Prevalence and associated factors of stress among primary health care nurses in Saudi Arabia, a multi-center study

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Background: Nursing practice has been identified as one of the most stressful professions within the healthcare systems. The current study aimed to determine the prevalence of stress and its associated factors among primary healthcare nurses.

Materials and Methods: This analytical cross-sectional study was conducted among 200 Saudi nurses in the government primary health care centers in Medina city, Saudi Arabia. Stress was measured by the stress subscale of the 21-Item Depression, Anxiety and Stress Scale. Sources of stress were assessed by 15 items.

Results: The majority were females (68.0%) and aged less than 40 years (72.5%). Thirty percent had severe or very severe stress. Stress was associated significantly with the presence of chronic diseases ($P = 0.037$) and with working in night shifts ($P = 0.042$). All sources of stress in the workplace were associated significantly and positively with stress ($P < 0.01$).

Conclusion: About one-third of the participants had stress. Improving work conditions and minimizing stress in the workplace should be a priority in the primary health care setting.

Keywords: Mental health, nursing, primary health care, Saudi Arabia, stress
repercussions.\cite{3-5} In contrast, common nonoccupational risk factors attributed to nurses’ psychological stress include demographic characteristics such as age, gender, marital status, and health status.\cite{3,4,6} The current study aimed to determine the prevalence of stress and its associated factors among primary healthcare nurses in Medina city, Saudi Arabia.

### Materials and Methods

This analytical cross-sectional study was conducted among 200 Saudi nurses in the government primary healthcare centers (PHC) in Medina city, Saudi Arabia. Madinah city is divided according to the hospital cluster into 5 areas with a total of 54 health care centers. Three health care centers were chosen randomly from each area and all nurses in each center were approached to participate.

A self-administered questionnaire was used to collect data. The questionnaire consisted of four parts. The first part included questions on the sociodemographic characteristics such as gender, age, body mass index (BMI), marital status, smoking, and chronic disease. The second part included questions about the work-related factors such as the number of patients seen every day, working hours, working in night shifts, and number of colleagues. The third part included 15 questions on source of stress that were obtained from the literature.\cite{7} These items were headed by the following question: “to which extent do the following conditions cause stress to you?” Each item was scored from 0 (causing no stress) to 4 (causing severe stress).\cite{8} The fourth part measured stress by using the stress subscale of the 21-Item Depression, Anxiety and Stress Scale (DASS-21). The stress subscale consists of 7 items and participants were asked to score every item on a scale from 0 (did not apply to me at all) to 3 (applied to me very much). The total score was computed by adding up the scores on all the items and then multiplying the total score by a factor 2 in order to yield equivalent scores to the full DASS 42.\cite{9} The total score ranges between 0 and 42 and higher score indicates higher level of stress. Scores 0–14 indicate normal (absence of stress), 15–18 mild stress, 19–25 moderate stress, 26–33 severe stress, and >33 very severe stress.\cite{8} This instrument was validated in many languages including Arabic language. The internal consistency (Cronbach’s alpha) for each of the subscales of the 21-item versions were: Cronbach $\alpha$ of 0.97 for DASS-Depression, 0.92 for DASS-Anxiety, and 0.95 for DASS-Stress.\cite{10}

Analysis was performed by using the Statistical Package for the Social Sciences (SPSS®) (version 22.0, IBM, Armonk, NY, USA).

The reliability analysis of DASS-stress yielded Cronbach alpha of 0.84. Test of normality was performed for DASS-stress subscale by using the Shapiro test, and the distribution was normal. $T$-test and analysis of variance were used to assess the association between stress and the sociodemographic and work-related variables. Pearson correlation coefficient was used to assess the association between stress and sources of stress. The accepted level of significance was below 0.05 ($P < 0.05$).

### Ethical Considerations

Ethical approval was obtained from the Ethics Committee of the Directorate of Health in Al-Madinah. Objectives and benefits of the study were explained to the participants. Confidentiality and anonymity of the participants were assured. Signed consents have been received from the participants.

### Results

The majority were females (68.0%), aged less than 40 years (72.5%), married (83.0%), and had diploma (79.0%). About 23% were currently smokers and 19.5% had chronic diseases. About 37.5% were overweight and 28.5% were obese [Table 1]. The majority see ≤40 patients per day (69.5%), working for ≤40 h/week (69.5%) and had no night shifts (72.5%) [Table 2].

Regarding the prevalence of stress, 9.5% had mild stress, 12.0% had moderate stress, and 30% had severe or very severe

| Table 1: Sociodemographic characteristics of the participants |
|---------------------------------------------------------------|
| $n$   | %    |
|---|---|
| Gender | | |
| Male | 64 | 32.0 |
| Female | 136 | 68.0 |
| Age | | |
| <40 | 145 | 72.5 |
| ≥40 | 55 | 27.5 |
| BMI | | |
| Normal | 68 | 34.0 |
| Overweight | 75 | 37.5 |
| Obese | 57 | 28.5 |
| Marital status | | |
| Not married | 34 | 17.0 |
| Married | 166 | 83.0 |
| Currently smoking | | |
| Yes | 46 | 23.0 |
| No | 154 | 77.0 |
| Smoke in the past | | |
| Daily | 27 | 13.5 |
| Less than daily | 19 | 9.5 |
| Not at all | 154 | 77.0 |
| Chronic disease | | |
| Yes | 39 | 19.5 |
| No | 161 | 80.5 |
| Education | | |
| Diploma | 158 | 79.0 |
| University | 42 | 21.0 |
| Income | | |
| <12000 | 77 | 38.5 |
| ≥12000 | 123 | 61.5 |
| Years of service | | |
| ≤10 | 76 | 38.0 |
| >10 | 124 | 62.0 |
| Administrative duties | | |
| Yes | 76 | 38.0 |
| No | 124 | 62.0 |
stress [Table 3]. Stress level was significantly higher among those who had chronic diseases (15.8 ± 3.1) compared to those who had not (12.3 ± 3.2), (P = 0.037) and among those who had night shifts (16.7 ± 3.2) compared to those who had not (12.1 ± 2.9), (P = 0.042) [Tables 4 and 5]. All sources of stress in the workplace were associated significantly and positively with stress (Pearson correlation coefficient ranged from 0.375 to 0.604), (P < 0.01) [Table 6].

Discussion

This study aimed to determine the prevalence of stress and its associated factors among primary health care nurses in Al-Madinah, Saudi Arabia. The prevalence of stress among nurses in the current study was approximately 30%, lower than that found among nurses in Slovenia (56.5%)[13], Eastern Saudi Arabia (43.1%)[18], and Hong Kong (41.1%)[23] but higher than that found among nurses in Malaysia (14.4%)[14], Vietnam (18.5%)[14], and Ghana (21%)[18]. The inconsistent prevalence rates of stress among nurses in the literature could be attributed to differences in measurement tools utilized, coupled with its scoring methods and cultural adaptability of the instruments used to the population’s local setting. Geographical variations and occupational settings that determine the type of healthcare services offered may also contribute to the varying level of stress among nurses. For example, healthcare facilities situated in urbanized settings as in cities or metropolitans are capacitated to provide wider range of services to patients, thus increasing patient loads as compared to health care centers located in semiurban or rural areas. Without compromising quality of service delivery and patient satisfaction, such situations may pose greater job demands to nurses who provide primary point of care to patients, and subsequently escalates their psychological stress levels.

This study found that nurses being afflicted with chronic diseases had higher stress level as compared to healthy nurses. This finding was contradictory to previous studies from Hong Kong[13] and Vietnam. Chronic diseases may collapse one’s coping mechanisms due to the emotional shock of the diagnosis, causing such individuals to be anxious or depressed, which subsequently leads to elevated psychological distress.[17,18] The current study found that nurses working in night shifts were more stressful as compared to those who were not. This finding was consistent with previous studies from Eastern Saudi Arabia[12] and Hong Kong[13], but contradictory to a study from Malaysia.[14] Night shift rotations may affect one’s sleep quality due to distorted circadian rhythm, which subsequently affects individual’s physical health, leading to increased psychological distress.[15] The clinical environment has been perceived to be stressful, yet leading to a bulk of physical, emotional, and mental related stressors.[19] This study found that the work environment, coupled with long work hour demands, work overload, and interaction with patients and their relatives were significant stressors for nurses. These findings were consistent with previous studies from Riyadh, Ghana,[15] and Ethiopia.[16] Job demands such as dealing with terminally ill patients, counseling patients and their relatives, change of work schedule, and lifting and transferring patients were documented as plausible attributes to be associated with greater job stress among nurses.[20] Literature postulated that such work demands may affect healthcare workers personal and home life, triggering greater chances for psychological repercussions.[8,9,21,22] This study found that work demands that affected nurses’ personal and home life were significantly associated with psychological distress. Fear of violence among nurses in the current study was significantly associated with perceived stress. Similar finding was reported in a previous study.[21] As primary contacts within the clinical environment, nurses are prone to encounter violent and aggressive patients or their relatives. These situations cause emotional disturbances to nurses, which subsequently increases their stress levels and impair their job performances.[19] Mental repercussions are triggered when one believes that he or she was treated unfairly as compared to their peers. Such situations may trigger frustrations in daily work routine, thus increasing psychological stress.[8] The current study found that nurses who were negatively rewarded, those working with uncooperative colleagues, those who were unable to participate in decision making, and those performing office work reported significant positive correlations with psychological stress. These associations were consistent with previous studies.[8,9,11,19] Such bullying acts that advocate injustice or unfairness within organizational structures cause negative emotions or behaviors that are capable to increase occupational stress substantially.[8,24] This study found that organizational attributes like lack of resources and staffs and performance pressures that impose time limitations were significantly correlated with nurses’ psychological stress.[8,11] Concurrently, this study found

| Table 2: Work-related factors of the participants |  |
|---|---|
| Patients seen every day |  |
| ≤40 | 139 | 69.5 |
| 41-80 | 40 | 20.0 |
| >80 | 21 | 10.5 |
| Working hours/week |  |
| ≤40 | 183 | 91.5 |
| >40 | 17 | 8.5 |
| Number of colleagues |  |
| ≤5 | 159 | 79.5 |
| >5 | 41 | 20.5 |
| Night shift |  |
| Yes | 55 | 27.5 |
| No | 145 | 72.5 |

| Table 3: Prevalence of stress among the participants |  |
|---|---|
| Level of stress |  |
| No stress | 97 | 48.5 |
| Mild stress | 19 | 9.5 |
| Moderate stress | 24 | 12.0 |
| Severe | 40 | 20.0 |
| Very severe | 20 | 10.0 |
that nurses who fear of making mistakes and their worries about finances, which indirectly relates to job insecurity, were significantly correlated with psychological stress. The limitations of the current study should be acknowledged. The cross-sectional nature of this study could not establish causality. Self-reported data are subjected to social desirability or recall bias.

In conclusion, occupational stress among nurses in this study accounted for approximately 30%. Occupational stresses among nurses were correlated with work-, organizational-, and system-related attributes. A wide-ranging interventional approach is required to minimize and prevent stress among nurses in the PHCs. There were three types of interventions to manage stress: organizational focused, individual focused, and combine interventions. Organizational interventions aimed to reduce stress and to mitigate the impact of stressors in the workplace; they included workload or schedule rotation, stress management training program, access to peer mentoring, and help and guidance from experienced work colleagues. Individual-focused interventions included self-care workshops, stress management skills, communication skills training, yoga, mindfulness, meditation, and coping programs. The best strategy is to combine both organizational individual-focused interventions.

### Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.
Conflicts of Interest

There are no conflicts of interest.

References

1. Al-Dubai SA, Ganasegeran K, Elkalami R, Alshakka M, Ghanem N. Perceived stress among Malaysian railway workers. Malays J Med Sci 2016;23:38-43.
2. Dagget T, Molla A, Belachew T. Job related stress among nurses working in Jimma Zone public hospitals, South West Ethiopia: A cross sectional study. BMC Nurs 2016;15:39.
3. Isfahani P, Shamsaie M, Peirovy S, Bahador RC, Afshari M. Job stress among Iranian nurses: A meta-analysis. Nurs Midwifery Stud 2021;10:57-64.
4. Tran TTT, Nguyen NB, Luong MA, Bui THA, Phan TD, Tran VO, et al. Stress, anxiety and depression in clinical nurses in Vietnam: A cross-sectional survey and cluster analysis. Int J Ment Health Syst 2019;13:3.
5. Hendy A, Abozeid A, Sallam G, Abboud AH, Ahmed ARF. Predictive factors affecting stress among nurses providing care at COVID-19 isolation hospitals at Egypt. Nurs Open 2021;8:498-505.
6. Johan S, Sarwar H, Majeed I. To identify the causes of stress among nurses working in intensive care unit of Ittefaq Hospital Lahore. Int J Soc Sci Manage 2017;4:96-109.
7. Gheslagh RG, Parizad N, Dalvand S, Zarei M, Farajzadeh M, Karami M, et al. The prevalence of job stress among nurses in Iran: A meta-analysis study. Nurs Midwifery Stud 2017;6:143-8.
8. Al-Dubai SA, Aljohani AM, Alghamdi AG, Alghamdi KS, Ganasegeran K, Yenbaawi AM. Prevalence and associated factors of burnout among family medicine residents in Al Madina, Saudi Arabia. J Family Med Prim Care 2019;8:657-62.
9. Shahin MA, Al-Dubai SAR, Abdo DS, Alahmadi AS, Ali AK, Hifnawy T. Burnout among nurses working in the primary health care centers in Saudi Arabia, a multicenter study. J Taibah Univ Med Sci 2019;14:376-82.
10. Ali AM, Green J. Factor structure of the depression anxiety stress scale-21 (DASS-21): Unidimensionality of the Arabic version among Egyptian drug users. Subst Abuse Treat Prev Policy 2019;14:1-8.
11. Dobnik M, Maletic M, Skela Savic B. Work-related stress factors in nurses at Slovenian hospitals – A cross-sectional study. Zdr Varst 2018;57:192-200.
12. Al-Makhtaita HM, Sabra AA, Hafez AS. Predictors of work-related stress among nurses working in primary and secondary health care levels in Dammam, Eastern Saudi Arabia. J Family Community Med 2014;21:79-84.
13. Cheung T, Yip PSF. Depression, anxiety and symptoms of stress among Hong Kong nurses: A cross-sectional study. Int J Environ Res Public Health 2015;12:11072-100.
14. Ghawadra SF, Abdullahi KI, Choo WY, Phang CK. Psychological distress and its association with job satisfaction among nurses in a teaching hospital. J Clin Nurs 2019;28:4087-97.
15. Kaburi BB, Bio FY, Kubio C, Ameme DK, Kenu E, Sackey SO, et al. Psychological working conditions and predictors of occupational stress among nurses, Salaga government hospital, Ghana, 2016. Pan Afr Med J 2019;33:320.
16. Ganasegeran K, Perianayagam W, Manaf RA, Jadoo SAA, Al-Dubai SAR. Patient satisfaction in Malaysia’s busiest outpatient medical care. ScientificWorldJournal 2015;2015:714754.
17. Ganasegeran K, Renganathan P, Manaf RA, Al-Dubai SAR. Factors associated with anxiety and depression among type 2 diabetes outpatients in Malaysia: A descriptive cross-sectional single-centre study. BMJ Open 2014;4:e004794.
18. Ganasegeran K, Abdulrahman SA, Al-Dubai SAR, Wan TS, Sangaran S, Perumal M. A cross-sectional study exploring perceived depression, anxiety and stress among chronic pain patients in a Malaysian general hospital. Malaysian J Psych 2019;28:4-19.
19. Almazan JU, Albougami AS, Alamri MS. Exploring nurses’ work-related stress in an acute care hospital in KSA. J Taibah Univ Med Sci 2019;14:376-82.
20. Yildirim T, Ozlu ZK. Needs of critically ill patients’ relatives in emergency departments. Nurs Midwifery Stud 2018;7:33-8.
21. Al-Dubai SAR, Ganasegeran K, Perianayagam W, Rampal KG. Emotional burnout, perceived sources of job stress, professional fulfillment, and engagement among medical residents in Malaysia. ScientificWorldJournal 2013;2013:137620.
22. Khoo EJ, Al-Dubai S, Ganasegeran K, Lee BX, Zakaria NA, Tan KK. Emotional exhaustion is associated with work related stressors: A cross-sectional multicenter study in Malaysian public hospitals. Arch Argent Pediatr 2017;115:212-9.
23. Najimi A, Goudarzi AM, Sharifirad G. Causes of job stress in nurses: A cross-sectional study. Iran J Nurs Midwifery Res 2012;17:301.
24. Awai NS, Ganasegeran K, Manaf MRA. Prevalence of workplace bullying and its associated factors among workers in a Malaysian public university hospital: A cross-sectional study. Risk Manag Healthc Policy 2021;14:75-85.