Factors Contributing to Work Stress among Nurses in Hadiya Zone's Public Hospitals, Central Ethiopia

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Abstract

Background: Stress in nurses refers to the reactions nurses experience when faced with work demands that exceed their knowledge, skills, or ability to cope. Nursing, as a profession, is particularly susceptible to work-related stress.

Methods: A cross-sectional study was conducted among 405 randomly selected nurses working in Hadiya Zone public hospitals from March 1 to 30, 2023. Data were collected using a pre-tested self-administered questionnaire. The data were entered using Epi-data version 3.1, and analysed using SPSS version 20.0. Multivariable logistic regression analysis was performed to identify factors associated with the level of work stress. Variables with a p-value <0.05 were considered statistically significant.

Results: In this study, 56% (95% CI 50.9-61.2) of the participants reported being stressed in their work. Several factors were found to be associated with work stress, including being female (AOR=1.94, 95% CI 1.19-3.16), rotating shifts (AOR=2.06, 95% CI 1.31-3.25), working in the intensive care unit (AOR=3.42, 95% CI 1.20-9.73), and having post-basic training (AOR=0.55, 95% CI 0.34-0.92).

Conclusion: The study revealed a high level of work stress among nurses in the study area. The zonal health unit takes measures to address work stress by providing job orientation during the hiring process, rotation, and on-the-job training to help nurses cope with and manage stressful events. Stress in public hospitals and among nurses is an important issue that needs urgent attention.

Keywords: stress; public hospitals; nurses

Introduction

Stress is frequently characterised as a sensation of being overwhelmed, tightly wound, tense, and anxious. It is a disruptive state that arises in reaction to negative influences from either internal or external surroundings (Cox, Griffiths, Cox 2012). The factors that trigger stress are known as stressors and can differ in both duration and intensity. Stressors are pressures within the environment that typically pose a threat to an organism's well-being (Garrosa et al. 2008).

The World Health Organisation (WHO) defines work-related stress as the response individuals may experience when faced with demands and pressures that exceed their knowledge and abilities, thus challenging their capacity to manage (WHO 2009). Nurses play a crucial role and constitute the largest workforce in healthcare institutions globally. Moreover, they serve as primary caregivers, providing round-the-clock care in hospitals (Elovainio et al. 2016).

Numerous studies have demonstrated that work-related stress among nurses constitutes a significant global issue, resulting in a healthcare workforce shortage of over 50% (Bhatia et al. 2010; Adzakpah, Laar, and Fiadjoe 2016). The deficiency of healthcare professionals, particularly nurses, can have a pervasive impact on overall service delivery within the healthcare industry. This is primarily because nurses influence the financial performance of healthcare organisations in various ways. For example, a reduction in the quality of patient care leads to increased mortality rates and staff expenditures (Escot et al. 2001).

As frontline healthcare providers, nurses are consistently overburdened due to the unique nature of their work environments and responsibilities, contributing to a higher incidence of work-related stress compared to other industries. Furthermore, in addition to work overload, 9.20-68.0% of nurses worldwide are affected by work-related stress (Golubic et al. 2009; Makhaita, Sabra, and Hafez 2014). A research study carried out in Iran revealed that 37% of participants experienced severe work stress (WS), with an overwhelming workload being cited as a primary stress inducer. The repercussions of this stress were felt by both professionals and the healthcare system, impacting satisfaction and the quality of nursing care (Madadzadeh, Hadith, and Asour 2018a). In India, the study found that 87.4% of nursing staff working at the lower levels in public hospitals were significantly stressed due to juggling numerous life issues alongside their professional responsibilities, such as caring for their own children/parents, managing their work situation, personal obligations, and the demanding skill requirements of their job. These stressors were identified as key factors contributing to reduced life satisfaction, increased susceptibility to medical illnesses, and the proliferation of substance abuse among the workers, which some used as a means to alleviate or manage their stress (Bhatia et al. 2010; Madadzadeh et al. 2018b).

In developing nations, nurses have pinpointed inadequate pay, managing a high patient load single-handedly, absence of rewards, and job instability as primary stressors. These

stressors have resulted in headaches, anger, lack of focus, and forgetfulness experienced by a majority of nurses in the ward (Habib, Noor, and Mian 2015; Mohite, Shinde, and Gulavani 2012). A study examining the concerns and obstacles linked to the emigration of nurses from sub-Saharan Africa highlighted work-related stress as a contributing factor to the migration of nurses from the region to other continents (Delanyo 2007).

In Ethiopia, the incidence of work-related stress (WS) among nurses varies from 37.8 to 57.3% (Anand and Mejid 2018; Baye et al. 2020; Dagget, Molla, and Belachew 2016; Salilih and Abajobir 2014). The main sources of stress in the workplace include workload, emotional challenges related to patient mortality, uncertainty regarding treatment, work experience, shift patterns, and work units. This overall work-related stress among nurses leads to a decrease in the quality of nursing care and puts patients at risk (Khan, Anwar, and Sayed 2014; Madadzadeh, Barati, and Asour 2018a).

Workload stress among nurses remains a big problem for our country (Ethiopia), which needs to be researched and will require much effort to overcome the problem. Therefore, the aim of the study that this article reports on was to assess the levels of work stress and its contributing factors among nurses working in the Hadiya Zone public hospitals in Central Ethiopia.

Significance of Study

The findings of the study will help to explore work stress among nurses and to identify contributing factors which lead to work stress. The data generated will be valuable for healthcare managers and nurses in exploring mitigation and planning work stress reduction interventions.

The findings of the study will help professional associations to prepare nurses for the prevention of work stress. The findings will serve as a guide for further large-scale studies to closely examine the problem of work stress among nurses working in the Hadiya Zone public hospitals in Central Ethiopia.

Objectives of study

- To assess the level of work stress and associated factors among nurses.
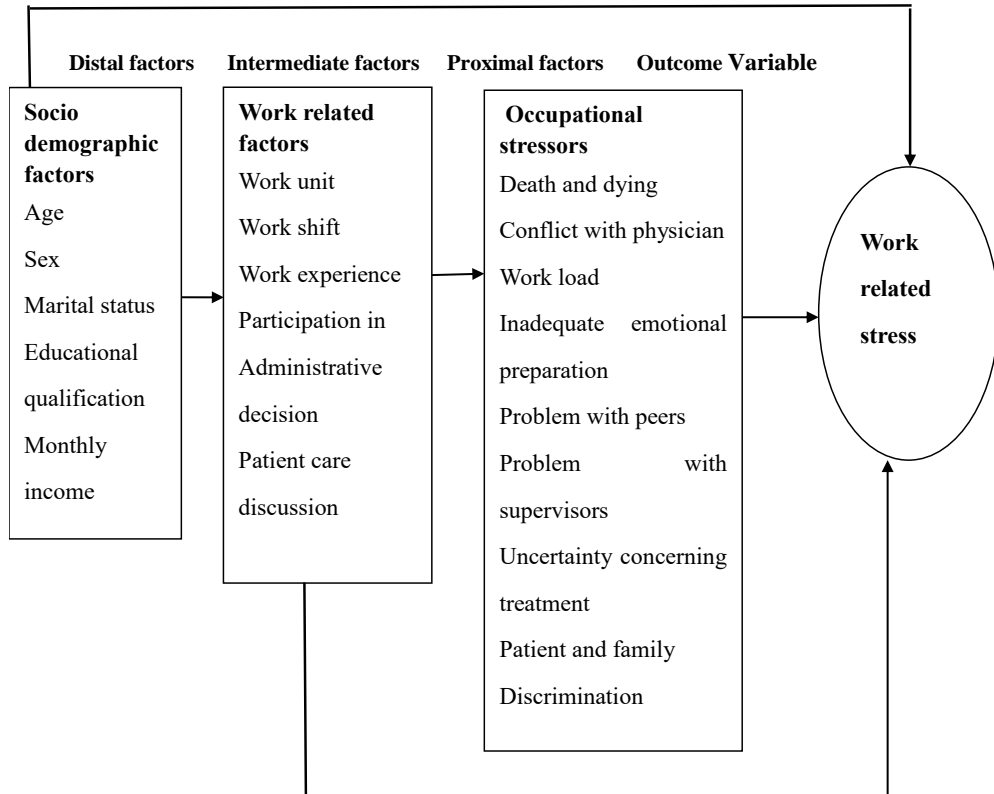- To identify factors contributing to work stress among nurses.

Conceptual Framework

Distal factors   **Intermediate factors**   **Proximal factors**   **Outcome Variable**

Socio demographic factors	Work related factors	Occupational stressors	Work related stress
Age	Work unit	Death and dying	
Sex	Work shift	Conflict with physician	
Marital status	Work experience	Work load	
Educational qualification	Participation in Administrative decision	Inadequate emotional preparation	
Monthly income	Patient care discussion	Problem with peers	
		Problem with supervisors	
		Uncertainty concerning treatment	
		Patient and family	
		Discrimination	

Figure 1: Conceptual framework that shows an overview of the previously published and presumed relationships among the study variables

Sources: Amanuel and Selamawit 2014; Anand and Meijid 2018; Dagget et al. 2016; Dessalegn et al. 2017

Methodology

Study Design and Setting

In 2023, a cross-sectional study was conducted in the public hospitals of Hadiya Zone, which is located in the Southern Nations, Nationalities, and Peoples Region (SNNPR). The zone is home to four public hospitals (Hadiya Zone Health Department Statistics [HZD] 2018).

Source and Study Population

For this study, the eligible participants were all nurses currently employed in the public hospitals of the Hadiya zone. The study population consisted of randomly selected nurses who volunteered to complete the survey questionnaire, with the exception of newly recruited nurses (those employed for less than 6 months). Nurses who were on sick leave, annual leave, or maternal leave during the data collection period were not included in the study.

Sample Size Determination and Sampling Procedure

The sample size for this study was calculated by using a single population proportion formula considering the following assumptions: 95% confidence level (CL), degree of precision of 5%, and proportion of stress 56.3% from the study conducted in Silte Zone Worabe Compressive Specialised Hospital, Southern Ethiopia (Anand, and Mejid 2018), then by using a following statistical formula:

$$n=\frac{[z\,\alpha\,/2]^2 p\,(1-p)}{d^2}$$

Where:

P=56.3% (population proportion)

d=marginal error 5%=0.05

Z=confidence level of 95% and Zα/2 is the value of the standard normal distribution corresponding to a significant level of alpha (0.05), which is 1.96.

Accordingly, the estimated sample size was 378 nurses; then by adding a 10% non-respondents rate, the final sample size was 416. Ahead of proportionate to population size allocation, the total number of currently active nurses' surveys taken from respective facilities considering records of nurses in each hospital, was used as a sampling frame to identify study participants; then a proportional sample allocation was delivered for the respective facilities. Simple random sampling was used to select study participants from all public hospitals in Hadiya Zone through using computer techniques.

Measurements

The data for this study were gathered using structured and pretested, self-administered questionnaires adapted from various literature reviews (Adzakpah et al. 2016; Khan et al. 2014; Lwin, Napan, and Osee 2015). The Standardised Expanded Nursing Stress Scale (ENSS) was utilised to evaluate the level of stress among the participants. Each item required the participants to rate their stress level on a 5-point Likert scale, ranging from 1 (never stressful) to 4 (always stressful), with 0 indicating "does not apply." Additionally, we assessed the reliability and validity of the ENSS items designed to

measure stress levels to determine internal consistency. The instrument's reliability was confirmed with an overall Cronbach's alpha score of 0.8.

Nurses' work stress was evaluated using a 57-item Likert scale measurement, representing the major subscales of the Expanded Nursing Stress Scale (ENSS). The total possible range for this scale was between 57 and 228, with an average scale of 1.0 to 4.0. Participants who scored at or above the mean score of the Likert scale questions used to assess work stress were considered to be experiencing work-related stress, while those who scored below the mean score of all ENSS subscales were considered not to be experiencing work-related stress (Kassa et al. 2017).

Data Collection and Analysis

The collected data were checked for completeness, cleaned, coded manually, and entered into the Epi-data version and exported to the Statistical Package for Social Science (SPSS) window version 20. A descriptive analysis was done by computing proportion and cross-tabulation. Then the findings were described by using frequency, tables, and figures.

Binary logistic regression was employed at P-value <0.25 to identify variables that had a statistical association with work stress. Considering the candidate variables that were statistically significant in bivariate analysis, multivariate analyses were performed to determine the association between the outcome variable and each independent variable. All variables with p-value ≤0.25 in bivariate analyses were included in the final model of multivariate analyses to control all possible confounders, and all variables statistically significant entered into to last models.

Adjusted odds ratio (AOR), along with 95% CI, was estimated to identify factors associated with the level of work stress among nurses. Finally, variables whose p-value <0.05 in multivariate logistic regression were considered as a statistically significant association, and by looking at odds ratio determinants of work stress, were identified.

Ethical Considerations

Ethical clearance was obtained from Wachemo University, College of Medicine and Health Sciences, Department of Ethical Review. A formal letter of permission and support was written to the Hadiya Zone health department and Wachemo University Comprehensive Specialised Hospital. Then, written and signed, informed, voluntary consent was obtained from all study participants before data collection.

Results

Sociodemographic Characteristics of Study Participants

A total of 405 nurses participated in the study, which yielded a response rate of 97.4%. The age of respondents ranged from 25 to 46 years, with a mean age of 32.73 (SD ±6.01)

years. One hundred and seventy-nine (44.2%) were in the age group younger than 30 years. Out of the total respondents, nearly three forths 294 (72.6%) of participants were female. Regarding marital status, nearly half of the respondents, 197 (48.6%) were married, and above half of the respondents, 229 (56.5%) were diploma holders (table 1).

Table 1: Sociodemographic characteristics of nurses working in Hadiya Zone public Hospitals, Central Ethiopia, 2023 (n=405)

Characteristics	Frequency	%
Sex		
Female	294	72.6
Male	111	27.4
Age		
<30 years	179	44.2
30–40	162	40
≥40years	64	15.8
Marital status		
Married	197	48.6
Single	195	48.1
Divorced	13	3.2
Monthly salary		
2745–4446	249	61.5
4446–6500	156	38.5
Educational qualifications		
Diploma	229	56.5
Degree	176	43.5

Work Variables Characteristics

More than half of the respondents were predominantly on fixed type work, 239 (59.0%); among them, 230 (56.8%) had more than five years of work experience. Most of them, 250 (61.7%) had exposure to participating in administrative decision-making issues, and 241(59.5%) of them had time and opportunity towards patient care discussions and a care-related problem with their colleagues. Out of the total participants, 253 (62.5%) had taken post-basic training. Sixty-five (16.0%) and 60 (14.8% of the nurses in this study were working in the surgical ward and outpatient unit, respectively (table 2).

Table 2: Work stress variables among nurses working in Hadiya Zone public hospitals, central Ethiopia, 2023 (n=405)

Characteristics		Frequency	%
Work shift	Fixed	**239**	**59**
	Rotating	166	41
Work experience	6months–<5years	230	56.8
	≥5years	175	43.2
Administrative participation in decision-making	Yes	250	61.7
	No	155	38.3
Patient care discussion	Yes	241	59.5
	No	164	40.5
Post basic training	Yes	253	62.5
	No	152	37.5
Work unit	Surgical	65	16
	Outpatient	60	14.8
	Emergency	52	12.8
	Psychiatric	51	12.6
	Paediatrics	49	12.1
	Medical	48	11.9
	Maternity	28	6.9
	Intensive Care unit	31	7.7
	Operation Room	21	5.2

The Magnitude of Work Stress

A standardised Expanded Nurses Stress Scale (ENSS) measurement finding demonstrates that more than half of 227 participants had developed work stress in the previous six months, with an overall prevalence of 56% (95% CI 50.9–61.2) (figure 2).
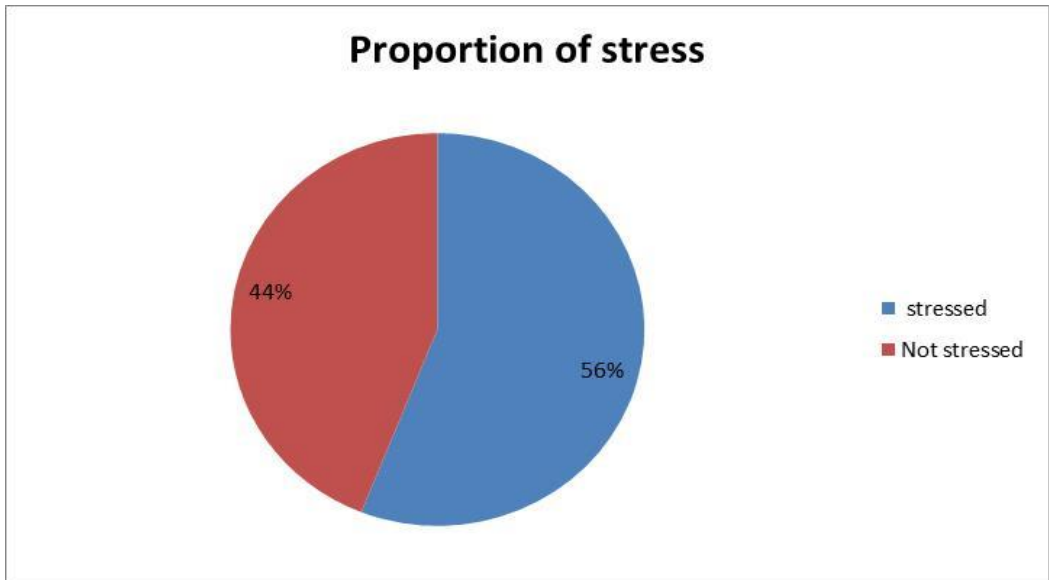
Figure 2: Level of work stress among nurses working in Hadiya Zone, Central Ethiopia, 2023

The blue colour in the above figure indicates that 227 (56%) of nurses had developed work stress during the study period (2023), and the red colour indicates that 178 (44%) of nurses were not stressed during the study period.

Factors Associated with Level of Work Stress

In the realm of background variables, only gender stood out, while in the context of other variables, factors such as discussing patient care issues, exposure to post-basic training, work shifts, and work units proved to be statistically significant in the initial logistic regression analysis. Upon conducting multivariate analysis, gender, work unit, work shift, and post-basic training were found to be statistically linked to the dependent variable.

The odds of work stress were two times higher among female nurses when compared to males (AOR=1.94 (95% CI 1.19-3.16). Nurses who participated in post-basic training were 45% times less likely to experience work stress, as compared to nurses who were not trained in basic training (AOR=0.55, 95%CI 0.34-0.92).

Rotating shifts within units increased the odds of work stress by twofold, as compared with those who worked in fixed shifts (AOR=2.06, 95%CI 1.31-3.25). Nurses who had been working in the intensive care unit were three times more likely to encounter work stress than their counterparts (AOR=3.42, [95%CI 1.20-9.73]) (table 3).

Table 3: Contributing factors associated with work stress among nurses working in Hadiya Zone public hospitals, central Ethiopia, 2023 (n=405)

Variables	Category	Work-related stress		COR (95%)	AOR (95%)
		Yes (%)	No (%)		
Sex	Male Female	50 (45) 177 (60.2)	61 (55) 117 (39.8)	1.00 1.85 (1.19-2.87)	1.00 **1.94 (1.19-3.16)***
Age	<30 30–40 ≥40	104(58.1) 83(51.2) 40(62.5)	75(41.9) 79(48.8) 24(37.5)	1.00 0.76 (0.49-1.16) 1.20 (0.67-2.16)	1.00 0.73 (0.46-1.16) 1.40 (0.73-2.72)
Marital status	Single Married Divorced	103(52.8) 118(40.1)) 6(46.2)	92(47.2) 79(40.1 7(53.8)	1.00 1.33 (0.89-1.99) 0.77 (0.25-2.36)	1.00 1.24(0.81-1.19) 0.39 (0.11-1.35)
Work shift	Fixed Rotating	121(50.6) 106(63.9))	118(49.4) 60(36.1	1.00 1.72 (1.48-2.58)	1.00 **2.06 (1.31-3.25)****
Work unit	Medical Surgical Pediatric Maternity Psychiatric Emergency ICU OR Outpatient	29(60.4) 32(49.2) 28(57.1) 29(56.9) 10(35.7) 31(59.6) 24(77.4) 10(47.6) 34(56.7)	19(39.6) 33(50.8) 21(42.9) 22(43.1) 18(64.3) 21(40.4) 7(22.6) 11(52.4) 26(43.3)	1.17 (0.54-2.53) 0.74 (0.37-1.50) 1.02 (0.48-2.18) 1.01 (0.47-2.14) 0.43 (0.17-1.07) 1.13 (0.53-2.39) 2.62 (0.98-7.02) 0.69 (0.26-1.88) 1.00	1.13 (0.49-2.36) 0.76 (0.35-1.62) 0.95 (0.42-2.14) 0.95 (0.43-2.11) 0.48 (0.18-1.29) 1.11 (0.49-2.47) **3.42 (1.20-9.73)*** 0.77 (0.27-2.15) 1.00
Administrative decision-making	Yes No	132(52.8) 95(61.3)	118(47.2) 60(38.7)	0.71 (0.47-2.58) 1.00	0.86 (0.54-1.36) 1.00
Patient care discussion	Yes No	121(50.2) 106(64.6)	120(49.8) 58(35.4)	0.55 (0.37-0.83) 1.00	0.77 (0.47-1.27) 1.00
Work experience	6 months- <5 years ≥5 years	138(60) 86(50.9)	92(40) 86(49.1)	1.45 (0.97-2.16) 1.00	1.25 (0.81-1.92) 1.00
Post basic training	Yes No	129(51) 98(64.5)	124(49) 54(35.5)	0.57 (0.38-0.87) 1.00	**0.55 (0.34-0.92)*** 1.00

Note: *P<0.05, **P<0.001
Meaning of asterisks:
1. A single asterisk shows a statistically significant variable at p-value <0.05
2. Two asterisks show a statistically significant variable at p-value <0.001

Discussion

Prevalence of Work Stress

According to this study, the work stress prevalence among nurses in public hospitals was 56% (95% CI 50.9-61.2). This figure closely aligns with findings from studies conducted in Slovenian public hospitals, Worabe Comprehensive Specialised Hospital in southern Ethiopia, and East Gojam (Anand and Mejid 2018; Dobnik, Maletic, and Savic 2018; Kassa et al. 2017). The prevalence found in this study was higher than in the study conducted in Addis Ababa (Salilih and Abajobir 2014). The possible reason for this higher prevalence of work stress might be due to the time difference, study setting, and differences in the study population. It was also lower compared to the previous study conducted on work stress amongst nurses from two tertiary care Hospitals in Delhi, India, Peshawar and Dubai (Bhatia et al. 2010; Khan et al. 2014; Mohite, Shinde, and Gulavan 2014; Rasasi et al. 2015). Possible reasons for the variation in the study results could be attributed to factors such as the varying levels of work-related stress across different study areas or settings, differences in work culture, nurse workload, social and economic disparities, organisational aspects of work, as well as the relatively small sample size used, all of which may have influenced the disparities observed when compared to the current study.

Associated Variables

Being female, working in a rotating shift, and being assigned to the intensive care unit were found to have a significant and positive association with the outcome variable, while receiving training was significantly and negatively associated with it. Female nurses were twice more likely to be stressed than male nurses. This finding was consistent with the study done in Addis Ababa public hospitals, East Gojam and Worabe, Ethiopia, and India, in which female nurses were found to be more stressed than male nurses (Gandhi, Nurnahar, and Chaturvedi 2014; Kassa et al. 2017). The variation in expectations between males and females globally, even in male-dominated societies, may be a potential factor contributing to the differences in outcomes.

In Ethiopia, a male-dominated society with evident gender bias in domestic roles, this could further have exacerbated workplace stress for women in the current study. Another potential factor could be the multiple roles that women often fulfil as working mothers, bearing a more extensive and diverse workload than men, both at home and in society.

Nurses who worked rotating shifts were twice more likely to experience work stress than those who worked fixed shifts. This finding is consistent with a study conducted in Saudi Arabia, Addis Ababa, and Worabe, which reported that work shift was the factor most associated with work stress (Makhaita et al. 2014). Working evenings and nights leads to poor quality of sleep, resulting in drowsiness, fatigue, limited concentration, and errors resulting in stress (Banakhar 2017). However, working on weekends and holidays creates stress for nurses because they often miss social or family activities.

Nurses who worked in the intensive care unit were three times more likely to develop work stress than those nurses who worked in the outpatient department. This finding is supported by India, Malaysia, Irish, and Worabe research studies that reported ICU nurses as perceived to experience higher stress levels than other nurses (Delanyo 2007; Lwin et al. 2015). The potential explanation for this could be that nurses in the intensive care unit (ICU) face substantial workloads, as their focus during shifts is primarily on tending to critically ill patients, leaving them with minimal time to provide emotional support to one another.

Another factor could be the insufficient knowledge, skills, and a demanding level of professional proficiency required to address technological and technical obstacles, confrontations with patients and their families, as well as work-related conflicts with fellow nurses and doctors, all of which could contribute to heightened stress within this unit.

Nurses who got training were 45% less likely to experience work stress as compared to those nurses who were not trained. This finding is supported by a South American research study that explored how trained nurses experience lower stress levels than non-trained nurses (Glazer and Gyurak 2008). The potential explanation for this could be that training helps nurses develop and improve their technical and scientific skills, thereby enhancing safety and proficiency in their daily practice and reducing the perception of work stress.

Recommendations

Administrators in the Hadiya Zone health department should prioritise offering specialised guidance and job familiarisation regarding the specific characteristics of each unit when recruiting new staff, facilitating rotations, and providing on-the-job training to effectively handle and navigate stressful situations in the hospital or workplace. Furthermore, it is essential for the designated focal persons and managers in the hospitals to establish regular rotation schedules for staff, particularly those working in high-pressure areas.

Conclusions

The findings of this study suggest a high prevalence of work stress among nurses in the study area, compared to earlier research. Factors such as being female, working rotating shifts, being in the intensive care unit, and undergoing post-basic training were identified as determinants of work stress among nurses.

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Authors' contributions

Asnakech: Manuscript draft writing, methodology and analysis.
Getachaw: Supervision, data entry and result writing.
Taye: Proposal writing, data entry and result writing.

Availability of Data and Materials

The dataset used and analysed during the current study is available from the corresponding author upon reasonable request.

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