Available online@www.ctlsr.com

CTLSR 1 (1): 41-52 (June, 2022)

Current Trends in Life Science Research

ISSN: 2814-1679

Factors associated with prevalence of anxiety disorder among nurses working in Covid-19 isolation centers in Lagos, Nigeria

Rasheed, Tajudeen, Olusegun[1*] and Aina, Joseph, Oyeniyi[1]

1. *Department of Nursing Science, Babcock University,Ilishan-Remo, Ogun, Nigeria.*

*****Corresponding author <tajrash2005@gmail.com>

Abstract

The unprecedented demands for services offered by nurses emerging from the COVID-19 pandemic placed much mental health pressure and physical exhaustion on nurses in the various isolation centers. This study estimated prevalence of anxiety disorder and examined associated factors among nurses working in COVID-19 isolation centers in Lagos, Nigeria. A cross-sectional study design was adopted with purposive sampling method selecting two isolation centers in Lagos of total enumeration sample size of 75 nurses was conducted. Data was collected with a validated structured questionnaire and analyzed with IBM SPSS version 25. Fisher's Exact Test and multivariate logistic regressions were conducted to determine the predictors of anxiety disorders at 5% level of significance and 95% CI. The results showed the mean age of nurses m=37.6 $\pm$ 10.2 years, while 39.7% of nurses reported having mild to severe anxiety disorder. The age, gender, marital status and living with vulnerable persons were not significantly associated with the anxiety disorder with $p > 0.05$. The odds of anxiety disorder was 2.3 times more likely for nurses having regular contact with COVID-19 patients with symptoms compared to nurses who did not (OR=2.3, 95% CI= 4.338 to 41.962, p=0.010). In conclusion, more than one-third of nurses developed mild to severe anxiety disorder. A psychological intervention program is recommended to support the affected nurses.

Keywords: anxiety disorder, coronavirus, isolation centre, nurse, prevalence

Introduction

Worldwide, nurses were confronted with enormous mental health pressure and physical exhaustion as they deal relentlessly with the unprecedented demands of COVID-19 patients in isolation centers (ICN, 2021; Azim, Kumar, Nasim, Arif, & Nanjiani, 2020). Nurses in Nigeria may have experienced feelings of anxiety when the first case of Coronavirus infection was diagnosed on a foreigner on 27th of February 2020 in Lagos (NCDC, 2020). The anxiety and panic attack might have heightened for nurses working in COVID-19 isolation centers when it was discovered that the novel Coronavirus (SARS-nCOV-2) has a unique high aerosol spreading rate with poor prognosis and death (WHO, 2020). The susceptibility of nurses to coronavirus in COVID-19 isolation centers, inadequate supply of N95 mask and physical distancing from family members may have precipitated emotional imbalance with anxiety as the consequence.

Anxiety is a natural response to a stressful situation characterized by feelings of worries and tension (Saricam, 2020). It is a fight-or-flight mechanism of survival that interplays between a troubled mind and body that react quickly to life-threatening situation (Chatterjee, Chakrabarty, Banerjee, Grover, Chatterjee, & Dan, 2021). Anxiety disorder is diagnosed within 3 days to 1 month of post exposure to traumatic event (APA, 2013). The global estimated prevalence of anxiety pooled for nurses during COVID-19 pandemic was 27.9% with significant difference across regions and countries (ICN, 2021; Li, Scherer, Felix, & Kuper, 2021). In Spain; 58.6%, New York; 40%, Jiangsu Province; China; 37.9%, Singapore; 14.5% and Ethiopia was 63.0% (Kibret, Teshome, Fenta, Hunie, & Tamire, 2020; Mekonen, Shetie, & Muluneh, 2020). The 27.9% was high when compared to WHO acceptable value of 3.6%.

Nurses' socio-demographic characteristic is an important factor for coping during COVID-19 pandemic responses. Chatterjee et al. (2021) conducted study in India and found that socio-demographic variables like; lower age, female gender, higher educational level and urban habitat of healthcare workers were associated with anxiety during COVID-19 outbreak responses. A good working condition should have necessary supportive measures and hazard free environment (WHO, 2016). During COVID-19 pandemic the working conditions of nurses may have been influenced by COVID-19 stressors environment, increase workload, inadequate staffing, spending extra hours on duty, PPE unavailability, safety guideline unavailability, and lack of training on Infection Prevention.

Transactional Theory of Stress and Coping by (Lazarus, 1966; Lazarus & Folkman, 1987) was applied to this study. The model is an integrative health protective strategy that encompasses all aspects of responses in the working environment. This theory is significance as it focuses on how nurses deals with their environment in the event of exposure to stressors combined with the physical and psychological factors that influences reaction to threatening situation in COVID-19 isolation centers.

There is a dearth in literature on studies on anxiety disorder among nurses working in isolation centers in Lagos, Nigeria. Given such gap, this study was conducted with objective of estimating prevalence of anxiety disorder and examined associated factors among nurses. Specifically; prevalence of anxiety was determined, the association that exists between socio-demographic characteristics,

psychological factors, working conditions factors and anxiety disorder was established. The justification for this study is that mental health challenges from pandemic is often neglected as all efforts are directed towards containment of the plague. The significance of this study is that it provided data on anxiety disorder among nurses working in COVID-19 isolation centers and established associated factors.

MATERIALS AND METHODS

Research Design and Setting

This study used cross-sectional design and settings were Yaba and Gbagada COVID-19 isolation centers in Lagos. Yaba centre has 265 beds and Gbagada 180 beds. The two centers have male and female wards with Intensive Care Unit for critically-ill patients.

Participants

The target population was 75 nurses, male and female working in the two selected COVID-19 isolation centers in Lagos. Inclusion Criteria: only nurses whose duty post was either Yaba or Gbagada COVID-19 isolation centre. Exclusion Criteria: nurses' who accompanied patients on emergency or working in other COVID-19 isolation centers were excluded.

Sample Size and Sampling Technique

Sample size determined by total inclusion of all nurses working in the two selected COVID-19 isolation centers in Lagos. Yaba *n*=59 and Gbagada *n*=16. Purposive sampling method was used to select the two centers. Total enumeration sampling technique was used to sample 75 nurses. However, the risk of negative bias due to incomplete coverage of the entire population was avoided to guide against error of under reporting.

Instrumentation

A structured questionnaire divided into sections A, B, C and D was used to collect data. **Section A (Socio-demographic):** consist of 7 questions numbered 1-7 in the questionnaire and collected data on socio-demographic characteristics. **Section B (Anxiety disorder):** consist of 9 questions numbered 8-16 in the questionnaire and collected data on anxiety disorder. **Section C (Psychological factors):** consist of 5 questions numbered 17-21 in the questionnaire and collected data on psychological factors experienced by the nurses. **Section D (Working conditions factors)**: consist of 7 questions numbered 22-28 and collected data on working conditions of nurses in COVID-19 isolation centers.

Validity and Reliability of the Instrument

The content and face validity of instrument was established through qualitative method by experts in the field of study for clarity and adequacy of the content to ensure instrument measure what it intended to measure. Test-retest method used to establish reliability of the instrument. Questionnaires were administered to 10 nurses working in COVID-19 isolation centre, Olodo, Ibadan, Oyo state. It was collected back immediately after filling completed. Two weeks later, same questionnaires were administered to the same nurses. The questionnaires were analyzed with Cronbach's Alpha test. The results showed that 21 items in the instrument tested for reliability has Cronbach's Alpha value of between α=0.792 and α=0.927 which showed the instrument was reliable.

Procedure for Data Collection

Data were collected daily by researcher from nurses working in Yaba and Gbagada COVID-19 isolations on Monday through Friday between 7th of February and 25th of March, 2022. Informed Consent Form was given to nurses to complete freely before completing questionnaire. Filled

questionnaires were collected, collated and kept in a safe by investigator for data security and no compensation was offered to nurses.

Data Analysis

Data were screened to correct errors on the field since primary data were collected. Analysis of data was done with IBM SPSS version 25. Anxiety disorder was categorized and acceptable significant (α) level was $p < 0.05$ at 95% CI. Fisher's Exact Test was run to establish an association that exist between socio-demographic characteristics and anxiety, while multivariate logistic regressions analysis was run on psychological and working conditions factors.

Measurement of Variables

Dependent variable: anxiety disorder and was measured by 9-items self-reporting scale SAVE-9 (Chung et al., 2020). Nurses were asked to report their feelings and worries on a 4-points scale from (0-never) to (4-always). The range of the score was from 0 to 22 and the rating on Likert Scale were (0 = never), (1 = rarely), (2 = sometimes), (3 = often), and (4 = Always) (Chung et al., 2020). Responses added together and scores categorized into normal (0-4), mild (5-9), moderate (10-14), and severe (15-22) anxiety (Chung et al., 2020).

Independent variables: this included socio-demographic characteristics of the nurses. The psychological factors measured with NO or YES responses on a scale of 0 and 1 respectively. Similarly, working conditions factors measured with NO or YES responses on a scale of 0 and 1 respectively.

Ethical Considerations

Ethical issues and right of the participants was protected during this study. Babcock University Health Research Ethics Committee (BUHREC) approval number is 830/21 and permission to collect data was granted by Lagos State Health Services Commission.

RESULTS

Table 1 shows 75 nurses who participated in the survey and no missing value N recorded. The finding shows that *n*=28 (37.3%) of the respondents were in age range 21-30 years, while *n*=9 (12.0%) were in age range 51-59 years. The mean age of respondents *m*=37.6 $\pm$ 10.2 years. Majority of respondents were female nurses *n*=53 (70.7%), and only *n*=10 (13.3%) were not living with vulnerable persons.

Figure 1 shows levels of anxiety disorder. Few respondent *n*=12 (16.0%) did not report anxiety, while *n*=25 (33.3%) reported severe anxiety. Table 2 shows that the age, gender, marital status and living with vulnerable persons were not significantly associated with anxiety disorder $p > 0.05$. Conversely, education level $p=0.002$, duration of period working in Covid-19 isolation centre $p=0.000$, and year of experience $p=0.018$ were significantly associated with anxiety $p < 0.05$.

Table 3 shows psychological factors associated with anxiety disorder. The finding revealed that nurses who had regular contact with COVID-19 patients with symptoms had an odds of 2.3 times likelihood of having anxiety disorder (OR=2.3, 95% CI= 4.338, 41.962, $p=0.010$) compared to nurses who did not. Table 4 shows that adequate supply of PPE was 4.6 times more likely to reduce anxiety among nurses (QR=4.6, 95% CI=1.208, 5.128, $p=0.009$) compared to a situation where there was inadequate supply of PPE.

Table 1: *Socio-Demographic Characteristics of Respondents*

Variables	Frequency (*N*=75)	Percent (100%)
Age of Nurses		
21 – 30	28	37.3
31 – 40	21	28.0
41 – 50	17	22.7
51 – 60	09	12.0
Gender of Nurse		
Male	22	29.3
Female	53	70.7
Marital Status		
Married	44	58.7
Not Married	31	41.3
Education Level		
RN/RM/RPHN	37	49.3
BNSc	35	46.7
MSN	03	4.0
Living with vulnerable persons		
Young children ≤ 2 years of age	16	21.3
Young children ≥ 2 years of age	28	37.3
Adults ≥ 60 years of age	17	22.7
Aged 65 years and above	04	5.3
None	10	13.3
Duration in Covid-19 isolation centre		
< 3 months	12	16.0
3 – 12 months	28	37.3
>1 year	35	46.7
Year of experience		
< 5 years	20	26.6
5 – 9 years	23	30.7
10 years and above	32	42.7

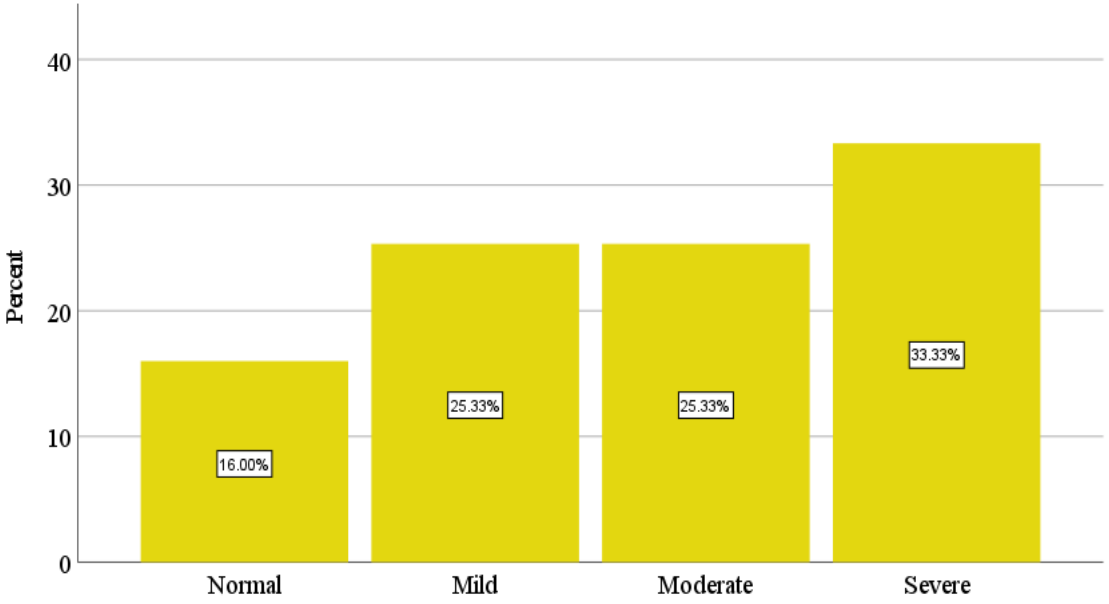

Figure 1. Level of Prevalence of Anxiety Disorder among Nurses Working in Covid-19 Isolation Centres in Lagos (Rasheed, 2022)

Table 2. *Respondents' Socio-Demographic Characteristics Associated with Prevalence of Anxiety Disorder in Covid-19 Isolation Centers in Lagos*

Independent Variables	Dependent Variable: Anxiety Disorder None *n* (%), < 5	Dependent Variable: Anxiety Disorder Anxiety Present *n* (%), ≥ 5	Total *N*=75 *n* (100%)	Statistical Analysis (95% CI) *p*-value
Score				
Age of Nurses				
21 – 30	03 (4.0)	25 (33.3)	28 (37.3)	
31 – 40	03 (4.0)	18 (24.0)	21 (28.0)	0.080
41 – 50	03 (4.0)	14 (18.7)	17 (22.7)	
51 – 60	03 (4.0)	06 (8.0)	09 (12.0)	
Gender of Nurse				
Male	06 (8.0)	16 (21.3)	22 (29.3)	0.331
Female	06 (8.0)	47 (62.7)	53 (70.7)	
Marital Status				
Married	05 (6.7)	39 (52.0)	44 (58.7)	0.175
Not Married	07 (9.3)	24 (32.0)	31 (41.3)	
Education level				
RN/RM/RPHN	02 (2.7)	35 (46.7)	37 (49.4)	
BNSc	09 (12.0)	26 (34.7)	35 (46.7)	0.002
MSN	01 (1.3)	02 (2.6)	03 (3.9)	
Living with vulnerable persons				
Young Children ≤ 2 years of age	01 (1.3)	15 (20.0)	16 (21.3)	
Young Children ≥ 2 years of age	05 (6.7)	23 (30.8)	28 (37.5)	
Adults ≥ 60 years of age	01 (1.3)	16 (21.3)	17 (22.6)	0.211
Aged 65 years and above	01 (1.3)	03 (4.0)	04 (5.3)	
None	04 (5.3)	06 (8.0)	10 (13.3)	
Duration in Covid-19 isolation centre				
<3 months	01 (1.3)	11 (14.7)	12 (16.0)	
3 – 12 months	07 (9.3)	21 (28.0)	28 (37.3)	0.000
>12months	05 (6.7)	30 (40.0)	35 (46.7)	
Year of experience				
< 5 years	02 (2.7)	18 (24.0)	20 (26.7)	
5 – 9 years	02 (2.7)	21 (28.0)	23 (30.7)	0.018
10 years and above	08 (10.6)	24 (32.0)	32 (42.6)	

Table 3: *Respondents' Psychological Factors Related to Prevalence of Anxiety Disorder in Covid-19 Isolation Centers in Lagos*

Psychological Factors	Adjusted Odd Ratio (OR)	Dependent Variable Anxiety Disorder (95% CI, *N*=75) Lower limit	Upper limit	Statistical Analysis *p*-value
Felt threat to life for working in covid-19 isolation centers				
NO	1.127	0.243	6.590	0.264
YES	1 [Reference]			
Felt work environment is stressful				
NO	0.534	0.482	9.952	0.534
YES	1 [Reference]			
Regular contact with Covid-19 patients with symptoms				
NO	2.284	4.338	41.962	0.010
YES	1 [Reference]			
Regular contact with covid-19 patients that died				
NO	1.230	0.249	8.689	0.223
YES	1 [Reference]			
Witnessing unexpected death of admitted Covid-19 patients				
NO	1.593	1.458	3.363	0.048
YES	1 [Reference]			

Table 4: *Respondents' Working Conditions Factors Associated with Prevalence of Anxiety Disorder in Covid-19 Isolation Centers in Lagos*

Working Conditions Factors	Adjusted Odd Ratio (OR)	Dependent Variable Prevalence of Anxiety (95% CI, *N*=75) Lower limit	Upper limit	Statistical Analysis *p*-value
Witnessing increased workload in covid-19 isolation centre				
NO	1.0767	0.252	2.834	0.286
YES	1 [Reference]			
Adequate nursing staff caring for covid-19 patients				
NO	5.710	1.854	4.406	0.001
YES	1 [Reference]			
Spend extra hours on duty per week				
NO	0. 470	1.40	7.110	0.268
YES	1 [Reference]			
Adequate supply of Personal Protective Equipment (PPE)				
NO	4.613	1. 208	5.128	0.009
YES	1 [Reference]			
Availability of safety guideline in the workplace				
NO	1.241	0.211	9.060	0.219
YES	1 [Reference]			
Regular training on infection prevention				
NO	2.763	0.407	.911	0.448
YES	1 [Reference]			
Coping with psychological trauma associated with the caring for Covid-19 patients				
NO	3.219	0.684	3.548	0.031
YES	1 [Reference]			

Discussion

This study estimated prevalence of anxiety and examined associated factors among nurses working in Covid-19 isolation centers in Lagos, Nigeria. The study revealed that the prevalence of mild to moderate anxiety disorder among nurses working in COVID-19 isolation centers in response to pandemic in Lagos, Nigeria was 39.7%. This finding is consistent with that of the study conducted in Jinzhong, Shanxi Province, China; 39% (Mekonen et al., 2020). Conversely, the prevalence of the anxiety was high when compared with result of the study conducted among nurses in Singapore; 14.5% (Mekonen et al., 2020). The implication of these findings showed that nurses suffered enormous mental health pressure and emotional stress while working in COVID-19 isolation centers.

This study revealed that education level, duration of period working in Covid-19 isolation centers, and year of experience were associated with anxiety. The finding on educational attainment is consistent with that of the study by Guo et al. (2021) in China, where respondents' with higher educational degree developed higher incidence of anxiety compared to those with lower educational qualification. The implication of this finding is that nurses with higher degree have high emotions, low energy and increase in risk of developing anxiety (Si et al., 2020). The personal resilience and social support during management of Covid-19 patients could effectively strengthen nurses coping mechanism (Xiao et al., 2020).

The odds of developing anxiety among nurses who had regular contact with COVID-19 patients with symptoms were two times higher compared to nurses who did not. This finding is consistent with that of the study conducted in Northwest, Ethiopia where nurses who had regular exposure to COVID-19 patients with symptoms developed anxiety (Mekonen et al., 2020). The implication of this finding is that nurses' fear of being infected with coronavirus might be the greatest worry while caring for COVID-19 patients leading to higher risk of anxiety.

Majority of nurses reported spending extra hours on duty per week. The odd of having adequate number of nurses working in isolation centre is five times more likely to improve working conditions compared with when there is inadequate staffing. This finding is consistent with that of the study by Luceno-Moreno et al. (2020). The variable of working conditions relates positively with anxiety disorder of nurses. The findings of this study established that positive work conditions are more likely to lower anxiety disorder.

Conclusion

In conclusion, more than one-third of nurses developed mild to severe anxiety disorder. The outcomes of this study showed interplay between personal attributes, psychological and working conditions factors.

Recommendations

It is recommended that psychological interventions organized for affected nurses, provision of social support by stakeholders during pandemic and study is suggested on other areas of mental health in COVID-19 isolation centers.

Limitations of the Study

This study was based on response to self-reporting scale and may be prone to reporting bias. It is possible the confounding variables may influence the association that

exists between independents variables and anxiety disorder reported.

References

American Psychological Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders.* 5th ed. Arlington, VA.

Azim, D., Kumar, S., Nasim, S., Arif, T. B., & Nanjiani, D. (2020). COVID-19 as a psychological contagion: A new Pandora's box to close? *Infection Control and Hospital Epidemiology*, 41(8), 989–990. https://doi.org/10.1017/ice.2020.127.

Chatterjee, S.S., Chakrabarty, M., Banerjee, D., Grover, S., Chatterjee, S.S, & Dan, U. (2021). Stress, sleep and psychological impact in healthcare workers during the early phase of COVID-19 in India: A Factor Analysis. *Front. Psycho*, 12(2), 1-13. doi: 10.3389/fpsyg.2021.611314

Chung, S., Kim, H. J., Ahn, M. H., Yeo, S., Lee, J., Kim, K., … Shin, Y. W. (2020). Development of the stress and anxiety to viral epidemics-9 (SAVE-9) scale for assessing work-related stress and anxiety in healthcare workers in response to COVID-19. 1-18. https://doi.org/10.31234/osf.io/a52b4

Guo, W. P., Min, Q., Gu, W. W., Yu, L., Xiao, X., Yi, W. B., . . . Shi, W. Y. (2021). Prevalence of mental health problems in frontline healthcare workers after the first outbreak of COVID-19 in China: a cross-sectional study. *Health and Quality of Life Outcomes*, 19(1), 103. https://doi.org/10.1186/s12955-021-01743-7

International Council of Nurses. (2021). The COVID-19 Effect: World's nurses facing mass trauma, an immediate danger to the profession and future of our health systems. *Press Information.* Geneva, Switzerland. Retrieved from https://www.icn.ch/sites/default/files/inline-files/PR_01_%20COVID-19%20Effect_FINAL_0.pdf

Kibret, S., Teshome, D., Fenta, E., Hunie, M., & Tamire T. (2020). Prevalence of anxiety towards COVID-19 and its associated factors among healthcare workers in a Hospital of Ethiopia. *PLoS one*, 15(12), e0243022. https://doi.org/10.1371/journal.pone.0243022

Lazarus, R. S., & Folkman, S. (1987). Transactional theory and research on emotions and coping. *European Journal of Personality*, 1, 141–169.

Lazarus, R. S. (1966). *Psychological Stress and the Coping Process.* New York, NY: McGraw-Hill.

Li, Y., Scherer, N., Felix, L., & Kuper, H. (2021). Prevalence of depression, anxiety and post-traumatic stress disorder in health care workers during the COVID-19 pandemic: A systematic review and meta-analysis. *PLoS ONE*, 16(3), e0246454. https://doi.org/10.1371/journal.pone.0246454

Liu, C. Y., Yang, Y. Z., Zhang, X. M., Xu, X., Dou, Q. L., Zhang, W. W., & Cheng, A. (2020). The prevalence and influencing factors in anxiety in medical workers fighting COVID-19 in China: a cross-sectional survey. *Epidemiology and Infection*, 148, e98. https://doi.org/10.1017/S0950268820001107

Luceño-Moreno, L., Talavera-Velasco, B., García-Albuerne, Y., & Martín-García, J. (2020). Symptoms of Posttraumatic Stress, Anxiety,

Depression, Levels of Resilience and Burnout in Spanish Health Personnel during the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 17(15), 5514. https://doi.org/10.3390/ijerph17155514

Mekonen, E., Shetie, B., & Muluneh, N. (2021). The Psychological Impact of COVID-19 Outbreak on Nurses Working in the Northwest of Amhara Regional State Referral Hospitals, Northwest Ethiopia. *Psychology Research and Behavior Management*, 13, 1353–1364. https://doi.org/10.2147/PRBM.S291446

Mukhtar, S. (2020). Mental Health and Psychosocial Aspects of Coronavirus Outbreak in Pakistan: Psychological Intervention for Public Mental Health Crisis. *Asian Journal of Psychiatry*, 51, 102069. https://doi.org/10.1016/j.ajp.2020.102069

Nigeria Center for Disease Control. (2021). Data report on Coronavirus disease. Retrieved from https://ncdc.org.ng

Saricam, M. (2021). COVID-19-Related anxiety in nurses working on front lines in Turkey. *Nurs Midwifery Stud*, 9, 178-181. Retrieved from: https://www.nmsjournal.com/text.asp?2020/9/3/173/289985

Si, M. Y., Su, X. Y., Jiang, Y., Wang, W. J., Gu, X. F., Ma, L., . . . Qiao, Y. L. (2020). Psychological impact of COVID-19 on medical care workers in China. *Infectious Diseases of Poverty*, 9(1), 113. https://doi.org/10.1186/s40249-020-00724-0

World Health Organization. (2020). Global Surveillance for human infection with coronavirus disease (COVID-2019), *Interim Guidance*, Switzerland, Geneva. Retrieved from https://www.who.int/publicationsdetail/global-surveillance-for-human-infectionwith-novel-coronavirus-(2019-ncov).

World Health Organization. (2016). Healthy Workers, Healthy Future, Why investing in healthy workers is fundamental to national development. WPR/2016/DNH/016, Retrieved from https://occupationhealth of workforce.pdf

Xiao, S., Luo, D., & Xiao, Y. (2020). Survivor of COVID-19 are at high risk of posttraumatic stress disorder. *Global Health Research and Policy, BMC*, 5(29): 1-3. https://doi.org/10.1186/s41256-020-00155-2