

**Pediatric Nurses' Stresses in Intensive Care Units and Its Related Factors**Fatma A. Mohamed<sup>1</sup>; Yousr A. Gaafar<sup>\*2</sup> and Wafaa M. Abd Alkader<sup>2</sup><sup>1</sup>Faculty of Nursing, Tishreen University.<sup>2</sup>Pediatric Nursing, Faculty of Nursing, Alexandria University.<sup>\*</sup>[dr\\_yousr@hotmail.com](mailto:dr_yousr@hotmail.com)

**Abstract:** Stress is an important psychological concept that can affect health, it can cause significant problems. Stress response may be psychological, spiritual, and environmental. This study aimed to identify pediatric nurses' stresses in Intensive Care Units "ICUs" and its related factors. The study was conducted on 135 nurses in the ICUs at Children's University Hospital at El-Shatby. Two tools were used to collect necessary data. Tool 1 Nurses' stresses related factors structure questionnaire. Tool 2 Nursing Stress Scale (NSS). The results revealed that the most common source of nursing stress was death and dying, uncertainty about treatment, conflict with other nurses, and workload. Also, nurses are faced with multiple stress factors which are personal, interpersonal relationship, health care system, occupational and environmental stress factors. The study concluded that the neonatal intensive Care Unit "NICU" was the most stressful area for nursing staff. The present study clarified that there was a statistically significant relation between nurses' stress and their age, unit, and work schedule.

[Fatma A. Mohamed; Yousr A. Gaafar and Wafaa M. Abd Alkader. **Pediatric Nurses' Stresses in Intensive Care Units and Its Related Factors**. Journal of American Science 2011; 7(9):304-315]. (ISSN:1545-1003). <http://www.americanscience.org>.

**Keywords:** stress, stressors.

**1. Introduction**

Stress is the emotional and physical response everyone experiences when the person perceives an imbalance between demands placed on him and his resources. (Brunero *et al.*, 2006 and Welbourne *et al.*, 2007). There are two types of stress which are *Eustress*, and *distress*. *Eustress* is a positive force that adds excitement and challenge to life and provides a sense of well-being. It prepares the muscles, heart, and mind for the strength needed for whatever is about to occur. *Distress*, the second type of stress which is a negative force caused by unrelieved tension that threatens effectiveness. There are actually two types of distress: acute stress and chronic stress. Acute stress is an intense stress that emerges and disappears quickly and may be due to work pressure, meeting deadlines pressure or a minor accident, over exertion, increased physical activity, searching for something but misplacing it. Acute stress is thrilling and exciting in small doses, but too much is exhausting. Because it is short term, acute stress does not have enough time to cause the extensive damage associated with long-term stress (Lyle *et al.*, 2004). Chronic stress is a prolonged stress that exists for weeks, months or even years. It is very harmful and can usually lead to burnout. It is the stress caused by unrelenting demands and pressures for seemingly interminable periods of time. Chronic stress destroys bodies, minds and lives (Tomey, 2004).

The whole person is involved in responding and adapting to stresses. Most researches of stress

responses focus on psychological, emotional and physiological responses, although these dimensions overlap and interact with other dimensions. The stress response is adaptive and protective, and the characteristics of this response are the result of integrated neuroendocrine responses (Potter *et al.*, 2001).

Occupational stress is the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker (Brunero *et al.*, 2006). It has been identified more frequently in jobs low in autonomy but high physically and psychologically demanding. Nursing is traditionally typical of such occupations (Cox *et al.*, 1996 and Tully, 2004). It is well accepted and documented that nurse's work in a high job stress, particularly for nurses who are working in acute and specialized care units (Carver *et al.*, 1989).

Intensive care units (ICUs) are recognized as stressful areas for nursing staff. Intensive care unit is a specialized section of a hospital that provides comprehensive and continuous care for children who are critically ill. It is highly technological areas in which nurses are required to make rapid –life sustaining life saving decisions (Callaghan P *et al.*, 2000 and Wong D *et al.*, 2001)

Intensive care units (ICUs) nurses experience stress from multiple sources including providing care to dying patients, fear of making mistakes, high workloads and task overload, interpersonal and inter group conflict, lack of collaboration, lack of support

from administration and patient care issues, enclosed atmosphere, time pressures, excessive noise, unpleasant sights and sounds, and standing for long hours also consider as source of stress (Cole *et al.*, 2001; Wong *et al.*, 2001; and Harvey, 2006). Moreover, nurses working in intensive care units assume an ever-increasing responsibility for the management of patient care. In this expanding role, the ICU nurse is confronted not only by the impending crises of patients and families, but also by the demand for technologic excellence (Healy *et al.*, 2000).

The intensive care unit has been described frequently as extremely stressful environment, Work stress increases as nurses face growing numbers of critically ill patients and endure pressure to conform to the rigorous standards of cost-containment and quality assurance programs, time pressures and no second chance. Nurse working in pediatric intensive care units assume an ever-increasing responsibility for the management of patient care. These factors in combination with the organizational constraints inherent in the hospital system make the pediatric ICU nurses face more amount of work-related stress (Clegg, 2001; Harrisson *et al.*, 2002 and Xianyu *et al.*, 2006).

Nurses are confronted daily with multiple factors that cause stress. They can be classified into four categories, personal, interpersonal, health care system, professional and environmental factors (Harrisson *et al.*, 2002).

Stress can adversely affect the quality of nursing care delivery, as well as having an economic cost to the community (Chang *et al.*, 2005). Stress also has some potential impacts on nurses such as fatigue, reduction of attention span, inability to concentrate, impaired decision-making, increased chance of developing cardiovascular, gastrointestinal and musculoskeletal problems (Hegge *et al.*, 2008).

Although in occupational stress considerable attention has been given to identifying its causes and consequences, relatively few attempts have been made to examine and identify the strategies nurses use to manage the stress (Dewe, 1987). The stress management techniques are psychological or behavioral processes which consist of specific efforts to master, tolerate and reduce the stressful events. Depending on personal resources, people choose coping strategies that influence adaptation outcomes (Raak *et al.*, 2001).

There have been numerous studies conducted to identify stresses among nurses (Raak *et al.*, 2001 and Gelder *et al.*, 2005), but only a limited number specifically have looked at pediatric critical care nursing. Therefore, this study was carried out to identify pediatric nurses' stresses and its' related

factors in intensive care units.

#### **Aim of the study:**

This study aimed to identify Pediatric Nurses' Stresses in Intensive Care Units and Its Related Factors

#### **Research Questions:**

- What are the pediatric nurses' stressors in the intensive care units and the related factors?
- Are there differences in nurses' stressors in the various pediatric intensive care units?

## **2. Material and Method:**

### **Material:**

#### **Research design**

A descriptive design was used in this study.

#### **Setting**

This study was carried out at the Pediatric Intensive Care Units "PICUs", Pediatric Surgical Intensive Care Unit "PSICU" and NICU of Children's University Hospital at El-Shatby in Alexandria.

#### **Subjects**

All ICUs nurses who were available at the time of study in the previously mentioned settings were included in the study. Available number was 135 nurses distributed as following: PICU 27 nurses, PSICU 34 nurses, and NICU 74 nurses.

#### **Tools**

Two tools were used for data collection:

#### **Tool I: Nurses' Stresses Related Factors Structure Questionnaire:**

It was developed by the researcher after reviewing of related literature. It assessed the factors related to nurses' stresses. It was consist of two parts: **Part 1: Socio-demographic data** about the subjects such: age, level of education and year of experience.

#### **Part 2: Nurses Stresses Factors:**

It included the following:

- 1- Personal factors: such as, feeling of inadequacy, fear of losing job.
- 2- Interpersonal factors such as: conflict with colleagues.
- 3- Health care system factors such as: increased workload.
- 4- Professional and environmental factors such as: lack of experience and preparation.

#### **Tool II: Nursing Stress Scale (NSS):**

A scale designed by Gray T. et al, 1981 to measure stress level among nurses. The scale consists of 28 items covering seven subscales, which

are: death and dying (7items), conflict with physician (4 items), inadequate preparation (2 items), lack of support (3 items), conflict with other nurses (3 items), workload (5 items), and uncertainty concerning treatment (4 items). Responses to this scale are scored using 4 point Likert type scale ranging from one to four:

- Never stressful (1)
- Occasionally stressful (2)
- Frequently stressful (3)
- Extremely stressful (4)

The scale has also been translated, validated, and applied on Egyptian nurses by Shash (2006). The scale has been tested for its reliability by the researcher.

#### METHOD:

- An official letter was sent to the director Children's University Hospital at El-Shatby to facilitate the research implementation.
- Tool I was developed by the researcher and test for its content validity by jury composed of five experts in pediatric and psychiatric nursing fields. Required modifications were done.
- Tools reliability was asserted. The reliability of the tools was estimated using the Cronbach's Coefficient alpha test. The reliability of the tools was 0.89.
- Consent from the nurses for their participation was obtained after explaining the aim of the study.
- A pilot study was carried out on 10 nurses to test the feasibility of the tools, and the necessary modifications were done.
- During the three shifts nurses were asked to respond to the study tools individually at their office during break time. And the researcher was available for any question. It took about 20 minutes.
- The data were collected during four weeks that was extended from May 2009 to June 2009.
- Collected data were tabulated and statistically analyzed using SPSS computer program and version 10.0. Frequencies and percentages were calculated to determine the average of the frequencies for each item. The statistical analysis included: the arithmetic means, standard deviation, ANOVA, Chi Square test, Fisher Exact test for Fourfold table, and Cronbach Alpha.

#### 3. Results

Table 1 shows percent distribution of ICU nurses according to their socio-demographic characteristics, the highest percent of the studied nurses age ranging between 20 years to less than 30 years at the three ICUs; PICU, PSICU, and NICU (51.9% ,29.4%, 50% respectively). Regarding

educational level, the highest percent of the studied nurses had Technical Nursing School Diploma in PICU, PSICU, and NICU (74.1%, 64.7%, and 70.3% respectively). According to marital status, the highest percent of studied nurses in the PICU and more than half in the NICU were single (66.7% and 52.7% respectively). In the PSICU about two thirds of studied nurses were married (61.8%). Concerning salary, the highest percent of nurses in the three ICUs: PICU, PSICU, and NICU (74.1%, 67.6%, and 73% respectively) reported that their salary was unsuitable for their efforts. Regarding residence more than two thirds of the studied nurses in the three ICUs reported that they live away from hospital (66.7%, 61.8%, and 68.9% respectively). As for the availability of transportation, the majority of studied nurses in the three ICUs; PICU, PSICU, and NICU mentioned that the transportation was not available (88.9%, 85.7%, and 88.2% respectively).

Table 2 shows the Percent distribution of ICU nurses according to their occupational characteristics. It was found that the highest percent of the studied nurses in the three ICUs; PICU, PSICU, and NICU had an experience less than five years (44.4%, 32.4%, 37.8% respectively). While the lowest percent of nurses in the PICU and NICU had an experience ranging from 15 years to less than 20 years (3.7%, 5.4% respectively). However the lowest percent of nurses in the PSICU had an experience ranging from 5 years to less than 10 years (2.9%). According to work schedule, it was found that the highest percent of PICU, PSICU, and NICU nurses were rotating among shifts (81.5%, 47.1%, 73% respectively), while the rest of the nurses were working in the morning shift only.

Table 3 shows the percent distribution of the studied nurses according to their medical characteristics. The previous ICUs nurses respectively reported that they had health problems perceived as related to work (100 %, 92.3%, and 85.2%). The findings indicated that the most frequently health problem related to work reported by studied nurses was musculoskeletal disorder in the PICU, PSICU, and NICU (50%, 63.6%, and 52.2% respectively).

Table 4 shows the nurses' scores on the nursing stress scale and its subscales. The most common source of nursing stress is death or expecting death situation as shown by the highest stress mean score reported by the ICU nurses (80.7±13.90). The least mean score mentioned by the studied nurses was conflict with physicians (23.5±8.60). It could be seen also from this table that the overall average score of nursing stress scale was (58.3±20.8).

Table 5 shows Percent distribution of the studied nurses' response to personal stress factors. The table clarified that the salary doesn't match

with the required tasks was the most perceived personal stress factor reported by 94.8% of the studied nurses and scored as extremely 50.0%, frequently 35.9%, and occasionally 14.1%. While fear of losing job was the least personal stress factor reported by 54.1% of studied nurses. It was scored as extremely 24.7%, frequently 41.1%, and occasionally 34.2%.

The most perceived interpersonal stress factor as reported by 90.4% of studied nurses. The stress score was extremely 51.6%, frequently 39.4%, and occasionally 9.0% as illustrated from table (6). While conflict for position was the least interpersonal stress factor reported by 35.6% of studied nurses, and stress score presented as extremely 20.8%, frequently 27.1%, and occasionally 52.1%.

Table 7 illustrates the percent distribution of the studied nurses' response to health care system stress factors. Inadequate staff was the most perceived health care system stress factor mentioned by 99.3% of the studied nurses, the stress score was extremely 82.1%, frequently 16.4%, and occasionally 1.5%. While viewing patient death as failure in nursing performance was the least health care system stress factor reported by 48.9% of studied nurses, and scored as extremely 19.7%, frequently 30.3%, and occasionally 50%.

Table 8 represents the percent distribution of the studied nurses' response to professional and environmental stress factors. It showed that the Exposure to noise generated during the use of medical equipment was the most professional and environmental stress factor reported by (94.1%) of studied nurses, and scored as extremely 49.6%, frequently 43.3%, and occasionally 7.1%. While, inadequate lighting was the least professional and environmental stress factor mentioned by 57.8% of studied nurses, and scored as extremely 25.6%, frequently 42.3%, and occasionally 32.1%.

Table 9 shows comparison between studied nurses' stresses according to their units. It demonstrated that there was a statistically significant difference between the three units regarding conflict with physicians stress score. The highest mean score was presented by nurses who were working in the NICU (25.10±7.41). While the lowest mean score was mentioned by nurses working in the PSICU (21.39±8.95). Concerning conflict with other nurses' stresses this table illustrates that the highest mean score was reported by nurses who were working in the NICU (68.77±23.38). While the lowest mean score was mentioned by the PICU nurses (56.38±27.20). There was a statistically significant difference between the three ICUs related to conflict with other nurses stress score. Regarding workload stresses, the highest mean score for nurses' workload

stress was found by those who were working in the NICU (66.67±24.92), whereas the lowest mean score was found in those working in the PSICU (55.88±22.80). There was a statistically significant difference between the three ICUs related to workload stress score.

Table 10 shows the relation between nurses' sociodemographic characteristics and average stress score in ICUs nurses. A statistically significant relation was found between nurses' stress and their age ( $F=2.656$ ,  $P = 0.036$ ). Older nurses in the age group 40 years to less than 50 years had the highest score on stress scale (62.74±19.092) as compared to the younger group who were less than 20 years (53.14±14.455).

The displayed findings also revealed that nurses who were working in the rotating shifts had the highest stress mean score (60.3±14.054) than those working only in morning shift (54.45±18.146). There was a statistically significant relation between nurse's stress and working schedule ( $F=4.299$ ,  $P=0.04$ ).

In relation to nurses' unit, table (10) reveals that there was a statistically significant relation between nurse's stress and their ICUs ( $f=4.211$ ,  $P= 0.017$ ). The results points out that nurses' stress increased among nurses working in the NICU (61.79±14.537) than nurses working in the PICU and the PSICU (53.8±16.465, 54.3±16.301 respectively).

#### 4. Discussion

Stress is recognized as an inherent feature of the work life of nurses, and growing evidence suggests that it may be increasing in severity. Nurses' high job stress is well documented in numerous studies (Gray *et al.*, 1981; Shash , 2006 and Cresia *et al.*, 2007) in particular, the job stress of nurses working in a specialized care units (Braaten , 2000). Lee (2003) mentioned that the heavy workload, poor staffing, dealing with death and dying and shift work, have been identified as the major sources of job stress. Cole *et al.* (2001) reported that intensive care units are recognized as the most stressful areas for nursing staff. Stress has been acknowledged as a significant problem in ICUs since their inception almost four decades ago (Makie , 2006).

The present study mentioned that the majority of the studied ICUs nurses who had health problem were perceived as related to work (table 3). The most frequently reported health problems were "Musculoskeletal disorder such as, low back pain, lower limb pain and/or joints pain' followed by "varicose veins", cardiac problems such as hypertension". The least reported health problem was "Ophthalmic problems." This could be interpreted as that the major sources of stress reported in the

present study was workload, it may lead to physical problem like low back pain, lower limb pain, joints pain and/or varicose veins. According to Theorell *et al.* (1996) who stated that the occurrence of cardiovascular disease and/or other health problems increase for those individuals who experience high work demands but have little control over their job situation. This concurs with Engkvist (2008) who

found that increased work related stress on nurses lead to more back pain and back injuries in his study of back injuries among nurses. Similarly, Arafa *et al.* (2003) reported that there was substantial evidence that a high level of occupational stress in nursing strongly associated with low levels of health and well-being.

**Table (1): Percent distribution of ICUs nurses according to their Socio-demographic characteristics.**

Socio-demographic characteristic		Unit							
		PICU		PSICU		NICU		Total	
		No (27)	%	No (34)	%	No (74)	%	No (135)	%
Age (years)	<20	5	18.5	3	8.8	9	12.2	17	12.6
	20-	14	51.9	10	29.4	37	50	61	45.2
	30-	7	25.9	8	23.5	17	23	32	23.7
	40-	1	3.7	7	20.6	10	13.5	18	13.3
	50+	0	0	6	17.6	1	1.4	7	5.2
Min –max		18-44		19-58		18-50		18-58	
Mean ± SD		26±6.6		35±12.31		28±8.89		29.2±10.0	
Level of Education	STNS Diploma*	20	74.1	22	64.7	52	70.3	94	69.6
	THI Diploma **	5	18.5	2	5.9	7	9.5	14	10.4
	BSc Nursing ***	2	7.4	10	29.4	15	20.3	27	20
Marital status	Single	18	66.7	13	38.2	39	52.7	70	51.9
	Married	9	33.3	21	61.8	35	47.3	65	48.1
Salary	Enough	7	25.9	11	32.4	20	27	38	28.1
	Not enough	20	74.1	23	67.6	54	73	97	71.9
Residence	Away from work	18	66.7	21	61.8	51	68.9	90	66.7
	Near work	9	33.3	13	38.2	23	31.1	45	33.3
Transportation		No (18)	%	No (22)	%	No(51)	%	No(90)	%
	Not available	16	88.9	18	85.7	45	88.2	79	87.8
	Available	2	11.1	3	13.6	6	11.8	11	12.2

STNS Diploma: Secondary Technical Nursing School Diploma. \*THI Diploma: Technical Health Institute Diploma.

\*\*

\*\*\*BSc Nursing: Bachelor of Science in Nursing.

**Table (2): Percent distribution of ICUs nurses according to their occupational characteristics.**

Occupational characteristic		Unit							
		PICU		PSICU		NICU		Total	
		No (27)	%	No (34)	%	No (74)	%	No (135)	%
Years of Experience	<5	12	44.4	11	32.4	28	37.8	51	37.8
	5-	6	22.2	1	2.9	20	27	27	20
	10-	8	29.6	4	11.8	11	14.9	23	17
	15-	1	3.7	4	11.8	4	5.4	9	6.7
	20+	0	0	14	41.2	11	14.9	25	18.5
Min- max		1-18		1-33		1-29		1-33	
Means		6.6±5.09		15.6±11.21		8.9±7.31		10.1±8.72	
Work schedule	Rotating shifts	22	81.5	16	47.1	54	73	92	68.1
	Morning shift	5	18.5	18	52.9	20	27	43	31.9

**Table (3): Percent distribution of the studied nurses according to their medical characteristics**

Medical characteristics		Unit							
		PICU		PSICU		NICU		Total	
		No (27)	%	No (34)	%	No (74)	%	No (135)	%
Health problem	Yes	2	7.4	12	35.3	27	36.5	41	30.4
	No	25	92.6	22	64.7	47	63.5	94	69.6
		No (2)	%	No (12)	%	No (27)	%	No (41)	%
Health problems related to work	Yes	2	100	11	92.3	23	85.2	36	88.1
	No	0	0	1	7.7	4	14.8	5	11.9
Type of health problem related work	Musculoskeletal disorder	1	50	7	63.6	12	52.2	20	55.6
	Cardiac problem	0	0	2	18.2	3	13	5	13.9
	Varicose veins	0	0	2	18.2	6	26	8	22.2
	PSICU problems	1	50	0	0	1	4.3	2	5.6
	Ophthalmic problems	0	0	0	0	1	4.3	1	2.8

**Table (4) Nurses' scores on the Nursing Stress Scale and its subscales (n=135)**

Stress subscales	Score Percent
	Mean± S.D
Death or expecting death situation	80.7± 13.9
Conflicts with physicians	23.5± 8.6
Inadequate preparation	59.9± 25.9
Conflicts with other nurses	63.7± 24.7
Lack of support	53.0± 24.4
Work load	61.9± 24.0
Uncertainty concerning treatment	65.5±24.5
Overall average score	58.3± 20.8

**Table (5): Percent distribution of the studied nurses' response to personal stress factors**

	Incidence of stress				Stress score					
	No stress		Stress		Extremely		Frequently		Occasionally	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Feeling of inadequacy to do some tasks	52	38.5	83	61.5	4	4.8	49	59.1	30	36.1
2. Daily working.	11	8.1	124	91.9	75	60.5	41	33.0	8	6.5
3. Facing crisis at home or in the work.	22	16.3	113	83.7	11	9.7	64	56.7	38	33.6
4. Social looking for me as a nurse	47	34.8	88	65.2	24	27.4	43	48.9	21	23.9
5. Fear of losing job	62	45.9	73	54.1	18	24.7	30	41.1	25	34.2
6. Exposure to infectious	20	14.8	115	85.2	56	48.7	33	28.7	26	22.6
7. Felling unable to help patients	45	33.3	90	66.7	10	11.1	51	56.7	29	32.2
8. Work during night shift	41	30.4	94	69.6	63	67.0	23	24.5	8	8.5
9. Difficulties to get vacations	11	8.1	124	91.9	63	50.8	51	41.1	10	8.1
10. Lack of financial reward	8	5.9	127	94.1	60	47.2	51	40.2	16	12.6
11. Salary does not match with the required tasks	7	5.2	128	94.8	64	50.0	46	35.9	18	14.1

**Table (6): Percent distribution of the studied nurses' response to interpersonal stress factors.**

Interpersonal -relationship factors	Incidence of stress				Stress score					
	No stress		Stress		Extremely		Frequently		Occasionally	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Conflict with colleagues	18	13.3	117	86.7	22	18.8	56	47.9	39	33.3
2. Lack of collaborative workplace relationships	25	18.5	110	81.5	14	12.7	66	60.0	30	27.3
3. decrease performance at work due to college incorporation	25	18.5	110	81.5	32	29.1	53	48.2	25	22.7
4. Experiencing discrimination	16	11.9	119	88.1	35	29.4	54	45.4	30	25.2
5. Constant demand from superiors	13	9.6	122	90.4	63	51.6	48	39.4	11	9.0
6. Criticism by supervisor and colleagues.	23	17.0	112	83.0	22	19.6	57	50.9	33	29.5
7. Conflict with supervisors	30	22.2	105	77.8	20	19.1	50	47.6	35	33.3
8. Conflict for position	87	64.4	48	35.6	10	20.8	13	27.1	25	52.1
9. Patients' families making unreasonable demands.	65	48.1	70	51.9	5	7.2	32	45.7	33	47.1
10. Poor relationship with patient / family	53	39.3	82	60.7	5	6.1	40	48.8	37	45.1
11. Have to give bad news to the family patient	24	17.8	111	82.2	28	25.2	57	51.4	26	23.4
12. Having to deal with violent patients	68	50.4	67	49.6	7	10.5	26	38.8	34	50.7
13. Difficulty controlling patient's pain	26	19.3	109	80.7	28	25.6	49	45.0	32	29.4
14. Performing procedures that patients experience as painful	29	21.5	106	78.5	33	31.1	51	48.1	22	20.8
15. Not to know how to respond to the patient	22	16.3	113	83.7	33	29.2	49	43.4	31	27.4
16. No participation in department's decision making.	27	20.0	108	80.0	40	37.0	42	38.9	26	24.1
17. Absence of encourage of good work	20	14.8	115	85.2	38	33.0	55	47.8	22	19.2

**Table (7): Percent distribution of the studied nurses' response to health care system stress factors.**

Health care system factors	Incidence of stress				Stress score					
	No stress		Stress		Extremely		Frequently		Occasionally	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Increase paper work	20	14.8	115	85.2	49	42.6	43	37.4	23	20.0
2. Lack of appreciation at work	12	8.9	123	91.1	59	48.0	53	43.1	11	8.9
3. Working shifts are changing frequently	31	23.0	104	77.0	64	61.5	25	24.1	15	14.4
4. Work routine	10	7.4	125	92.6	75	60.0	36	28.8	14	11.2
5. Standing for long hours	2	1.5	133	98.5	92	69.2	36	27.0	5	3.8
6. Short break	5	3.7	130	96.3	92	70.8	32	24.6	6	4.6
7. Having to work through break	16	11.9	119	88.1	61	51.3	34	28.5	24	20.2
8. Have to work for long hours	2	1.5	133	98.5	88	66.2	38	28.6	7	5.2
9. Provide care for many patients at same time	7	5.2	128	94.8	90	70.3	28	21.9	10	7.8
10. Patient die during my shift	8	5.9	127	94.1	40	31.5	72	56.7	15	11.8
11. Hospital policy stresses	7	5.2	128	94.8	63	49.2	52	40.6	13	10.2
12. Have to do many tasks at same time	3	2.2	132	97.8	82	62.1	40	30.3	10	7.6
13. Lack of communication and support from administration	13	9.6	122	90.4	48	39.3	52	42.6	22	18.1
14. View patient death as failure in nursing performance	69	51.1	66	48.9	13	19.7	20	30.3	33	50.0
15. Work with incompetent staff	38	28.1	97	71.9	26	26.8	41	42.3	30	30.9
16. Inadequate staff	1	0.7	134	99.3	110	82.1	22	16.4	2	1.5

**Table (8): Percent distribution of the studied nurses' response to professional and environmental stress factors**

Professional and environmental factors	Incidence of stress				Stress score					
	No stress		Stress		Extremely		Frequently		Occasionally	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Lack of experience and preparation.	40	29.6	95	70.4	22	23.2	42	44.2	31	32.6
2. Increase of professional liability.	27	20.0	108	80.0	40	37.0	44	40.7	24	22.3
3. Insufficient technical facilities.	12	8.9	123	91.1	34	27.6	66	53.7	23	18.7
4. Lack of ability to catch up with rapid technology changes	23	17.0	112	83.0	14	12.5	58	51.8	40	35.7
5. perform minutes and serious tasks	25	18.5	110	81.5	40	36.4	49	44.5	21	19.1
6. Making a mistake when giving nursing care.	29	21.5	106	78.5	19	17.9	39	36.8	48	45.3
7. Radiation exposure.	14	10.4	121	89.6	55	45.5	49	40.5	17	14.0
8. Noise exposure.	8	5.9	127	94.1	63	49.6	55	43.3	9	7.1
9. Irritant gases exposure.	15	11.1	120	88.9	51	42.5	42	35.0	27	22.5
10. Enclosed atmosphere.	16	11.9	119	88.1	69	58.0	36	30.2	14	11.8
11. Insufficient work space.	44	32.6	91	67.4	41	45.0	35	38.5	15	16.5
12. Inadequate lighting.	57	42.2	78	57.8	20	25.6	33	42.3	25	32.1

**Table (9): Comparison between studied nurses' stresses according to their units.**

Stress score	Unit						F	P value
	PICU		PSICU		NICU			
	Mean	S D	Mean	S D	Mean	SD		
Average overall death or expecting death situation score	81.66	13.05	76.05	13.80	82.56	13.97	2.69	0.07
Average overall conflict with physicians score	21.55	10.47	21.39	8.95	25.10	7.41	3.08	0.05*
Average overall inadequate preparation score	51.24	26.12	58.33	27.29	63.74	24.58	2.45	0.09
Average overall conflict with other nurses score	56.38	27.20	58.50	23.58	68.77	23.38	3.64	0.03*
Average overall lack of support score	47.74	26.48	50.65	18.59	56.01	25.71	1.36	0.26
Average overall workload score	56.30	20.53	55.88	22.80	66.67	24.92	3.38	0.04*
Average overall uncertainty concerning treatment	61.73	29.98	59.31	25.85	69.71	20.94	2.55	0.08

Significant values at the  $p \leq 0.05$ **Table (10) Relation between sociodemographic characteristic and average stress score in ICUs nurses**

Sociodemographic characteristics	Stress scores Mean± SD	Test of Significant
- age (years) • Less than 20 • 20- • 30- • 40- • 50+	53.14 ± 14.455 60.43 ± 12.517 57.52 ± 18.739 62.74± 19.092 61.98 ± 11.249	F=2.656 P = 0.036*
-Level of education • Technical nursing school • Nursing institute • Nursing faculty	58.21±15.798 53.31± 10.731 61.23± 17.484	F=1.177 P = 0.311
- Marital status: • Single • Married	58.2± 15.062 58.1± 16.493	F=0.902 P =0.408
- Years of experience in ICU: • Less than 5 years. • 5 – • 10- • 15 – • 20+	57.63±14.211 60.21± 11.447 62.63±17.922 50.26± 17.992 65.55± 19.222	F=1.228 P = 0.302
- Nurses' work schedule : • morning shift • rotating shift	54.45± 18.146 60.3±14.054	F=4.299 P=0.04*
Sufficiency of salary • yes • no	56.05±15.541 59.19±15.822	F=1.085 P =0.299
- Residence • away from hospital • near hospital	56.51±15.071 61.9±16.62	F=3.573 P = 0.061
-Having health problems : • Yes • No	55.66±13.314 59.46±16.635	F=1.677 P = 0.198
ICUs: • PICU • PSICU • NICU	53.8±16.465 54.3±16.301 61.79±14.537	F=4.211 P = 0.017 *

Significant values at the  $p \leq 0.05$



The findings of this study revealed that the most common source of nursing stress was related to death or expecting death situation, followed by, uncertainty about treatment, conflict with other nurses, and work load (table 4). Which was reported by many research studies (Arafa *et al.*, 2003 and Engkvist, 2008). Nurses working in the intensive care units perceived death or expecting death situations as the highest source of stress they faced in their work. This may be attributed to the fact that nurses traditionally had not received sufficient education about dealing with death/dying so they do not know how to express their emotions when encountering the death or the dying of a patient. These results are supported by Muhammad (2008) who reported that nurses working in intensive care units perceived death or expecting death situations as the highest source of stress they face in their work. Similarly, Cole *et al.* (2001) reported that the death or expecting death situations are recognized as one source of stress for intensive care unit nurses. On the contrary, the present study findings did not agree with other studies where nurses found the death of a patient least stressful (Davies *et al.*, 1996). Similarly, Hays *et al.* (2006) found that the studied nurses reported minimum to no stress most frequently with exposure to death and dying. Uncertainty about treatment associated with nurses performance was reported to be among the highest stressors by ICUs nurses in this study. This might be related to inadequate information from a physician regarding the medical condition of a patient. This is supported by Alnems *et al.* (2005) who reported that the most stressful subscale for staff nurses was the uncertainty concerning treatment. Likewise, Muhammad (2008) also reported uncertainty about treatment associated with nurses performance as one of the highest stressors by ICU nurses. The present study is inconsistent with Payne (2001) in his study on occupational stressors in nursing found that the most frequently problematic stressor was death and dying and the least frequently problematic stressor was uncertainty concerning treatment.

The present study has shown that the most stressful items related to personal stress factors reported by ICUs nurses were, salary which did not match the required tasks and the lack of financial reward (table 5). This might be interpreted as, money is important nowadays and the requirements of daily life are costly, so insufficient salary causes stress for nurses. Lack of financial reward seems to become more prominent as a major source of stress for nurses. The present study is supported by Ball *et al.* (2003) and McVicar (2003), who identified lack of reward at working as a major sources of nurses' stress.

Similarly, Yingchun (2009) in his study "Review of work-related stress in mainland Chinese nurses" reported that the most important stressors among Chinese nurses was effort–reward imbalance. Nevertheless, nurses who viewed their salary neither unsuitable to their efforts nor covering life needs mentioned more stress than other nurses. This finding is consistent with Brantley *et al.* (2002) who stated that low income individuals face a number of chronic, daily, low-control stressors, and they experience a significantly greater number of these types of chronic stressors than people from higher income levels.

The present study has demonstrated that the most stressful items related to interpersonal stress factors reported by ICUs nurses were constant demand from superiors, and experiencing discrimination (table 6). Interprofessional conflict continues to be an important source of stress for nurses in the present study. Interpersonal conflict may result from inconsistencies related to beliefs, values, opinions, knowledge or actions that are incongruent. Nurses' personal values, knowledge, and behaviors may be in direct opposition to those of other colleagues. Anderson *et al.* (1988) determined that interpersonal relationships were the most stressful area for ICU nurses. Cavalheiro *et al.* (2008) investigated the factors related to nurses stress in intensive care units, they found that the constant demands from superiors and the highly-demanding routines, were the most interpersonal factors related to stress. In regard to experiencing discrimination, the present study revealed that it was the second factor related to interpersonal stress. Which was inconsistent with Alnems *et al.* (2005) who found that the experiencing discrimination was the least stressful events perceived by the staff nurses.

The present study has revealed that the most stressful items related to health care system factors reported by ICUs nurses were long working hours, short breaks; inadequate staff (table 7). In the light of the previous results, it seems reasonable to explain that inadequate number of staff nurses and inexperienced staff were perceived to compromise nurse's ability to provide quality care. Long working hours and short break stressors may be interpreted as those stressors resulting in health problem such as low back pain, and varicose veins, which cause stress. Our study agrees with the findings obtained by Gillespie *et al.* (2003) who studied Burnout among nursing staff in accident and emergency acute medicine, and reported that the most ICU stressors were resulting from inadequate staffing. In addition, Astbury (2009) found that the most intensive and frequent cause of nurses' stress was inadequate staff. In the study of stress in ICU nurses obtained by

Oehler *et al.* (1992) inadequate staffing has been identified as one of the most commonly stressors. Regarding long working hours and short breaks, Al-Omar (2003) , who studied sources of Work-Stress among Hospital-Staff at the Saudi Ministry Of Health found that the previously mentioned factors were the most reported source of stress in nursing.

The present study has illustrated that the most stressful items related to professional and environmental factors reported by ICUs were insufficient functional equipments, exposure to radiation and exposure to noise generated during the use of medical equipment (table 8). This may be related to the fact, that inadequate safety measures such as inadequately shielded nurses when holding patient in proper position for radiation make them liable to have breast mass. Exposure to noise from ICU machines causes nurses more stress than those working in other areas. The results of the present study are consistent with the finding obtained by Sawatzky (1996) who studied stress in critical care nurses and found that the noise level of the unit was the third most frequent stressors. Regarding insufficient functional equipments, the present study found that lack of sufficient or malfunctioning equipments was the second frequent stressor. Al Omar (2003) reported that the first cause of work stress in nursing was the insufficient technical facilities. Similarly, Bailey *et al.* (1980) found that the element of work environment such as lack of sufficient equipment and inadequate work space were considered as the major sources of stress. Cox *et al.* (1996) found that the enclosed atmosphere, time pressures, excessive noise were the most common stressors reported by ICU nurses. This goes on line with the results of the present study.

The present study has reported that a statistically significant relation was found between nurses' average stress score and their age (table 10). Nurses aged 40 years to less than 50 years were more stressed than other younger nurses. This may be attributed to the fact that as nurse's age increases, the nurse's roles increase at the same time such as her role as a wife, a mother, as well as a nurse. Nurses with many years of clinical experience may know more than young physicians who have a limited experience in intensive care. This may lead to a conflict, resulting in strained relationships between nurses and physicians. This result was in line with other studies which found significant correlations between stress and age; increase in nurses' age will increase the level of stress (Sawatzky , 1996 and Braaten , 2000) as for relation of the nurse average score of stress to work schedule, a statistically significant relation was found between nurses stress

and their work schedule. Nurses working at rotating shift were more stresses than others who were working in the morning shift. This may be attributed to the fact that the nurse has to work during holidays or weekend according to work schedule. In addition, nurses who work at evening stay away from their families and friends who are the main source for social support. The result of this study go with the findings of study carried out by Coffey (1990) who found that the rotating shift work and length of working hour had a strong impact on nurse's job related stress.

### Conclusion and recommendations

Based on the findings of this study one can conclude that ICUs nurses in the Children's University Hospital at Elshatby are confronted with a multitude of stressful clinical situations. the most intense and frequent stress was associated with death and dying, followed by uncertainty about treatment, conflict with other nurses, , and workload. Also, nurses are confronted with multiple stress factors which are: personal, interpersonal relationship, health care system, occupational and environment stress factors. Present study clarified that there was a statistical significant relation between nurses' stress and their age, unit, and work schedule.

### Main recommendations of this study:

- 1-Stress management programs related to the intensive care units must be designed for all nurses.
- 2-Continuing education through attending conference and training courses to staff for development and promotion ICU nurses.
- 3- ICU nurses should receive systematic death education with planned assignments that may help them develop positive attitudes toward dying.
- 4-Psychological counseling should be an integral service to help supporting ICU nurses experiencing high levels of stress.

### Corresponding author

**Yousr A. Gaafar**

Pediatric Nursing, Faculty of Nursing, Alexandria University.

[dr\\_yousr@hotmail.com](mailto:dr_yousr@hotmail.com)

### References

1. Alnems A, Aboads F, AL-Yousef M, AL-Yateem N, Abotabar N. (2005) Nurses' perceived job related stress and job satisfaction in Amman Private Hospitals. Available at: <http://faculty.Ksu.edu.sa/msawalha/Documents/M y%20publication.pdf>
2. AL-Omar B. (2003) Sources of Work-Stress among

- hospital-staff at the Saudi MOH. *JKAU: Econ & Adm*; 17(1): 3-16.
3. Anderson M, Chmboga D, Bailey J. (1988) Changes in management stressors in ICU nurses. *Journal of Dimensions of Critical Care Nursing*; 7(2): 111-7.
  4. Arafa M, Abou Nazel M, Ibrahim N, Attia A. (2003) Predictors of psychological well-being of nurses in Alexandria, Egypt. *International Journal of Nursing Practice*; 9(5): 313–20.
  5. Astbury J. (2009) Determinants of stress for staff in a neonatal intensive care unit. *Journal of Advanced Nursing*; 57(2): 108-11.
  6. Bailey T, Staffen M, Grout W. (1980) The stress audit: identifying the stressors of ICU nursing. *Journal of Nursing Education*; 19(6): 15-22.
  7. Ball J, Pike G, Mellor J, Connell J. Working Well Survey. (2003) in: McVicar A. Workplace stress in nursing: a literature review. *Journal of Advanced Nursing*; 44(6): 633–42.
  8. Braaten D. (2000) Occupational stress in mental health counselor. Published Master Thesis of Science Degree. University of Wisconsin-Stout.
  9. Brantley P, Hea E, Jones G, Mehan D. (2002) The influence of income level and ethnicity on coping strategies. *Journal of Psychopathology and Behavioral Assessment*; 24(1): 39-45.
  10. Brunero S, Cowan D, Grochulski A, Garvey A. (2006) Stress management for nurses. Sydney; New South Wales Nurses' Association.;4-33. Available at: [http://www.health.nsw.gov.au/nursing/pdf/stress\\_mngt.pdf](http://www.health.nsw.gov.au/nursing/pdf/stress_mngt.pdf)
  11. Callaghan P, Tak-Ying S, Wyatt P. (2000) Factors related to stress and coping among Chinese nurses in Hong Kong. *Journal of Advanced Nursing*; 31(6): 1518-27.
  12. Carver C, Scheier M, Weintraub J. (1989) Assessing Coping Strategies: A Theoretically Based Approach. *Journal of Personality and Social Psychology*; 56(2): 267-83.
  13. Cavalheiro A, Moura Junior D, Lopes A. (2008) Stress in nurses working in intensive care units. *J of Rev Latino-am Enfermagem*; 16(1):29-35.
  14. Chang E, Hancock K, Johnson A, Daly J and Jackson D. (2005) Role stress in nurses: review of related factors and strategies for moving forward. *Journal of Nursing and Health Sciences*; 7(1): 57-65.
  15. Coffey L, Skipper K, Jung D. (1990) Nurses and shift work: effect of job performance and job – related stress. *Journal of Advanced Nursing*; 13(5): 245- 54.
  16. Cole F, Slocumb E, Mastey J. (2001) A measure of critical care nurses' post-code stress. *Journal of Advanced Nursing*; 34(3): 281-8.
  17. Cox T, Griffiths A, Cox S. (1996) Work-related stress in nursing: controlling the risk to health. Working paper. International Labour Office Geneva. Available at: <http://www.ilo.org/public/english/protection/condtrav/publ/wc-tc-ag-sc96.htm>
  18. Creasia J and Parker B. (2007) *Conceptual Foundations: The Bridge to Professional Nursing Practice*. 4<sup>th</sup> ed. United State of America: Mosby Elsevier Copmpany; 360-445.
  19. Davies B, Cook K, O'Loane M, Clarke D, MacKenzie B, Stutzer C. (1996) Caring for dying children: nurses' experiences. *Journal of Pediatric Nursing*; 22:500-7.
  20. Dewe P. (1987) Identifying strategies nurses use to cope with work stress. *Journal of Advanced Nursing*; 12(4):489-97.
  21. Engkvist I. (2008) Back injuries among nurses; a comparison of the accident processes after a 10-year follow-up. *Journal of Safety Science*; 46(2): 291-301.
  22. Gelder M, Mayou R, Geddes J. (2005) *Psychiatry*. 3<sup>rd</sup> ed. New York: Oxford University Press Inc; Company; 45-71.
  23. Gillespie M & Melby V. (2003) Burnout among nursing staff in accident and emergency acute medicine: a comparative study. *Journal of Clinical Nursing*; 12, 842-51.
  24. Gray T, Anderson P. (1981) The nursing stress scale; development of an instrument. *Journal of Behavioral Assessment*; 3 (1): 11-23.
  25. Harvey G. (2006) Critical incident stress in ICU nursing. Canadian Association of Critical Care Nurses. Available at: <http://www.caccn.ca/new/index.php>.
  26. Hays M, All A, Mannahan C, Cuaderes E, Wallace D. (2006) Reported stressors and ways of coping utilized by intensive care unit nurse. *Journal of Dimensions Critical Care Nursing* ; 25(4): 185-93.
  27. Healy C, McKay M. (2000) Nursing stress: the effects of coping strategies and job satisfaction in a sample of Australian nurses. *Journal of Advanced Nursing*; 31(3): 681-8.
  28. Hegge M and Larson V. (2008) Stressors and coping strategies of students in accelerated baccalaureate nursing programs. *Journal of Nurse Educator*; 13(1):26-30.
  29. Lee J. (2003) Job stress, coping and health perceptions of Hong Kong primary care nurses. *International Journal of Nursing Practice*; 9(22): 86–91.
  30. Lyle H, Miller, Smith A. (2004) Stress: the different kinds of stress. APA Help Center from American Psychological Association Available at:

- <http://drmarlene.vox.com/library/post/stress-the-different-kinds-of-stress.html>
31. Makie V. (2006) Stress and coping strategies amongst registered nurses working in South African tertiary hospital. Published Master's Thesis. Faculty of Community Health Sciences. University of the Western Cape; South Africa.
  32. McVicar A. (2003) Workplace stress in nursing: a literature review. *Journal of Advanced Nursing*; 44(6): 633-42.
  33. Mouhammad M. (2008) Stress coping strategies among nurses in the intensive care units. Unpublished Master's Thesis. Faculty of Nursing. University of Alexandria.
  34. Oehler M, Davidson G (1992) Job stress and burnout in acute and nonacute pediatric nurses. *American journal of Critical Care*;2(2) :81-90.
  35. Payne N. (2001) Occupational stressors and coping as determinants of burnout in female hospice nurses. *Journal of Advanced Nursing*; 33(3):396-405.
  36. Raak R, Wahren L. (2001) Stress coping strategies in thermal pain sensitive and insensitive healthy subjects. *International Journal of Nursing Practice*; 7(3): 162-8.
  37. Sawatzky J. (1996) Stress in critical care nurses: actual and perceived. *The Journal of Critical Care*; 25(5):409-17.
  38. Shash H. (2006) The relationship between job stress, job performance, and social support among nurse at Alexandria Main University Hospital. Unpublished Master's Thesis. Faculty of Nursing. University of Alexandria.
  39. Theorell T, Karasek A. (1996) Current issues relating to psychological job strain and cardiovascular disease. *Journal of Occupational Health Psychology*; 1(1): 9-26.
  40. Tomey A. (2004) *Nursing management and leadership*. 7th ed .China: Mosby Elsevier Company; 27-53.
  41. Tully A. (2004) Stress, sources of stress and ways of coping among psychiatric nursing students. *Journal of Psychiatric and Mental Health Nursing*; 11(1): 43-7.
  42. Welbourne J, Eggerth D, Hartley T, Andrew M and Sanchez F. (2007) Coping strategies in the workplace: relationships with attributional style and job satisfaction. *Journal of Vocational Behavior* ;70 (2) :312-25
  43. Wong D, Leung S, So C and Lam D. (2001) mental health of Chinese nurses in Hong Kong: the roles of nursing stresses and coping strategies. *Online Journal of Issues in Nursing*; Available at: [http://www.nursingworld.org/ojin/topic12/tpc12\\_7.htm](http://www.nursingworld.org/ojin/topic12/tpc12_7.htm)
  44. Yingchun Z. (2009) Review of work-related stress in mainland Chinese nurses. *Journal of Nursing and Health Sciences*; 11: 90-7
  45. Potter P, Perry A. (2001) *Fundamentals of Nursing*, 4th ed. Philadelphia: A Harcourt Health Science Company; 645-66.
  46. Clegg A. (2001) Occupational stress in nursing: a review of the literature. *Journal of Nursing Management*; 9(2): 101-6.
  47. Xianyu Y, Lambert V. (2006) Investigation of the relationships among workplace stressors, ways of coping, and the mental health of Chinese head nurses. *Journal of Nursing and Health Sciences*; 8(3): 147-55.
  48. Harrisson M, Loiselle C , Duquette A, Semenic S. (2002) Hardiness, work support and psychological distress among nursing assistants and registered nurses in Quebec . *Journal of Advanced Nursing*; 38(6): 584-91.

8/18/2011