et al.*, 2016) and are more vulnerable to

negative behaviors such as smoking and drug dependence (Khan, Farooq & Bano, 2011).

Nurses working in critical care units in particular are thought to have a high vulnerability to burnout as a result of experiencing high levels of emotional strain, owing to stressful working environments exacerbated by sick and dying patients to whom they provide care. Their high levels of burnout could be also related to poor peer relationships, lack of professional recognition, job demands, job complexity and work overload, working overtime, role conflict, insufficiency and ambiguity (Jornalo & Pinto, 2017). Burnout among nurses was also found as an important factor increasing patient length of stay and mortality (Breen & Sweeney, 2013).

Consequently, stress management is crucial step in the treatment and prevention of burnout and associated psychosomatic diseases (Fradelos *et al.*, 2014). The prevention of burnout requires therapeutic actions at the social level, individual group and organizational level, in addition to educational actions. It is still extremely difficult to diagnose burnout early and renew the work environment and create different strategies to combat it (Salilih & Abajobir, 2016).

Significance of the study

Nursing is a profession with high risk of burnout. A significant increase in work-related psychosomatic symptoms and burnout was observed among the nurses directly caring for patients in intensive care units (ICUs). Considering this high prevalence of psychosomatic symptoms, it was deemed worthy to investigate the relation between these health problems and burnout.

Aim of study

The aim of this study was to assess the relation between burnout and psychosomatic symptoms among staff nurses working in ICUs. The study attempted to answer the research question of whether the psychosomatic symptom among staff nurses working in ICUs is related to burnout or not.

RESEARCH METHODOLOGY

Research design and setting

The study was conducted in the Intensive Care Units (ICUs) at Fayoum University Hospital and Fayoum General Hospital using a cross-sectional analytic study design.

Subjects

The study included the entire male and female nurses (86) working in mentioned setting during the time of the study with no inclusion or exclusion criteria. This sample size was large enough to demonstrate a correlation coefficient of 0.30 or higher with 80% power and at a 95% level of confidence between the scores of burnout and psychosomatic symptoms using the Open-EPI software package.

Data collection tool

Data were collected using a self-administered questionnaire that included a standardized scale for assessment of burnout and another one for psychosomatic symptoms, in addition to a section for nurse's personal and health characteristics such as age, gender, marital status, qualification, experience years, residence, income, history of chronic diseases, practice of regular exercise and others.

The scale used to assess burnout was the Maslach Burnout Inventory developed by Maslach & Jackson (1981). It has three subscales, namely emotional exhaustion (9 items), depersonalization (5 items), and personal accomplishment (8 items). The responses on the 5-point Likert scale ranging from "strongly agree" to "strongly disagree" were scored from 5 to 1. The scoring is reversed for positive items so that a higher score indicates more burnout. The scale has good reliability with coefficients ranging from 0.64 to 0.82 (p<0.001), and proved convergent validity (Maslach & Jackson 1981; Sabbah *et al.*, 2012). The scores of each subscale and for the total scale were summed and converted into percent scores. For categorical presentation, a percent score of 60% or greater was considered high in the corresponding burnout subscale and low if less than 60%. In total, a nurse with high emotional exhaustion and depersonalization and low sense of personal achievement was considered to have high burnout.

The psychosomatic symptoms scale was adopted from WHO (2000) and Stock *et al.*, (2008) to measure staff nurses' psychosomatic complaints. It consists of 21 symptoms measuring a number of diverse health

complaints such as stomach trouble/heartburn, back pain, rapid heartbeats, dizziness, headaches, sleep disorder/insomnia, concentration difficulties, neck and shoulder pain and depressive mood. The frequency of occurrence of such symptoms during the past 12 months was to be rated on a four-point scale from "never" to "very often," scored from one to four respectively. The scores of the scale are summed-up and a higher score indicates more psychosomatic symptoms. For categorical presentation, a percent score of 60% or greater was considered high and low if less than 60%.

The tool was rigorously revised by six experts in nursing psychiatry and nursing administration departments. The two scales that were used have proved psychometric characteristics, with high validity and reliability. Their reliability was tested in the current study and proved to be good with Cronbach alpha coefficients 0.60 and 0.93 for the burnout and psychosomatic scales respectively.

Pilot study

The tool was piloted on the working of eight nurses in ICU units in the study setting to test their clarity, feasibility and applicability and to identify the most suitable time to collect data and its duration. The pilot nurses were not included in the main study sample.

Study Manoeuvre

After obtaining official approvals, a schedule of work in the ICU units was set to collect the data. The researchers met with the staff nurses in the study settings, explained to them the aim and procedures of the study, informed them about their rights, and invited them to participate. Those who gave their verbal informed consent to participate were given the data collection form and instructed in how to fill it. Data collection from the staff nurses occurred in the changing room according to available time in between shifts. The researchers were present all the time for any clarification. The time spent by participants to complete the questionnaire form ranged from 15 to 20 minutes. Due to workload and busy schedules of the staff nurses, the total period of fieldwork extended from September to December 2016.

Administrative and ethical issues

The study protocol was approved by the research and ethics committee in the Faculty of Nursing, Fayoum University. An official permission to conduct the study was obtained from the hospitals' directors based on official letters issued from the Dean of the Faculty of Nursing, Fayoum University to the directors of the Fayoum University hospital and Fayoum general hospital. The letter explained the aim of the study and maneuvers, along with a copy of the data collection form.

The staff nurses obtained a full explanation of the study' aim and procedures and accordingly gave their informed verbal consent to participate. They were assured that participation was voluntary, about the confidentiality and anonymity of the collected data and that it would be only used by the researchers for the purpose of the current study.

Statistical analysis

Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Cronbach alpha coefficient was calculated to assess the reliability of the tools through their internal consistency. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and means and standard deviations for quantitative variables. Spearman rank correlation was used for assessment of the relations between quantitative variable and ranked ones. To identify the independent predictors of burnout and psychosomatic scores, multiple linear stepwise regression analysis was done with analysis of the variance of the model. Statistical significance was considered at p-value <0.05.

RESULTS

The study sample included 86 staff nurses whose age ranged between 20 and 54 years, with median 30 years, with slightly more males (62.8%). The majority had nursing school diploma (89.5%); the medians of their experience in nursing and in ICU were 10.0 and 8.0 years respectively and 75.6% had related training courses. One-half of these nurses were married (50.0%) and they mostly had insufficient income (76.7%), were living in rural areas (76.7%) and they with their families (83.7%). As for their health, 26.7% had chronic diseases, and only about one-tenth were practicing physical exercises (11.6%).

Table 1: Demographic and health characteristics of nurses in the study sample (n=86)

	Frequency	Percent
Age:		
<30	37	43.0
30+	49	57.0
Range	20.0-54.0	
Mean±SD	31.9±7.1	
Median	30.0	
Gender:		
Male	54	62.8
Female	32	37.2
Nursing qualification:		
Diploma	77	89.5
Bachelor	9	10.5
Experience years (total):		
<10	39	45.3
10+	47	54.7
Range	1.0-34.0	
Mean±SD	11.7±6.9	
Median	10.0	
Experience years (ICU):		
<5	19	22.1
5+	67	77.9
Range	1.0-25.0	
Mean±SD	9.4±5.8	
Median	8.0	
Had training courses	65	75.6
Marital status:		
Unmarried	43	50.0
Married	43	50.0
Income:		
Sufficient	20	23.3
Insufficient	66	76.7
Residence:		
Rural	66	76.7
Urban	20	23.3
Live with family	72	83.7
Live near work	15	17.4
Have chronic diseases	23	26.7
No. of chronic diseases:		
Range	0-4	
Mean±SD	0.5±0.8	
Median	0.0	
On regular medication	18	20.9
Practice exercise	10	11.6

Table 2 demonstrated that around one-third of staff nurses were having high total burnout (29.1%). The worst domain of burnout was that of personal achievement, which was low among 86.0% of the nurses, while emotional exhaustion was high among approximately one-third (32.6%) of them and it had the highest median score (4.44). As for the psychosomatic symptoms, they were high among 65.1% of the nurses.

Table 2: Burnout and psychosomatic symptoms among nurses in the study sample (n=86)

Burnout:		
Personal achievement:		
Low	74	86.0
High	12	14.0
Mean±SD (max=5)	3.26±0.71	
Median (max=5)	3.25	
Depersonalization:		
Low	44	51.2
High	42	48.8
Mean±SD (max=5)	3.10±0.67	
Median (max=5)	3.20	
Emotional exhaustion:		
Low	58	67.4
High	28	32.6
Mean±SD (max=5)	4.29±0.64	
Median (max=5)	4.44	
Total burnout:		
Low	61	70.9
High	25	29.1
Mean±SD (max=5)	3.46±0.52	
Median (max=5)	3.41	
Psychosomatic symptoms:		
High	56	65.1
Low	30	34.9
Mean±SD (max=5)	3.79±0.76	
Median (max=5)	3.81	

As shown in Table 3, a moderate statistically significant positive correlation was revealed between nurses' scores of emotional exhaustion and depersonalization, whereas the correlation was negative between emotional exhaustion and personal achievement (r=-0.531). Meanwhile, the psychosomatic score had statistically significant moderate positive correlations with all burnout domains except personal achievement. Its correlation with total burnout was weak and positive (r=0.371).

Table 3: Correlation Matrix of Psychosomatic Scale and Burnout Domains Scores

	Spearman's rank correlation coefficient				
	Personal Achievement	Depersonalization	Emotional Exhaustion	Total Burnout	Psychosomaticscore
Personal achievement					-0.21
Depersonalization	-0.19				0.495**
Emotional exhaustion	-0.531**	0.500**			0.426**
Total burnout					0.371**

Table 4 indicates that staff nurses' scores of personal achievement is statistically weak significant correlations with their total and current years of experience (r=0.217 and 0.226 respectively). Their emotional exhaustion had statistically weak positive correlation with the number of chronic diseases they had (r=0.217). Meanwhile, statistically weak positive correlations were revealed with their age (r=0.258) and total experience years (r=0.286).

Table 4: Correlation between psychosomatic scale and burnout domains scores and nurses characteristics

	Spearman's rank correlation coefficient				
	Personal Achievement	Depersonalization	Emotional Exhaustion	Total Burnout	Psychosomatic score
Age	0.19	0.07	0.04	-0.07	0.258*
Qualification	0.16	-0.11	-0.05	-0.15	0.03
Experience (total)	0.217*	0.11	0.07	-0.07	0.286**
Experience (current)	0.226*	0.03	0.02	-0.11	0.20
Income	0.18	-0.10	-0.02	-0.13	-0.06
No. of diseases	0.01	0.01	0.217*	0.11	0.18

(*) Statistically significant at p<0.05 *(**) statistically significant at p<0.01*

In multivariate analysis (Table 5), the nurses' marital status was identified as the only statistically significant independent positive predictor of burnout score. However, it explains only 3% of the variation in this score. None of the other nurses' characteristics had any significant influence on the burnout score.

Table 5: Best fitting multiple linear regression model for the burnout score

	Unstandardized Coefficients		Standardized Coefficients	*t*-test	*p*-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	3.82	0.18		21.386	<0.001	3.47	4.18
Marital status	-0.22	0.11	-0.20	-1.919	0.058	-0.44	0.01

R-square=0.03; Model ANOVA: F=3.68, p=0.058
Variables entered and excluded: age, gender, qualification, experience, residence, income, chronic diseases, exercise

Table 6 demonstrated that the statistically significant independent positive predictors of nurses' psychosomatic symptoms score were the burnout score, in addition to total experience years in nursing. On the other hand, the practice of regular physical exercises was a negative predictor. As indicated by the standardized beta coefficient, the burnout score was the most influential on the psychosomatic score. The model explains 25% of the variation in this score. None of the other nurses' characteristics had any significant influence on their psychosomatic symptoms score.

Table 6: Best fitting multiple linear regression model for the psychosomatic symptoms score

	Unstandardized Coefficients		Standardized Coefficients	*t*-test	*p*-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	1.77	0.50		3.533	0.001	0.77	2.76
Total experience	0.03	0.01	0.29	3.084	0.003	0.01	0.05
Exercising	-0.67	0.22	-0.28	-3.019	0.003	-1.11	-0.23
Burnout score	0.48	0.13	0.33	3.557	0.001	0.21	0.75

DISCUSSION

The current study documents a high prevalence of psychosomatic symptoms among intensive care units (ICUS) nurses, along with high levels of job burnout. The findings provide an answer to the posed research question of whether the psychosomatic symptoms among staff nurses working in ICUs are related to their burnout.

According to the present study findings, less personal achievement seems to be the most prevalent

component of the three burnout domains, with a great majority of the sample suffering from it. This indicates a reduced feeling of self-efficacy. It could be attributed to the lack of empowerment among these nurses, in addition to lack of resources needed to achieve a quality care. In this situation, the nurses feel that they are helpless and that their potentials are not utilized efficiently as they should be, particularly in a highly demanding service such as in ICU. This contributed to high frustration and negative emotions among them. In support of this, a positive correlation was revealed between nurses' scores of sense of low achievement and of emotional exhaustion. The findings are in agreement with those of Basińska & Wilczek-Rużyczka, (2013) whose study revealed that nurses' sense of low personal achievement is due to a demanding job.

The result of the present study revealed statistically significant positive correlations between staff nurses' scores of personal achievement and their total and current years of experience. This could have more than one explanation. Firstly, with longer years of experience, these staff nurses gain more power, and are more involved in decision-making, which would increase their sense of personal achievement. Secondly, with advancing age, these nurses tend to have better coping strategies to reduce stress and burnout. Thirdly, these nurses seldom see positive outcomes from the patients under their care, which may foster the feelings of failure. In line with this, a study in Australia showed the importance of nurses' coping with stressors in reducing their burnout (Dolan, Strodl & Hamernik, 2012). Moreover, Iecovich & Avivi, (2017) demonstrated that advancing age among nurses improved their sense of personal achievement. Meanwhile, the positive influence of empowering staff nurses on their burnout and sense of personal accomplishment was shown among nurses in Jordan (Mudallal, Othman & Al Hassan, 2017).

The burnout component of emotional exhaustion was also prominently high in the present study, with high median score. This could be explained by the nature of work in the ICU environment, with work-related stressors combined with shortage of staff and facilities, leading to depletion of their emotional reserves. The physical stress adds to this emotional stress and this is supported by the finding that the scores of emotional stress among these staff nurses was positively correlated to the number of chronic diseases, which may add to their burdens. A similarly high prevalence of emotional exhaustion was reported among neonatal nurses in Lithuania (Skorobogatova *et al.*, 2017). On the same line, a study in Belgium Vandenbroeck *et al.,* (2017) demonstrated that the scores of emotional exhaustion are correlated positively with workload, role conflicts, and work-home interferences among hospital nurses.

The current study has also demonstrated that approximately half of the staff nurses in the studied ICUs were having high scores in the burnout component of depersonalization. In agreement with this, a study in Spain on nurse working in palliative care reported that about two-fifth of them were having depersonalization (Rizo-Baeza *et al.*, 2017). This feeling of indifference and numbness towards patients might be due to the nurses' belief that in many instances their care cannot help ICU patients. In line with this, a study in Brazil (Fumis *et al.*, 2017) concluded that the feeling of delivering futile care to ICU patients leads to moral distress among nurse, with consequent high prevalence of severe burnout due to depersonalization.

Approximately one third of the staff nurses in the current study settings had a high level of burnout. This is a reflection of very low sense of personal achievement among nurses in association with high emotional exhaustion and depersonalization.These findings of the study was carried out among nurses working in ICUs with very high burden of job, in addition to the emotional burdens from dealing with dying and critically ill patients. Prevalence rates of burnout close to this study was reported by Hartog (2017) who mentioned that approximately one-third of ICU nurses and practitioners in Switzerland and France were suffering professional burnout. Moreover, a recent meta-analysis provided evidence that at least 30% of emergency nurses were having high burnout syndrome (Gómez-Urquiza *et al.*, 2017). Nonetheless, a very wide range of prevalence rates of burnout was reported in various studies ranging from very high as in Egypt 66.0% (Abdo *et al.*, 2015) and 71.6% in Saudi Arabia (Zaki *et al.*, 2016), to very low as in Iran 8.67% (Gholami *et al.*, 2016) and in Brazil 12.54% (Andolhe *et al.*, (2015). This wide discrepancy could be attributed to the differences of study settings, as well as the burnout assessment tools.

Concerning the factors influencing burnout among

the nurses in the present study, the results revealed that only the nurses' marital status was a significant independent positive predictor of the burnout score. This is quite plausible since the burden of the care for the family and children is added to the job-related stressors. Thus it increases the chance of having burnout among them. In agreement with this, a study of the prevalence of burnout among Brazilian nurses showed that the married nurses had more risk of burnout (Ribeiro *et al.*, 2014). Moreover, a study in Japan demonstrated significant impact of work-family conflict on nurses' job causing stress and consequently leading to burnout among them (Sugawara *et al.*, 2017).

The present study has additionally assessed the prevalence of psychosomatic symptoms among the ICU nurses. The findings revealed a high rate, with approximately two-thirds of them suffering such symptoms. This is quite plausible given the stressful work environment they are working in. Moreover, the psychosomatic symptoms seem to increase with age and experience which is certainly due to the effects of aging on health. A similarly high rate of self-reported psychosomatic symptoms was found among nurses in Palestine, and it was attributed to job stress (Jaradat *et al.*, 2016). Similarly, high percentages of Portuguese nurses had psychosomatic symptoms (López-Montesinos, 2013).

The main objective of the current study was to examine the possible relation between psychosomatic symptoms and burnout among ICU nurses.The findings do confirm such association, with significant positive correlations between the psychosomatic score and each of the scores of depersonalization, emotional exhaustion and total burnout. Moreover, the multivariate analysis identified the burnout score as the main factor significantly influencing nurses' psychosomatic score. Thus it gives a valid response to the research question. The finding is in agreement with the results of a study carried out among Lithuanian nurses, where psychosomatic symptoms as sleep problems, nervousness and fatigue had significant relationships with professional burnout (Skorobogatova *et al.*, 2017). A similar association was also reported in a study in the United States (Bamonti *et al.*, 2017). On the same line, a study in Hungary found that the doctors experiencing high levels of burnout had significantly more psychosomatic symptoms, sleep disorders and ill-health (Németh, 2016).

Meanwhile, the practice of regular exercise was identified as a negative predictor of nurses' psychosomatic score. Thus it could be considered as a protective mechanism against the occurrence of such symptoms. Physical activity is expected to affect both the physical and psychological well being. Thus, it could relieve stress, decrease burnout and subsequently prevent the deterioration of health. In agreement with this, a study in China demonstrated the positive impact of physical exercise and strength on burnout among nurses (Guo *et al.*, 2017). Nonetheless, it is found that in the most cases nurses and healthcare practitioner's knowledge regarding the benefits of regular physical activity is not translated into actual practice (Ross *et al.*, 2017).

CONCLUSION AND RECOMMENDATIONS

In conclusion, the ICU nurses in the study settings have high burnout with low personal achievement, and high depersonalization and emotional exhaustion. Psychosomatic symptoms are highly prevalent among them and are closely related to their burnout. The study recommends improvements in the work environment, with more support along with empowerment of staff nurses. Periodic screening of nurses for psychosomatic symptoms is needed for early detection and management. Health-promoting interventions are highly recommended including healthy dietary habits, regular physical activity, as well as coping strategies. Further research is proposed to assess the effectiveness of such interventions on nurses' burnout and psychosomatic symptoms.

REFERENCES

Abdo, S.A., El-Sallamy, R.M., El-Sherbiny, A.A. & Kabbash, I.A. (2015). Burnout among physicians and nursing staff working in the emergency hospital of Tanta University, Egypt. *Eastern Mediterranean Health Journal*, 21(12), pp 906-915.

Andolhe, R., Barbosa, R.L., Oliveira, E.M., Costa, A.L. & Padilha, K. G. (2015). Stress, coping and burnout among Intensive Care Unit nursing staff: associated factors. *Revista da Escola de Enfermagem da USP*, 49(Esp), pp 57-63.

Bamonti, P., Conti, E., Cavanagh, C., Gerolimatos, L., Gregg, J., Goulet, C., Pifer, M. & Edelstein, B. (2017). Coping, Cognitive Emotion Regulation, and Burnout in Long-Term Care Nursing Staff: A Preliminary Study. *Journal of Applied Gerontology*. [Epub ahead of print].

Basińska, B.A. & Wilczek-Rużyczka, E. (2013). The role of rewards and demands in burnout among surgical nurses. *International Journal of Occupational Medicine and Environmental Health*, 26(4), pp 593-604.

Breen, M. & Sweeney, J. (2013). Burnout: The experiences of nurses who work in inner city areas. *Mental Health Practice*, 17(2), pp 12-20.

Dolan, G., Strodl, E. & Hamernik, E. (2012). Why renal nurses cope so well with their workplace stressors. *Journal of Renal Care*, 38(4), pp 222-232.

Fradelos, E., Mpelegrinos, S., Mparo, Ch., Vassilopoulou, Ch., Argyrou, P., Tsironi, M. & Theofilou, P. (2014). Burnout syndrome impacts on quality of life in nursing professionals: The contribution of perceived social support. *Progress in Health Sciences*, 4(1), pp 102-109.

Fumis, R.R.L., Amarante, G.A.J., Nascimento, A.F.N. & Vieira Junior, J.M. (2017).Moral distress and its contribution to the development of burnout syndrome among critical care providers. *Annals of Intensive Care*, Pages 8.

Gholami, T., Pahlavian, A.H., Akbarzadeh, M., Motamedzade, M., Moghadam, R.H. & Jeihooni, A.K. (2016). Effects of Nursing Burnout Syndrome on Musculoskeletal Disorders. *International Journal of Musculoskeletal Pain Prevention*, 1(1), pp 35-39.

Gómez-Urquiza, J.L., De la Fuente-Solana, E.I., Albendín-García, L., Vargas-Pecino, C., Ortega-Campos, E.M. & Cañadas-De la Fuente, G.A. (2017). Prevalence of Burnout Syndrome in Emergency Nurses: A Meta-Analysis. *Critical Care Nurse*, 37(5), pp e1-e9.

Guo, Y.F., Luo, Y.H., Lam, L., Cross, W., Plummer, V. & Zhang, J.P. (2018). Burnout and its association with resilience in nurses: A cross-sectional study. *Journal of Clinical Nursing*, 27(1-2), pp 441-449.

Hartog, C.S. (2017). Burnout-a call for action. *Medizinische Klinik, Intensivmedizin Und Notfallmedizin*.

Iecovich, E. & Avivi, M. (2017). Agism and burnout among nurses in long-term care facilities in Israel. *Aging and Mental Health*, 21(3), pp 327-335.

Jaradat, Y., Nijem, K., Lien, L., Stigum, H., Bjertness, E. & Bast-Pettersen, R. (2016). Psychosomatic symptoms and stressful working conditions among Palestinian nurses: a cross-sectional study. *Contemporary Nurse*, 52(4), pp 381-397.

Jornalo, I.C. & Pinto, F. (2017). Stress, Burnout and Coping in Health Professionals: A Literature Review. *Journal of Psychology and Brain Studies*, 1(1:4), pages 8.

Khamisa, N., Oldenburg, B., Peltzer, K. & Ilic, D. (2015). Work Related Stress, Burnout, Job Satisfaction and General Health of Nurses. *International Journal of Environmental Research and Public Health*, 12(1), pp 652-666.

Khan, S.A., Farooq, S. & Bano, A. (2011). Pattern of Benzodiazepine use in nurses. *Gomal Journal of Medical Sciences*, 9(1), pp 28-31.

Lizano, E.L. (2015). Examining the Impact of Job Burnout on the Health and Well-Being of Human Service Workers: A Systematic Review and Synthesis. *Human Service Organizations: Management, Leadership & Governance*, 39(3), pp 167–181.

López-Montesinos, M.J. (2013). Psychosocial study about the consequences of work in hospital nurses as human resource management. *Revista Latino-Americana de Enfermagem*, 21, pp 61-70.

Maslach, C. (1998). Chronic outcomes: Burnout. In Stellman J (Ed.), *Journal of Occupational Health and Safety*,

2(34-64). 4th edition. International Labor Office, Geneva.

Maslach, C. & Jackson, S. (1981). The measurement of experienced burnout. *Journal of Occupational Behavior*, 2(1), pp 99-113.

Mousavi1, S.V., Ramezani, M., Salehi, I., Khanzadeh, A.A. & Sheikholeslami, F. (2017).The Relationship between Burnout Dimensions and Psychological Symptoms (Depression, Anxiety and Stress) Among Nurses. *Journal of Holistic Nursing and Midwifery*, 27(2), pp 37-43.

Mudallal, R.H., Othman, W.M. & Al Hassan, N.F. (2017). Nurses' Burnout: The Influence of Leader Empowering Behaviors, Work Conditions and Demographic Traits. *Inquiry*, 54, pages 10.

Németh, A. (2016). Burnout among doctors and its correlations with health, life satisfaction and sleep. *Orvosi Hetilap*, 157(16), pp 623-630.

Ribeiro, V.F., Filho, C.F., Valenti, V.E., Ferreira, M., de Abreu, L.C., de Carvalho, T.D., Xavier, V., de Oliveira Filho, J., Gregory, P., Leão, E.R., Francisco, N.G. & Ferreira, C. (2014). Prevalence of burnout syndrome in clinical nurses at a hospital of excellence. *International Archives of Medicine*, 7:22, pages 7.

Rizo-Baeza, M., Mendiola-Infante, S.V, Sepehri, A., Palazón-Bru, A., Gil-Guillén, V.F. & Cortés-Castell, E. (2017). Burnout syndrome in nurses working in palliative care units: An analysis of associated factors. *Journal of Nursing Management*, 26(1), pp 19-25.

Ross, A., Bevans, M., Brooks, A.T., Gibbons, S. & Wallen, G.R. (2017). Nurses and Health-Promoting Behaviors: Knowledge May Not Translate Into Self-Care. *AORN Journal*, 105(3), pp 267-275.

Sabbah, I., Sabbah, H., Sabbah, S., Akoum, H. & Droubi, N. (2012). Burnout among Lebanese nurses: Psychometric properties of the Maslach Burnout Inventory-Human Services Survey (MBI-HSS), *Scientific Research*, 4(9), pp 644-652.

Salilih, S.Z. & Abajobir, A.A. (2016). Work Related Stress and Associated Factors Among Nurses Working in Public Hospitals of Addis Ababa, Ethiopia: A Cross-sectional Study. *Workplace Health & Safety*, 62(8), pp 326-332.

Shorofi, S.A. & Karimzadeh, M. (2015). Factors associated with burnout in nursing staff: A Review Article. *Journal of Clinical Excellence*, 3(2), pp 56-70.

Skorobogatova, N., Žemaitienė, N., Šmigelskas, K. & Tamelienė, R. (2017). Professional Burnout and Concurrent Health Complaints in Neonatal Nursing. *Open Medicine*, 12, pp 328-334.

Stock, C., Mikolajczyk, R.T., Bilir, N., Petkeviciene, J., Naydenova, V., Dudziak, U., Marin-Fernandez, B. & El Ansari, W.L. (2008). Gender differences in health complaints among students: Results from a survey in seven countries. *Journal of Public Health*, 16(5), pp 353–360.

Sugawara, N., Danjo, K., Furukori, H., Sato, Y., Tomita, T., Fujii, A., Nakagami, T., Kitaoka, K. & Yasui-Furukori, N. (2017). Work-family conflict as a mediator between occupational stress and psychological health among mental health nurses in Japan. *Neuropsychiatric Diseases and treatment*, 13, pp 779-784.

Vandenbroeck, S.,Van Gerven, E., De Witte, H., Vanhaecht, K. & Godderis, L. (2017). Burnout in Belgian physicians and nurses. *Occupational Medicine*, 67(7), pp 546-554.

World Health Organization (2000). Health and health behavior among young people. Denmark, Copenhagen. Retrieved from: http://www.euro.who.int/__data/assets/pdf_file/0006/119571/E67880.pdf

Zaki, S.M., Elsayed, L.A. & Ibrahim, M.M. (2016). Factors Contributing to Burnout among Saudi Nurses and their Effect on Patients' Satisfaction at Makkahm Al- Mukaramah Hospitals. *Life Science Journal*, 13(5), pp73-88.