

## ORIGINAL RESEARCH

# Occupational stress and stressors experienced by the newly practicing nurses in intensive care units

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## ABSTRACT

**Background and objective:** Nurses working in critical care units face occupational stress particularly in the first six months of their practice; however, research on nurses' perceived stress during this period is extremely limited. The aim of the study was to assess occupational stress and stressors experienced by the newly practicing nurses in intensive care units (ICUs).

**Methods:** Design: A cross-sectional, descriptive, quantitative research design. Settings: Four ICUs in a university hospital in Alexandria governorate, Egypt. Participants: A convenient sample of 100 intern nurses who had their first clinical work experience in ICU during the internship. Method: This is a cross-sectional, descriptive, quantitative survey study conducted in four ICUs in Alexandria university hospital, Egypt. A questionnaire sheet consisting of two parts was used to collect data. Part one is the nursing stress scale and part two is the respondents' socio-demographic and work-related data. Descriptive and bivariate statistical analyses were used to describe study variables and their associations.

**Results:** All of the studied newly practicing nurses in ICUs experienced either moderate (43%) or high (57%) stress level. There are differences between the perceived stress reported by the studied nurses according to their characteristics (e.g., sex, marital status, having private work). These differences were not statistically significant. Death and dying, workload, and inadequate preparation are the top ranked stressors; average scores are 2.22, 2.20, and 2.13 respectively. In their first two months of experiences, nurses perceived inadequate preparation and death and dying as the highest stressors. This ranking differs among nurses with 3-4 months of experience and nurses with 5-6 months of experience.

**Conclusions and recommendations:** Newly practicing nurses in ICUs face a significant level of stress. Death and dying, workload, and inadequate preparation are the top ranked stressors. Recommendations: Stress-management program must be initiated for new practicing nurses in ICU. Death and dying in ICU are highly needed topics to be embedded into nursing curriculum. Strategies to help graduate nurses cope must be implemented.

**Key Words:** Egypt, Newly practicing nurses, Novice nurses, Occupational stress, Stress, ICU

## 1. INTRODUCTION

Stress is an occupational hazard that is defined as an internal cue in the physical, social, or psychological environment that

threatens the equilibrium of an individual.<sup>[1,2]</sup> Occupational or professional stress is a pattern of emotional, cognitive, behavioral, and physiological reactions to adverse and harmful

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aspects of job-related factors, including work content, organization, and the environment.<sup>[3,4]</sup> It occurs when working environment demands exceed the workers' coping capacities.<sup>[5,6]</sup> In nursing, stress is attributed to the physical efforts, suffering and demands of patients and families, work load, including extra working time, multiple duties in a limited time and limited rest time, interpersonal relationships, and other burdens related to nurses' work.<sup>[5,7,8]</sup>

Working in critical care units is extremely challenging.<sup>[9]</sup> Critically ill patients have a higher acuity of illness than other patients in medical/surgical units.<sup>[10]</sup> It is a must for critical care nurses to have comprehensive knowledge of emergency management, diagnoses, monitoring in addition to proficient skills of assessment, problem solving, and decision-making.<sup>[11,12]</sup> Occupational stress may significantly affect nurses' physical and psychological health. It increases the probability of anxiety, depression, cardiovascular, and locomotor diseases. These negatively affect nurses' quality of life. Occupational stress decreases compassion to patients, increases rate of errors, and decreases the quality of care.<sup>[5,13-16]</sup> Therefore, numerous studies<sup>[5,6,8,14,17-20]</sup> were concerned with nurses' occupational stress, stressors, and the related consequences.

Sarafis et al.<sup>[14]</sup> studied 246 nurses from different educational categories to determine the relation between nurses' work stress and their caring behaviors and health-related quality of life. They reported that dealing with death, patients and families, conflict with managers and doubt about the treatment effects resulted in significantly higher stress. They also reported that occupational stress negatively affected nurses' health-related quality of life. In a multi-center study,<sup>[5]</sup> critical care nurses rated situations concerning working environments either physical or psychological as the most stressful. Significant differences in the perception of stresses of particular stressors were observed with respect to psychosomatic manifestations and certain illnesses. A study by Shivaprasad<sup>[8]</sup> revealed that 52% of the nurses had severe level of stress. Workload and patients and families, problems involving colleagues, death and dying, and problems concerning managers were the top causes of severe level of stress. Kamal and colleagues<sup>[19]</sup> ranked patient's demands, family's complaints and workload as the most stressful categories. They also documented that critical care and emergency nurses experienced a high level of stress which resulted in low level of job satisfaction.

Nurse students are sheltered from stressful situations. They are not exposed to actually distressing requirements needed from the employed nursing staff. The transition from nursing student to practicing nurse is complex and challenging.<sup>[13,21]</sup>

The new graduates move on a continuum till they have advanced thinking and competency.<sup>[17]</sup> New graduate nurses require 12 to 18 months to feel competent in ICU practices.<sup>[22]</sup> Intern nurses are considered beginning level nurses or newly practicing nurses. They are unfamiliar and inexperienced in dealing with the complex working environment, especially those who do not have a private experience before internship. They lack awareness about specialized equipment functions and operation. In addition, they are lacking control over patient care tasks leading to emotional exhaustion and occupational stress.<sup>[23,24]</sup> In Egypt, for example, where the current study was conducted, the internship program is a mandatory work-based program which allows graduates exposure to a variety of educational opportunities at clinical settings and assist the adjustment from students to registered nurses. To our knowledge, there are no published statistics regarding the Egyptian critical care nursing workforce. Nevertheless, as a result of some work-related legislations, hospital policies, and nursing shortage, it is not rare for intern nurses to be the main portion of the ICU nursing workforce specially during the evening and night shifts.<sup>[25]</sup> This situation puts newly practicing nurses under considerable stress without enough supervision or support.

Researchers reported that the first 3 to 6 months of employment are the most stressful for nurses' career.<sup>[26-28]</sup> This may be attributed to that, transition from study to work results in loss of the familiar setting and switching to a noticeably new culture.<sup>[29]</sup> Yeh et al.<sup>[20]</sup> documented that new nurse graduates perceived moderate job stress which significantly influenced their intention to quit. In addition, the national healthcare retention and registered nurses staffing report<sup>[30]</sup> revealed that the turnover is 30% during the first year of registered nurses' employment. Though the importance of the beginning of the transmission period, many studies concerned with occupational stress either excluded or did not concern in specific the new practicing nurses (i.e., those who had less than 6 months experience).<sup>[5,7,19,31,32]</sup> Hence, the current study is implemented to assess occupational stress and stressors experienced by the newly practicing nurses in ICUs.

### 1.1 Aim of the study

The aim of this study is to assess occupational stress and stressors experienced by the newly practicing nurses in ICUs.

### 1.2 Research questions

- (1) What is the severity of occupational stress experienced by the newly practicing nurses in ICUs?
- (2) What are the occupational stressors experienced by the newly practicing nurses in ICUs?

## 2. METHOD

### 2.1 Research design and sampling

This is a cross-sectional, descriptive, quantitative survey study was conducted in four ICUs in a university hospital in Alexandria, Egypt with a total bed capacity of 42 beds (i.e., 17, 9, 8, and 8 beds). A convenience sample of newly practicing nurses in ICUs (100 intern nurses) was included in this study. Included intern nurses had their first clinical work experience in the ICU during the internship and their experience is ranging from one month to six months. Intern nurses who had a previous work experience in ICU before internship were excluded from the study.

### 2.2 Instrument

To assess occupational stress and stressors experienced by the newly practicing nurses in intensive care units (ICUs), the English version of Nursing Stress Scale (NSS) was adopted. This scale was developed by Toft and Anderson.<sup>[1]</sup> It is composed of 34 items clustered into seven categories; death and dying patients (7 items), conflict with physicians (5 items), inadequate preparation (3 items), lack of staff support (3 items), conflict with other nurses (5 items), workload (6 items), and uncertainty concerning treatment (5 items). A 4-point Likert scale was used to elicit the frequency of nurses' experienced work stressors: never (0), occasionally (1), frequently (2), very frequently (3). The severity of stress is determined as follows: low (0-34), moderate (35-68), High (69-102) based on the total score allotted for the seven categories. Internal consistency reliability of NSS in this study was assessed using Cronbach's coefficient alpha (0.79). In addition to the NSS scale, a supplementary questionnaire was used to obtain socio-demographic data (gender, age, marital status), and work related data (daily work hours, the presence of an extra private work) from the study participants.

### 2.3 Data collection

A permission to conduct this study was obtained from hospital responsible authorities after explaining the aim of the work. An informed consent was obtained from included nurses after explaining the aim of this study. A pilot study was conducted on 10 intern nurses who are placed at the previously mentioned ICUs. To assess the clarity and applicability of the study tool. The questionnaire sheet was introduced to the studied nurses at their break time in the nurses' room. The questionnaire sheets were collected immediately after completion of the same shift. Data collection was done from May to October 2016.

### 2.4 Statistical analysis

First, descriptive statistical analysis for all study variables was conducted. Second, researchers performed bivariate anal-

yses to examine the association between independent variables (i.e., sociodemographic and work-related variables) and the stress level (NSS total score) using independent sample *t*-test (for two level categorical variables), one-way ANOVA (for three level categorical variables) and Pearson product-moment correlation (for continuous variables). Third, we compared between levels of stress and stressors in three groups: nurses by 1-2 months of experience, nurses by 3-4 months of experience, and nurses with 5-6 months of experience. Since items per each stressor in the NSS are not the same, we used the average score to allow their comparability (i.e., total subscale score divided by the number of items of the subscale). All statistics were conducted using SPSS version 20. All reported *p* values are two tailed and the .05 level was used to test statistical significance.

### 2.5 Ethical consideration

The current study was approved by the research ethics committee of the faculty of nursing, Alexandria University, Egypt. Participation in this study was voluntary. Participants were informed of their right to withdraw from the study at any time. An informed consent was obtained from each of the included nurses after explaining the aim of this study. Nurses' confidentiality, anonymity, and privacy were ensured during the study.

## 3. RESULTS

Table 1 shows that 57% of the studied intern nurses are females, most of them (82%) are single, 63% are working for 6 to 12 hours daily, 63% do not have additional private work, 55% have 3 to 4 months ICU experience. All of the studied nurses are experiencing either moderate or high stress; 43% and 57% respectively. The percent of female nurses who had severe stress is 64.9%. It is higher than that (35.1%) for male nurses who have the same level of stress. More than half of single nurses (59.8%) have severe stress, which is higher than that (44.4%) for married nurses.

More than half (58.7%) of nurses who are working from 6 to 12 hours daily have severe stress, which is higher than that (54.1%) for nurses who are working from 12 to 18 hours daily. The percent of nurses who have private work and have severe stress is 54.1%. It is lower than that (58.7%) for nurses who do not have a private work. A large percent (73.7%) of nurses who have work experience from 5 to 6 months have severe stress compared to that (54.5%) of nurses who have work experience from 3 to 4 months and that (50.0%) for nurses who have work experience from 1 to 2 months. All differences were statistically insignificant.

**Table 1.** The association between stress level experienced by the studied nurses and their characteristics

Participants' characteristics		Total	Nursing Stress Scale			
			Total	Low	Moderate	High
		N = 100	71.9 ± 13.3	00 (00%)	43 (43%)	57 (57%)
		No. (%)	Mean ± SD	No. (%)	No. (%)	No. (%)
Sex	Female	57 (57.0%)	73.2 ± 13.5	---	20 (35.1%)	37 (64.9%)
	Male	43 (43.0%)	70.2 ± 12.9	---	23 (53.5%)	20 (46.5%)
<i>p</i> value		-----	.720	.071		
Marital status	Single	81 (82.0%)	72.4 ± 13.7	---	33 (40.2%)	49 (59.8%)
	Married	18 (18.0%)	69.8 ± 11.3	---	10 (55.6%)	8 (44.4%)
<i>p</i> value		-----	.205	.296		
Daily work hours	6-12 hours	63 (63.0%)	72.6 ± 13.0	---	26 (41.3%)	37 (58.7%)
	12-18 hours	37 (37.0%)	70.8 ± 13.9	---	17 (45.9%)	20 (54.1%)
<i>p</i> value		-----	.821	.680		
Private work	Yes	37 (37%)	70.7 ± 13.9	---	17 (45.9%)	20 (54.1%)
	No	63 (63%)	72.6 ± 13.0	---	26 (41.3%)	37 (58.7%)
<i>p</i> value		-----	.785	.680		
ICU experience	1-2 m.	26 (26.0%)	70.9 ± 16.5	---	13 (50.0%)	13 (50.0%)
	3-4 m.	55 (55.0%)	71.6 ± 12.7	---	25 (45.5%)	30 (54.5%)
	5-6 m.	19 (19.0%)	74.1 ± 10.1	---	5 (26.3%)	14 (73.7%)
<i>p</i> value		-----	.731	.257		

Concerning the overall ranking of stressors, Table 2 reveals that death and dying, increased workload, inadequate preparation are the top 3 ranked stressors, respectively. On the contrary, the least ranked stressor is the conflict with other nurses. Regarding the ranking of stressors according to the duration of nurses' experience in the ICU, inadequate preparation is the top stressor for nurses who had 1 to 2 months

experience in the ICU followed by death and dying and lack of support, respectively. The workload is the top stressor for nurses who had 3 to 4 months experience followed by death and dying and conflict with physicians, respectively. For nurses who had 5 to 6 months experience, death and dying is the atop ranked stressor followed by workload and lack of support respectively.

**Table 2.** Distribution and ranking of stressors experienced by the studied nurses

Nursing stressors	No. of items	Mean ± SD	Stressors ranking *							
			Overall		First 2 months		Second 2 months		Third 2 months	
			Average (Rank)		Average (Rank)		Average (Rank)		Average (Rank)	
Death and dying	7	15.6 ± 3.6	2.22	(1)	2.21	(2)	2.21	(2)	2.27	(1)
Conflict with physicians	5	10.2 ± 2.7	2.05	(6)	2.039	(6)	2.08	(3)	1.96	(7)
Inadequate preparation	3	6.4 ± 1.8	2.13	(3)	2.28	(1)	2.042	(5)	2.19	(5)
Lack of support	3	6.3 ± 1.8	2.09	(4)	2.10	(3)	2.03	(6)	2.25	(3)
Conflict with other nurses	5	9.8 ± 3.0	1.98	(7)	1.92	(7)	1.95	(7)	2.11	(6)
Workload	6	13.2 ± 3.6	2.20	(2)	2.045	(5)	2.26	(1)	2.26	(2)
Uncertainty concerning treatment	5	10.4 ± 2.8	2.07	(5)	2.05	(4)	2.043	(4)	2.20	(4)

\* Ranking is based on the average score of each stressor category because of the unequal distribution of items among categories.

Table 3 shows that the mean scores for all stressor categories among female intern nurses are higher than that for male intern nurses. Nurses who are working 6 to 12 hours daily and those who do not have private work have higher mean

scores for death and dying, inadequate preparation, lack of support, uncertainty concerning treatment. Nurses who are working 12 to 18 hours daily and those who have additional private nursing work have higher mean scores for conflict

with physicians and conflict with other nurses. Nurses at the beginning of their experience (i.e., 1-2 months) have higher mean scores for inadequate preparation, conflict with physicians, and uncertainty concerning treatment, while nurses

with prolonged experience have higher mean scores for death and dying, lack of support, conflict with other nurses. The difference between mean scores of stressor categories are statistically insignificant.

**Table 3.** The association between nurses characteristics and stressors

Participants' characteristics		Death and dying	Conflict with physicians	Inadequate preparation	Lack of support	Conflict with other nurses	Workload	Uncertainty concerning treatment
		Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Sex	Female	15.6 ± 3.6	10.5 ± 2.4	6.3 ± 1.9	6.5 ± 1.9	10.2 ± 3.0	13.4 ± 3.4	10.7 ± 2.9
	Male	15.6 ± 3.8	9.9 ± 2.9	6.4 ± 1.7	6.0 ± 1.7	9.3 ± 3.0	13.0 ± 3.8	10.0 ± 2.6
<i>p</i> value		.597	.241	.168	.124	.994	.597	.467
Marital status	Single	15.7 ± 3.4	10.2 ± 2.6	6.4 ± 1.9	6.2 ± 1.8	10.0 ± 3.1	13.5 ± 3.7	10.4 ± 2.9
	Married	14.9 ± 4.5	10.2 ± 2.9	6.6 ± 1.5	6.4 ± 1.9	9.4 ± 2.7	12.1 ± 2.8	10.2 ± 2.1
<i>p</i> value		.052	.301	.317	.998	.441	.082	.029
Daily work hours	6-12 hrs.	15.6 ± 3.7	10.1 ± 2.7	6.8 ± 1.8	6.3 ± 1.9	9.7 ± 3.0	13.5 ± 3.3	10.6 ± 2.6
	12-18 hrs.	15.6 ± 3.5	10.4 ± 2.6	5.8 ± 1.6	6.2 ± 1.8	10.0 ± 3.1	12.8 ± 3.9	10.0 ± 3.1
<i>p</i> value		.772	.790	.266	.836	.677	.534	.110
Private work	Yes	15.6 ± 3.5	10.3 ± 2.7	5.8 ± 1.6	6.3 ± 1.8	10.0 ± 3.2	12.8 ± 3.9	10.0 ± 3.1
	No	15.6 ± 3.7	10.2 ± 2.7	6.8 ± 1.8	6.2 ± 1.9	9.8 ± 3.0	13.5 ± 3.3	10.6 ± 2.6
<i>p</i> value		.772	.932	.266	.620	.502	.619	.110
ICU experience	1-2 m.	15.5 ± 3.8	10.2 ± 3.0	6.8 ± 1.8	6.3 ± 2.2	9.6 ± 3.7	12.3 ± 3.9	10.2 ± 3.2
	3-4 m.	15.5 ± 3.6	10.4 ± 2.6	6.1 ± 1.8	6.1 ± 1.7	9.7 ± 2.7	13.5 ± 3.5	10.2 ± 2.8
	5-6 m.	15.9 ± 3.6	9.8 ± 2.2	6.6 ± 1.7	6.7 ± 1.7	10.5 ± 3.0	13.6 ± 3.2	11.0 ± 2.2
<i>p</i> value		.912	.691	.221	.423	.549	.289	.556

#### 4. DISCUSSION

The first six months of employment are the most stressful for nurses.<sup>[26,27]</sup> However, research on stress novice nurses, including nurses working in ICUs, experience in this critical area is extremely limited. Therefore, the current study aimed to assess occupational stress and stressors experienced by the newly practicing nurses in ICUs. The novelty of the current study is not only being among the first studies to examine occupational stress among Egyptian nurses using a standardized internationally accepted instrument (i.e., NSS) but also the examination of such phenomena in different stages of nurses' experience. Therefore, the results of the current study provide an insight on the chronological change of stress level and stressors among novice nurses. Up to our knowledge, there is no available Arabic version of the NSS validated in the Egyptian context. Use of the English version of the NSS in the current study was not problematic because nurse students in faculties of nursing in Egypt are educated in English. This adds to the strength of the current study in regard comparison with international studies.

The results of the current study depict that all studied nurses are experiencing either moderate or severe stress. A larger percent of nurses who have severe stress are females, single,

working from 6 to 12 hours daily, and do not have private work. These findings may be attributed to that females play multiple roles beyond their work and may expose to multiple stressors from multiple sources. Males in the Egyptian culture rarely report their stress. Nurses who are single, working from 6 to 12 hours daily, and those who do not have not private work may have a plenty of time and may be concerned a lot about their work and its related stressors. The results of the current study also reveal that the number of nurses suffering severe stress increases with the increase of the experience. These findings may be attributed to that nurses are suffering stress from the beginning of their experience in ICU, but this stress is neither expressed nor managed, so it may accumulate and increase in severity with the increase in work experience.

Different studies reported different results regarding levels of nurses' perceived stress. Kamal et al.<sup>[19]</sup> and Chang et al.<sup>[33]</sup> reported that new nurse graduates perceived moderate job stress. Dagget and colleagues<sup>[17]</sup> documented that 33.4%, 34%, and 32.7% of nurses had low, moderate and high stress, respectively. Hezaveh et al.<sup>[34]</sup> reported that nurses experienced high levels of stress during the first months of their work and 52% of the studied nurses had severe level of stress.

Mohamedkheir et al.<sup>[35]</sup> documented that most of nurses experienced high level of occupational stress and that nurses' working experience had a significant effect on the overall nurses' stress level. Saini et al.<sup>[36]</sup> reported that most of ICU nurses experienced moderate level of stress and that there was no significant relationship between stress level and nurses' gender, marital status, or experience. Another study<sup>[37]</sup> found that nurses who had a longer ICU work experience had a lesser level of stress; this was attributed to that nurses at the professional level master competencies and have an appropriate situation controlling skills specially the critical ones.

Concerning the overall ranking of stressors, the results of the current study reveal that death and dying, increased workload, and inadequate preparation are the top three ranked stressors. Death and dying as a top stressor may be attributed to that during the beginning of clinical experience in ICU, nurses may have lack of self-confidence and may consider death as a poor outcome attributed to a failure of management and control over patients' deterioration. In addition, they have difficulty with effective prioritization of management tasks, so they feel overloaded. The results of the current study also revealed that the least ranked stressor is conflict with other nurses. This may be due to that beginner nurses during the first months of experience are lacking clinical experience and may forget the underpinning scientific knowledge, so they are in an urgent need for ICU senior staff guidance and support and are obeying senior colleagues' instruction without conflict. Our result is in line with Milutinovic et al.,<sup>[5]</sup> Mohamedkheir et al.<sup>[35]</sup> and Sarafis et al.<sup>[14]</sup> who reported that death and dying was considered the most stressful situations. Yet, some other studies<sup>[37,38]</sup> reported nursing work conditions and lack of knowledgeable nurses as the most stressing factors. Such discrepancies may be due to the contextual difference among different countries particularly, nurses' educational preparation, pre- and in-service training, and type of patients of whom newly practicing nurses are caring.

The results of the current study also reveal a difference in the stressors experienced by newly practicing nurses based on the length of their experience. Death and dying is one of the top ranked stressors at different length of experiences. The workload is one of the top ranked stressors starting from the third to the six months of experience. This may

be due to that ICU staff may have unrealistic expectations and assume that intern nurses gained adequate experience after 2 months of practice in ICU, so they leave them fully responsible about more than one patient per time without any assistance because of the marked shortage of nursing staff. Inadequate preparation is the top stressor for nurses in the first two months of experience in ICU. This may be attributed to that this period is the beginning of the transition period from nurse student to practicing nurse. They were shielded during the study period from total responsibility of patients and managing the whole situation within a highly technological environment. In addition, they are not exposed to clinical challenges occur during sudden crisis.

### Limitations

This study was conducted only at four ICUs and other ICUs were not included. The small sample size and selecting participants on convenience is another limitation made the results of this study cannot be generalized.

## 5. CONCLUSIONS

It can be concluded from this study that newly practicing nurses in ICUs face a significant level of stress. Death and dying, workload, and inadequate preparation are the top ranked stressors.

### Recommendations

New practicing nurses in ICU need to be trained through a stress-management program. The topic of death and dying in ICU is highly needed to be embedded into nursing curriculum. Strategies to help graduate nurses cope with workload might have a positive effect on the nurses' perceived experience. Further research recruiting a larger sample size from multiple units may allow performing more advanced statistical analyses such as multilevel regression models so as to deeply explore individual and organizational factors associated with nurses' perceived stress.

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### CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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