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Influences of the Work Environment on Nurses' Psychological Wellbeing at Selected Teaching Hospitals in Lusaka, Zambia: A Focus on Secondary Traumatic Stress and Burnout

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Abstract

Introduction: The current study sought to establish associations of the nurse work environment, with Secondary Traumatic Stress and Burnout among nurses at selected Teaching Hospitals in Lusaka, Zambia.

Methods: A correlational study was conducted at three Teaching Hospitals in Lusaka, Zambia using a stratified sample of 250 nurses. Spearman rank order correlations and hierarchical linear regression were employed to determine correlations among variables at 95% confidence level and 0.05 level of significance.

Results: Secondary Traumatic Stress was positively correlated with levels of nursing workload (r_s = .18, p<.004) and level of stress reported between respondents and their supervisors (r_s = .20, p = .001). Taken together, quality of the respondent's relationship with the supervisor and the reported level of nursing workload explained 23.7% of the variance in Secondary Traumatic Stress [F (5, 244) = 4.793, p < 0.001, R2 = 0.237]. Reported quality of relationship with the supervisor and reported level of nursing workload also explained 12.1% of the variance in Burnout [F (5, 244) = 6.748, p < 0.001, R2 = 0.121].

Conclusion: Findings of this study suggest a need to develop measures that can enhance good relationships between nurses and their supervisors, reduce nursing workloads and regulate frequency of exposure to severe patient suffering.

Key words: Secondary Traumatic Stress, Burnout, Psychological wellbeing, Nurses, Work Environment

Introduction

Nurses are at the helm of health care systems that demand their constant presence at the sides of those experiencing severely distressing, life-threatening, or life-limiting illnesses. The ability of nurses to provide care that is devoid of medical errors to their severely distressed patients can be enhanced by a healthy nurse work environment [1, 2]. Critical to a healthy nurse work environment are aspects of appropriate staffing levels, fair and manageable workloads, organisational support as well as effective nursing leadership [3-7]. Because healthy nurse work environments are well staffed, have manageable workloads and offer management support, nurses may be less likely to feel overwhelmed as they care for their distressed and acutely ill patients in such environments.

Researchers [8-11] have reported that when nurses are exposed to severe human suffering within work environments that are physically and psychologically overbearing, they face a risk for developing Secondary Traumatic Stress and Burnout. Secondary Traumatic Stress results from helping or wanting to help a traumatized or suffering person [12] while Burnout describes the broader consequences of working in a stressful environment. [13] The combined presence of Secondary Traumatic Stress and Burnout known as Compassion Fatigue [14] can have negative effects on delivery of patient care and these effects are aggravated by the severity of the traumatic material to the nurse is exposed. [15]

Globally, factors related to the work environment such as workloads, accountability and administration, as well as quality of relationships at work have been identified as significant risks for Burnout.[16-19] Evidence thus seems to suggest a link between factors in the work environment and the risk for Burnout. On the other hand, relations of the work environment to the risk for Secondary Traumatic Stress among nurses have not been thoroughly interrogated in previous studies. In sub Saharan Africa, most research [20-25] has focused on investigating factors associated with Burnout independent of Secondary Traumatic Stress. Findings of these studies conducted in sub Saharan Africa have however suggested that nurses who report more favourable work environments are less likely to report high levels of Burnout, and that lower social support from colleagues is associated with increased Burnout.

Like the rest of sub-Saharan Africa, Zambia suffers a dearth of research investigating influences of the work environment on the combined presence of Secondary Traumatic Stress and Burnout among nurses. Previous studies in Zambia [26,27] have focused on investigating Burnout independently and have not identified key factors in the work environment that predict both Secondary Traumatic Stress and Burnout. This is despite persistence of a health care environment in the country that is challenged by an increased disease burden with an ever more acute patient population, shortage of nurses and increased workloads. [28-29] The current study therefore aimed to establish associations of the nurse work environment, with Secondary Traumatic Stress and Burnout among nurses at a Teaching Hospital in Lusaka, Zambia

Methods

Study Design and Study Setting

This was a correlational study conducted at three Teaching Hospitals in Lusaka, Zambia that were purposively selected. The hospitals included: The Cancer Diseases Hospital (CDH), Children's Hospital and the Adult Hospital. In the Adult Hospital, only the Emergency Department (ED) and Main ICU were considered for the study. The institutions were chosen due to their heavy patient loads, which ranged in acuity, and crowded working conditions (94% occupancy rate)

Participants

On the basis of proportional stratified sampling, 250 nurses were selected from the three hospitals. Each hospital was regarded as a homogenous and mutually exclusive stratum, allowing for the calculation of proportions for each facility. Thereafter, individuals were chosen using simple random sampling within each stratum (Hospital). As a result, 77 nurses from the CDH, 80 from the Adult Hospital, and 93 from the Children's Hospital were chosen. Sampling frames were created using ward time tables, which also defined the accessible population. Nurses who scored 6 or more on the PHQ – 4 were excluded from the study as they were at greater risk for depressive disorders or generalized anxiety. Similarly, nurse managers, nurse educators, and nurse researchers without any direct patient care activities were excluded from the study.

Data Collection Tool

The PHQ – 4, and the Professional Quality of Life Version 5 (ProQOL 5) were adapted into a self-administered questionnaire. As indicated earlier, the PHQ-4 was used to identify and exclude those that had a high risk for generalized anxiety and depressive disorders. Data on Secondary Traumatic Stress and Burnout were gathered using the ProQOL 5. The Compassion Satisfaction Scale's reported alpha reliability was.88 (n = 1130). .75 (n=1135) for the Secondary Traumatic Stress Scale and 75 (n=976) for the Burnout Scale [14]

Validity and Reliability of the Study

Use of an exclusion criteria based on a scrupulous review of literature to avoid known confounders improved the internal and external validity of the design. Further, use of proportional stratified sampling helped to reduce selection bias and to obtain a representative sample and ultimately enhanced generalizability of results to the study population. Construct validity of the PHQ – 4 has been established as evidenced by the good Cronbach's alpha coefficient reported [41] at 0.85 for the total scale. The ProQOL 5 on the other hand has reported psychometric properties of Cronbach's alpha (α) reliability ranging from .84 to .90 on the three subscales. [14]

Data Processing and Analysis

Data from the questionnaires were entered into the Statistical Package for Social Sciences (SPSS) version 23 and the resultant data file was cleaned with an initial check for outliers and wild codes and subsequent check for consistency. To check for outliers, frequency distributions were generated from the data file and inspection was done with special attention paid to the lowest and highest values. To examine the data file for internal consistency, the researchers tested whether data for different variables that were related were indeed compatible. Frequencies, means (*M*) and standard deviations (*SD*) were computed. The dependent variables (Secondary Traumatic Stress and Burnout) were collected and analyzed as continuous variables then later categorized based on the 25^{th} and 75^{th} percentiles set by Stamm [14] into low, average and high. Spearman Rank order correlations and Point-biserial correlations were computed to identify variables that had a linear relationship with the dependent variables in preparation for hierarchical multiple linear regression analysis. Histograms were inspected to ascertain normality of data and statistical significance was set at 0.05.

Results

Table 1: Spearman rank order (rho) Correlations between Secondary Traumatic Stress, Burnout and independent predictor variables

Variable		tSTS	tBO	Frequency of exposure to severe patient suffering	Self- reported level of workload	Quality of relationship with supervisor
tSTS	Correlation Coefficient	1.000	.39**	.04	.18**	.20**
	Sig. (2-tailed)	.	<.001	.553	.004	.001
	N	250	250	250	250	249
tBO	Correlation Coefficient	.39**	1.000	.28**	.27**	.17**
	Sig. (2-tailed)	<.001	.	<.001	<.001	.006
	N	250	250	250	250	249

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is Significant at the 0.05 level (2-tailed)

Table 1 above shows results of Spearman's rank order correlations that were executed to ascertain the relation between various independent variables and the two dependent variables (Secondary Traumatic Stress and Burnout). This test was preferred to Pearson's correlation because some of the data violated the assumption of normality. A statistically significant positive correlation was found between Secondary Traumatic Stress and Burnout (r_s =.39, p <.001), implying that levels of Secondary Traumatic Stress

increased as levels of Burnout increased. Furthermore, levels of Secondary Traumatic Stress increased as levels of nursing workload increased as demonstrated by a statistically significant positive correlation between self-reported levels of nursing workload and Secondary Traumatic Stress (r_s = .18, p<.004). Levels of Secondary Traumatic Stress also increased with an increase in the level of stress reported between respondents and their supervisors as demonstrated by a statistically significant positive correlation between Secondary Traumatic Stress and quality of relationship with supervisor (r_s = .20, p = .001).

Regarding relationship of various independent variables with Burnout, a number of statistically significant correlations emerged. Levels of Burnout increased with an increase in frequency of exposure to severe patient suffering (r_s = .28, p<.001). Levels of Burnout also increased as the levels of nursing workload increased (r_s = -.31, p<.001). Therefore, respondents who reported higher levels of nursing workload also recorded higher t-scores on the Burnout scale. In addition, levels of Burnout increased with a rise in the level of stress reported between respondents and their supervisors (r_s = .71, p<.006).

Table 2: Hierarchical multiple regression analysis summary predicting Secondary Traumatic Stress from work environment factors

			Beta	**P-Value**	**R^2**	**ΔR^2**	**F-Change**	**F-change p-value**	**Model p-value**
Step 1	**Relationship with Supervisor**	**Variable**		0.001	0.064	0.064	5.643	0.001	0.001
	Ref None stressful relationship	Very stressful relationship with supervisor	6.584	<.001					
	Ref None stressful relationship	Moderately stressful relationship with supervisor	2.416	0.120					
Step 2	**Nursing Workload**			0.036	0.089	0.025	3.356	0.036	<.001
	Ref Low workload	Very High nursing workload	3.985	0.011					

Results of the hierarchical multiple regression predicting Secondary Traumatic Stress from factors in the Work environment depicted in Table 2. The predictor variables (relationship with supervisor and Nursing workload) were initially nominal. Binary (Dummy) variables with values of 0 and 1 were thus developed for each of the nominal variables. The number of dummy variables created was determined by the formula *(k – 1)* where '*k'* is the number of categories (levels) in each nominal variable. This was executed using the transformation command in SPSS. The resultant dummy variables were subsequently entered using forced entry into each block of the multiple regression models.

For the variable 'Quality of relationship with supervisor', the reference category was "None Stressful" while "Low workload" constituted the reference category for the variable "workload." The results of Step One indicated that the variance accounted for by the variable "relationship with supervisor" differed significantly from zero [F (3, 246) = 5.643, p = 0.001, R^2 = 0.064]. After adding the variable 'nursing workload' in Step Two, a statistically significant improvement in the model's prediction of Secondary Traumatic Stress was seen [F (2, 244) = 3.356, p = 0.036, R^2 = 0.089; ΔR^2 = 0.025]. Among the two predictors, participant's

relationship with the supervisor was the most important variable to predict an increase in Secondary Traumatic Stress. Taken together, quality of the respondent's relationship with the supervisor and the reported level of nursing workload in Step two significantly predicted Secondary Traumatic Stress [F (5, 244) = 4.793, $p < 0.001$, $R^2 = 0.237$]. This model explained 23.7% of the variance in Secondary Traumatic Stress.

Table 3: Hierarchical multiple regression analysis summary predicting Burnout from Work Environment factors

			Beta	**P-Value**	**R^2**	**ΔR^2**	**F-Change**	**F-change p-value**	**Model P-value**
Step 1	**Relationship with Supervisor**	**Variable**		0.002	0.057	0.057	4.918	0.002	0.002
	Ref None stressful	Very stressful relationship with supervisor	4.574	0.011					
	Ref None stressful	Moderately stressful relationship with supervisor	1.478	0.349					
Step 2	**Nursing Workload**			<.001	0.121	0.065	9.012	<.001	<.001
	Ref Low workload	Very High nursing workload	4.898	0.002					

Table 3 shows results of the hierarchical multiple regression predicting Burnout from factors in the Work environment. The predictor variables (reported quality of relationship with supervisor and reported nursing workload) were initially nominal. Binary (Dummy) variables with values of 0 and 1 were thus developed for each of the nominal variables. The number of dummy variables created was determined by the formula *(k – 1)* where '*k'* is the number of categories (levels) in each nominal variable. The resultant dummy variables were subsequently entered using forced entry into each block of the multiple regression models.

For the variable 'Quality of relationship with supervisor', the reference category was the variable "None stressful" while "Low workload" was the reference category for workload. The results of Step One indicated that the variance accounted for by the variable "relationship with supervisor" differed significantly from zero [F (3, 246) = 4.918, $p = 0.002$, $R^2 = 0.057$]. Addition of the variable 'nursing workload' in Step Two resulted in a statistically significant improvement in the model's prediction of Burnout [F (2, 244) = 9.012, $p = <0.001$, $R^2 = 0.121$; $\Delta R^2 = 0.065$]. Among the two predictors, participant's reported level of nursing workload was the most important variable to predict an increase in Burnout. Taken together, reported quality of the respondent's relationship with the supervisor and the reported level of nursing workload significantly predicted Burnout [F (5, 244) = 6.748, $p < 0.001$, $R^2 = 0.121$]. This model explained 12.1% of the variance in Burnout.

Discussion

Secondary Traumatic Stress and Burnout were found to be significantly associated with quality of relationship reported between respondents and their supervisors (Table 1). Levels of Secondary Traumatic Stress increased with an increase in the level of stress reported between respondents and their supervisors (r_s = .20, p = .001). Likewise, levels of Burnout increased with a rise in the level of stress reported between respondents and their supervisors (r_s = .71, p<.006). Quality of relationship with supervisor accounted for 6.4% of the variance in Secondary Traumatic Stress scores (p = .001).

Compared to nurses who reported a non-stressful relationship with the supervisor, those who reported a very stressful relationship with the supervisor had Secondary Traumatic Stress scores that were higher by 6.58 (p<.001). Quality of relationship between respondents and their supervisor also significantly predicted Burnout accounting for a variance of 12.3% (p=.003). Compared to reporting a non-stressful relationship with the supervisor, reporting a very stressful relationship with the supervisor resulted in an increase of 9.79 on Burnout t-scores (p = .006). This finding is in keeping with other studies [18, 30, 31, 32] in which low level of management support and poor relationships with supervisors were found to predict higher levels of Secondary Traumatic Stress and Burnout.

Having a supportive management is essential particularly for nurses with less work experience who need to be mentored and supported as they encounter novel nursing situations. Nolte and others [33] in a metasynthesis of Compassion Fatigue in nurses raised "lack of support" as one of the main themes and explained how nurses in various qualitative studies had reported feeling "alone in a crowded room" due to lack of support from colleagues and management. Findings of the current and other studies [34, 35, 36] therefore, speak to the importance of team work and management support in preventing Secondary Traumatic Stress and Burnout among nurses. The Professional Quality of Life Model [14] posits that a combination of Secondary Traumatic Stress and Burnout, conceptualized as Compassion Fatigue can result in frustration, anger and inability to empathize with others. The need to enact measures to forestall development of Compassion Fatigue among nurses is thus critical.

The current study further demonstrated a significant positive correlation between frequency of exposure to severe patient suffering and levels of burnout with nurses that reported higher frequency of exposure also recording higher levels of Burnout. Similarly, Portoghese and others [37] in a related study of Burnout and workload among Health Care Workers (HCWs) found that; an increase in workload was significantly associated with higher job exhaustion.

Dasan and others [16] also reported that workload impacted Emergency Medicine Consultants in the UK both physically (through having to work longer or more intensely) and emotionally (by raising anxiety regarding patient safety and quality of patient care when patient load was high) thus predisposing them to both Secondary Traumatic Stress and Burnout. Ziaei and others [38] and Upton [39] also found high workloads to be significantly associated with Burnout and Compassion Fatigue respectively. Meanwhile, an earlier study [40] also found lower workloads to be protective against Secondary Traumatic Stress. Lower workloads can confer protection against Secondary Traumatic Stress by reducing caseloads leading to a reduction in frequency of exposure to severe patient suffering and a decrease in the rate of errors/omissions with subsequent improvement in patient outcomes.

Conclusion

Factors in the work environment including high nursing workloads and poor supervisor - subordinate relationships in the setting of frequent exposure to severe patient suffering has potential to affect nurses' psychological wellbeing leading to secondary traumatic stress and burnout. Findings of this study therefore suggest a need to develop and institute measures that can enhance good working relationships between nurses and their supervisors, reduce nursing workloads and regulate frequency of exposure to severe patient suffering through measures such as rotational work schedules.

Authors Contributions

Conception and conceptualisation of research topic: MMK
Data collection and analysis: MMK, MKM, RW

Study supervision: MKM, RW
Manuscritp writing: MMK, MKM, RW

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Conflict of Interest
None

Ethical Approval
Ethical approval was obtained from the University of Zambia, Biomedical Research Ethics Committee (UNZABREC) and permission to conduct the study was further sought from the National Health Research Authority, and from the 3 hospitals included in the study. Participants were availed with an information sheet that outlined the nature and purpose of the study, as well as their rights. Services of a psychotherapist were made available for any participant who would have indicated a need for psychological attention after participating in the study. However, none of the participants in the study requested this service. Permission to use the Patient Health Questionnaire and the ProQOL 5 has been given by the authors on the respective tools.

References

1. Mabona F, van Rooyen RM, Jordan J, ten Ham-Baloyi W. Work environment in the South African military health service experienced by nurses: A qualitative study. Int J Afr Nurs Sci. 2019;11:100171. doi:10.1016/j.ijans.2019.100171.
2. Wei H, Sewell KA, Woody G, Rose MA. The state of the science of nurse work environments in the United States: A systematic review. Int J Nurs Sci. 2018;5:287–300. doi:10.1016/j.ijnss.2018.04.010.
3. Aiken LH, Sloane DM, Bruyneel L, Van den Heede K, Griffiths P, Busse R, et al. Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. Lancet. 2013;383(9931):1824–30. doi:10.1016/S0140-6736(13)62631-8.
4. Twigg DE, McCullough K. Nurse retention: a review of strategies to create and enhance positive practice environments in clinical settings. Int J Nurs Stud. 2014;51(1):85–92. doi:10.1016/j.ijnurstu.2013.05.015.
5. Ajeigbe DO, McNeese-Smith D, Leach LS, Phillips LR. Nurse-physician teamwork in the emergency department: impact on perceptions of job environment, autonomy, and control over practice. J Nurs Adm. 2016;46(6):301–8. doi:10.1097/NNA.0000000000000353.
6. Panunto MR, Guirardello EB. Professional nursing practice: environment and emotional exhaustion among intensive care nurses. Rev Lat Am Enfermagem. 2014;22(6):1041–7. doi:10.1590/0104-1169.3293.2492.
7. Maurício L, Mantovani MF, Gemito ML, Bernardes A, Guirardello EB, Panunto MR. Predictive factors of adverse events in patients undergoing haemodialysis. J Clin Nurs. 2017;26(23-24):4817–25. doi:10.1111/jocn.13831.
8. Kanyanta M, Makukula M, Wahila R. Prevalence and Social Demographic Factors Associated with Secondary Traumatic Stress, Burnout and Compassion Satisfaction among Nurses at Selected Teaching Hospitals in Lusaka, Zambia. J Biosci Med. 2023;11:86–104. doi:10.4236/jbm.2023.112007.
9. Sacco TL, Ciurzynski SM, Harvey ME, Ingersoll GL. Compassion Satisfaction and Compassion Fatigue among Critical Care Nurses. Crit Care Nurse. 2015;35(4):32–43.
10. Frey R, Robinson J, Wong C, Gott M. Burnout, Compassion Fatigue and Psychological Capital: Findings from a Survey of Nurses Delivering Palliative Care. Appl Nurs Res. 2018;43:1–9.
11. Hricova M, Lovašová S. Stress, secondary trauma and burnout-risk characteristics in helping professions. J Interdiscip Res. 2019;8:161–5.
12. Figley CR. Compassion fatigue as secondary stress disorder: An Overview. In: Figley CR, editor. Compassion fatigue: Coping with Secondary Traumatic Stress Disorder in Those Who Treat the Traumatised. New York: Brunner – Routledge; 1995. p. 1–20.

13. Lahana E, Papadopoulou K, Roumeliotou O, Tsounis A, Sarafis P, Niakas D. Burnout among nurses working in social welfare centers for the disabled. BMC Nurs. 2017;16:15. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5364673/ [Accessed 05/11/2018].
14. Stamm BH. The Concise ProQOL Manual. 2nd ed. Pocatello, ID: ProQOL.org; 2010. Available from: http://www.proqol.org/uploads/ProQOL_Concise_2ndEd_12-2010.pdf [Accessed 20/07/2018].
15. Cocker F, Joss N. Compassion Fatigue among Healthcare, Emergency and Community Service Workers: A Systematic Review. Int J Environ Res Public Health. 2016;13(6):618.
16. Bellolio MF, Cabrera D, Sadosty AT, et al. Compassion fatigue is similar in emergency medicine residents compared to other medical and surgical specialties. West J Emerg Med. 2014;15(6):629–35.
17. Berger J, Polivka B, Smoot EA, et al. Compassion fatigue in pediatric nurses. J Pediatr Nurs. 2015;30(6)6–7. Available from: https://www.ncbi.nlm.nih.gov/pubmed/25800590 [Accessed 10/09/2018].
18. Mangoulia P, Koukia E, Alevizopoulos G, et al. Prevalence of Secondary Traumatic Stress among Psychiatric Nurses in Greece. Arch Psychiatr Nurs. 2015;29(5):333–8.
19. Dasan S, Gohil P, Cornelius V, et al. Prevalence, causes and consequences of compassion satisfaction and compassion fatigue in emergency care: a mixed-methods study of UK NHS Consultants. Emerg Med J. 2016;32:588–94.
20. Gorgens-Ekermans G, Brand T. Emotional intelligence as a moderator in the stress-burnout relationship: a questionnaire study on nurses. J Clin Nurs. 2012;21(15-16):2275–85.
21. Van der Doef M, Mbazzi FB, Verhoeven C. Job conditions, job satisfaction, somatic complaints and burnout among east African nurses. J Clin Nurs. 2012;21(11-12):1763–75.
22. Coetzee SK, Klopper HC, Ellis SM, Aiken LH. A tale of two systems--nurses practice environment, well-being, perceived quality of care and patient safety in private and public hospitals in South Africa: a questionnaire survey. Int J Nurs Stud. 2013;50(2):162–73.
23. García-Campayo J, Puebla-Guedea M, Herrera-Mercadal P, Daudén E. Burnout syndrome and demotivation among healthcare personnel. Managing Healthcare Employees. 2016;175–97. doi:10.1007/978-3-319-31939-9_10.
24. Gómez-Urquiza JL, De la Fuente-Solana EI, Albendín-García L, Vargas-Pecino C, Ortega-Campos E, Cañadas-De la Fuente GA. Prevalence of burnout syndrome in emergency nurses: A meta-analysis. Crit Care Nurse. 2017;37(5)6–9. doi:10.4037/ccn2017746.
25. Roomaney R, Steenkamp J, Kagee A. Predictors of burnout among HIV nurses in the Western cape. Curationis. 2017;40(1)8–9.
26. Kruse GR, Chapula BT, Ikeda S, et al. Burnout and use of HIV services among health care workers in Lusaka District, Zambia: a cross-sectional study. Hum Resour Health. 2009;7:55. doi:10.1186/1478-4491-7-55. Available from: http://www.human-resources-health.com/content/7/1/55.
27. Mutale W, Ayles H, Bond V, Mwanamwenge M, Balabanova D. Measuring health workers' motivation in rural health facilities: baseline results from three study districts in Zambia. Hum Resour Health. 2013;11(8):1–8.
28. Ministry of Health (MoH). National Health Strategic Plan, 2022–2026. Lusaka: MoH; 2022.
29. Dart PJ, Kinnear J, Bould MD, et al. An evaluation of inpatient morbidity and critical care provision in Zambia. Anaesthesia. 2017;72:181–9.
30. Laschinger HK, Fida R. A time-lagged analysis of the effect of authentic leadership on workplace bullying, burnout, and occupational turnover intentions. Eur J Work Organ Psychol. 2014;23(5):739–53. doi:10.1080/1359432X.2013.804646.
31. Hunsaker S, Chen HC, Maughan D, et al. Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. J Nurs Scholarsh. 2015;47(2):186–94.
32. Melnyk BM, Kelly SA, Stephens J, Dhakal K, McGovern C, Tucker S, et al. Interventions to improve mental health, well-being, physical health, and lifestyle behaviors in physicians and nurses: A systematic review. Am J Health Promot. 2021;35(6):838–60. doi:10.1177/08901171211014884.
33. Nolte AG, Downing C, Temane A, Hastings-Tolsma M. Compassion fatigue in nurses: A metasynthesis. J Clin Nurs. 2017;26(23-24):4364–78. doi:10.1111/jocn.13766.

34. Duarte J, Pinto-Gouveia J. The role of psychological factors in oncology nurses' burnout and compassion fatigue symptoms. Eur J Oncol Nurs. 2017;28:114–21. doi:10.1016/j.ejon.2017.04.002.
35. Kelly L, Lefton C. Effect of meaningful recognition on critical care nurses' compassion fatigue. Am J Crit Care. 2017;26(6):438–44. doi:10.4037/ajcc2017471.
36. Kelly LA, Gee PM, Butler RJ. Impact of nurse burnout on organizational and position turnover. Nurs Outlook. 2021;69(1):96–102. doi:10.1016/j.outlook.2020.06.008.
37. Portoghese I, Galletta M, Coppola RC, Finco G, Campagna M. Burnout and workload among health care workers: the moderating role of job control. Saf Health Work. 2014;5(3):152–7.
38. Ziaei M, Yarmohammadi H, Moradi M, Khandan M. Level of Workload and Its Relationship with Job Burnout among Administrative Staff. Int J Occup Hyg. 2015;7(1):53–60. Available from: http://ijoh.tums.ac.ir [Accessed 14/10/2018].
39. Upton KV. An investigation into compassion fatigue and self-compassion in acute medical care hospital nurses: a mixed methods study. J Compassionate Health Care. 2018;5:7. Available from: https://doi.org/10.1186/s40639-018-0050-x [Accessed 10/10/2019].
40. Jonsson A, Halabi J. Work related post-traumatic stress as described by Jordanian emergency nurses. Accid Emerg Nurs. 2006;14(2):89–96. doi:10.1016/j.aaen.2006.03.006.
41. Kroenke, K, Spitzer, R.L, Williams, J.B., Löwe, B. The Patient Health Questionnaire somatic, anxiety, and depressive symptom scales: a systematic review. Gen Hosp Psychiatry 2010; 32:345-59.