Mental Health Status Among Nurses InSaudi Arabia: A Wide Cross-Sectional Study

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Abstract
Background: Healthcare Institutions Have Challenging Responsibilities That Create A High-Risk Work Environment For Nurses. Mental Health Status, Such As Depression, Insomnia, And Anxiety, Has Become A Great Concern For Healthcare Systems, Especially Nurses. The Study Aimed To Evaluate The Mental Health Status Of Nurses Working In Saudi Arabia.
Materials And Methods: A Descriptive Cross-Sectional Design Was Used. Demographic Data And Mental Health Scale Measurements Of Symptoms Of Depression, Anxiety, And Insomnia Were Collected From A Convenient Sample Of Nurses From Five Regions In Saudi Arabia.
Results: In Total, 777 Participants Were Finally Included. Insomnia, Anxiety, And Depression Occurred In 612 (78.8 %), 662 (85.2%), And 663 (85.3%) Participants, Respectively. Female Nurses Who Have 3–5 Years Of Experience Working In The Northern Region Had Higher Insomnia, Anxiety, And Depression Rates Than Those Who Were Female Nurses Working In Other Regions (P < 0.001, 0.001, And 0.001, Respectively).
Conclusion: We Found A Significantly Higher Association Of Insomnia, Anxiety, And Depression With An Increasing Experience Of More Than 3 Years.
Keywords:Mental Health, Generalized Anxiety Disorder, Insomnia, Patient Health Questionnaire, Mental Health Status.

I. Introduction

The COVID-19 pandemic has put a significant strain on healthcare workers globally, affecting not only their physical health but also their mental well-being[1, 2]. Healthcare workers have been at the forefront of the response to the pandemic, working tirelessly to care for patients and save lives[3]. However, the pandemic has also brought about unprecedented levels of stress, anxiety, and burnout among healthcare workers. The long hours, the risk of infection, and the emotional toll of caring for critically ill patients have taken a toll on the mental health of healthcare workers, especially in the emergency departments [4]. This has led to increased attention on the mental health status of healthcare workers and the need for support and resources to help them cope with the challenges they face[5].

The mental health status of healthcare workers (HCWs) has become a great concern to healthcare systems. The most prevalent mental health problems facing HCWs, especially nurses,aredepression, insomnia, and anxiety [6].Saudi healthcare specialty students as well suffered also a significant level of psychological distress during their study and clinical training [7]. An increasing number of chronic patients requiring constant support visiting healthcare institutions creates a challenging and high-risk work environment[8].Delirium symptoms start to appear when a nurse does not know how to adapt or deal with a high-stress work environment[9, 10]. Therefore, stress is linked to diseases thathavebeen diagnosed empirically[11]. Stress-related illnesses are a serious health hazard for nurses.A previous study by Day et al.showed that nurses, midwives, and health visitors topped the league table for female suicides in the United Kingdom (UK)[12]. Nurses who are stressed are more likely to be absentfrom work and have more conflictwith their colleagues[13, 14]. Additionally, they experience feelings of inadequacy, self-doubt, lowered self-esteem, irritability, depression, somatic disturbance, sleep disorders, and burnout. Allthese factors can jeopardize the quality of care provided[15].Stress-

predisposing risk factors affecting nurses are many and varied, including work overload, long working hours, poor communication with colleagues, erratic nature of the work, and sentinel patient conditions[9].Stress and poor mental health status affect nurses in many aspects, such as low work performance, engagement in work, communication with coworkers, and increased patient turnover rate, resulting in less satisfaction with work. This study aimed to evaluate the mental health status of nurses working indifferent regions of Saudi Arabia and to assess the association of mental health outcomes with sociodemographics of nurses in Saudi Arabia.

II. Materials and Methods

A descriptive cross-sectional study, designed as a web-based survey, was conducted to evaluate mental health statusamong nursesand its association with the nurses' sociodemographic data indifferent regions.The study was approved by the local institutional review board (IRB) of King Fahad Medical City. We included nurses working in Saudi public hospitals who agreed to participate in the survey and provided online informed consent. A convenience sampling technique was used to collect data from777 nurses working in public hospitals in Saudi Arabiawho met the inclusion criteria. Data were collected from five regions in Saudi Arabia (west, east, north, south, and central). Data were collected from September 1, 2021, to October 24, 2021. The survey consisted of 30 items. Demographic data included gender, age, region location, type of hospital (secondary or tertiary), marital status (single or married), educational level(diploma or bachelor's degree), nationality (Saudi or non-Saudi), and years of working experience. To evaluatehealth, anxietydisorders, and insomnia severity, we used three different standardscales to measure the severity of these psychological symptoms:the Patient Health Questionnaire (PHQ-9), Generalized Anxiety Disorder (GAD-7) scale, and Insomnia Severity Index (ISI-7). The patient health scores of these measurement tools were interpreted as follows: PHQ-9, normal (0–4), mild (5–9), moderate (10–14), severe (15–21) very severe (22–27).Depression scales: GAD-7, normal (0–4), mild (5–9), moderate (10–14), and severe (15–21).Anxiety scales: ISI, normal (0–7), sub-threshold (8–14), moderate (15–21), and severe (22–28).Insomniascores were analyzed according to demographic characteristics. Participants notified the research via social media pages. Prior to the start of the study, the intent, benefits, and safety of the study were disclosed, and all potential participants were informed that participation was entirely voluntary. Participants were also assured of confidentiality. Their right to refuse to participate or withdraw from the study at any time, as they wished, was guaranteed. All information concerning the participants was kept confidential and destroyed after the publication of the study. Before completing the survey and after reading the online consent form, the participants were required to click an icon that read, "I understand the purpose of this study and give my consent to participate." No personal health or employee information was collected (e.g., name or employee number).

Consistency and validation of the questionnaire

The questionnaire was reviewed by a panel of experts and revised based on their comments. Subsequently, a pilot study was conducted to evaluate the internal consistency and validity of the questionnaire by asking 35 participants to complete it. Cronbach's alpha was calculated, and it was within the acceptable level, with values of 0.74, 0.85, and 0.88, respectively.

Sample size

A total of 600 participants were required to evaluate their mental health status among nurses. The sample size estimated for this cross-sectional study used the following formula $= Z_{1-\alpha/2}^{2} SD^2 / d^{2}$, where $Z_{1-\alpha/2}=$ is standard normal variate (4% type 1 error), standard deviation (SD) of the variables, and d = absolute precision taken as 0.05.

Statistical analysis

The collected data for insomnia, anxiety, and depression scores were analyzed according to the demographic characteristics and region.For continuous data, we used an independent t-test and one-way analysis of variance (ANOVA). The one-sample Kolmogorov-Smirnov test was used to test for normality,and the Mann–Whitney U test was used for median variables between the two groups. For categorical data comparisons, we used the chi-squared test. Data analyses were conducted using SPSS version 28.0. The statistical significance level was set at $P < 0.05$ (two-sided).

III. Results

A total of 777 participants responded to the survey. Participants'demographic data are shown in Table 1.The ratio of Saudi nurses to non-Saudi nurses was 5.4:1. Most respondents were from 470 (60.5%) secondary care hospitalsand307 (39.5%) tertiary care hospitals. We found that 60% of participants had more than 3 years of experience in the field.The proportion of married participants was significantly higher than that of single

participants (68.7% vs. 31.3%, *P*<0.001). Nurses who had a bachelor's degreewere significantly higher than those who had diplomas and master's degrees (58.3%, 22.5%, and 19.2%, respectively; *P*< 0.001)(**Table 1**).

Table 1. Sociodemographic data of study sample (N=777)

Sociodemographic data		n	%
Gender	Male	349	44.90%
	Female	428	55.10%
Nationality	Saudi	657	84.60%
	Non-Saudi	120	15.40%
Marital status	Single	243	31.30%
	Married	534	68.70%
Educational level	Diploma	175	22.50%
	Bachelor	453	58.30%
	Master	149	19.20%
Type of hospital	Secondary	470	60.50%
	Tertiary	307	39.50%
Geographic location	East	118	15.20%
	Medial	196	25.20%
	West	189	24.30%
	South	149	19.20%
	North	125	16.10%
Years of experience	Less than 1 year	119	15.30%
	1-2 years	189	24.30%
	3-5 years	225	29%
	More than 5 years	244	31.40%

A total of 612 (78.8 %) participants had insomnia, 662 (85.2 %) had anxiety, and 663 (85.3 %) had depression. The associationsof insomnia,anxiety, and depression to geographic location and sex are shown in **Table 2**.Regarding the geographic location analysis, the southern region represented 23.8% of abnormal insomnia, and the central regionhad more abnormal anxiety (23.7%)and higherdepression (25%) than the other regions. We found that malesin the southern region had significantly higher insomnia, anxiety, and depression rates than males in other regions.

Table 2. The scale of measurements and associated demographic factors.

Region	Gender	Insomnia		Anxiety		Depression	
		n	%	n	%	n	%
East	Male	12	70.60%	11	64.70%	11	64.70%
	Female	77	76.20%	81	80.20%	75	74.30%
	Total	89	14%	92	13.80%	86	12.90%
Central	Male	67	62.60%	83	77.60%	87	81.30%
	Female	61	68.50%	74	83.10%	79	88.80%
	Total	128	20.90%	157	23.70%	166	25%
West	Male	56	64.40%	70	80.50%	73	83.90%
	Female	77	75.50%	85	83.30%	81	79.40%
	Total	133	21.70%	155	23.40%	154	23.20%
South	Male	102	100.00%	101	99.00%	100	98.00%
	Female	44	93.60%	42	89.40%	43	91.50%
	Total	146	23.80%	143	21.60%	143	21.50%
North	Male	30	83.30%	31	86.10%	31	86.10%
	Female	86	96.60%	84	94.40%	83	93.30%

	Total	116	18.90%	115	17.30%	114	17.10%

Table 3 presents the median scores of the PHQ-9 for depression, GAD-7 for anxiety, and ISI for insomnia. Females who have 3–5 years of experience had higher insomniaand working in the northern region had higher scores on all three scales thanfemale nurses working in other regions. Median ISI scores among nurses in the north region vs. south region were significantly higher (18 vs. 15, *P*<0.05),and the median GAD-7 scores among females vs. males were significantly higher (12 vs. 11, *P* = 0.02).The median PHQ-9 score of nurses who had3–5 years of experience vs. those who have1–2 years of experience was significantly higher (15 vs. 14)(*P*=0.01).

Table 3. Scores of measurements and associated factors

Sociodemographics		Insomnia		Anxiety		Depression	
		Median	P value	Median	P value	Median	P value
Gender	Male	14	0.001	11	0.02	14	0.526
	Female	15		12		14	
Years of experience	<1 year	10	0.001	8	0.046	11	0.019
	1-2 years	14		12		14	
	3-5 years	15		12		15	
	>5 years	16		11		13	
Geographic location	East	15	0.001	11	0.001	11	0.001
	Middle	11		9		13	
	West	14		10		13	
	South	15		12		15	
	North	18		14		18	

IV. Discussion

This study aimedto evaluate the mental status of nurses working in Saudi Arabia associated with their sociodemographic characteristics. We found a significant association between years of experience and mental health abnormalities such as insomnia, anxiety, and depression levels, which is in agreementwith a study conducted in the UK among 225 mental health nurses by Oates et al., who found an association between age, years of experience, and mental health status [16]. They found that the most common nurses affected age group between 40–49 years sufferedfrom mental health disorders.

In our study, we found that the levels of insomnia, anxiety, and depression increased with years of experience. Most respondents responded positively to having mental health issues; 78.8% of participants suffered from insomnia, 85.2% had anxiety, and 85.3% had depression, which is considered a significantlyhigh number among nurses.Most responders were from secondary care hospitals (60.5%) rather than tertiary care hospitals (39.5%). Of the participants, 60%had more than 3 years of experience in the field.The number of married participants was significantly higher than that of single participants (68.7% vs. 31.3%) due to job stability.

Owing to job requirements, we found that nurses withbachelor's degrees were significantly higher than those with diplomas and master's degrees (58.3%, 22.5%, and 19.2%, respectively). Furthermore, we found that female nurses weremore prevalent than male nurses (55% vs. 45%). According to the years of experience, the lowest rate of participation was for nurses who had less than one year (15.3%, 1–2 years which was 24.3%), more years of experience than nurses who had worked 3–5 years (29%), and for nurses who worked more than 5 years (31/4%). This reflects the positive correlation between job-related stress and years of experience. This is because of the increasing job responsibilities with increasing levels of seniority. This finding agreed with other studies in which mental health problems were found to be significantly more prevalent with a higher number of years of nursing experience [16, 17]. Regardinggeographical location, we found that the central region was the highest (25.2%), followed by the west (24.3%), south (19.2%), north (16.1%), and east (15.2%).

The total number of participants with insomnia, anxiety, and depression was 78.8 %, 85.2%,and 85.3 %, respectively. A geographic location analysisregarding mental health abnormalities revealed that the southern region represented 23.8% of insomnia complaints. The central region presentedmore abnormal anxiety (23.7 %) and higher depression (25 %) than the other regions. In the southern region, we found that males had significantly higher insomnia, anxiety, and depression rates than males in other regions.

In general, there was a significant relationship between female sex and insomnia ($P = 0.001$). Females who had 3–5 years of experience working in the northern region had higher scores on all three scales than those who were female nurses working in other regions, reflecting a positive correlation between job-related stress and more than 3 years of experience. This is because of increasing job responsibilities with increasing levels of seniority. Median ISI scores among nurses in the north region vs. south region were significantly higher (18 vs.15) ($P<0.05$). In addition, median GAD-7 scores among females versus males were significantly higher (12 vs.11) ($P = 0.02$), and the Median PHQ-9 comparing 3–5 years' experience to 1–2 years' experience was significantly higher (15 vs.14) ($P =0.01$).

V. Conclusion

In conclusion, the study revealeda significant association between the nurses' length of experience and their distressed mental health statusin terms of insomnia, anxiety, and depression. This finding agreed with other studiesin which mental health problems were found to be significantly more prevalent with a higher number of years of nursing experience. A gender-related analysis showed that females were significantly more affected by insomnia and anxiety than males were. However, this study provides a preliminary understanding of nurses' mental health in Saudi Arabia, based on a nationally representative sample with demographic characteristics comparable to those of the general population. To the best of our knowledge, no similar study has been conducted on the mental health of Saudi nurses. Research regarding the effect of demographics, workplace characteristics, and years of experience on nurses' mental health has been inconclusive and restricted.

Limitations:

The limitations of this study's methodology should be highlighted, and its findings must be interpreted considering these limitations. A correlational cross-sectional design precludes the determination of causality. The sample size limits the generalizability of the claims. In addition, using web-based methods made it difficult to calculate the ultimate response rate, which is a common problem in online survey research. Nonetheless, the initial response rates were comparable to those of other surveys conducted on this group.

Owing to the obstacles faced during this study, its findings should be regarded as exploratory, and additional research on this population is required. This study demonstrated that nurses are frequently affected by mental health issues. Therefore, a qualitative study needs to investigate how nurses can cope with and maintain their mental health and subjective well-being throughout their working lives, as well as determine how nurses and their employers could intervene to address these difficulties.

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