Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Depression, anxiety, and suicidal ideation in nurses with and without symptoms of secondary traumatic stress during the COVID-19 outbreak

Saeed Ariapooran a,*, Batool Ahadi b, Mehdi Khezeli c

a Department of Psychology, Malayer University, Malayer, Iran
b Department of Psychology, Faculty of Education and Psychology, Alzahra University, Tehran, Iran
c Social Development and Health Promotion Research Center, Health Institute, Kermanshah University of Medical Sciences, Kermanshah, Iran

ARTICLE INFO

Keywords: Anxiety, COVID-19, Depression, Nurses, Suicidal ideation

ABSTRACT

Background: Nurses tend to experience a lot of Secondary Traumatic Stress (STS) during the outbreak of the COVID-19. This study aimed to evaluate the prevalence of STS and comparing depression, anxiety, and Suicidal Ideation (SI) in nurses with and without STS symptoms during the COVID-19 outbreak.

Method: The research method of this study was descriptive-comparative. The statistical sample consisted of 315 nurses working in hospitals of Malayer city, western Iran, selected through census method. Data were collected using the STS Scale, Beck's Depression Inventory (BDI-13), Anxiety Inventory (BAI), and SI scale. Data were analyzed using the independent t-test, multivariate analysis of variance (MANOVA), and multivariate analysis of covariance (MANCOVA).

Results: This study showed that 161 nurses (51.11%) had symptoms of STS. The prevalence of STS symptoms in nurses in emergency, ICU/CCU, medical emergencies, and other wards was 62.27%, 62.02%, 51.61%, and 26.32%, respectively. The results of the MANCOVA showed that the nurses with STS symptoms received higher scores in depression, anxiety, and SI than the ones without STS symptoms (p < 0.01).

Conclusion: Hospital authorities and nursing psychiatrists should pay more attention to the STS symptoms in nurses during the COVID-19 outbreak, and its effects on depression, anxiety, and SI.
secondary Traumatic Stress (STS) is one of the problems that nurses may experience in caring for patients. STS is defined as the behavioral consequences and natural emotions arising from knowledge about a stressful event experienced by another person and helping one injured person (Figley, 2013). The prevalence of STS in different countries is estimated to be from 7% to 67.64% depending on the target groups or regions (Duffy, Avalos, & Dowling, 2015; Gunjaen, Wilson, & Aksoy, 2017; Von Rueden et al., 2010). In a study conducted in Iran, the prevalence of STS in married nurses was reported to be 22.4% (Ariapooran, 2018; Ariapooran & Khezeli, 2018; Khezeli et al., 2019), but during the COVID-19 pandemic, it has received less attention, especially among nurses. Some studies have shown that the suicide rates compared to the general population is higher among the nurses (Davidson, Proudfoot, Lee, Terterian, & Zisook, 2020; Fink-Miller & Nestler, 2018).

The rate of 64.57%. After reviewing the questionnaires, 24 incomplete nurses completed the data gathering tools, demonstrating a response rate of 64.57%. After reviewing the questionnaires, 24 incomplete questionnaires were removed from the study, and the sample size was reduced to 315 nurses.

Measures

The data in this study were collected using the demographic information form, STS Scale, Beck Depression Inventory (BDI-13), Beck Anxiety Inventory (BAI), and Beck Scale for Suicidal Ideation (BSSI).

1. Secondary Traumatic Stress Scale (STSS): Bride, Robinson, Yegidis, and Figley (2004) developed this scale which contains 17-items scored on a 5-point Likert scale from 1 (never) to 5 (often). The optimal cut-off point is 38 with a sensitivity of 0.93 and a specificity of 0.91. Accordingly, using this value, 93% of those who met the core criteria for PTSD would correctly be identified as having PTSD, and 91% of those who did not meet the core criteria for PTSD would be identified as not having PTSD (Bride, 2007). This scale has three subscales including intrusion (5 items), avoidance (7 items), and arousal (5 items). The Cronbach’s alpha for STS was 0.93, and for intrusion, avoidance, and arousal subscales equaled 0.80, 0.83, and 0.87, respectively (Bride et al., 2004). In examining the validity of this scale, Bride et al. (2004) found a significant relationship between depression (r = 0.502), anxiety (r = 0.555) and STS. Ariapooran (2013) reported the Cronbach’s alpha coefficients for the full STSS, intrusion, avoidance and arousal subscales as 0.90, 0.68, 0.81, and 0.78, respectively. Another study conducted in Iran (Ariapooran & Raziani, 2019) also reported a favorable internal consistency of STSS questions.

2. Beck Depression Inventory (BDI-13): This 13-item scale was developed by Beck and Beck (1972). It consisted of 21 items rated from 0 to 3. BDI-13 measures normal (0–3), mild (4–7), mild to moderate (8–11), moderate (12–15), and severe (16–39) depression. The Cronbach’s alphas of the BDI-13 was reported to range from 0.78 to 0.97 indicating favorable to high internal consistency (Beck & Beck, 1972; Beck, Rial, & Rickels, 1974). In a study conducted in Iran, the Cronbach’s alpha, Spearman-Brown, and Guttmann’s alpha coefficients of BDI-13 were found to be 0.85, 0.70, and 0.67, respectively (Dadfar & Kalibatseva, 2016). Moreover, in a study conducted among Iranian nurses, the Cronbach’s alpha coefficient of BDI-13 was reported as 0.77 (Ariapooran, 2019). The present study calculated the Cronbach’s alpha of BDI-13 to equal 0.78 which is almost consistent with the original version of BDI-13 and the one in other studies.

3. Beck Anxiety Inventory (BAI): This 21-item (Beck & Steer, 1993) inventory, consisted of 21 items rated from 0 to 3 (basically = 0, mild = 1, moderate = 2, and severe = 3). The scores of BAI ranged from 0 to 63. BAI measures normal (0 to 7), mild (8 to 15), moderate (16 to 25), and severe (26 to 63) anxiety (Beck & Steer, 1993). BAI has been translated into Persian, and the Cronbach’s alpha coefficient and the reliability of the one-week interval were calculated to equal 0.92 and 0.75 (Kaviani & Mousavi, 2008). In another study conducted in Iran, the Cronbach’s alpha coefficient of BAI was estimated to be 0.92 (Rafiei & Seifi, 2013). The present study calculated the Cronbach’s alpha of BAI to equal 0.81.

4. Beck Scale for Suicidal Ideation (BSSI): Beck, Kovacs, and Weissman (1979) developed a scale that measures the severity of suicidal ideation using 19 items; each rated from 0 to 2. The total score of the BSSI ranges from 0 to 38, in which higher scores indicate the more intense suicidality. The first 5 questions of this questionnaire are screening tests, and the answers to these questions indicate the tendency or unwillingness to commit active or inactive suicide. BSSI measures the absence of SI (0–5), presence of SI (6–19), and readiness to suicide (20–38). The Cronbach’s alpha coefficient of BSSI was calculated to be 0.89 (Beck et al., 1979). Anisi, Majdian, and Mirzamani (2010) performed semantic equivalence by translating and back translating BSSI into Persian language and reported the Cronbach’s alpha coefficient of 0.90 for BSSI in a sample of Iranian soldiers. Another study conducted in Iran reported that the Cronbach’s alpha coefficient of BSSI was witnessed to be 0.84 (Hakim-Shooshhtari et al., 2016) and 0.95 (Rezapur-Shahkoli et al., 2020). The present study calculated the Cronbach’s alpha of BSSI to be 0.74.

Data collection and ethical consideration

In this study, the researchers referred to the hospitals of Malayer city for one month. After explaining the purposes of the research to the nurses in different wards, an informed consent form was delivered to them and they filled it out. The participants completed the questionnaire which lasted for about 45 min. Moreover, owing to the contagious nature of the coronavirus, preventive measures were observed, including wearing a mask and observing social distance. The participants were also assured that their data would be confidential, and the results would
be published in an article without their personal information. This study received ethical approval from the Ethics Committee of Malayer University, Iran (IR.MALAYERU.REC.1399.002).

Analysis

Data were analyzed by IBM SPSS Statistics (Version 24). Frequency and percentage were used to evaluate the prevalence of STS in nurses. The multivariate analysis of covariance (MANCOVA) was also used to compare depression, anxiety, and SI to each other in order to control the effect of age and occupational experience in nurses with and without STS. It is worth mentioning that in previous studies, the role of age and occupational history in nurses’ psychological problems, including depression, was confirmed (Ariapooran, 2019).

Results

As shown in Table 1, among all nurses, 195 (61.90%) were female, and 120 (38.10%) were male. In addition, 228 (72.38%) had a BA and 87 (27.62%) had an MA degree. Among the nurses, 115 nurses (36.51%) were single, and 200 (63.49%) were married. Furthermore, 79 (23.80%) of them were nurses in ICU and CCU, 31 (9.84%) were nurses in medical emergencies, 110 (34.92%) were nurses in emergency and 95 (28.74%) were nurses in other wards (such as surgery and pediatrics). In terms of work shift, 204 (64.76%) had rotating work shifts, and 111 (35.24%) had fixed morning shifts. The mean age of all nurses was 34.69 ± 8.33, and the mean of work experience was 11.30 ± 8.40 years. The mean of work hours in each shift was 13.36 ± 7.44 h.

As revealed by Table 2, 51.11% of nurses had STS symptoms. In addition, 31.66% of males and 63.08% of females had STS symptoms. The mean of work hours in each shift was 13.36 ± 7.44 h. The prevalence of STS symptoms in nurses in emergency, ICU and CCU, medical emergencies, and other wards was 62.27%, 62.02%, 51.61%, and 26.32%, respectively. The results of the independent t-test indicated that the STS mean was higher in female nurses as compared to males. The mean was also higher in nurses with a BA degree than in nurses with an MA, and higher in single nurses than in married nurses. According to the results of multivariate analysis of variance (MANOVA), there was a significant difference between STS in nurses based on different wards (emergency, ICU and CCU, medical emergencies, and other wards). According to the LSD post-hoc test, the STS mean in ICU and CCU nurses was higher than in nurses in emergency, medical emergencies, and other wards. Additionally, in emergency nurses, the STS mean was higher than in medical emergencies and other wards (p < 0.05). However, there was no significant difference in the STS mean between medical emergency nurses and nurses in other wards.

Before MANCOVA, the Box test was conducted for the homogeneity of variance-covariance matrices, and the results indicated that this condition was observed (F Box = 1.730; p < 0.52). The Levin test was also used to examine the equality of variances between the groups. The results confirmed the equality of variances for depression (f = 1.243; p < 0.182), anxiety (f = 2.211; p < 0.135) and SI (f = 2.424; p < 0.091). Table 2 presents the results of MANCOVA which compare depression, anxiety, and SI (the age and educational level are controlled).

As Table 3 reveals, by controlling the effect of age, occupational experience, and work shifts, there was a significant difference between depression, anxiety, and SI in nurses with and without STS symptoms. In other words, nurses with STS symptoms received higher scores in depression, anxiety, and SI than the ones without STS symptoms.

Table 2
Prevalence and comparison of the STS symptoms in nurses based on demographic variables in the outbreak of COVID-19.

| Group                  | With STS | Without STS | M ± SD | Statistic (p) |
|------------------------|----------|-------------|--------|---------------|
| Gender                 |          |             |        |               |
| Males                  | 38 (55%) | 82 (45%)    | 33.76  | t = 4.24, p < 0.001 |
| Females                | 123 (63.08%) | 72 (36.92%) | 40.31  | t = 3.93, p < 0.001 |
| Educational levels     |          |             |        |               |
| Bachelor               | 62 (71.26%) | 25 (28.74%) | 41.88  | t = 2.98, p = 0.001 |
| M.A                    | 99 (43.42%) | 129 (56.58%) | 10.92  | t = 2.98, p = 0.001 |
| Marital status         |          |             |        |               |
| Single                 | 59 (51.30%) | 56 (48.70%) | 39.50  | t = 1.97, p = 0.04 |
| Married                | 102 (51.0%) | 98 (49.0%)  | 36.84  | t = 0.97, p = 0.05 |
| Occupational wards     |          |             |        |               |
| Emergency              | 74 (62.27%) | 36 (37.73%) | 38.90  | t = 1.91, p = 0.05 |
| ICU & CCU              | 46 (62.02%) | 33 (37.98%) | 44.38  | t = 1.91, p = 0.05 |
| Medical emergencies    | 16 (51.61%) | 15 (48.39%) | 34.00  | t = 1.91, p = 0.05 |
| Other wards            | 25 (26.32%) | 70 (73.68%) | 32.34  | t = 1.91, p = 0.05 |
| All participants       | 161 (51.11%) | 154 (48.89%) | N = 315 |               |

M = mean; SD = standard deviation.

Discussion

This study was an attempt to investigate the prevalence of STS and to compare depression, anxiety, and SI in nurses with and without STS symptoms during the COVID-19 outbreak. The results indicated that 51.11% of nurses had STS symptoms. In addition, the prevalence was higher in female nurses as compared to the male nurses, and the results of the independent t-test confirmed the higher mean score of STS in female nurses as compared to the male nurses. This result is similar to previous findings, in which STS rates ranged from 7% to 67.64% (Duffy et al., 2015; Günüşen et al., 2017; Von Rueden et al., 2010). However, the prevalence of STS in the present study was higher than the prevalence reported in previous study in Iran (Ariapooran & Raziani, 2019) and also in a study on the nurses of Malayer (Ariapooran, 2013). The results of this study also confirmed the results of the study by Vagni,
...to those holding an MA degree. Before this study, no studies had confirmed the higher mean STS in nurses with a BA degree as compared to nurses with an MA degree. The social status and even higher income of nurses with an MA degree add to this. Ariapooran and Raziani (2019) showed that the prevalence of STS among married nurses was 22.4%. Another study revealed that being married was one of the protective factors against the symptoms of secondary trauma (Byrne, 2006). Married nurses are more likely to receive social support from their spouses during the COVID-19 outbreak, and they are less likely to have STS as compared to their single counterparts, since social support reduces the rate of STS (Ariapooran, 2013) and is positively associated with a higher level of stress (Ta, Gesselman, Perry, Fisher, & Garcia, 2017).

This study indicated that the prevalence of STS symptoms was higher in nurses in emergency wards and ICU-CCU as compared to those in medical emergencies and other wards. Furthermore, the results of MANOVA and LSD post-hoc tests showed that the mean STS in nurses in ICU-CCU as compared to those in emergency, medical emergencies, and other wards were higher. In addition, STS was higher in emergency nurses as compared to those in medical emergencies and other wards. A study previously done by Ariapooran (2013) reported that the prevalence of STS was higher in emergency nurses as compared to non-emergency nurses. It seems that emergency nurses experience more STS symptoms due to witnessing patients’ problems and pain, especially patients with COVID-19, which is consistent with the emotional contagion model (Figley, 2013). Because critically ill patients with COVID-19 are being treated and cared for in the ICU-CCU, nurses in these wards appear to experience higher STS due to observing the patients’ problems. A similar situation occurs for nurses in medical emergencies in comparison with other wards except for the ICU nurses.

The MANCOVA results showed that nurses with STS symptoms received higher scores in depression, anxiety and SI as compared to those without STS symptoms. We found a large effect size (0.20) for the anxiety. This result was consistent with the previous studies showing that nurses with STS symptoms experienced more depression (Ariapooran & Raziani, 2019; Bock et al., 2020) and anxiety (Bock et al., 2020) as compared to those without STS symptoms. Nevertheless, previous studies have not explored the relationship between STS and SI. Furthermore, previous studies showed that secondary trauma, trauma memories, and stressful events were positively associated with depression (Ashbaugh, Marinos, & Bujaik, 2017; Thabet, Thabet, & Vostanis, 2016). Moreover, due to the association between post-traumatic stress disorder (PTSD) and STS (Burr, O’Brien, Brown, Penfil, & Hertzog, 2020), it can be stated that this finding is similar to previous findings confirming the association of PTSD with depression, anxiety, and SI (Cheng, Liang, Fu, & Liu, 2020; Ni et al., 2020). It is likely that the pain and problems of patients with COVID-19, and the fear of COVID-19 disease can cause feelings of sadness, anxiety and even SI in nurses. It has been shown that the nurse-patient relationship causes psychological symptoms, such as depression in nurses (Haugan, Inmanstrand, & Moknes, 2013), and feeling of more stress in the workplace and fatigue associated with patient care were the risk factors for SI in nurses (Chin et al., 2019). Due to the high effect size for anxiety, it can be said that in previous studies in the COVID-19 outbreak, anxiety was one of the major problems in nurses (Savitsky et al., 2020). Therefore, STS in the COVID-19 outbreak had probably a greater effect on anxiety than depression and SI in nurses.

One of the limitations of this study was the lack of interviews for STS assessment, which was due to the busy schedule of nurses in COVID-19 conditions. Interviews can be more accurate than self-report questionnaires. Therefore, for future research studies, it is recommended that interviews be conducted for the prevalence of psychological problems and disorders. Additionally, the infection of nurses and their acquaintances with COVID-19 were not studied, while these factors can affect the results, especially the prevalence of STS. Furthermore, in this study, we used the Persian versions of STSS, BDI, BAI, and BSSI. In some cases, the Cronbach’s alpha of the questionnaires was lower as compared to some other studies, which was probably due to the special conditions of nurses when answering questions in the present study, and the different groups of participants in different studies.

Conclusions

The results of the present study support the high prevalence of STS in nurses (CCU-ICU and emergency wards) during the COVID-19 outbreak. Moreover, in this study, the high rate of depression, anxiety, and SI was confirmed in nurses with STS symptoms as compared to those without STS symptoms. Thus, psychologists, counselors, and psychiatrists working in hospitals should pay attention to the high rate of STS symptoms and its role in increasing the rate of depression, anxiety, and SI in nurses. This also highlights the role of psychiatric nurses in identifying the problem, and providing counseling and supportive care for nurses involved in COVID-19 related wards. It is also important for nurses with STS symptoms to use training and psychological therapies in the outbreak of COVID-19.

Table 3
Comparison of depression, anxiety, and SI in nurses with and without STS symptoms in the outbreak of COVID-19.

| Group          | M ± SD     | SS           | MS           | F1,315  | p     | EF   |
|----------------|------------|--------------|--------------|--------|-------|------|
| Depression     |            |              |              |        |       |      |
| Without STS    | 4.45 ± 3.36| 1141.44      | 1141.44      | 49.075 | 0.001 | 0.14 |
| With STS       | 8.07 ± 4.57| 3652.76      | 3652.76      |        |       |      |
| Anxiety        |            |              |              |        |       |      |
| Without STS    | 7.91 ± 7.84| 4293.45      | 4293.45      | 79.436 | 0.001 | 0.20 |
| With STS       | 15.19 ± 6.93| 1252.76      | 1252.76      |        |       |      |
| SI             |            |              |              |        |       |      |
| Without STS    | 3.90 ± 3.94| 975.62       | 975.62       | 38.452 | 0.001 | 0.11 |
| With STS       | 7.79 ± 6.56| 1131.26      | 1131.26      |        |       |      |

M = mean; SD = standard deviation; SS = sum of squares; MS = mean square; EF = effect size.
Declaration of competing interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Anisi, J., Majdian, M., & Mizramani, S. M. (2010). The factors associated with suicide ideation in Iranian soldiers. Iranian Journal of Psychiatry, 5(3), 97-101. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3430507/

Ariapooran, S. (2013). The prevalence of secondary traumatic stress among nurses in Iran: A Malayser model of role mismatch and social support. International Journal of Community Based Nursing and Midwifery, 1(3), 156-164. https://www.asid.ir/en/journal/ViewPaper.aspx?id=326533.

Ariapooran, S. (2019). Sleep problems and depression in Iranian nurses: The predictive role of workaholism. Iranian Journal of Nursing and Midwifery Research, 24(1), 30-37. https://doi.org/10.4103/ijnmr.IJNMR_188_17.

Ariapooran, S., Heidari, S., Agahi, M., Ashtarian, H., & Khezeli, M. (2018). Individualism-collectivism, social support, resilience and suicidal ideation among women with the experience of the death of a young person. International Journal of Community Based Nursing and Midwifery, 6(3), 250.

Ariapooran, S., & Khezeli, M. (2018). Suicidal ideation among divorced women in kermanshah, Iran: The role of social support and psychological resilience. Iranian Journal of Psychiatry and Behavioral Sciences, 12(4). https://doi.org/10.5812/ijpbs.3565.

Ariapooran, S., & Khezeli, M. (2021). Symptoms of anxiety disorders in Iranian women with the experience of the death of a young person. International Journal of Community Based Nursing and Midwifery, 6(3), 250.

Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., & Zhang, L. X. (2017). Strengths-based service planning as a resilience factor in child protective services. Psychosocial Services, 11(4), 129-136. https://doi.org/10.1016/j.copsyc.2017.07.019.

Davidson, J. S. (2020). A longitudinal analysis of suicide risk in the United States (2005-2016) with recommendations for action. Worldviews on Evidence-Based Nursing, 17(1), 6-15. https://doi.org/10.1111/wen.12414.

Duffy, E., Avalon, G., & Dowling, M. (2015). Secondary traumatic stress among emergency nurses: A cross-sectional study. International Emergency Nursing, 23(2), 53-58. https://doi.org/10.1016/j.ienur.2014.05.001.

Figley, C. R. (1995). Compassion fatigue: Evolution of a new clinical syndrome among human caregivers. In S. Ariapooran et al. (Eds.), Psychosomatics of the Persian version of the Beck Depression Inventory with Iranian psychiatric outpatients. BMC Psychiatry, 21(1), 1-5. https://doi.org/10.1186/s12888-021-02323-x.

Ariapooran, S., & Raziani, M. (2019). Sexual satisfaction, marital intimacy, and symptom severity on trauma memory. Psychology, 6(1), 30-37. https://doi.org/10.4103/psyc.Psyc_3798.

Galek, K., Flannelly, K. J., Greene, P. B., & Kudler, T. (2011). Burnout, secondary traumatic stress, and social support. Pastoral Psychology, 66(5), 633-649. https://doi.org/10.1007/s11089-011-9347-y.

Gershon, D. (2020). COVID-19: Emerging compassion, courage and resilience in the face of misinformation and adversity. Journal of Clinical Nursing, 29(9-10), 1425-1428. https://doi.org/10.1111/jocn.15231.

Güneşen, N. P., Wilson, M., & Aksoy, B. (2019). Secondary traumatic stress and burnout among Muslim nurses caring for chronically ill children in a Turkish hospital. Journal of Transcultural Nursing, 22(4), 146-154. https://doi.org/10.1177/1049731519860966.

Hu, D., Kong, Y., Li, W., Han, Q., Zhang, X., Zhu, L. X., … He, H. G. (2020). Frontline nurses’ burnout, anxiety, depression, and fear of being infected with COVID-19: A systematic review. Journal of Psychiatric and Behavioral Sciences, 12(1), Article 4984. https://doi.org/10.17795/jpbs.356514.

Haugan, G., Innstrand, S. T., & Moksnes, U. K. (2013). The effect of nurse-patient interaction on anxiety and depression in cognitively intact nursing home patients. Journal of Clinical Nursing, 22(15-16), 2192-2205. https://doi.org/10.1111/jocn.12072.

Hu, D., Yu, G., Li, W., Han, Q., Zhang, X., Zhu, L. X., … He, H. G. (2020). Frontline nurses’ burnout, anxiety, depression, and fear of being infected with COVID-19 in Wuhan, China: A big-scale cross-sectional study (3/27/2020). https://doi.org/10.2129/jsm.3566144.

Kaviani, H., & Mousavi, A. S. (2008). Psychometric properties of the Persian version of the Beck Depression Inventory (BDI). Tehran University Medical Journal, 60(2), 156-140. https://pycnset.apajir.com/page/112121-2006.

Khezeli, M., Hazavehei, S. M. M., Ariapooran, S., Ahmadi, A., Soltanian, A., & Rezapour-Shahkolai, F. (2019). Individual and social factors related to attempted suicide among women: A qualitative study from Iran. Health Care for Women International, 40(3), 295-313. https://doi.org/10.1080/07399332.2018.1455773.

Kuhn, C. M., & Flanagan, E. M. (2017). Self-care as a professional imperative: Physician burnout, depression, and suicide. Canadian Journal of Anaesthesia, 64(2), 158-168. https://doi.org/10.1002/cja.23073.

Koenig, H. (2017). The COVID-19 outbreak in Wuhan, China: A big-scale cross-sectional study (3/27/2020). https://doi.org/10.2129/jsm.3566144.

Ko...
Ta, V. P., Gesselman, A. N., Perry, B. L., Fisher, H. E., & Garcia, J. R. (2017). Stress of singlehood: Marital status, domain-specific stress, and anxiety in a national US sample. *Journal of Social and Clinical Psychology, 36*(6), 461-485. https://doi.org/10.1521/jscp.2017.36.6.461.

Thabet, A. M., Thabet, S. S., & Vostanis, P. (2016). The relationship between war trauma, PTSD, depression, and anxiety among Palestinian children in the Gaza Strip. *Health Science Journal, 10*(5), 1-8. https://doi.org/10.4172/1791-809X.1000100501.

Thompson, R. N. (2020). Novel coronavirus outbreak in Wuhan, China, 2020: Intense surveillance is vital for preventing sustained transmission in new locations. *Journal of Clinical Medicine, 9*(2), 498. https://doi.org/10.3390/jcm9020498.

Vagni, M., Maiorano, T., Giostra, V., & Pajardi, D. (2020). Hardiness, stress and secondary trauma in Italian healthcare and emergency workers during the COVID-19 pandemic. *Sustainability, 12*(14), 5592. https://doi.org/10.3390/su12145592.

Von Rueden, K. T., Hinderer, K. A., McQuillan, K. A., Murray, M., Logan, T., Kramer, B., & Friedmann, E. (2010). Secondary traumatic stress in trauma nurses: Prevalence and exposure, coping, and personal/environmental characteristics. *Journal of Trauma Nursing, 17*(4), 191-200. https://doi.org/10.1097/JTN.0b013e3181f2607.

World Health Organization. (2021). *COVID-19 weekly epidemiological update (23 February 2021)*.

Zangrillo, A., Beretta, L., Silvani, P., Colombo, S., Scandroglio, A. M., Dell’Acqua, A., … Monaco, F. (2020). Fast reshaping of intensive care unit facilities in a large metropolitan hospital in Milan, Italy: Facing the COVID-19 pandemic emergency. *Critical Care and Resuscitation, 22*(2), 91. https://search.informit.com.au/documentSummary;dn=196484700544171;res=IELHEA.