

Work stress, anxiety, depression, and quality of life among nurses in East Java: a cross-sectional study

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ABSTRACT

Introduction: Work stress is a significant issue in the nursing profession, often linked to adverse mental health outcomes such as anxiety, depression, and decreased quality of life. This study aimed to investigate the relationships between anxiety, depression, quality of life, and work stress among nurses in East Java Province, Indonesia.

Methods: A descriptive cross-sectional design was employed, involving 205 nurses from three cities in Indonesia. Data were collected using standardized instruments: Generalized Anxiety Disorder-7 (GAD-7) for anxiety, the Center for Epidemiologic Studies Depression Scale (CES-D) for depression, World Health Organization Quality of Life-BREF (WHOQOL-BREF) for quality of life, and the Work Stress Scale (WSS) for work stress. Correlation and multiple regression analyses were used to examine the relationships between the variables.

Results: The finding revealed significant correlations between work stress, anxiety (p-value 0.001), and quality of life (p-value 0.001). Higher levels of work stress were associated with increased anxiety and lower quality of life scores. However, no significant association was found between work stress and depression in the regression analysis (p-value 0.101). Anxiety and quality of life were significant predictors of work stress, accounting for 13.4% of the variance.

Conclusions: This study's findings support targeted interventions that can reduce anxiety and improve nurses' quality of life. These include mental health workplace programs and hospital organizational changes to foster a positive work culture. Given the limitations of self-reported data, future research should incorporate longitudinal designs and objective measures to understand these relationships better.

Keywords: anxiety, depression, mental health, nurses, occupational stress, quality of life, work stress

Introduction

Nurses represent the largest segment of the healthcare workforce globally, with an estimated 29 million nurses worldwide (WHO, 2024). In Indonesia, over 580,000 nurses work across various provinces in different healthcare settings (BPS, 2023b), providing essential patient care despite challenging circumstances and workforces (Efendi *et al.*, 2018; Juanamasta *et al.*, 2021). The nursing profession is confronted with

numerous issues, including high workloads, inadequate preparation, a lack of resources, and exposure to traumatic events, which can lead to emotional exhaustion and negatively impact mental health (Guttormson *et al.*, 2022; Petersen, Wendsche and Melzer, 2023; Reyes-rodriguez, Cuellar-Pompa and Gómez, 2025). Additionally, nurses often report low job satisfaction, which contributes to turnover intentions and exacerbates the ongoing shortage of nurses (Galanis



et al., 2023; Liu, Y., et al., 2023), a significant issue in healthcare systems. These challenges necessitate a closer examination of the factors contributing to nurses' working stress and their associated mental health concerns.

The nursing profession is well-known for being highly stressful, with the majority of perceived occupational or work stress among nurses at a moderate level (Bai and Ravindran, 2019; Gmayinaam et al., 2024). The high levels of work stress among nurses significantly affect their well-being and notably impact their performance (Alraimi and Shelke, 2023; Sundram, Kumareswaran and Muhadi, 2024). Work-related stress refers to people's responses when they encounter work demands and pressures that exceed their abilities and knowledge, challenging their capacity to cope (WHO, 2003). Nurses' work-related stress can change over time and is influenced by various factors, such as geographical and cultural differences (Okuhara, Sato and Kodama, 2021). Familiar sources of work-related stress among nurses include patient-related factors, professional factors, environmental conditions, organizational factors, and family and personal issues. For nurses working in hospitals, unfriendly relationships with superiors, colleagues, and subordinates, working with incompetent staff, long working hours, and injuries are significant stressors in healthcare settings, leading to mental and physical strain (Gmayinaam et al., 2024). Work-related stress also affects performance, leading to threats to patient safety, such as work-related fatigue, interruptions during tasks, and errors in procedure performance (Mekonen, Gebrie and Jemberie, 2022). Chronic exposure to stress among nurses can result in high levels of job burnout, which is often linked to mental health issues, including anxiety and stress (Liu, F., et al., 2023). The low state of mental health among nurses can be moderated by psychological resilience (Chen, S.-Y., et al., 2022), which can be fostered by providing adequate support systems and organizational resources (Alodhialah, Almutairi and Almutairi, 2024). Nurses often face challenging situations, including job stress, while dealing with personal and family issues (Ramalisa, du Plessis and Koen, 2018). Addressing these stressors is crucial for improving nurses' well-being and enhancing the overall quality of healthcare services.

Burnout and work-related stress among nurses are linked to increased anxiety symptoms, job dissatisfaction, and lower self-esteem (Seo et al., 2024). At the same time, work-related stress has a negative association with depression in nurses (Poursadeghiyan et al., 2016). Higher levels of anxiety and depression contribute to more significant work stress, which includes concerns about job dissatisfaction and conflicts with supervisors (Kaushik et al., 2021); this relationship is reciprocal. Furthermore, anxiety, depression, and overall job dissatisfaction are negatively correlated with the

quality of life among nurses (Li et al., 2024). Nurses who feel exhausted and experience decreased energy levels often face psychological issues such as depression, anxiety, and elevated stress scores. They also report reduced desire, effort, and motivation at work (Sert et al., 2023). The effect of anxiety and depression can significantly impact nurses' quality of life (An et al., 2015; Mohamadzadeh Tabrizi et al., 2022), with depression having pervasive effects on both quality of life and work life (An et al., 2015; Li, J.-N., et al., 2023). Therefore, it is essential to address these factors to mitigate the impact of work stress on nurses' well-being and the quality of healthcare delivery.

Working stress and related factors can overshadow care performance and affect patient outcomes (Babapour, Gahassab-Mozaffari and Fathnezhad-Kazemi, 2022). Understanding how working stress occurs in nursing is crucial for improving daily life and work performance (Dartey et al., 2023). Identifying the risk factors associated with working stress can also help enhance mental health support and organizational resources. Early detection of anxiety and depression among nurses can facilitate prompt treatment, reducing the long-term effects on their quality of life. Several studies have identified work stress among nurses in Indonesia (Dewi, Hargono and Rusdi, 2019; Kusumawati et al., 2024), especially during the pandemic (Paschalia et al., 2022; Syamlan et al., 2022). However, there has been no specific research investigating the risk factors for work stress related to anxiety, depression, and quality of life among nurses in typical working conditions, particularly within the East Java population, which has its unique characteristics.

Additionally, such research has not been conducted across multiple sites with diverse nursing profiles, which may enrich and generalize the findings about this topic in this area. East Java, with the highest population in Indonesia, exceeding 41 million in 2024 (BPS, 2024), also has the highest number of health workers, with more than 72,000 nurses spread across diverse resources in rural and urban areas (BPS, 2023b). This situation creates unique challenges within the healthcare system. The diversity of resources in this region generates high expectations for healthcare services from the community, which may increase pressure and workload on healthcare workers. Ultimately, this study aimed to identify relationships between anxiety, depression, quality of life, and work stress among nurses in East Java Province, Indonesia.

Materials and Methods

Study Design and Participants

A descriptive cross-sectional design was used to investigate the relationship between anxiety, depression, and quality of life with work stress among nurses. The study was conducted in three cities in East Java Province

(Jember, Malang, and Surabaya), Indonesia, from September to October 2024. Surabaya City has the highest number of nurses in East Java, with 10,883. Malang Regency and Jember Regency rank second and third regarding the number of nurses among all regencies in East Java Province (BPS, 2023a). The selection of these locations also considers that Surabaya City serves as the urban center of East Java; Malang Regency has a relatively high number of nurses, and Jember Regency, located in the eastern part of East Java, adds representation from a different region. This selection aims to encompass the diverse characteristics of East Java, including both urban and rural areas. Two hundred five nurses were initially selected using an accidental sampling method and screened for inclusion and exclusion criteria. The inclusion criteria were (a) nurses aged 21-60 years, (b) having at least one year of work experience, and (c) willingness to participate in the study. Exclusion criteria included (a) nurses on extended leave during the data collection period and (b) nurses who were diagnosed with severe mental health disorders that could affect participation. Ultimately, 205 nurses met the inclusion criteria and participated in the study.

Data Collection

Data were collected using a structured questionnaire administered between September to October 2024. The research team approached nurses who met the inclusion criteria, and their willingness to participate was confirmed. Participants were introduced to the study's objectives and methods, followed by the distribution of an informed consent form. Once consent was obtained, participants completed the questionnaire independently or with the researcher's assistance if needed. Therefore, researchers and enumerators received training on the study protocol, data collection tools, and ethical considerations. The data collection instrument used was a standardized and validated questionnaire, ensuring the accuracy of the collected data. The questionnaire took approximately 25-30 minutes to complete. The researchers conducted data checks during the data collection to identify incomplete data and erroneous entries. Researchers addressed any questions from participants during data collection to ensure clarity and completeness.

Measures

The questionnaire was divided into four sections to assess demographic characteristics, work stress, anxiety, depression, and quality of life. Demographic variables included age (years), gender (male, female), marital status (married, single, divorced/widowed), educational level (diploma, bachelor's, master's), area of work (Public health centers or hospital), and years of experiences (years).

Work stress was assessed using the Work Stress Scale (WSS), which measures perceived work-related stress

through 8 items. Each item is scored on a 5-point Likert scale from 1 (never) to 5 (very often), with total scores ranging from 8 to 40. Higher scores indicate higher levels of work-related stress were developed by the The Marlin Company and the American Institute of Stress, (1978). The Work-Stress Scale Indonesian version questionnaire has passed the validity (Corrected Item Total Correlation > 0.3) and reliability test (Cronbach's alpha 0.826).

Anxiety was measured using the Generalized Anxiety Disorder-7 (GAD-7) scale, a widely used screening tool for identifying symptoms of generalized anxiety disorder. The GAD-7 consists of 7 items, with responses rated on a 4-point Likert scale ranging from 0 (not at all) to 3 (nearly every day). The total score ranges from 0 to 21, with higher scores indicating greater severity of anxiety symptoms (Löwe *et al.*, 2008). In previous studies, the Indonesian version of the GAD-7 has demonstrated good reliability and validity (Larasari *et al.*, 2015).

Depression was assessed using the Center for Epidemiologic Studies Depression Scale (CES-D), a 10-item questionnaire designed to measure depressive symptoms in the general population. Each item is rated on a 4-point Likert scale ranging from 0 (rarely or none of the time) to 3 (most or all), with total scores ranging from 0 to 30. Higher scores indicate more severe depressive symptoms (James *et al.*, 2020). The CES-D has been translated and validated in Indonesia, showing good internal consistency (Priyadi, 2023).

Quality of life was measured using the World Health Organization Quality of Life-BREF (WHOQOL-BREF), a shorter version of the WHOQOL-100 assessment tool. The WHOQOL-BREF comprises 26 items across four domains: physical health, psychological health, social relationships, and environment. Each item is rated on a 5-point Likert scale, with domain scores transformed to a range of 0-100; higher scores reflect better quality of life (WHO, 2004).

Data Analysis

Descriptive statistics were used to summarize demographic data, work stress, anxiety, depression, and quality of life scores. Mean \pm standard deviation and frequency (%) were reported for continuous and categorical variables. Data normality was checked using the Kolmogorov-Smirnov test, which indicated a non-normal distribution for all variables. Bivariate analyses using Spearman's Rho test identified potential factors associated with higher work stress levels ($p < 0.25$). Multiple linear regression analysis was performed to evaluate the relationship between work stress (dependent variable) and anxiety, depression, and quality of life (independent variables). The multicollinearity test was also conducted using collinearity diagnostics, with a value for tolerance multicollinearity diagnostics of > 0.4 . Statistical

Table 1. Characteristics of Participants

Characteristics	Total	
	n	%
Age		
Early Adults	8	3.9
Middle Adults	180	87.8
Late Adults	16	7.8
Older Adults	1	0.5
Education Level, n (%)		
Diploma	129	62.9
Bachelor Degree	75	36.6
Master Degree/ Nursing Specialist	1	0.5
Marital Status		
Single	15	7.3
Married	187	91.2
Divorced/Widowed	3	1.5
Area of Working		
Public Health Center	147	71.7
Hospital	58	28.3
Years of Experiences		
<= 5 years	81	39.5
> 5 years	124	60.5

significance was set at a p-value < 0.05, and all analyses were conducted using SPSS version 26.

Ethical Considerations

The study was approved by the Ethics Committee of the Faculty of Dentistry (Approval Number 2768/UN25.8/KEPK/DL/2023). Before data collection, all participants provided written informed consent. Participation was voluntary, and all responses were anonymized to ensure confidentiality.

Results

Participant Characteristics

A total of 205 nurses participated in the study, with the majority being middle-aged adults (87.8%), while early adults, late adults, and older adults accounted for 3.9%, 7.8%, and 0.5% of the sample, respectively. Most participants had a diploma in nursing (62.9%), followed by those with a bachelor’s degree (36.6%), and a small percentage held a master’s degree or nursing specialist certification (0.5%). Regarding marital status, 91.2% were married, 7.3% were single, and 1.5% were divorced or widowed. In terms of work setting, 71.7% of the nurses worked in public health centers, while 28.3% worked in hospitals. The majority of nurses had more than five years of work experience (60.5%), with the rest having five years or less (39.5%) (Table 1).

Correlation Analysis

The Spearman-Rho correlation analysis revealed significant relationships between work stress, anxiety,

depression, and quality of life. Work stress was positively correlated with anxiety ($r = 0.148, p < 0.05$) and quality of life ($r = 0.190, p < 0.01$), suggesting that higher work stress is associated with increased anxiety and lower quality of life. Conversely, work stress showed a negative correlation with depression ($r = -0.148, p < 0.05$). Anxiety was significantly correlated with depression ($r = 0.471, p < 0.01$) and negatively correlated with quality of life ($r = -0.329, p < 0.01$). Depression also had a strong negative correlation with quality of life ($r = -0.483, p < 0.01$), indicating that higher levels of depression were associated with lower quality of life scores (Table 2).

Multivariate Regression Analysis

Multivariate linear regression analysis identified anxiety and quality of life as significant predictors of work stress. Anxiety ($B = 0.638, p < 0.01$) and quality of life ($B = 0.078, p < 0.01$) were positively associated with work stress, with an R-square value of 0.134, indicating that these variables explained 13.4% of the variance in work stress levels. Depression was not a significant predictor of work stress ($B = -0.237, p = 0.101$) in the model. This suggests that while anxiety and quality of life contribute significantly to the perception of work stress, depression does not have a direct effect on it in this sample of nurses (Table 3).

Discussions

The results indicate that anxiety and quality of life are important factors influencing nurses' perceptions of work stress. The positive association between anxiety and work stress suggests that nurses experiencing higher levels of anxiety are more likely to report tremendous work stress. Similarly, lower quality of life was associated with higher work stress, emphasizing the need to improve overall well-being to reduce stress levels in nursing professionals. Although depression showed significant correlations with anxiety and quality of life, it did not significantly predict work stress in the regression analysis, indicating that other factors may mediate its impact. Other factors that may emerge are likely influenced by individual coping mechanisms and social support (Chen, J., et al., 2020), levels of spirituality (Ibrahim et al., 2020), and having a chronic medical illness (Baye et al., 2020).

The findings of this study reveal significant correlations between anxiety, depression, quality of life, and work stress among nurses. The results align with existing literature that has documented associations

Table 2. Correlation between anxiety, depression, quality of life, and work stress scale among Indonesian Nurses

Variables	Mean	SD	Work Stress Scale	Anxiety	Depression	Quality of Life (WHOQOL-BREEF)
Work Stress Scale	17.07	4.904	1			
Anxiety	2.08	2.760	0.148*	1		
Depression	5.01	3.174	-0.148*	0.471**	1	
Quality of Life (WHOQOL-BREEF)	60.59	15.875	0.190**	-0.329**	-0.483**	1

Note: Analysis using Spearman-Rho Test *p-value < 0.05; **p-value < 0.01

Table 3. Multivariate linear regression model according to Work Stress Scale

Characteristics	B	p-value	95% CI		R-Square
			Lower	Upper	
Anxiety	0.638	0.001**	0.331	0.994	0.134
Depression	-0.237	0.101	-0.522	0.047	
Quality of Life	0.078	0.001**	0.034	0.122	

Significant at *p-value<0.05; **p-value<0.01

between occupational stress and mental health problems in nursing (Okuhara, Sato and Kodama, 2021), showing that higher work stress levels are linked to increased anxiety, higher depression scores, and lower quality of life (Kaushik *et al.*, 2021; Babapour, Gahassab-Mozaffari and Fathnezhad-Kazemi, 2022). Psychological factors are one of the factors related to the emergence of burnout, as well as biological, socio-environmental, and cultural factors (Listopad *et al.*, 2021). The burnout that does not receive recovery is significantly related to work stress in nurses (Jin, Zhou and Zhang, 2023). It also emphasizes the interconnectedness of psychological distress and work stress (Abdou *et al.*, 2024). Whereas anxiety and depression are significantly correlated with working stress, the inverse relationship between quality of life and work stress further highlights the adverse impact of stressful work environments, which reveals a wide range of stressors that cause stressful situations and impact overall well-being (Pauline Ojekou and Titilayo Dorothy, 2015; Layali *et al.*, 2020; Sundram, Kumareswaran and Muhadi, 2024). These results underscore the need for strategies to manage stress effectively among nursing professionals.

Anxiety is a significant factor contributing to work stress among nurses, indicating that those who experience higher levels of anxiety are more likely to perceive more considerable stress in their work environment. Employees with anxiety problems have been found to have an impact on their jobs, including workplace performance, relationships with coworkers and supervisors, and also an impact on their quality of work (Anxiety Disorders Association of America, 2006). Anxiety leads to a diminished sense of control and lower psychological resilience among healthcare workers (Hou *et al.*, 2022). Additionally, it is associated with time pressure, high mental and physical task demands, and unpredictable situations (Kim *et al.*, 2021), which are common in the nursing profession. The strong connection between anxiety and work-related stress underscores the necessity for interventions aimed at reducing anxiety, such as mindfulness-based programs, to enhance the psychological well-being of nurses (Hofmann and Gómez, 2017; Sulosaari, Unal and Cinar, 2022). By addressing anxiety, we can help mitigate its impact on work stress and improve the overall mental health of nurses.

The study found that the quality of life is inversely related to work stress among nurses. Specifically, nurses with higher levels of work stress reported a poorer quality of life, with a notable decrease of 27.9% when job stress

was present (Babapour, Gahassab-Mozaffari and Fathnezhad-Kazemi, 2022). Nurses' well-being is challenged by their work and working conditions (Sulosaari, Unal and Cinar, 2022). Moreover, quality of life is closely linked to health status; as the quality of life improves, so does the level of health behaviors among nurses (Orszulak *et al.*, 2022). Maintaining good health behaviors and status is associated with decreased absenteeism due to illness (Yun *et al.*, 2016; Seglem *et al.*, 2020), leading to increased job stressors. It is important to note that quality of life and work stress have a reciprocal relationship. Job stress is one factor that impacts nurses' quality of life (Babapour, Gahassab-Mozaffari and Fathnezhad-Kazemi, 2022). Enhancing quality of life is crucial for improving workplace productivity, addressing work-life balance, work-related anxiety, and role conflict—critical components of job stress (Oyediran *et al.*, 2022). Furthermore, job stress negatively affects health-related quality of life for nurses (Sarafis *et al.*, 2016), while quality of life is also connected to work stress and influences patient outcomes. The results indicate that reducing work stress is an urgent necessity for improving the quality of life, which can be achieved through stress management and counseling programs.

Contrary to expectations, depression did not significantly predict work stress in the regression analysis despite being correlated with anxiety and quality of life. This finding contrasts with some studies that have demonstrated a direct link between work stress and depressive symptoms in healthcare workers (Gherardi-Donato *et al.*, 2015). One possible explanation is that nurses may experience reduced emotional exhaustion as their years of work increase. Research indicates that emotional exhaustion among nurses generally declines until around 21 years of service (Wu *et al.*, 2023), whereas, in this study, most nurses have been working for more than 5 years. Additionally, self-compassion serves as a moderator in the relationship between emotional exhaustion and depression. Individuals with high self-compassion tend to have a weaker relationship between emotional exhaustion and depression compared to those with lower self-compassion (Wu *et al.*, 2023). The different coping mechanisms of each individual also play a role in influencing nurses' work stress levels. Individual coping mechanisms are crucial in affecting stress levels, which can directly impact the strength of the response to stressors (Thuné-Boyle *et al.*, 2013). The spirituality and social support possessed by nurses also influence the level of depression, which affects work stress. Consistent

with research conducted on nurses in hospitals in Indonesia, the strength of spirituality enhances nurses' coping mechanisms to face challenges in the healthcare services (Huda *et al.*, 2024). These findings suggest that while depression is a crucial mental health concern, its relationship with work stress may be influenced by other moderating factors. Healthcare institutions must develop policies prioritizing nurse well-being through mental health programs, including counseling programs for mental health support, stress management training, and policies that ensure work-life balance and create a positive work culture.

The limitations of this study include the use of self-reported measures, which may introduce bias and affect the validity of the results. Self-reported data can be influenced by respondents' emotional states or a tendency to provide socially desirable answers, potentially leading to an over- or underestimation of anxiety, depression, and work stress levels. This study's results also indicate that the R-square showed a small proportion of the variance in the dependent variable. This suggests that there are likely unmeasured factors influencing the dependent variable. The findings highlight the need for further research to explore these factors in depth, emphasizing the complexity of the predictors of work stress among nurses in East Java. Additionally, the study's cross-sectional nature limits the ability to establish causality between work stress and the psychological variables. Despite these limitations, the study provides valuable insights into the impact of work stress on nurses' mental health and quality of life.

Conclusion

The findings of this study highlight significant relationships between work stress and mental health outcomes, specifically anxiety and quality of life, among nurses. At the same time, depression did not show a significant association with work stress. The results suggest that high levels of work stress are linked to increased anxiety and decreased quality of life, emphasizing the need for stress management strategies in the nursing profession. These findings support the implementation of targeted interventions, such as mental health workplace programs and organizational changes, to alleviate work-related stress, create a positive culture, and improve the well-being of nurses. Addressing work stress is crucial for enhancing nurses' mental health and quality of life and maintaining a stable and effective healthcare workforce. Future research should focus on longitudinal studies and more objective measures to explore these relationships further.

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Availability of data and materials

The datasets generated and/or analyzed during this study are available from the corresponding author upon reasonable request

Authors' contributions

TS, BAK, HDW, HEN: Conceptualization, methodology, supervision; NALA, RI, DR, KK: Data collection, investigation. TS, NALA, RI: Data curation, formal analysis, writing – original draft; TS, BAK, HDW, HEN, NALA, RI D: Writing – review and editing, project administration. All of authors are approved this study to submit to this journal.

Declaration of Interest

There is no conflict of interest in this study.

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