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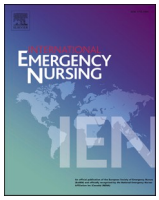

Factors correlating work engagement among Palestinian emergency nurses during Gaza war in the West Bank

Malakeh.Z. Malak [a,*], Hisham Zahran [b], Abdelrahman Swalmeh [c], Haya Albana [d]

[a] Community Health Nursing, Faculty of Nursing, Al-Zaytoonah University of Jordan, Amman, Jordan
[b] Adult Health Nursing, Faculty of Nursing, Arab American University at Palestine, Jenin, Palestine
[c] Head Nurse of Pediatric Intensive Care, H. Clinic, Ramallah, Palestine
[d] Adult Health Nursing, Faculty of Nursing, Al-Zaytoonah University of Jordan, Amman, Jordan

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ABSTRACT

Purpose: Work engagement among emergency nurses is a critical issue that adversely affects the quality of patient care and productivity. Psychological reactions (e.g., stress, anxiety, and depression) and resilience correlated with work engagement. This study addresses the gap in understanding the factors correlating work engagement among.
emergency nurses in the West Bank during the Gaza War.
Methods: A descriptive correlational design was used. The data were collected from 378 emergency nurses from governmental and private hospitals in the West Bank using a self-reported questionnaire from December 2023 to February 2024. Depression Anxiety Stress Scales-21 (DASS-21), the Connor-Davidson Resilience Scale (CD-RISC), and the Utrecht Work Engagement Scale (UWES) were used to assess the study variables.
Results: The findings demonstrated that 71.7 %, 52.9 %, 42.5 %, 55.6 %, and 40.0 % of the emergency nurses reported severe to extremely severe stress, moderate to extremely severe levels of anxiety, severe to extremely severe levels of depression, low resilience, and low to extremely low levels of job engagement, respectively. A positive relationship existed between work engagement and age ($r = 0.407$, $p < 0.01$), years of experience ($r = 0.385$, $p < 0.01$), and resilience ($r = 0.419$, $p < 0.01$). While, work engagement negatively correlated with stress ($r = -0.486$, $p < 0.01$), anxiety ($r = -0.616$, $p < 0.01$), and depression ($r = -0.632$, $p < 0.01$).
Conclusions: The findings indicated that policymakers and healthcare professionals should promote initiatives that enhance nurses' resilience and mitigate psychological responses to improve work engagement. Therapeutic programs should consider the situational variations of Palestinian society, encompassing resilience, coping mechanisms, and psychological management approaches.

1. Introduction

Nursing is a job that requires much effort to optimize nursing care in workplaces [1]. Emergency departments are demanding work environments and often encounter urgent and stressful situations. Emergency staff is regularly exposed to distressing occurrences such as abrupt death, trauma, patients in tremendous pain, resuscitation efforts, antagonism, and violence, which can impair their physical, psychological, and emotional well-being [2] and may affect their performance [3].

Previous studies suggested that emergency nurses experience common psychological problems during work including stress, anxiety, depression, and secondary post-traumatic stress disorder [4–7]. Emergency nurses are frequently confronted with occupational stress in their workplace due to stressful situations [8]. These encounters could make them more stressed than nurses in other units [9]. It was estimated that the incidence rate of low, medium, and high work-related stress levels among emergency nurses was 0.21 %, 0.46 %, and 0.32 %, respectively [10]. Also, an Ethiopian study revealed that the prevalence of stress among emergency nurses was as low, moderate, and high as follows: 19.3 %, 55.9 %, and 24.8 %, respectively [11]. A Chinese study found that the incidence rate of stress among emergency nurses as low, medium, and high stress was as follows: low (3.47 %), medium (44.8 %), and high (51.73 %) [12]. An Egyptian study showed that the incidence rate of stress as low, medium, and high among emergency nurses was

* Corresponding author.
E-mail address: malakeh.m@zuj.edu.jo (Malakeh.Z. Malak).

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13.4 %, 52.1 %, and 26.2 %, respectively [13]. A study conducted in the U.S. revealed that the incidence rate of mild stress among emergency nurses was 73.0 % [14].

Anxiety is another psychological reaction among emergency nurses. A study conducted in Ethiopia revealed that anxiety among emergency nurses was high due to life-threatening cases and high mortality rates [15]. Omani study reported that 28.7 % of emergency nurses experienced anxiety [16] Similar findings in Turkey emphasized the importance of considering the anxiety aspect of emergency nurses and the extent to which it affects their work concentration, especially for long periods [17]. Also, emergency nurses are considered the first line that treats patients, especially during disasters and global diseases such as the COVID-19 pandemic [18]. Additionally, depression is one of the most important factors that may contribute to care provided by emergency nurses and can increase the incidence of burnout among those nurses [19]. A previous study revealed that 13.6 % of Omani emergency nurses suffered from depression [16]. Another study demonstrated that 54.6 % of Chinese emergency nurses had depressive symptoms [5].

Due to harsh work conditions, emergency nurses should have effective coping strategies and resilience [15,20]. Resilience is considered one of the most important constants that can contribute to raising the efficiency of care by emergency nurses and increasing their ability to adapt at work [21]. Recent studies suggested that nurses who had high resilience reported better work performance [22,23]. On the contrary, nurses who experienced a high level of anxiety and depression had lower levels of resilience and tended to leave work [24,25]. A previous study indicated that Chinese emergency nurses who exhibited higher levels of team resilience and greater job engagement experienced lower stress at work [26]. Another study in Thailand proposed an association between resilience and job outcomes, including burnout, intention to leave, and work engagement, it has been suggested that resilience is a significant predictor of several nurses' outcomes [27].

Work-related psychological reactions increase absenteeism and turnover and negatively affect work engagement and patient outcomes [28]. Work engagement is the ability of emergency nurses to bear the nature of the work in the department and their ability to continue providing health care to patients and adapt to various pressures and factors that could affect them during work, and how these factors reflect positively on their performance in the department [29]. Moreover, demographic factors have shown a significant association with work engagement including age, being female, married, educational level, and work experience of < 5 years [30].

Regardless of the significance of factors related to work engagement among emergency nurses, there is a lack of studies about these factors internationally and in Palestine. Also, few studies have assessed resilience among emergency nurses [21–25]. Furthermore, few studies examined resilience among Palestinian nurses [31,32]. Unfortunately, one study examined work engagement among critical care nurses in Palestine and revealed that 57.5 % of the participants exhibited low work engagement [32].

As a result of the political situation in the region and dealing with difficult emergencies in Palestine, the psychological health and work engagement of emergency nurses are affected. According to the World Health Organization (WHO), the GAZA war is considered a disaster, accompanied by a lack of health services and basic resources used to provide emergency care for acute cases, insufficient medications used for various emergency cases, and the lack of the number of ambulances in the region, which affect the healthcare system in the area, and this reflected in nurses' engagement and performance in emergency departments [33]. Therefore, the results of this study can help policy-makers and hospital administrators' emergency nurses to know the factors affecting them while working in the emergency department, thus they can learn how to adapt to them and overcome the problems and difficulties they may face. Therefore, this study aimed to identify the correlating factors of work engagement among emergency nurses in Palestine. Also, these questions have guided the study:

- What are the levels of psychological reactions (stress, anxiety, and depression), resilience, and work engagement among emergency department nurses in Palestine?
- What is the relationship between psychological reactions (e.g., stress, anxiety, and depression), resilience, selected demographic characteristics (age, gender, marital status, experience, educational level, income/month, and health sector), and work engagement among emergency department nurses in Palestine?
- What are the predictors of work engagement among emergency department nurses in Palestine?

2. Methodology

2.1. Study design

A descriptive correlational design was used to perform this study. The target population of this study included all registered nurses working in the emergency departments of private and public hospitals in Palestine. The sampling was recruited in three phases; the first phase was a cluster sample in which the West Bank was divided geographically into three zones (North, Center, and South). In the second phase, the hospitals in the West Bank were divided into private and public hospitals using a stratified sampling. Criteria for selecting participating hospitals were based on high admission rates and high occupancy rates. Only eight hospitals from the north (five private and three public), two hospitals from the center (one private and one public), and four hospitals from the south (two private and two public) met these criteria and were included in the study. In the third phase, a simple random sample was drawn to select the participants who met the inclusion criteria.

Participants were selected according to the following criteria: nurses who had been working for at least one year to familiarize themselves with emergency department policies and procedures, and full-time nurses who were willing to participate. Nurses in managerial positions were excluded. The sample size was calculated using the software program G*power (3.0.10), with alpha $= 0.05$, effect size $= 0.07$, and power $= 0.90$ with 11 predictors (age, gender, marital status, education level, hospital sector, monthly income, years of experience, anxiety, depression, stress, and resilience). After regression, a total sample of 313 nurses was required to conduct this study. An additional 30 % of nurses were added to avoid incomplete questionnaires.

2.2. Study Instruments

The data was collected using a self-structured questionnaire divided into these parts:

a) *Demographic data included a*ge, sex, marital status, educational level, monthly income, years of experience, and health sector. *b) Depression Anxiety Stress Scales-21 (DASS-21)* was developed by Lovibond and Lovibond [34] and refined by Antony et al. [35] to assess major symptoms of depression, anxiety, and stress. It is divided into three subscales: depression, anxiety, and stress, each of which contains seven items. These items were rated on a 4-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much). The scores of the related items are calculated by adding the scores of the corresponding items. The resulting ratings are then categorized as "normal, mild, moderate, severe, or extremely severe," per the manual. The questionnaire has been proven to have adequate psychometric properties and is equivalent to other accurate scales in which the internal reliability using Cronbach's alpha for the total scale was 0.89 [36]. The Arabic version of DASS-21 was utilized, which has good validity and reliability [37,38] with Cronbach alpha of 0.94 % [38].

c) The Connor-Davidson Resilience Scale (CD-RISC) was utilized to evaluate resilience [39]. A five-point Likert scale, with 0 representing

not true at all, 1 representing rarely true, 2 denoting sometimes true, 3 denoting often true, and 4 representing true almost all the time, was used to evaluate each of the 25 items. The scale scores range between 0 and 100, with higher scores denoting stronger resilience [39]. The CD-RISC has shown strong reliability (α = 0.88 and 0.89), test–retest reliability (0.87), and convergent and divergent validity in the scale's development [39,40]. The Arabic version was employed, which had a high internal consistency with a Cronbach alpha of 0.89 % [41].

d) The Utrecht Work Engagement Scale (UWES) was created by Schaufeli et al. [42] and consists of nine items, with ratings ranging from 0 (never) to 6 (always/every day) on a Likert scale. The overall score was the mean of the nine items. The scale has three subscales including vigor, dedication, and absorption. The original tool of UWES is valid and reliable with a Cronbach's alpha varying from 0.80 to 0.90 [42]. A valid and reliable Arabic version with a Cronbach's alpha of 0.85 was used in this study [43].

2.3. Ethical considerations

Ethics approval was obtained from the ethics committee of (XXX). Informed consent was obtained from the agreed participants. Confidentiality was maintained throughout the study, and participation was voluntary. The data were stored securely in a coded file.

2.4. Data collection procedures

The data collection process began after obtaining approvals from the target hospitals. A scheduled meeting was then held with the head nurses of the emergency departments in these hospitals, and each head nurse prepared a list of eligible nurses to participate in the study. Then, the nurses were randomly selected After that, each hospital was sent a sealed envelope containing the questionnaire and consent forms, which were distributed by the senior nurses to chosen nurses. After one week, these envelopes were collected again by the head nurses. Data were during the period from December 2023 to February 2024.

2.5. Data analysis

The data were edited, coded, and transcribed before analysis to ensure completeness, consistency, and readability. Every question was given a code, then, the data were added to the SPSS 24.0 data file. Next, the data were examined for normality and missing values. Since the responses to each item were verified to be required, no missing data were discovered for the measured items. Descriptive statistics of the skewness and kurtosis coefficients were produced to assess the constructs' normality. All constructs exhibited normal distributions since the skewness and kurtosis statistics on the standard error values fell between −1.96 and 1.96 [44].

The study's variables were described using descriptive statistics, which include mean, standard deviation, percentages, and frequencies. The association between the variables was examined using point biserial correlation and Pearson's correlation tests. Utilizing multiple linear regression, the factors influencing work engagement were evaluated. A significant p-value of less than or equal to 0.05 was chosen.

3. Results

A total of 406 questionnaires were distributed to emergency nurses in the selected hospitals. Three hundred and seventy-eight nurses completed the questionnaire, with a response rate of 93.1 %.

The findings revealed that the mean age of participants was 28.88 years (SD = 5.58), with a range of 23 to 51 years. Also, 65.5 % of emergency nurses were males and 34.5 % were females. Around 53 % were married and 82.3 % held a bachelor's degree. A total of 62.4 % of nurses worked in private institutions. The average years of experience in the emergency department were 5.58 (SD = 4.34) (Table 1).

Table 1
Characteristics of the sample (N = 378).

Character	Category	n(%)
Gender	Male	246 (65.5)
	Female	132 (34.9)
Marital status	Single	172 (45.5)
	Married	200 (52.9)
	Divorced	6 (1.6)
Educational level	Bachelor	311 (82.3)
	Higher Studies	67 (17.7)
Hospital sector	Private	236 (62.4)
	Governmental	142 (37.6)
Monthly income	2500 – 3400 NIS	76 (20.1)
	3500 – 4499	131 (34.7)
	More than 4500	171 (45.2)
Age/ years: M = 28.88, SD = 5.97, Range = 23–51		
Years of experience in emergency department /years: M = 5.58, SD = 4.34, Range = 1–30		

n: number; %: percentage; M: mean, SD: Standard Deviation; NIS: New Israeli Shekel.

Regarding psychological reactions, the results revealed that 71.7 % of the emergency nurses reported severe to extremely severe stress, with a mean of 25.3 (SD = 5.17), indicating that participants experienced substantial stress. Furthermore, 52.9 % of the participants reported moderate to extremely severe levels of anxiety, with a mean of 13.19 (SD = 7.56), indicating that participants experienced moderate anxiety levels. Also, 42.5 % of them had severe to extremely severe levels of depression, with a mean of 19.72 (SD = 7.70), indicating that participants experienced moderate depression levels. Regarding resilience, 55.6 % of nurses reported low levels, with a mean of 68.81 (SD = 14.94). Regarding work engagement, 40 % of nurses endorsed extremely low and low levels of job engagement, with a mean of 3.44 (SD = 1.45) (Table 2).

Pearson's correlation test examined the relationships between continuous variables (age, experience, psychological reactions,

Table 2
Levels of psychological reactions, resilience, and work engagement among emergency department nurses (N = 378).

Variable	n	%	M (SD)
Stress			25.3 (5.17)
Normal (0–14)	29	7.7	
Mild (15–18)	44	11.6	
Moderate (19–25)	34	9.9	
Severe (26–33)	131	34.7	
Extremely Severe (34 +)	140	37.0	
Anxiety			13.19 (7.56)
No anxiety (0–7)	105	27.8	
Mild anxiety (8–9)	73	19.3	
Moderate anxiety (10–14)	76	20.1	
Severe anxiety (15–19)	82	21.7	
Extremely severe anxiety (20 +)	42	11.1	
Depression			19.72 (7.70)
Normal (0–9)	34	9.0	
Mild (10–13)	50	13.2	
Moderate (14–20)	133	35.2	
Severe (21–27)	89	23.5	
Extremely Severe (28 +)	72	19.0	
Resilience			68.81 (14.94)
Low (0–73)	210	55.6	
Mild (74–82)	96	25.4	
Moderate (83–90)	47	12.4	
High (91–100)	25	6.6	
Work Engagement			3.44 (1.45)
Very Low (<1.93)	63	16.7	
Low (1.94–3.06)	88	23.3	
Average (3.07–4.66)	115	30.4	
High (4.67–5.53)	62	16.4	
Very High (>5.54)	50	13.2	

n: number; %: percentage; M: mean, SD: Standard Devnation

resilience, and work engagement). The point biserial correlation test was used to test the relationship between categorical variables and continuous variables (sex, hospital sector, marital status, educational level, and income). The findings found a positive relationship between work engagement and age ($r = 0.407$, $p < 0.01$), years of experience ($r = 0.385$, $p < 0.01$), and resilience ($r = 0.419$, $p < 0.01$). While, work engagement negatively correlated with stress ($r = -0.486$, $p < 0.01$), anxiety ($r = -0.616$, $p < 0.01$), and depression ($r = -0.632$, $p < 0.01$) (Table 3). However, there were no relationships between work engagement and other study variables.

A multivariable regression analysis was conducted to identify determinants of work engagement in the emergency department. The regression assumptions were applied, and the variance inflation factor (VIF) and tolerance statistics were employed to evaluate multicollinearity. Collinearity should be avoided if the VIF value exceeds 10 and the tolerance value is less than 0.1. In addition, the autocorrelation assumption was established using the Durbin-Watson coefficient, which in this study was 1.536. Regarding the regression model for independent variables, the VIF and tolerance were within the typical range, indicating a positive and acceptable autocorrelation.

As indicated in Table 4, the correlated variables with job engagement were entered into the predictor model, which included age, years of experience, depression, anxiety, stress, and resilience. The model, including all work engagement factors, was statistically significant ($p \leq 0.01$, $R = 0.715$, $R^2 = 0.511$, adjusted $R^2 = 0.696$). According to this, the model explained 51.1 % of the variation in work engagement.

The study found that age predicted work engagement ($p < 0.05$). Moreover, the beta coefficient for age was 0.096 representing that a one-point rise in resilience was correlated with a 0.096 increase in work engagement. Additionally, years of experience were found to predict work engagement ($p < 0.05$), and the beta coefficient for years of experience was 0.369 representing that a one-point increase in years of experience was correlated with a 0.369 increase in work engagement. Depression was found to be a predictor of job engagement ($p < 0.01$), with a one-point rise in depression resulting in a 0.758 decrease in engagement. Anxiety was identified as a predictor of job engagement ($p < 0.05$), with a one-point increase in anxiety resulting in a 0.266 decrease in engagement. Additionally, stress was a significant predictor ($p < 0.01$), with a one-point increase in stress resulting in a 0.492 decrease in work engagement. Furthermore, resilience was the greatest predictor of work engagement (part = 0.833, $part^2 = 0.694$).

4. Discussion

This study assessed the relationship between psychological reactions, resilience, and work engagement among Palestinian emergency nurses during the Gaza War. Our findings indicated that around two-thirds of emergency nurses reported experiencing high to extremely high stress. This result is consistent with previous studies conducted among emergency nurses in Jordan [8], and China [12,45,46]. On the contrary, other studies in Ethiopia, China, Iran, and Egypt revealed that emergency nurses had moderate stress [13,47–49]. In contrast, studies conducted in the U.S. and China demonstrated that emergency nurses had low stress [14,50,51]. This study's finding could be related to persistent political conflicts in the region and the Gaza war; Palestinian emergency nurses encounter specific challenges in their profession, often being exposed to instances of violence and traumatic circumstances [52]. Additionally, due to the Gaza war, the healthcare system in Palestine lacks adequate support and is overwhelmed by the scarcity of medical resources and supplies and overwhelming demands for services [33].

Our study demonstrated that the majority of emergency nurses experienced moderate to severe anxiety. This finding aligns with studies conducted in Ethiopia [15], Oman [16], Saudi Arabia [37], Iran [53], and Turkey [17]. The present finding may be associated with various aspects, including the work-related environment, political conflicts, team conflicts, conflicts with patients and their families, insufficient job satisfaction, low salaries, and sleep deprivation [54].

The findings of our study revealed that the majority of participants experienced moderate levels of depression, which is parallel with a study conducted in Oman [16]. In contrast, a study conducted in China indicated that the participants had depressive symptoms [5]. The excessive workload and prolonged working hours could explain this finding [55]. Changing policies could be a contributing factor to depression [56]. In addition, the experience of post-traumatic stress, grief, and other psychological issues related to the deaths of patients, combined with the demanding nature of the work, might contribute to an elevated level of depression [6,7,57].

Our study proposed that more than half of the emergency nurses had a low level of resilience. This finding aligns with other international studies conducted among emergency nurses [21,22], and in Palestine among critical care nurses [31,32]. In contrast, previous U.S. and Chinese studies reported that emergency nurses endorsed high resilience levels [58,59]. This result suggests that Palestinian emergency nurses have ineffective coping mechanisms to deal with stressful events they face in their work environment. Political challenges and harsh workplace conditions, such as overcrowding, critical events, and resource scarcity, contribute to the nurses' low resilience [60]. Talebian et al. [61] indicated a correlation between reduced levels of resilience and the presence of psychological reactions (e.g., stress, anxiety, and depression).

This study found a negative correlation between psychological reactions (stress, anxiety, and depression) and work engagement, indicating increased psychological reactions associated with decreased work engagement. Also, these reactions predicted work engagement. These findings are consistent with previous studies [28,32]. Work-time demands appear to be important determinants of psychosomatic and psychological complaints and fatigue in emergency nurses decreasing work satisfaction and engagement [62,63].

Our study revealed a positive association between resilience and work engagement, reflecting high levels of resilience correlated with high work engagement. This is consistent with the results of Pericak et al. [30] and Swalma et al. [32]. This finding could indicate that hospitals and nursing managers have the potential to improve nurses' work engagement by enhancing organizational support and resilience [64].

This study found positive relationships between work engagement, age, and work experience, which align with the findings of previous studies [30,32]. These findings suggest that advancing age and more experience were associated with better work engagement. Older and more experienced nurses have the competencies and skills to manage problems with patients and families, healthcare teams, and difficult and critical situations [65].

Table 3
Correlating factors of work engagement (N = 378).

Variable	Work engagement	
	*r	*p. value
Age	0.407	0.000**
Years of experience	0.385	0.000**
Stress	−0.486	0.000**
Anxiety	−0.616	0.000**
Depression	−0.632	0.000**
Resilience	0.419	0.000**
	p.b.r	**p. value**
Gender	0.021	0.076
Hospital sector	0.014	0.817
Marital status	−0.086	0.158
Educational level	−0.091	0.158
Monthly income	−0.029	0.630

p.b.r = point biserial correlation, r = Pearson correlation
** Significant at $p \leq 0.01$.

Table 4
Predictors of work engagement: Multiple Linear Regression.

Predictor	β	B	t	p-value	95.0 % CI		Correlations	
					Lower	Upper	Partial	Part
Age	0.212	0.096	1.720	0.047	0.009	0.415	0.105	0.366
Experience	0.369	0.124	2.232	0.026*	0.643	0.096	0.136	0.369
Depression	−0.758	−0.443	−6.912	0.000**	−0.939	−0.577	−0.390	0.277
Anxiety	−0.266	−0.125	−2.558	0.011*	−0.437	−0.094	−0.155	0.474
Stress	−0.492	−0.279	−4.479	0.000**	−0.673	−0.311	−0.265	0.293
Resilience	0.098	0.110	2.978	0.003**	0.044	0.152	0.180	0.833

CI = Confidence Interval, β = Unstandardized beta, B = Standardized beta.
* Significant at $p \leq 0.05$; ** Significant at $p \leq 0.01$.

5. Strengths and limitations of the study

This study is one of the first investigations on the work engagement of emergency nurses during the Gaza war in Palestine and reflects significant findings on emergency nurses' situations. Despite that, this study has specific limitations: the cross-sectional approach imposes limitations on examining the cause and effect of the study variables, therefore, longitudinal studies are recommended. Also, data were collected using a self-reported questionnaire that was influenced by the participants' work environment and critical situations.

6. Implications of the study

This study investigated Palestinian emergency nurses' psychological reactions, resilience, work engagement, and the factors that predict work engagement during Gaza war. The results indicated that emergency nurses exhibited a significant work engagement level, low resilience, and high psychological reactions. Therefore, emergency nurses need social support systems, training courses that enhance their resilience, psychological therapeutic interventions, and organizational policies that promote their psychological welfare and professional engagement. Furthermore, hospital managers must improve the work environment and boost the morale of emergency nurses to maintain their level of commitment.

Policymakers should consider several influential factors to establish a conducive workplace for emergency nurses. For example, strategies need to implemented to enhance nurse involvement, such as providing opportunities for professional growth through training programs. Therapeutic programs should consider the situational variations of Palestinian society, encompassing resilience, coping mechanisms, and psychological management approaches. Therefore, a deeply driven nursing workforce yields significant advantages for the healthcare system and ensures exceptional patient care.

7. Conclusion

Most Palestinian emergency nurses had low resilience, high levels of stress, moderate to severe anxiety, moderate depression, and poor work engagement. A positive correlation existed between work involvement and resilience and a negative correlation with psychological reactivity. Furthermore, initiatives that could enhance nurses' resilience and mitigate psychological responses should be implemented to improve work engagement. Further research, including qualitative studies, is required to investigate the phenomenon of resilience, psychological reactions, and work engagement among emergency nurses, drawing on their personal experiences.

8. Consent to participate (include appropriate consent statements)

Each participant provided informed consent before beginning the study.

CRediT authorship contribution statement

Malakeh.Z. Malak: . Hisham Zahran: Writing – review & editing, Writing – original draft, Methodology, Investigation. **Abdelrahman Swalmeh:** Writing – review & editing, Writing – original draft, Software, Methodology. **Haya Albana:** Writing – review & editing, Writing – original draft.

Ethics approval

All procedures performed in studies involving human participants were by the ethical standards of the institutional and/or national research committee at Arab American University at Palestine.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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