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ORIGINAL RESEARCH

Prevalence and Associated Factors of Poor Sleep Quality Among Nurses in a Tertiary Care Hospital: A Cross-Sectional Study

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Background: Poor sleep quality among nurses negatively impacts job performance, patient care, and mental well-being, leading to compromised cognitive ability, decision-making, and increased errors, which ultimately jeopardize patient care and safety. This study aimed to determine the prevalence of poor sleep quality and its associated factors among nurses at a tertiary care hospital in Mogadishu, Somalia.

Methods: A cross-sectional study was conducted among nurses working at a tertiary care hospital between May and August 2024. Data were collected using a standardized questionnaire, which included socio-demographic information, the Pittsburgh Sleep Quality Index (PSQI), the Depression, Anxiety, and Stress Scale (DASS-21), and the Oslo Social Support Scale (OSSS-3). Bivariate and multivariate logistic regression analyses were used to identify risk factors for poor sleep quality. A p-value of 0.05 was considered the threshold for statistical significance.

Results: A total of 280 nurses participated in the study, with 45.7% (95% CI: 39.8–51.7) reporting poor sleep quality. The odds of reporting poor sleep quality were higher among female nurses (AOR = 2.68; 95% CI: 1.35–5.32), those working night shifts (AOR = 4.76; 95% CI: 2.06–11.02), those with poor social support (AOR = 2.82; 95% CI: 1.09–7.27), and those experiencing depression (AOR = 5.35; 95% CI: 2.22–12.88), anxiety (AOR = 5.58; 95% CI: 2.61–11.92), and stress (AOR = 3.92; 95% CI: 1.11–13.90).

Conclusion: This study revealed a significantly high prevalence of poor sleep quality among nurses. These findings underscore the importance of addressing sleep quality as a key component of nursing well-being. It is recommended that nursing managers assess both the mental and physical health of their staff, implement targeted interventions such as stress management and counseling, and develop workplace strategies to improve sleep, including flexible scheduling and education on sleep hygiene.

Keywords: poor sleep quality, associated risk factors, nurses, tertiary care hospital, PSQI

Introduction

Nurses are essential to the healthcare system, serving as the foundation of patient care and a crucial link between patients and medical practitioners.[1] Their persistent efforts and steadfast commitment ensure the provision of superior care while cultivating an atmosphere of empathy and support for individuals in need.[1,2] Nurses fulfill a diverse role that requires both professional knowledge and deep empathy, including the administration of medications, monitoring vital signs, and providing emotional support and education.[3,4] Their dedication to advocating for patients' rights and welfare underscores

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their vital role within the healthcare system, making them indispensable for better patient outcomes and overall community health.[3,4] In an era of escalating healthcare demands, the perseverance and professionalism demonstrated by nurses serve as a symbol of optimism and a testament to the human spirit under hardship.[2]

Poor sleep quality among nurses has been recognized as a significant issue, adversely affecting their job performance, patient care, and mental well-being.[5] Research shows that a substantial percentage of nurses experience sleep disturbances, often due to demanding schedules, high-stress environments, and the emotional toll of caregiving.[6,7] Sleep deprivation can result in diminished cognitive function, compromised decision-making, and an increased likelihood of errors, ultimately jeopardizing patient safety and care outcomes.[5–7] Additionally, the ongoing lack of restful sleep exacerbates stress, anxiety, and burnout, further affecting nurses' overall health and well-being.[8,9] As frontline healthcare providers, the implications of their sleep quality extend beyond individual health; they ripple through the healthcare system, impacting patient satisfaction and the quality of care delivered.[10]

A high prevalence of poor sleep quality among nurses has been reported in numerous studies conducted in different countries, with 66% experiencing it in the US,[11] 78% in the UK,[12] 54.6% in Italy,[13] 79.8% in South Korea,[14] 76.3% in China,[15] 77.1% in Nigeria,[16] and 70.6% in Ethiopia.[17] According to previous studies, poor sleep quality is associated with various risk factors among nurses, including gender. Due to hormonal changes and greater susceptibility to stress, women may experience poorer sleep quality.[18,19] Shift work can disrupt the body's circadian rhythm, leading to sleep disturbances.[16–18] Substance use, as well as symptoms of depression, anxiety, and stress, can contribute to difficulties falling asleep or staying asleep among nurses.[19,20] Additionally, high workload and emotional work demands can lead to emotional exhaustion, negatively affecting sleep and recovery between shifts.[7] Years of experience[21] and body mass index (BMI)[17] also influence sleep quality.

Despite the high prevalence of poor sleep quality among nurses and its negative impact on their mental and physical well-being, as well as their professional efficacy, research on this issue remains limited in African countries.[19] To the best of our knowledge, no studies have examined this important topic within Somalia, highlighting a significant gap in the literature that needs to be addressed. Determining the prevalence of poor sleep quality and its associated risk factors among nurses is essential not only for enhancing their health and performance but also for ensuring the delivery of effective patient care in an increasingly demanding healthcare landscape. Therefore, the purpose of this study was to assess the prevalence of poor sleep quality and its associated factors among nurses at a tertiary care hospital in Mogadishu, Somalia.

Methods

Study Design and Setting

A hospital-based cross-sectional study was conducted among nurses working at the Mogadishu Somali-Turkiye Recep Tayyip Erdogan Training and Research Hospital between May and August 2024. The hospital is a tertiary care facility with a skilled nursing department comprising over 300 nurses. They provide comprehensive care across various departments, including emergency, intensive care, pediatrics, surgery, and outpatient services. Their active involvement in patient care, monitoring, and treatment protocols ensures the delivery of high-quality medical services. The nursing team's work spans the entire hospital, managing both acute and chronic conditions and supporting medical and surgical procedures. Their contribution is essential to delivering compassionate, professional care in this multidisciplinary healthcare environment.

Sample Size and Sampling Procedure

In this study into nurses' sleep quality, we applied the single population proportion formula: $n = (z)^2*p*(1-p)/d^2$.[22] This study employed a proportionate prevalence of 75.5%, which corresponds to the prevalence of poor sleep quality among nurses in a prior study conducted in Ethiopia.[18] We estimated the required sample size using a 95% confidence level, which equates to a z value of about 1.96 and an error margin of d = 0.05. Given a total population of 300 nurses working at the hospital, we determined a final target sample size of approximately 147 participants. To enhance the

representativeness of our results and to maximize participation, we extended invitations to all nurses within the hospital to participate in the study, thereby facilitating a comprehensive assessment of sleep quality in this essential workforce.

Inclusion and Exclusion Criteria

Nursing professionals with a minimum of six months of experience prior to data collection at the Mogadishu Somali-Turkiye Recep Tayyip Erdogan Training and Research Hospital constituted the study sample. To maintain the robustness of the study, specific exclusion criteria were established. Individuals in training roles, such as interns and students, as well as nursing professionals currently on annual leave, were excluded. Furthermore, nursing personnel suffering from significant health conditions that might hinder their ability to provide reliable responses were also excluded from the study.

Variables of Study and Measurement Tools

Dependent Variable

Sleep quality status (assessed using the PSQI): absence of poor sleep quality vs presence of poor sleep quality.

Independent Variables

In this study, socio-demographic factors were marital status, age, and gender, parental status, presence of chronic medical conditions, educational status, and monthly income. Job-related variables encompassed job title, departmental affiliation, work shift, and service duration. Additionally, behavioral and clinical characteristics were assessed through measures of physical activity, cigarette smoking, khat use (Catha edulis, also referred to as the khat plant, belongs to the Celastraceae family and is widely cultivated in various parts of East Africa and several Arab countries. In Somalia, it is particularly popular for its stimulant effects),[23] social support levels, depression, anxiety, and stress symptoms.

Data Collection Tools and Procedures

The data were collected by distributing self-administered questionnaires that included socio-demographic and occupational characteristics, the Pittsburgh Sleep Quality Index (PSQI), the Depression, Anxiety, and Stress Scale (DASS-21), and the Oslo Social Support Scale. Socio-demographic and occupational information was gathered using a structured questionnaire developed from a literature review.[19,24] All variables, except for age, were classified and collected through closed-ended questionnaires.

The PSQI is a self-administered questionnaire developed by Buysse et al in 1989[25] that evaluates the quality of sleep over the past four weeks. It consists of 19 self-reported questions and five additional questions rated by a bed companion or roommate. The PSQI assesses seven components: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, sleep medication use, and daytime dysfunction. Each component is scored on a scale from 0 to 3. The total PSQI score ranges from 0 to 21, with higher scores indicating poorer sleep quality. A global PSQI score greater than 5 indicates “poor sleepers”, while a score of 5 or lower indicates “good sleepers”. Although responses from bed partners or roommates offer additional insights into the participant’s sleep, they are not factored into the overall score. The PSQI continues to be widely used in research, demonstrating its reliability and validity in assessing sleep disturbances across diverse populations.[19,26]

The DASS-21, developed by Lovibond in 1995,[27] was used to assess the symptoms of depression, anxiety, and stress among participants. The scale consists of 21 items, divided into three subscales: Depression, Anxiety, and Stress, with seven items in each subscale. Participants rated their experiences on a 4-point Likert scale. Subscale scores were calculated by summing the responses to each item in the subscale and then multiplying by two. To facilitate a comprehensive evaluation of participants’ psychological well-being, the DASS Manual classifies scale scores into five categories: normal, mild, moderate, severe, or extremely severe (Table 1). The DASS-21 remains widely used in research, demonstrating its effectiveness and reliability in measuring psychological symptoms across various populations.[28]

The OSSS-3, developed by Dalgard,[29] is a tool designed to assess perceived social support by evaluating the frequency of family contact, close friendships, and satisfaction with the support received. The scale consists of three

Table 1 The Scoring Classification for the DASS-21 Questionnaire

Domain	Normal	Mild	Moderate	Severe	Extremely Severe
Depression	0–9	10–13	14–20	21–27	≥28
Anxiety	0–7	8–9	10–14	15–19	≥20
Stress	0–14	15–18	19–25	26–33	≥34

items that measure the extent of social support. The total score ranges from 3 to 14, with higher scores indicating stronger social support and lower scores reflecting poorer support. The total score can be categorized into three levels: 3–8 indicates poor social support, 9–11 represents moderate social support, and 12–14 reflects strong social support. Validated across various populations, the OSSS-3 helps identify individuals who may benefit from improved support systems. It is a valuable tool for understanding the connection between social support and mental health.

Participants were recruited through direct invitations at the hospital during their free time, where the study's objectives were explained to them. After obtaining their informed consent, participants were provided with the questionnaire to complete independently. They were then instructed to return the completed questionnaire to the principal researcher.

Data Analysis

Data entered into Excel spreadsheets were later imported into the Statistical Package for the Social Sciences (SPSS), version 26, for both descriptive and inferential analysis Armonk, NY: IBM Corp). The descriptive study examined the distributions of PSQI, behavioral, clinical, and socioeconomic demographic scores. Poor sleep quality was reported as proportions, with exact 95% CI calculated using the Clopper-Pearson method.[30] Bivariate and multivariable logistic regression analysis were used to find elements connected to the outcome variables. All variables with a p-value < 0.25 were regarded in bivariate logistic regression as fit for inclusion into the multivariate logistic regression investigations. The Hosmer-Lemeshow goodness-of-fit test was utilized in the multivariate logistic regression model to assess the goodness of fit of the final model. In multivariate logistic regression, any variables with a p-value less 0.05 were considered statistically significant; thereafter, the adjusted odds ratio (AOR) was presented coupled with a 95% confidence interval (CI).

Ethical Approval

The Institutional Review Board (IRB) of the Mogadishu Somali-Turkiye Recep Tayyip Erdogan Research and Training Hospital granted ethical approval, with reference number MSTH/17629. This study adhered to the principles and ethical guidelines outlined in the Declaration of Helsinki, as well as the hospital's regulations. The study's objectives were explained to qualified individuals, who were then invited to participate. Prior to participation, each eligible participant voluntarily provided written informed consent, free from undue pressure or coercion. Participants were also informed of their right to withdraw from the study, the anonymity of the questionnaires, the confidentiality of their data, and the absence of individual-specific information in the research findings.

Results

Socio-Demographic and Behavioral Characteristics Among Nurses

The study included a total of 280 healthcare nurses, with a 93% response rate. The majority of participants (55.4%) were male. Most respondents were younger than 30 years (63.2%), with a mean age of 28.28 years and a standard deviation of 4.6 years. A majority of participants were single (51.8%) and held a Bachelor of Science in Nursing (75.7%). A small proportion of the nurses smoked cigarettes (10.4%) and used khat (6.8%) (Table 2).

Table 2 Socio-Demographic and Behavioral Characteristics Among Nurses in Mogadishu, Somalia (n = 280)

Variable	Category	Frequency	Percentage
Gender	Female	125	44.6
	Male	155	55.4
Age	<30 years	177	63.2
	≥30 years	103	36.8
Marital status	Single	145	51.8
	Married	114	40.7
	Others	21	7.5
Having children	Yes	112	40.0
	No	167	60.0
Education status	Diploma	36	12.9
	BSc Nursing	212	75.7
	MSc Nursing	32	11.4
Monthly income	≤ 600 dollars	22	6.1
	> 600 dollars	74	20.6
Cigarette smoking	Yes	29	10.4
	No	251	89.6
Khat use	Yes	19	6.8
	No	261	93.2
Physically active	Yes	145	51.8
	No	135	48.2
Caffeinated use	≤2 cups per day	248	88.6
	>3 cups per day	32	11.4

Notes: Others: Divorced, widowed and widower.

Work-Related and Clinical Characteristics Among Nurses

Most participants (54.6%) had less than five years of job experience, and a small proportion (8.9%) of participants had chronic medical conditions. A majority (53.2%) of nurses reported inadequate social support, while approximately one-third of participants reported experiencing stress symptoms (Table 3).

Prevalence of Poor Sleep Quality Among Nurses

According to the study's findings, 45.7% (95% CI: 39.8–51.7) of nurses reported poor sleep quality. Most participants (57.5%) stated that they had very good subjective sleep quality. Approximately one-fifth of nurses reported a sleep duration of less than 5 hours per night. A small proportion (3.2%) of participants indicated using sleeping medications three or more times per week (Table 4).

Factors Associated with Poor Sleep Quality Among Nurses

In the bivariate logistic regression analysis, gender, work shift, use of sleeping medications, social support, depression, anxiety, and stress symptoms were all found to be significantly associated with poor sleep quality among healthcare nurses. In the multivariate logistic regression analysis, factors such as gender, work shift, social support, depression, anxiety, and stress symptoms were significantly associated with poor sleep quality ($p < 0.05$).

The study's results indicated that female participants were approximately 2.7 times more likely to experience poor sleep quality compared to their male counterparts (AOR = 2.68; 95% CI: 1.35–5.32). Nurses working night shifts were 4.76 times more likely to report poor sleep quality than those working day or mixed shifts (AOR = 4.76; 95% CI: 2.06–11.02). Nurses exhibiting signs of depression were 5.35 times more likely to experience poor sleep quality compared to their counterparts without depressive symptoms (AOR = 5.35; 95% CI: 2.22–12.88). Moreover, nurses with inadequate social support had a 2.82 times higher probability of experiencing poor sleep quality compared to those with better social support (AOR=2.82; 95% CI: 1.09–7.27) (Table 5).

Table 3 Work-Related and Clinical Characteristics Among Nurses in Mogadishu, Somalia (n = 280)

Variable	Category	Frequency	Percentage
Work shift	Day shift	88	31.4
	Night shift	98	35.0
	Mixed shift	94	33.6
Years of experience	<5 years	153	54.6
	5–10 years	100	35.7
	>10 years	27	9.6
Job title	Nursing officer	43	15.4
	Nursing practitioner	237	84.6
Department	Internal medicine	84	30.0
	Surgical departments	81	28.9
	Emergency departments	36	12.9
	ICU	62	22.1
	OPD	17	6.1
Use of sleeping medications	Yes	33	11.8
	No	88.2	88.2
Chronic medical condition	Yes	25	8.9
	No	255	91.1
Depressive symptoms	Absent	202	72.1
	Present	78	27.9
Anxiety symptoms	Absent	182	65.0
	Present	98	35.0
Stress symptoms	Absent	229	81.8
	Present	51	18.2
Social support	Poor	149	53.2
	Moderate	75	26.8
	Strong	56	20.0

Abbreviations: ICU, Intensive care unit; OPD, Outpatient department.

Discussion

This study assessed the prevalence and factors influencing poor sleep quality among nurses at a tertiary care hospital in Mogadishu, Somalia. Of the 280 participants surveyed, 45.7% reported experiencing poor sleep quality. Key predictors identified included being female, working night shifts, having poor social support, and experiencing symptoms of depression, anxiety, and stress. These findings emphasize the need for effective screening methods and targeted interventions to support nurses' well-being and improve their sleep quality, ultimately enhancing patient care.

Poor sleep quality among nurses is well-established in the literature, highlighting a significant concern for healthcare professionals and patient care.[31] The present study revealed a high prevalence of poor sleep quality among nurses, consistent with findings from previous studies conducted in Vietnam[24] and China[32] However, our findings were higher than those in studies conducted in Germany[33] and China.[34] These variations in prevalence could be attributed to differences in staffing levels, workload, available facilities, the hospital departments to which nurses were assigned, and the broader healthcare systems in those countries compared to the current study.[19] For instance, studies conducted in developed countries like Germany and China, where nurses typically experience better working conditions and have access to more adequate resources, could explain these differences in prevalence. The improved economic resources and regulatory frameworks that support effective occupational health and safety standards in these nations are likely to result in better environments for nurses.[19] Conversely, nurses in developing countries may encounter considerable obstacles, including insufficient resources and weaker safety regulations, which can negatively impact their working conditions and overall health.[35] Moreover, in developing countries like Somalia, the nurse-patient ratio is often low, and there is a scarcity of qualified healthcare professionals.[36] This situation is compounded by a significant disease burden, which

Table 4 Sleep Quality and Its Component Scores Among Nurses in Mogadishu, Somalia (n = 280)

PSQI Components	Score key	Frequency	Percentage
Subjective sleep quality	Very good	161	57.5
	Fairly good	74	26.4
	Fairly bad	33	11.8
	Very bad	12	4.3
Sleep latency	0	68	24.3
	1–2	120	42.9
	3–4	59	21.1
	5–6	33	11.8
Sleep duration	>7 hours	119	42.5
	6–7 hours	69	24.6
	5–6 hours	42	15.0
	<5 hours	50	17.9
Sleep efficiency	>85%	222	79.3
	75–84%	38	13.6
	65–74%	11	3.9
	<65%	9	3.2
Sleep disturbance	0	35	12.5
	1–9	165	58.9
	10–18	77	27.5
	19–27	3	1.1
Use of sleep medication	Not during the past month	157	56.1
	Less than once a week	80	28.6
	Once or twice a week	34	12.1
	Three or more times each week	9	3.2
Daytime dysfunction	0	150	53.6
	1–2	65	23.2
	3–4	62	22.1
	5–6	3	1.1
Global sleep quality	Good sleep quality	152	54.3
	Poor sleep quality	128	45.7

heightens workload and stress levels for nurses. As a result, these factors contribute to a decline in sleep quality, further exacerbating the challenges faced by nursing staff in such contexts.[36]

However, this study found a lower prevalence of poor sleep quality compared to previous research conducted in Ethiopia,[19] Iran,[21] China,[15] and Korea.[14] The observed differences in results may be attributable to variations in study populations. For instance, the Chinese study included solely emergency department nurses, whereas the Iranian and Korean studies included shift-working nurses. Conversely, the current study included a more extensive cohort, comprising nurses from diverse departments and work schedules. This expanded inclusivity may explain the variations in outcomes. Shift work and emergency department employment are linked to suboptimal sleep quality, mostly due to circadian rhythm disruption, job demands, and stress.[14,15]

Several studies have demonstrated that the nursing profession significantly suffers from poor sleep quality, particularly among women who balance professional responsibilities with personal caregiving roles.[19,37] In the current study, we found a notable association between being a female nurse and higher odds of poor sleep quality, a finding that aligns with existing literature.[15,19] This result could be connected to the fact that female nurses face higher life stressors due to their dual roles of professional responsibilities and family care, which often result in increased household management and childcare obligations. This can exacerbate sleep quality and fatigue issues, which may be linked to their unique physiological and psychological characteristics. Female nurses often navigate these greater stressors, highlighting the complexities of their experiences and their impact on their overall well-being. Furthermore, hormonal fluctuations in

Table 5 Bivariate and Multivariate Logistic Regression of Sleep Quality and Associated Factors Among Nurses in Mogadishu, Somalia (n = 280)

Variable	Category	Sleep Quality		COR (95% CI)	AOR (95% CI)	p-value
		Good	Poor			
Gender	Female	54(43.2)	71(56.8)	2.26(1.40–3.66)	2.68(1.35–5.32)	0.005*
	Male	98(63.2)	57(36.8)	1	1	
Work shift	Day shift	56(63.6)	32(36.4)	1	1	
	Night Shift	36(36.7)	62(63.3)	3.04(1.69–5.47)	4.76(2.06–11.02)	<0.001*
	Mixed shift	60(63.8)	34(36.2)	1.00(0.551–1.85)	1.48(0.676–3.25)	0.325
Use of sleeping medication	No	131(53.0)	116(47.0)	1	1	
	Yes	21(63.6)	12(36.4)	0.645(0.304–1.37)	0.783(0.297–2.06)	0.619
Depressive symptoms	Absent	139(68.8)	63(31.2)	1	1	
	Present	13(16.7)	65(83.3)	11.03(5.67–21.47)	5.35(2.22–12.88)	<0.001*
Anxiety symptoms	Absent	133(73.1)	49(26.9)		1	
	Present	19(11.2)	79(88.8)	11.29(6.20–20.53)	5.58(2.61–11.92)	<0.001*
Stress symptoms	Absent	147(64.2)	82(35.8)	1	1	
	Present	5(9.8)	46(90.2)	16.49(6.30–43.15)	3.92(1.11–13.90)	0.034*
Social support	Poor	76(51.0)	73(49.0)	1.28(0.690–2.38)	2.82(1.09–7.27)	0.032*
	Moderate	44(58.7)	31(41.3)	0.939(0.466–1.89)	1.03(0.380–2.80)	0.952
	Strong	32(57.1)	24(42.9)	1	1	

Notes: *indicates significance at 5% level. 1: reference categories. Hosmer-Lemeshow test: 0.49.
Abbreviations: COR, Crude odd ratio; AOR, Adjusted odd ratio; CI, Confidence interval.

women, particularly during reproductive aging, can lead to sleep disturbances.[38] A decrease in progesterone during the late luteal phase of the menstrual cycle disrupts sleep, while pregnancy-related sleep issues are mainly physiological. Hormone therapy during menopause can help alleviate these disturbances, indicating that females may be more predisposed to poor sleep quality.[38]

The literature provides substantial data highlighting the association between shift work and an increased risk of poor sleep quality among healthcare workers.[37] In this study, we found that nurses working night shifts are more likely to experience poor sleep quality compared to those working day or mixed shifts. Similar to our findings, studies conducted in Ethiopia,[17] China,[15] and Saudi Arabia[39] revealed that nurses working shifts were more susceptible to poor sleep quality compared to those without shifts. Night shift work may significantly impact the quality of sleep for nurses by disturbing the body's natural circadian rhythms, which control sleep-wake cycles.[15] This disturbance can lead to difficulty falling asleep during the day and a shorter overall sleep length. Additionally, daytime sleep is often compromised by environmental factors such as noise, light, and household activities, making it harder for nurses to achieve restorative sleep.[15] Therefore, it is essential to regulate the number of night shifts assigned to nurses and to ensure that they have access to comfortable sleeping environments during their off-hours.

Research indicates a complex relationship between depression and sleep disturbances, highlighting that individuals with depression often experience significant disruptions in their sleep patterns. In contrast, inadequate sleep is linked to heightened stress levels, which can exacerbate mental health problems and contribute to the development of psychiatric disorders like depression. This reciprocal connection shows that the onset of depression may lead to sleep difficulties; while poor sleep quality can further deteriorate mental well-being,[40] and enhancing sleep quality could play a crucial role in improving mental health outcomes.[41] Interestingly, acute sleep deprivation has been observed to unexpectedly improve depressive symptoms, adding another layer of complexity to this dynamic.[40,42] This study's results revealed that participants with depressive symptoms had a higher likelihood of experiencing poor sleep quality compared to those without such symptoms, a conclusion that aligns with research conducted in Ethiopia,[19] Jordan,[43] and India.[44] A potential reason for this correlation among nurses is the intricate interaction between medical emergencies and the emotional burdens of patient care, especially the pain and loss encountered upon a patient's death.[24] These stressors can exacerbate psychological distress, resulting in increased depressive symptoms that

subsequently impair sleep quality, creating a cyclical pattern of emotional and physical strain.[18,24] Additionally, the neurotransmitter systems that regulate mood, motivation, energy, and other brain functions are also essential in the regulation of sleep.[45] Dysregulation of these systems is commonly observed in depressive symptoms, resulting in sleep disruptions. Specifically, serotonergic neurons are integral to the initiation and maintenance of sleep, and dysfunction within the serotonergic system is often associated with poor sleep quality in individuals with depression.[45]

Existing literature underscores the link between anxiety and poor sleep quality, with particular emphasis on high-stress professions such as nursing, showing that anxiety not only heightens cognitive and emotional arousal but also disrupts the body's ability to enter restorative sleep stages, leading to difficulty falling asleep and staying asleep.[46] They have a complicated, bidirectional interaction, with each condition capable of exacerbating and perpetuating the other.[46–48] Their relationship is deeply rooted in shared neurobiological pathways, with the amygdala—essential for emotional processing and danger detection—acting as a pivotal link in controlling both states. This neural overlap highlights the intricate connection between emotional distress and sleep disruption, underscoring the complexity of their interaction.[46,49] In this study, we discovered that nurses exhibiting anxiety symptoms were much more likely to experience poor sleep quality compared to those without anxiety symptoms, highlighting a robust correlation between emotional distress and sleep disruption. These results were similar to the findings reported in several previous studies conducted in Ethiopia[19] and India.[44] This association can be attributed to the inherently high demands of the nursing profession, characterized by extended shifts, emotional stress associated with patient care, and frequent exposure to traumatic situations. The constant pressure to juggle multiple responsibilities, often amidst inadequate staffing or resources, can lead to feelings of overwhelming stress. This persistent strain fosters anxiety, which subsequently disrupts sleep quality.[50]

Stress among nurses is a well-documented topic that substantially impacts their sleep quality. Several studies have emphasized the relationship between increased job stress and poor sleep quality, with nurses often experiencing disrupted sleep patterns due to work-related stressors such as high patient loads, extended shifts, and mental exhaustion.[44] For example, a study by Deng et al[15] demonstrated that nurses with elevated job stress had significantly poorer sleep quality. This study showed that nurses experiencing stress symptoms were significantly more likely to suffer from poor sleep quality, a finding that resonates with similar research conducted in Ethiopia,[19] Vietnam,[24] and Jordan.[43] One probable explanation for this relationship is because stress affects the hypothalamic-pituitary-adrenal (HPA) axis, which controls the body's stress response and sleep patterns. Chronic stress raises cortisol levels, especially throughout the night, disrupting the body's capacity to relax and fall asleep.[46,49] Additionally, a recent systematic review of 38 studies conducted over a decade looked at the link between occupational stress and sleep quality in a variety of jobs, countries, and regions. It found a consistent negative link between high levels of occupational stress and poor sleep quality.[51] These findings show the negative impacts of work-related stress on sleep are not limited to a certain profession or region rather instead constitute a worldwide problem. They also underscore the critical need for interventions aimed at alleviating workplace stress to enhance sleep health and general well-being.

The relationship between a lack of social support and poor sleep quality among healthcare professionals is well documented in academic literature, indicating a concerning association that adversely affects their overall well-being. Studies repeatedly demonstrate that healthcare workers frequently face poor social support, which is closely linked to depression and decreased sleep quality.[52,53] Additionally, high social support from friends and family has been consistently linked to a decreased probability of experiencing poor sleep quality and shorter sleep duration.[54] Furthermore, a meta-analysis revealed that higher social support was strongly associated with better sleep quality and overall sleep outcomes.[55] In line with previous research, the present study found that inadequate social support was significantly linked to poorer sleep quality, reinforcing the notion that a lack of social support may contribute to sleep disturbances. These results underscore the importance of social support networks in improving the quality of sleep for healthcare nurses, as well as their overall mental and physical health. This, in turn, enhances their job performance and ultimately leads to better patient care outcomes.

Limitations

It is important to recognize that this study has certain limitations. First, a clear temporal relationship between the outcome and independent factors cannot be established due to the study's cross-sectional design. Second, using a self-administered questionnaire to assess sleep quality and other factors carries the possibility of recollection bias, which could lead to inaccurate reporting. Third, the study used a screening tool to measure sleep quality instead of a diagnostic tool, limiting the investigation to symptomatic presentation and precluding a definite identification of the underlying condition. Finally, the limited sample size constitutes an additional constraint, potentially affecting the generalizability of the results to a broader nursing community. Regardless of these limitations, this study effectively accomplished its objectives and, to our knowledge, is the first investigation of the prevalence of poor sleep quality and its associated factors among nurses in Somalia.

Conclusion

The study revealed that 45.7% of nurses experienced poor sleep quality, with several key factors significantly influencing these outcomes. Female gender, night shift work, lack of social support, and symptoms of depression, anxiety, and stress were all identified as significant predictors of poor sleep quality in this cohort. The findings emphasize the importance of addressing sleep quality as a critical aspect of nurse well-being. The associations between poor sleep quality and symptoms of depression, anxiety, and stress underscore the need for the implementation of screening tools and targeted interventions to improve the mental health of nurses. Based on the current findings, it is advisable to assess nurses' sleep quality and psychological well-being, including symptoms of depression, anxiety, and stress, and to implement appropriate interventions, such as counseling or stress management strategies. Nurse managers should prioritize the implementation of workplace strategies aimed at enhancing sleep quality for nursing staff. These strategies could include providing targeted education on effective sleep hygiene practices, establishing dedicated rest areas, and offering flexible scheduling options to better accommodate nurses' needs. We recommend that future researchers conduct longitudinal studies to investigate the long-term impacts of poor sleep quality on nurse well-being, including physical health, mental health, job satisfaction, and patient care outcomes. Additionally, researchers should explore the correlation between poor sleep quality and mental health conditions like depression, anxiety, and stress, focusing on identifying causal relationships and underlying mechanisms.

Abbreviations

PSQI, Pittsburgh Sleep Quality Index; DASS-21, Depression, Anxiety, and Stress Scale; OSSS-3, Oslo Social Support Scale; AOR, Adjusted Odds Ratio; CI, Confidence Interval; COR, Crude odd ratio; ICU, Intensive care unit; OPD, Outpatient department.

Data Sharing Statement

All data produced or analyzed in this study are provided in the published article or can be obtained from the corresponding author upon request.

Ethical Approval and Consent to Participate

This study was approved by the ethics review board of Mogadishu Somali-Turkiye Recep Tayyip Erdogan Training and Research Hospital (MSTH/17629). All procedures were carried out in accordance with the Declaration of Helsinki, and written informed consent was obtained from all participants.

Author Contributions

All authors made substantial contributions to the work, including the conception, study design, execution, data acquisition, analysis, and interpretation, or in all of these areas. They participated in drafting, revising, or critically reviewing the article, provided final approval of the version to be published, agreed on the journal for submission, and take responsibility for all aspects of the work.

Disclosure

The authors confirm that they have no financial or personal conflicts of interest.

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