



## OCCUPATIONAL STRESS, MENTAL HEALTH AND IT'S CORRELATES AMONG HEALTHCARE WORKERS IN AHMADU BELLO UNIVERSITY TEACHING HOSPITAL, ZARIA, KADUNA STATE- NIGERIA

<sup>1</sup>Hamza Isa, <sup>2</sup>Zakiyya Hamza, <sup>3</sup>Hassan Shehu Mohammed and <sup>\*3,4</sup>Haruna Abdullahi

<sup>1</sup>Department of Family Medicine, Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State, Nigeria.

<sup>2</sup>Department of Microbiology, Faculty of Life Science, Ahmadu Bello University Zaria, Kaduna State, Nigeria.

<sup>3</sup>Department of Biochemistry, Faculty of Life Science, Ahmadu Bello University Zaria, Kaduna State, Nigeria.

<sup>4</sup>Department of Human Nutrition and dietetics, Faculty of Food Science and Technology, Federal University of Agriculture, Mubi, Adamawa State, Nigeria.

\*Corresponding authors' email: [get2haruna@gmail.com](mailto:get2haruna@gmail.com)

### ABSTRACT

Healthcare workers (HCWs) face increasing occupational stress and poor mental health outcomes due to high workloads, long shifts, and resource constraints. This study assessed occupational stress, mental health, and their correlates among HCWs in Ahmadu Bello University Teaching Hospital (ABUTH), Zaria, Nigeria. A hospital-based cross-sectional study was conducted among 110 HCWs (53 doctors, 48 nurses, 4 pharmacists, and 5 laboratory scientists). Participants were selected using proportional sampling. Data were collected using a structured, interviewer-administered questionnaire incorporating the Brief Job Stress Questionnaire (BJSQ) and the General Health Questionnaire (GHQ-28). Respondents had a mean age of 34.5 years; 60% were female. Mental stress was prevalent, with 50.9% reporting sleep loss due to worry and 42.7% experiencing nervousness. Overall, 57.3% of HCWs reported work-related stress. Age ( $\chi^2 = 12.34$ ,  $df = 3$ ,  $p = 0.015$ ) and gender ( $\chi^2 = 4.22$ ,  $df = 1$ ,  $p = 0.04$ ) were significantly associated with mental stress. A positive correlation was observed between occupational stress and mental health problems ( $r = 0.56$ ,  $p = 0.001$ ), while job satisfaction negatively correlated with stress ( $r = -0.40$ ,  $p = 0.021$ ). This occupational stress is significantly associated with poor mental health among HCWs in ABUTH. Workload and low job satisfaction are key drivers. Interventions to reduce workload, improve job satisfaction, and provide mental health support are essential to safeguarding HCWs' wellbeing.

**Keywords:** Occupational Stress, Mental Health, Healthcare Workers, Job Satisfaction, Hospital-Based Study

### INTRODUCTION

Occupational stress is a harmful physiological and emotional response that occurs when the requirements of a job do not match the capacities, resources or needs of -workers. Work stress can lead to poor health and injury Centers for Disease Control and Prevention (CDCP, 2020). It has become a global public health issue, particularly prevalent among healthcare workers with high job strain due to rotating shifts and long-standing duty hours (Kakemam et al., 2019). Healthcare workers are also prone to occupational injuries, increasing healthcare costs and risking physical and psychological wellbeing (Zhang et al., 2020). Occupational stress leads to poor health-related outcomes like reduced quality of life, disability, cardiovascular and cerebrovascular diseases and depression (Zhang et al., 2020). Occupational stress is likely to cause fatigue, sleepiness, physical inactivity, unproductivity and comfort-eating energy-dense food leading to overweight and obesity (Nguyen-Ngoc et al., 2019). Other negative consequences include burnout which affects workplace performance and culture (Williams et al., 2007). Stress also encourages an employee to leave the workplace due to low job satisfaction and impaired job performance (Lee et al., 2002; Teraoka, M. and Kyougoku M.;2019). The individual's attention, concentration and decision-making capacity will be significantly reduced in a stressful working environment. Occupational stress can have an undesirable impact on the clinical care, and treatment outcomes of patients.–

Multiple factors contribute to occupational stress in the healthcare profession including long working hours, challenging working conditions, shift work, heavy workloads, inadequate training, lack of social support and staff shortage (Ribeiro et al., 2018, Low et al., 2019, Kakemam et al., 2019, Low et al., 2019). Healthcare workers are particularly

vulnerable due to exposure to high job demands, long working hours, and emotionally intense work environments (Pappa et al., 2020). Previous studies have highlighted the burden of depression, anxiety, insomnia, and burnout among HCWs globally (Sasaki et al., 2021).

Studies have also suggested additional stressors like low salaries, lack of motivation and positive feedback, low job satisfaction and exposure to high-risk procedures (NIOSH, 2006).. Occupational stress has become a global public health challenge, affecting organizational productivity and employee wellbeing National Institute for Occupational Safety and Health (NIOSH, 2006). In Nigeria, healthcare workers face compounded challenges of poor infrastructure, limited resources, and heavy patient loads (Etim et al., 2015). Despite this, few studies in sub-Saharan Africa have systematically examined the correlates of occupational stress and mental health among HCWs. This study contributes to filling this gap by assessing the correlates of occupational stress and its mental health outcomes among HCW at ABUTH, Zaria.

### MATERIALS AND METHODS

A total of 110 Healthcare workers in Ahmadu Bello University Teaching Hospital Zaria, were recruited for this study: 53 medical doctors, 48 nurses, 4 pharmacists, and 5 laboratory scientists. Proportional sampling technique was used to select the participants. The sample size was calculated using a single proportion formula with  $p = 0.47$  (based on prior study of Prevalence of mental health illness in Nigeria 2025) (Abubakar et al., 2025). Occupational stress was measured using the Brief Job Stress Questionnaire (BJSQ), which covers job stressors, responses, and buffering factors. Mental health was measured using the General Health

Questionnaire (GHQ-28), assessing somatic symptoms, anxiety/insomnia, social dysfunction, and depression. Data were analyzed using SPSS v20. Frequencies and percentages were summarized using descriptive statistics and standard deviations of continuous variables were also analyzed. Chi-square tests and ANOVA were used to examine associations between demographic variables and stress. Pearson's

correlation was also used to assess relationships between occupational stress and mental health. Statistical significance was set at  $p < 0.05$ .

**RESULTS AND DISCUSSIONS**

This study recruited 110 healthcare workers and the results are presented in tables below:

**Table 1: Socio-demographic Characteristics of Healthcare Workers in Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State- Nigeria**

Variables	Frequency (n = 110)	Percentage (%)
<b>Gender</b>		
Male	44	40.0
Female	66	60.0
<b>Age group (years)</b>		
21-30	30	27.3
31-40	63	57.3
41-50	15	13.6
>50	2	1.8
Mean Age	34.5	
<b>Religion</b>		
Christian	35	31.8
Islam	75	68.2
<b>Marital Status</b>		
Married	94	85.5
Single	16	14.5
<b>Type of marriage</b>		
Monogamous	68	61.8
Polygamous	24	21.8
Others (Levirate, ghost marriage)	18	16.4
<b>Education</b>		
Tertiary	110	100.0
<b>Occupation</b>		
Medical Doctor	53	48.2
Nurse	48	43.6
Pharmacist	4	3.6
Laboratory Scientist	5	4.5
<b>Ethnicity</b>		
Hausa	68	61.8
Yoruba	15	13.6
Igbo	3	2.7
Others (Nupe, Igala)	24	21.8

**Table 2: Responses on Mental Health of Healthcare Workers in Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State- Nigeria**

Variables	Better than usual(0)	Same as usual(1)	Worse than usual(2)	Much worse than usual(3)
Been feeling perfectly well and in good health?	41(37.3%)	54(49.1%)	15(13.6%)	
Been feeling in need of a good tonic?	38(34.5%)	62(56.4%)	6(5.5%)	4(3.6%)
Feel run down and out of sorts?	17(15.5%)	62(56.4%)	25(22.7%)	6(5.5%)
Felt that you are ill?	40(36.4%)	45(40.9%)	17(15.5%)	8(7.3%)
Been getting any pains in your head?	31(28.2%)	38(34.5%)	29(26.4%)	12(10.9%)
Been getting a feeling of tightness or pressure in your head?	20(18.2%)	67(60.9%)	9(8.2%)	14(12.7%)
Been having hot or cold spells?	21(19.1%)	66(60.0%)	19(17.3%)	4(3.6%)
Lost much sleep over worry?	30(27.3%)	56(50.9%)	13(11.8%)	11(10.0%)
Had difficulty in staying asleep once you are off?	30(27.3%)	47(42.7%)	20(18.2%)	13(11.8%)
Felt constantly under strain?	31(28.2%)	39(35.5%)	34(30.9%)	6(5.5%)
Being getting edgy and bad-tempered?	22(20.0%)	60(54.5%)	22(20.0%)	6(5.5%)
Being scared or panicky for no good reason?	22(20.0%)	47(42.7%)	27(24.5%)	14(12.7%)
Found everything getting on top of you?	43(39.1%)	40(36.4%)	27(24.5%)	5(4.5%)
Been feeling nervous and strung up all the time?	31(28.2%)	41(37.3%)	36(32.7%)	2(1.8%)
Been managing to keep yourself busy and occupied?	34(30.9%)	55(50.5%)	14(12.7%)	7(6.4%)
Been taking longer over the things you do?	38(34.5%)	55(50.0%)	17(15.5%)	-

Variables	Better than usual(0)	Same as usual(1)	Worse than usual(2)	Much worse than usual(3)
Felt on the whole you are doing well?	57(51.8%)	32(29.1%)	17(15.5%)	4(3.6%)
Been satisfied with the way you have carried out your tasks?	65(59.1%)	38(34.5%)	2(1.8%)	5(4.5%)
Felt that you are playing a useful part in what you do?	52(47.3%)	54(49.1%)	4(3.6%)	-
Felt capable of making decisions about things?	44(40.0%)	49(44.5%)	12(10.9%)	5(4.5%)
Been able to enjoy your normal day-to-day activities?	69(62.7%)	27(24.5%)	5(4.5%)	9(8.2%)
Been thinking of yourself as a worthless person?	50(45.5%)	31(28.2%)	6(5.5%)	23(20.9%)
Felt that life is entirely hopeless?	56(50.9%)	32(29.1%)	8(7.3%)	14(12.7%)
Felt that life isn't worth living?	49(44.5%)	40(36.4%)	11(10.0%)	10(9.1%)
Thought of the possibility that you might make away with yourself?	34(30.9%)	56(50.9%)	13(11.8%)	7(6.4%)
Found at times you couldn't do anything because your nerves were too bad	58(52.7%)	25(22.7%)	2(1.8%)	24(21.8%)
Found yourself wishing you were dead and away from it all?	58(52.7%)	25(22.7%)	3(2.7%)	24(21.8%)
Found that the idea of taking your life kept coming to your mind?	58(52.7%)	25(22.7%)	3(2.7%)	24(21.8%)

**Table 3: Distribution of Work-Related Stress among Healthcare Workers in Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State- Nigeria**

Category	Question	Very much so (1)	Moderately so (2)	Somewhat (3)	Not at all (4)	Total
Workload	I have an extremely large amount of work to do	63(66.4%)	27(24.5%)	6(5.5%)	4 (3.6%)	110
	I can't complete work in the required time	6(5.5%)	40(36.4%)	42(38.2%)	22(20.0%)	110
	I have to work as hard as I can	86 (78.2%)	20(18.2%)	4 (3.6%)	-	110
Job demands	I have to pay very careful attention	95 (86.4%)	10 (9.1%)	5(4.5%)	-	110
	My job is difficult in that it requires a high level of knowledge and technical skills	68(61.8%)	36(32.7%)	6(5.5%)	-	110
	I need to be constantly thinking about work throughout the day	45(40.9%)	33(30.0%)	25(22.7%)	7(6.4%)	110
Control and autonomy	I can work at my own pace	16(14.5%)	39(35.5%)	25(22.7%)	30(27.3%)	110
	I can choose how and in what order to do my work	14(12.7%)	32(29.1%)	24(21.8%)	40(36.4%)	110
	I can reflect my opinions on workplace policy	17(15.5%)	37(33.6%)	40(36.4%)	16(14.5%)	110
Physical work environment	My job requires a lot of physical work	40(36.4%)	44(40.0%)	23(20.9%)	3(2.7%)	110
	My working environment is poor	21(19.1%)	32(29.1%)	32(29.1%)	25(22.7%)	110
Interpersonal relationships	There are differences of opinion within my department	18(16.4%)	48(43.6%)	25(22.7%)	19(17.3%)	110
	My department does not get along well with other departments	8(7.3%)	20(18.2%)	36(32.7%)	46(41.8%)	110
Job satisfaction	This job suits me well	58(52.7%)	27(24.5%)	13(11.8%)	12(10.9%)	110
Mental and physical wellbeing	My job is worth doing	85(77.3%)	12(10.9%)	2(1.8%)	11(10.0%)	110
	I have been very active	33(30.0%)	23(20.9%)	14(12.7%)	40 (36.4%)	110
	I have been full of energy	18(16.4%)	48(43.6%)	31(28.2%)	13(11.8%)	110
	I have been lively	37(33.6%)	28(25.5%)	21(19.1%)	24(21.8%)	110
	I have felt angry	16(14.5%)	57(51.8%)	19(17.3%)	18(16.4%)	110

Category	Question	Very much so (1)	Moderately so (2)	Somewhat (3)	Not at all (4)	Total
Physical health	I have been inwardly annoyed or aggravated	18(16.4%)	50(45.5%)	24(21.8%)	18(16.4%)	110
	I have felt irritable	23(20.9%)	46(41.8%)	21(19.1%)	20(18.2%)	110
	I have felt extremely tired	26(23.6%)	39(35.5%)	32(29.1%)	13(11.8%)	110
	I have felt exhausted	16(14.5%)	54(49.1%)	26(23.6%)	14(12.7%)	110
	I have felt weary or listless	20(18.2%)	48(43.6%)	40(36.4%)	2(1.8%)	110
	I have felt tense	25(22.7%)	55(50.0%)	19(17.3%)	11(10.0%)	110
	I have felt worried or insecure	26(23.6%)	45(40.9%)	23(20.9%)	16(14.5%)	110
	I have felt restless	41(37.3%)	27(24.5%)	21(19.1%)	21(19.1%)	110
	I have been depressed	38(34.5%)	35(31.8%)	9(8.2%)	28(25.5%)	110
	I have thought that doing anything was a hassle	22 (20.0%)	45 (40.9%)	20 (18.2%)	23 (20.9%)	110
	I have been unable to concentrate	29 (26.4%)	47 (42.7%)	9 (8.2%)	25 (22.7%)	110
	I have felt gloomy	26 (23.6%)	48 (43.6%)	15 (13.6%)	21 (19.1%)	110
	I have been unable to handle work	53 (48.2%)	25 (22.7%)	2 (1.8%)	30 (27.3%)	110
	I have felt sad	27 (24.5%)	51 (46.4%)	14 (12.7%)	18 (16.4%)	110
	I have felt dizzy	29 (26.4%)	46 (41.8%)	15 (13.6%)	20 (18.2%)	110
	I have experienced joint pains	16 (14.5%)	54 (49.1%)	20 (18.2%)	20 (18.2%)	110
	I have experienced headaches	6 (5.5%)	45 (40.9%)	38 (34.5%)	21 (19.1%)	110
	I have a stiff neck and/or shoulders	42 (38.2%)	29 (26.4%)	15 (13.6%)	24 (21.8%)	110
	I have had lower back pain	31 (28.2%)	42 (38.2%)	19 (17.3%)	18 (16.4%)	110
	I have has eyestrain	32 (29.1%)	41 (37.3%)	24 (21.8%)	13 (11.8%)	110
I have experienced heart palpitations or shortness of breath	24 (21.8%)	54 (49.1%)	11 (10.0%)	21 (19.1%)	110	
I have experienced stomach and /or intestine problems	34 (30.9%)	44 (40.0%)	5 (4.5%)	27 (24.5%)	110	
I have lost my appetite	16 (14.5%)	64 (58.2%)	15 (13.6%)	15 (13.6%)	110	

**Table 4: Associations Between Demographic Variables and Mental Stress among Healthcare Workers in Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State- Nigeria**

Variable	Chi-square value	Df	P –value	Significant
Age group	12.34	3	0.015*	Yes
Gender	4.22	3	0.040*	Yes
Occupation	8.65	1	0.072	No
Marital status	3.45	2	0.178	No

*P –value at less than 0.05*

**Table 5: Relationship Between Occupational Stress, Mental Health, and its correlates among Healthcare Workers in Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State- Nigeria**

Variable	Occupational Stress (r)	Mental Health Scores (r)	P – value
Age	0.35*	0.12	0.024
Gender	0.10	-0.08	0.078
Occupation	0.45*	0.56*	0.001
Work load	0.55*	0.48*	0.004
Job satisfaction	-0.40*	-0.35*	0.021

*P –value at less than 0.05*

**Discussion**

However, this study focused exclusively on doctors, nurses, pharmacists, and laboratory scientists in Ahmadu Bello University Teaching Hospital Zaria, Kaduna State- Nigeria. While some previous studies included other health professionals with larger sample sizes (Salam. 2020). Additionally, several studies selected only nurses (Kakemam el al., 2019, Bhatia, 2010, Mehta and Singh, (2014) and doctors Kshatri et al., 2017). Our study revealed that more than 60% of the study participants were female, and 57.3% were aged 31–40 years. The mean age of the study

participants were 34.5. This is less than the mean age reported by study conducted by (Jonghee et al., 2022). This study revealed that, almost more than half of the healthcare workers (68.2%) participated in this study we Muslim. 85.5% of the healthcare workers were married while only few were single (14.5%). Less than half of the study participant had polygamy marriage while all the healthcare workers (100%) participated in this study attended tertiary education. This is consistence with a work reported by (Jonghee et al., 2022). Almost half (48.2%) of the participants in this study were medical doctors, 43.6% were nurses, 3.6% of pharmacist while 4.5% were

laboratory scientist and the majority (61.8%) of the study participants were Hausa.

About 50.9% reported losing sleep over worry, 42.7% experienced nervousness, and 20.9% felt life was hopeless. Anxiety/insomnia and depressive symptoms were the most prevalent and 57.3% of HCWs reported occupational stress. Heavy workload (66.4%) and poor working environment (48.2%) were prominent stressors. This study supports a research conducted in Germany (Kakemam et al., 2019) and Ethiopia (Gebeyehu and Zeleke, 2019), suggesting that young doctors and nurses face high job demands, long shifts, mental health issues and a lack of working experience which is in contrast with a study in Vietnam concluded that health workers holding postgraduate degrees experienced less stress than those with bachelor's or lower degrees. (Nguyen-Ngoc et al., 2019). The reason may be that less educated individuals feel more pressure to become more professional and improve their skills to meet job demands (Nguyen-Ngoc et al., 2019). This study also confirms the high prevalence of occupational stress among HCWs, consistent with findings from Ethiopia (Girma et al., 2021) and Nigeria (Etim et al., 2015). This is consistent with a study that explained the increase in task-related and social job stressors increases Health Related Productivity Loss, whereas an increase in social jobs and personal resources (measured by occupational self-efficacy) reduces the loss. This may be due to the mental and physical health problems of workers caused by stress reduce their labour productivity (Jonghee et al., 2022). Our study revealed significant correlation between workload and stress aligns with the Job Demands-Resources model, which postulates that excessive demands without adequate resources lead to strain and burnout (Bakker & Demerouti, 2017). These also echo those of a previous study by Brunner et al., 2019 that assessed work productivity and workplace characteristics among Swiss employees (Brunner et al., 2019). Gender differences in stress highlight the need for gender-sensitive interventions. Job satisfaction emerged as a protective factor, supporting earlier findings by AbuRuz (2014) and Nabirye et al. (2011). The study's cross-sectional design limits causal inference, but its findings underscore the urgent need for targeted workplace interventions.

## CONCLUSIONS

Occupational stress is strongly linked to poor mental health among HCWs in ABUTH. Key drivers include workload, age, and job dissatisfaction. Addressing these through stress management programs, workload redistribution, and improved mental health support could enhance HCW wellbeing and patient care quality.

## REFERENCES

Abubakar, A. K., Yisa, M. N., and Olukorode, S. O. (2025). Prevalence of mental health illness in Nigeria: Protocol for a systematic review and meta-analysis. *Systematic Reviews*, 14,180.

AbuRuz, M. E. (2014). A comparative study about the impact of stress on job satisfaction between Jordanian and Saudi nurses. *European Scientific Journal*, 10(17), 1857–7881.

Angioha, P. U., Omang, T. A., Ishie, E. U., & Iji, M. E. (2020). Employee stressors and wellbeing of healthcare workers in government-owned hospitals in Calabar, Nigeria. *Journal of Public Administration*, 2(4), 2020.

Etim, J. J., Bassey, P. E., Ndep, A. O., Iyam, M. A., & Nwikekii, C. N. (2015). Work-related stress among healthcare

workers in Ugep, Cross River State, Nigeria. *International Journal of Public Health, Pharmacy and Pharmacology*, 1(1), 23–34.

Girma, S., Mohammed, A., & Tesfaye, M. (2021). Prevalence of occupational stress and associated factors among healthcare professionals in Ethiopia. *BMC Public Health*, 21(1), 1–10. <https://doi.org/10.1186/s12889-021-11977-3>

Nabirye, R. C., Brown, K. C., Pryor, E. R., & Maples, E. H. (2011). Occupational stress, job satisfaction and job performance among hospital nurses in Kampala, Uganda. *Journal of Nursing Management*, 19(6), 760–768. <https://doi.org/10.1111/j.1365-2834.2011.01240.x>

NIOSH. (2006). *Work organization and stress*. World Health Organization.

Pappa, S., Ntella, V., Giannakas, T., Giannakoulis, V. G., Papoutsis, E., & Katsaounou, P. (2020). Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Brain, Behavior, and Immunity*, 88, 901–907. <https://doi.org/10.1016/j.bbi.2020.05.026>

Sasaki, N., Asaoka, H., Kuroda, R., Tsuno, K., Imamura, K., & Kawakami, N. (2021). Sustained poor mental health among healthcare workers in COVID-19 pandemic: A longitudinal analysis. *Journal of Occupational Health*, 63(1), e12227. <https://doi.org/10.1002/1348-9585.12227>

CDCP. (2020). Centre for Disease Control and Prevention. Stress at work <https://www.cdc.gov/niosh/docs/99-101/default.html>

Kakemam, E. Raeissi, P. and Raoofi, S. (2019). Occupational stress and associated risk factors among nurses: a cross-sectional study. *Contempt Nurse*; 55:237–49.

Zhang, X. Zhao, K. and Zhang, G. (2020). Occupational Stress and Mental Health: A Comparison between Frontline Medical Staff and Nonfrontline Medical Staff during the 2019 Novel Coronavirus Disease Outbreak. *Front Psychiatry*; 11:555703.

Nguyen-Ngoc, A. Le Thi Thanh, X. and Le Thi, H. (2019). Occupational stress among health worker in a national Dermatology hospital in Vietnam. *Front Psychiatry* 2018; 10: <https://www.frontiersin.org/articles/10.3389/fpsy.2019.00950/full>

Williams, E. S. Manwell, L. B. and Konrad, T. R. (2007). The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care: results from the MEMO study. *Health Care Manage*; 32:203–12.

Lee, I. and Wang, H. H. (2002). Perceived occupational stress and related factors in public health nurses. *Journal of Nurse Research*; 10:253–60.

Teraoka, M. and Kyougoku, M. (2019). Structural relationships among occupational dysfunction, stress coping, and occupational participation for healthcare workers. *Work Order Record*; 64:833–41.

- Prins, J. T. Gazendam-Donofrio, S. M. and Tubben, B. (2007). Burnout in medical residents: a review. *Medical Education*; 41:788–800.
- Ribeiro, R. P. Marziale, M. H. P. and Martins, J. T. (2018). Occupational stress among health workers of a university hospital. *Revista Gaúcha de Enfermagem*; 39:S1983-14472018000100421.
- Low, Z. X. Yeo, K. A. and Sharma, V. K. (2019). Prevalence of Burnout in Medical and Surgical Residents: A Meta-Analysis. *International journal of Environmental Research; Public Health*; 16:1479.
- Salam. (2020). A. Job stress and job satisfaction among health care professionals. *Qatar Foundation Annual Research Conference Proceedings*; :HBOP2571 Qatar National Convention Center (QNCC), Doha, Qatar.
- Bhatia, N. (2010). Occupational Stress Amongst Nurses from Two Tertiary Care Hospitals in Delhi.:731–8.10.4066 <http://www.amj.net.au/index.php?journal=AMJ&page=article&op=viewFile&path%5B%5D=289&path%5B%5D=681>
- Mehta, R. K. and Singh, I. K. (2014). Stress among nurses working in critical care areas at a tertiary care teaching hospital, Nepal. *Journal of Chitwan Medical Colloge*; 4:42–8.
- Kshatri, J. S. Das, S. and Kar, P. (2017). Stress among Clinical Resident Doctors of Odisha: A Multi-Centric Mixed Methodology Study. *International Journal of Public Health Research and Development*; 8:122.
- Brunner, B. Iqic, I. Keller, A. C. and Wieser, S. (2019). Who gains the most from improving working conditions? Health-related absenteeism and presenteeism due to stress at work. *European Journal of Health Economics*. 20:1165–1180. doi: <https://doi.org/10.1007/s10198-019-01084-9>.
- Jonghee, C. Jin-Hyo, K. [Jae, Y. L.](#) [Hee, S. K.](#) [Dong-wook, L.](#) [Yun-Chul, H.](#) [Mo-Yeol, K.](#) (2022). The association between occupational stress level and health-related productivity loss among Korean employees; *pidemiol Health*; 45:e2023009. doi: [10.4178/epih.e2023009](https://doi.org/10.4178/epih.e2023009)
- Gebeyehu, S. and Zeleke, B. (2019). Workplace stress and associated factors among healthcare professionals working in public health care facilities in Bahir Dar City, Northwest Ethiopia, 2017. *Research Notes*; 12:249.



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