

## ORIGINAL ARTICLE

## Prevalence of Stress and Coping Mechanism among Staff Nurses in the Intensive Care Unit

Raja Lexshimi RG<sup>1</sup>, Saadiyah Tahir<sup>2</sup>, Santhna L.P<sup>1</sup>, Md Nizam J<sup>3</sup>

<sup>1</sup> Department of Nursing, <sup>3</sup> Department of Community Health, Faculty of Medicine, Universiti Kebangsaan Malaysia

<sup>2</sup> Ministry of Health

### ABSTRAK

Persekitaran tempat kerja di kalangan jururawat unit rawatan intensif (ICU) menyumbang kepada punca stres. Ramai penyelidik telah menjelaskan bahawa stres di unit rawatan rapi adalah disebabkan oleh masalah penjagaan pesakit yang rumit dan penggunaan teknologi yang canggih. Kajian ini bertujuan mengenalpasti prevalen stres di kalangan jururawat yang berkerja di ICU, Hospital Universiti Kebangsaan Malaysia (HUKM) dan faktor-faktor yang mempengaruhi stres, dan meninjau tanda-tanda stres yang dialami. Kajian deskriptif ini dijalankan keatas 67 jururawat yang berkerja di ICU, HUKM. Data diperolehi melalui soalselidik yang diedarkan sendiri oleh penyelidik. Soal selidik terdiri daripada maklumat demografi, faktor-faktor penyumbang stres dan pengalaman stres yang dialami. Data dianalisis dalam bentuk frekuensi dan peratusan. Ujian "Chi-square" telah digunakan untuk melihat hubungan antara sosio-demografi dengan faktor-faktor yang menyumbang kepada stres. Keputusan kajian mendapati 100% atau semua jururawat di ICU mengalami stres. Pengetahuan, pengalaman kerja, keadaan pesakit yang kritikal dan persekitaran kerja adalah antara faktor-faktor yang menyumbang kepada kejadian stres di kalangan jururawat, ICU, HUKM. Langkah-langkah seperti menggalakkan jururawat ICU mengikuti kursus pos-basik ICU dan meningkatkan bilangan jururawat, boleh mengurangkan stres di kalangan jururawat ICU. Pihak pengurusan hospital juga memainkan peranan yang penting untuk mengurangkan stres di kalangan jururawat yang berkerja di ICU disebabkan stres boleh memberi kesan ke atas prestasi kerja dan kualiti jagarawatan.

*Kata kunci:* stres, mekanisma pengendalian, jururawat ICU

### ABSTRACT

The working environment of intensive care unit (ICU) nurses is a constant source of stress. Researchers have described ICU as a stressful environment because of the complex nature of patients' health problems requiring an extensive use of very sophisticated technology. This study aimed to identify the prevalence of stress among staff nurses working in ICU, Hospital Universiti Kebangsaan Malaysia (HUKM), factors influencing stress and to explore the symptoms of stress experienced. This descriptive study was conducted on 67 staff nurses working in ICU, HUKM. Data was collected using self-administered questionnaires. The questionnaires included sections on socio-demographic data, factors influencing stress and symptoms of stress experienced. Data was analysed

**Address for correspondence and reprint requests:** Dr M I Nor Azlin. Dept. of Obstetric & Gynaecology Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, Cheras, 56000 Kuala Lumpur. Tel: 03-91455949 Fax: 603- 91738946 E-mail: [azlinm@mail.hukm.ukm.my](mailto:azlinm@mail.hukm.ukm.my)

using frequency and percentage. The Chi square test was used to examine the relationship between socio-demographic data and factors influencing stress. Findings indicated that stress symptoms were experienced by 100 per cent (n =67) of staff nurses. Knowledge, working experience, critically ill patients, and environmental factors were one of the many factors contributing to the stress experienced by the ICU nurses in HUKM. Nurses working in ICU, HUKM are found to have a high level of stress. Recommendations like encouraging ICU nurses to take up post basic ICU courses and increasing the nurses quota can reduce the prevalence of stress among ICU nurses. Hospital management has an important role to play in reducing the stress levels of nurses working in ICU as stress has an effect on job performance and quality of nursing care.

*Key Words:* stress, coping mechanism, ICU nurses

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## INTRODUCTION

The working environment of Intensive Care Unit (ICU) is a constant source of stress for nurses working there. Critical care nurses practice in a complex assessment, high intensity therapies and continuous nursing vigilance (Norbeck 1985). Nurses constantly experience a stressful environment because of the complex nature of patient's health problems requiring an extensive use of very sophisticated technology (Robinson & Lewis 1990). Nurses not only have to cope with the sophisticated technology but also regularly face ethical dilemmas concerning issues of patient care management. The changes in Health care delivery has also created new nursing roles and responsibilities and has also contributed to the source of stress (Erlen & Sereika 1997). Stress occurs when nurses try to manage patient's nursing care within the scope of nursing. Stress also occurs when there is a constant desire to achieve only the best.

### Types of work stressors

Several researchers have described ICU as a stressful environment (Robinson & Lewis 1990) and Youngner et al (1979) found that ICU environment itself creates stress for nurses. Studies have also shown

that high level of stress can affect the competence and job performance of nurses (Taromina 2000). Hay & Oken (1972) identified the ICU environment and the psychological impact of working in an ICU as two factors contributing to the stress experienced by ICU nurses. However, a study done in Netherlands on 521 nurses did not agree with the idea that the work environment in ICU is more stressful than a non ICU (Boumans & Landeweerd 1994).

Some researchers have indicated issues related to death and dying of patients nursed closely with the hope of recovering as fully stressful for ICU nurses. Decision making is another factor that is a concern for ICU nurses. Previous research has also indicated that the source of stress among ICU nurses is more organizational in nature. Organizational stressors could be physical, psychological and social in nature (Duquette et al 1994). Nurses working in environments where verbal and physical aggression is prevalent are more likely to experience the effects of stress. The other determinants causing the stress in ICU nurses could be due to increased job demand, nursing shortage (Janseen et al 1999), overload of work, lack of social support from colleagues (Balker et al,2000), a lot of paperwork and high expectations from the superior, organization and next of kin of patients.

## Effect of work stressors

According to Dunham (1984), response to stress can be divided into three categories i.e mental, physical and emotional. Emotional and mental responses to stress has been linked to outbursts of anger, unnecessary worries and frequent mood changes whereas physical stress is associated with cardiac disorders, ulcer and skin rashes. Stress has also been found to be associated with mood changes which include tension, anxiety, fatigue and depression (Cox & Ferguson 1991). Effect of burnout can range from a degree of dysfunction to exhaustion and loss of control (Tavares 1994). Previous studies on stress among nurses have identified positive relationships between work stress, mental distress (Tyler & Ashway 1992) and high incidences of stress. Little is known about the prevalence of stress and the factors influencing stress among the nurses in ICU in HUKM. This study thus aims to investigate the prevalence of stress among the critical care nurses, factors influencing the stress and to examine the relationship between stressors and nurses.

## METHODS

A total of 70 critical care nurses working in ICU, Hospital Universiti Kebangsaan Malaysia (HUKM), were recruited in this cross-sectional study. The ICU of HUKM was chosen because of it being a referral center and a teaching hospital, its utilization of sophisticated technology in the management of critical patients and also partly because patients here are managed by trained specialists and anaesthetists. Questionnaires adapted from Cole (1992) were distributed to all nurses who were recruited, using a random universal method which means all nurses working in ICU, who meet the inclusive criteria were recruited into this study. The inclusive criteria used in the recruitment of the samples are that they must be registered with the Nursing Board of Malaysia. The questionnaire was tested

for validity and reliability through a pilot study conducted on 20 nurses working in the Intensive care unit of Hospital Tengku Ampuan Rahimah Klang. The results of the pilot study were not included in the actual study. Questionnaires consisted of four sections: section A on socio-demographic data, section B consisted of 25 stress inventory items divided into three subtopics: physical environment (9 items), psychological environment (10 items) and nurses responses towards stress in the past 12 months (6 items), section C are questionnaires on the study variables influencing stress and section D on coping mechanism of stress. For the questions in relation to responses towards stress, nurses are just required to answer 'Yes' or 'No'.

Data was coded and entered into SPSS version 10.0 (Statistical Package for Social Sciences) for descriptive analysis. Data were described by frequencies and percentages. A Chi square was performed to investigate the relationship between factors influencing stress and socio-demographic data.

## RESULTS

### Description of the samples

Out of the 70 questionnaires distributed, only 67 sets were returned with full information whereas 3 sets were returned empty. More than 70% of the nurses were 22-40 years old. Only 13% were between the age of 25-27 and an equal number of nurses between 28-30 years and over the age of 31. All the nurses had completed their secondary education and were registered nurses. Majority of the nurses (80%) have a short working experience of less than three years. Out of the 67 nurses, only 10 (14.3%) nurses had undergone the post basic course in ICU. Based on the short working experience and not having a post basic course (87.5%), nurses may not have a strong foundation and knowledge in relation to critical care nursing. In relation to marital status, 57 (81.4%) of the res-

pondents were married and 16 (22.9%) were found to be living with families. Living on their own accounted for 20% and living with friends 57.1%.

### Prevalence of stress

All (100%) of the nurses said they had experienced physical stress, psychological stress and changes in behaviour and indicated the symptoms of stress they experienced in the past 12 months through the stress inventory.

### Stress inventory

From the total number of 67 nurses, 66 (98.6%) experienced episodes of headache followed by abdominal pain (60%) and chest pain (57.1%). Sixty-five (97.1%) nurses were also taken ill with viral infection, experienced sleeping problems (84.3%) and weight loss (65.7%). However,

loss of libido was experienced by only a minority (5.7%) of nurses (Table 1).

### Nursing a critically ill patient

A total of 50 (71.4%) nurses indicated they feel stressful when nursing a critically ill patient compared to 53 (75.7%) when nursing patients who require resuscitation.

### Nurse-patient ratio

Nurse-patient ratio was identified as a stress factor by 100 percent of the nurses. However, nurses who were given only one patient to care finds it less stressful compared to nursing two to three patients.

### Environmental factor

The majority (67.1%) indicated that being in an environment with sophisticated machines as very stressful to handle as

Table 1 : Distribution of nurses response to stress (n=67)

	Frequency	Percentage
<b>Symptoms (Physical)</b>		
Headache	66	98.6%
Viral Infection	65	97.1%
Back pain	62	92.9%
Insomnia	56	84.3%
Weight loss	41	65.7%
Abdominal pain	39	60.0%
Chest pain	27	42.9%
Weight gain	15	25.7%
Loss of libido	1	5.7%
<b>Symptoms (Psychological)</b>		
Fatigue	65	97.1%
Anxiety	65	97.1%
Poor concentration	62	92.9%
Boredom	57	85.7%
Hasty decision making	56	84.35%
Irritability	54	81.4%
Guilt	49	74.3%
Loss of interest	48	72.9%
Depression	47	71.4%
Frustration	20	32.9%
<b>Changes in Behaviour</b>		
Experiences Injury & Commit errors/mistakes	62	92.9%
Experiences conflict with others	59	88.6%
Aggressiveness	18	30%
Absenteeism	0	0%
Alcohol abuse	0	0%
Drug abuse	0	0%

operating and fixing the machines requires a lot of knowledge and patience.

### Interpersonal relationship

Thirty-one (44.9%) nurses finds it uncomfortable working with other staff - doctors and nurse managers, whereas the other half finds it comfortable working together. Fifty-nine (85.5%) nurses find it uncomfortable working in the presence of their head nurse around them and 49 (70%) finds it uncomfortable working in the presence of doctors.

### Relationship of stress with study variables (work stressors)

There is a significant difference between all the study variables with stress (Table 2). Findings indicated a significant difference between nurses with post basic and nurses without post basic training ( $p < 0.05$ ). Thus, it indicates that nurses working in ICU without post basic training find intensive care nursing stressful. Nurses with less years of working experience, experienced

more stress compared to nurses with many years of working experience ( $p = 0.0001$ ). A significant difference between work environment, nurse patient ratio and nursing critically ill patients and stress was identified among the nurses here. This indicates that nurses who work in a high tech environment ( $p = 0.0011$ ), a high nurse patient ratio ( $p = 0.0321$ ), working relationship with staff/professionals ( $p = 0.0021$ ) and nursing critically ill patients ( $p = 0.0011$ ) are the main cause of stress for nurses working in ICU.

### Coping mechanisms

The five coping mechanisms adopted by ICU nurses were identified. Prayers (100%) and relaxation (100%) methods were the common methods used in coping stress. Physical exercises were only used by some (35.7%) of the nurses whereas more than half (60%) of the nurses relieved stress by ventilating their feelings and sharing their problems with others. Some (35.7%) nurses were found to relieve their stress by taking rest in between work.

Table 2 : Association of stress with study variables (work stressors) using chi square (n=67)

Study variables	Level of stress		Total
	Yes (n=%)	No (n=%)	
<b>Post Basic Course</b>	<b><math>\chi^2 = 27.623</math></b>		<b>P= 0.0001</b>
With ICU Post Basic Course (n=10)	0	10	10
Without ICU Post Basic Course (n=57)	47 (82.5%)	10 (17.5%)	57
<b>Working Experience</b>	<b><math>\chi^2 = 41.591</math></b>		<b>P= 0.0001</b>
< than 3 years (n=56)	47 (88.7%)	6 (11.3%)	53
> more than 3 years (n=13)	0	14 (53.8%)	14
<b>Nursing Critically Ill patients</b>	<b><math>\chi^2 = 11.683</math></b>		<b>P= 0.0011</b>
Critically ill	35 (85.4%)	6 (14.6%)	41
Less Critically ill patients	12	14 (53.8%)	26
<b>Ratio of nurses to patient</b>	<b><math>\chi^2 = 4.612</math></b>		<b>P= 0.0321</b>
1 nurse : more than 1 patient	38 (77.6%)	11 (22.4)	49
1 nurse : 1 patient	9 (50%)	9 (50%)	18
<b>Working relationship with other staffs/professionals</b>	<b><math>\chi^2 = 9.961</math></b>		<b>P= 0.0021</b>
Comfortable	39 (81.3%)	9 (18.8%)	48
Uncomfortable	8 (42.1%)	11 (57.9%)	19
<b>Working Environment</b>	<b><math>\chi^2 = 11.897</math></b>		<b>P= 0.0011</b>
Unsafe Environment	37 (84.1%)	7 (15.9%)	44
Safe Environment	10 (43.5%)	13 (56.5%)	23

Significant  $P < 0.05$

## DISCUSSION

Findings of this study indicated that the prevalence of stress among nurses in ICU, HUKM is high, as symptoms of stress were experienced by 100% of the nurses. Three categories of stress symptoms investigated in this study comprising of physical, psychological and changes in behaviour revealed interesting findings. The common physical stress symptoms experienced by nurses in ICU were headache, being easily susceptible to viral infections, back pain, insomnia and weight loss. The psychological stress symptoms experienced by many of the nurses is high which consisted of fatigue, anxiety, boredom, poor concentration at work, irritability, loss of interest in work and depression. However, the type of changes in behaviour experienced was committing errors at work and having frequent conflict with colleagues and other staff. The result was consistent with the study findings of Milazzo (1988) and Yip (2001). Stress at work did not indulge any of the ICU nurses to be involved in drugs and alcohol as strong spirituality and religious background may have prevented the nurses from doing so.

Knowledge was found to have influenced the level of stress among ICU nurses as the majority (82.5%) of the nurses in this study did not have a post basic course but were posted to ICU to work. Lack of knowledge among ICU nurses was also identified as a main indicator of stress among ICU nurses (Steffen 1980). Findings also indicated that the majority of the nurses in this study experienced stress when nursing critically ill patients. This situation was unavoidable as most patients in ICU were either critically ill or required resuscitation. A post basic course in ICU is necessary for nurses working in a specialized unit like the ICU as it demands a high level of knowledge and skill in handling critically ill patients (Kelly & Cross 1985; Sawatzk 1996)

The significant association between work stress with less experience concurs with

previous findings (Huckabay & Jagia 1979; Oisen 1977; Stone et al. 1984). Huckabay & Jagia (1979) again investigated further the association between work stress and less working experience and concluded that "once the nurse has the knowledge and skill required, the degree of stress is reduced. However, Sawatzk (1996) concluded that nurses perceived inadequate knowledge as challenging. Pagana (1990) also reported that nursing students' initial clinical experiences were perceived as significantly more challenging than threatening.

Nurses working in ICU are more often confronted with life sustaining treatment decisions and ethical issues concerning issues of patient care management. Death and dying are frequently encountered and this poses a high level of stress for the nurses working in ICU. This finding is consistent with the findings of Sawatzk (1996) and Bartz & Maloney (1986). Study findings among ICU nurses in Hong Kong also reported the causes of stress being nursing critically ill patients, shortage of nurses, increasing workload and interpersonal relationship among the staff (Lau & Chan, 1995).

Nurses were found to have more than one patient under their care. Nurses find it very stressful when nursing two to three patients under their care. According to Coghlan (1984) shortage of nurses is the main factor causing nurses to care for two to three patients. The inability to meet the needs of patients is affected by the nurse's workload and ultimately patients, and the nurses suffer. Nursing stress ultimately can have an impact on the patient and compromise patient care (Gentry et al.1972; Rich & Rich 1987). However, according to Payne (2001), despite heavy workload being a frequently reported stressor, it is suggested that some stress may be necessary for optimum functioning. But, of course, heavy workload may lead to other negative consequences.

Maintaining a professional relationship among working colleagues is important as

it results in a harmonious working environment. Teamwork and collaboration need to be strong or else nurses will find difficulties in speaking about problems. They will not be able to resolve conflicts in a healthy manner and also may not be able to participate in clinical decisions. This is agreed by Cottrell (2000) that poor professional relationship may cause a stressful working environment. Therefore, specialized knowledge and competency are required in order for nurses to communicate and collaborate effectively which will thus improve patient care. In fact, both physicians and nurses find difficulty when confronted with inter-professional problem due to lack of ability and unwillingness to accept responsibility (Maxfield 2005).

An unsafe environment may also cause a stressful environment for nurses. This finding is consistent with the findings of Briner (1999). The ICU work environment is physically, cognitively and emotionally demanding. Stressful experiences may lead to work-related problems such as staff conflicts, absenteeism, lowered morale decreased productivity and ultimately burnout (Stechmiller & Yarandi 1993; Bailey 1980).

Stress can be alleviated by the availability of coping resources such as social support. Nurses in this study were found to have utilized quite effective coping strategies such as prayers and relaxation. However, nurses should be taught the appropriate coping skills. A stress inoculation training could be implemented to prevent total burnout among ICU nurses (Payne 2001). Several studies, however, have identified "Painful problem solving" as the most frequent coping strategy being used by nurses in other countries (Payne 2001, Healy 2000; O'Brien & Delongis 1996).

## RECOMMENDATIONS AND CONCLUSION

This study has important implications for critical care nursing practice and administration. Critical care nurses work in an environment that is highly stressful due

to the increased responsibility in the management of patient care. ICU nurses are confronted not only by the increasing demand for quality care by patient's family and the organization, but also by the demand for technological excellence. The origins of stress among ICU nurses in HUKM has now been identified and because stress has an impact on the health and well-being of critical care nurses, it is therefore important for organizations to take measures to relieve stress among ICU nurses. Recommendations like encouraging ICU nurses to take up post basic ICU courses and increase staff quota can help reduce stress levels among ICU nurses as nursing is regarded as a very potentially stressful occupation.

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