



## Effect of Stress level and Burnout on Quality of Care and Patients Satisfaction among Critical Care Nurses.

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### ABSTRACT

**Background:** Nurses are exposed to various stressors from physical, psychological, and social working environments; nursing has been considered as a risk profession for burnout due to this stressor. **Aim:** This study was performed to explore the effect of nurses' burnout and stress levels on the quality of nursing care and patient satisfaction. **Methods & Materials:** The study was a descriptive cross-sectional hospital based. A total of 117 nurses and 94 patients from critical care units in three governmental public hospitals in Wad Medani city, Sudan, were enrolled. **Results:** The level of nurses' stress was low among 97.4 % of respondents and moderate among 2.6 %. Regarding the relationship between nursing stress level and job burnout; the study found a significant effect of stress on emotional exhaustion was moderate, mean (SD) 23.34 (10.6) and low personal accomplishment 37.27 (9.4). Stress has a positive statistical effect on emotional exhaustion and depersonalization; while depersonalization and death / dying stressors have negative statistical effects on the quality of care that perceived by nurses. The overall regression of the negative effect of depersonalization and death / dying stressors on the quality of care that perceived by nurses was  $F=5.690$ ,  $p<0.001$  ( $R^2=0.13$ ). **Conclusion:** All nurses in critical care units were experiencing stress and burnout at the workplace, the study found a significant effect of work stress and burnout on quality of care. While no effect on the quality perceived by patients and their satisfaction level.

**Keywords:** stress level, burnout, critical care, care quality, patient satisfaction, nurses.

### Introduction

The largest group of health care provider are nurses, they provide a direct care to the hospital patients, and assurance of hospital quality of care is strongly linked to the performance of nursing staff (Hassmiller & Cozine, 2006; Ibrahim & Fadlalmola, 2020). To ensure and sustain high quality of patient care, nursing practice environment was need to high quality leadership and management, sufficient staffing, positive nurse–physician relationships, reasonable workloads and appropriate working conditions, this

characteristic can reduce nurse burnout, improve nurse job satisfaction (Van Bogaert et al., 2009).

Providing specialized and necessary care to patients suffering from a critical condition is a challenging job that need trained and qualified critical care nurses to provide compassionate care, because these patients come to hospital in

an unconscious state, unstable, and have erratic vital signs, so a critical care nurse has slightly different duties as compared to other staff nurses (*Explained:*

*Requirements of Working in Critical Care Nursing Environments | INSCOL Philippines* -, n.d.). Also, critical care units is a highly stressful environment and may therefore be associated with a high rate of burnout in staff members; that is due to nature of nurses work in complex settings with multiple conflicting missions, it was found strong negative relationship between nurse's occupational stress and job satisfaction, and ultimately growing occupational stress results in increasing turnover rate (Sveinsdottir et al., 2006).

Increase staff turnover rate will increase work burden on other nurses, predispose them to negative health outcomes, and may ultimately affect their performance; this dissatisfaction of nurses distracts their attention from patients and leads to their failure to provide comprehensive care of high quality; and this have a negative impact on patient's satisfaction (Mrayyan, 2006; Poghosyan et al., 2010).

Furthermore, occupational stress is one of the main causes of work-related health problems; it was found that night work and job stress were associated with sleep deficiency, and increased cardio-metabolic risk (Jacobsen et al., 2014); so it is very important to understand how stress affects nurses, and what factors have led to this in their working environment (Sveinsdottir et al., 2006). Critical care health care workers had high burnout syndrome, and most of them had high levels of emotional exhaustion (Elshaer et al., 2018).

Patient satisfaction, is an important indicator for measuring the quality in health care, because has an impact on the results of medical care, retention of patients as clients of the health care; and also increased patient satisfaction reduces medical malpractice claims (Heidenreich, 2013).

In this study we aimed to evaluate the effects of stress level and burnout on quality of care and patient satisfaction among critical care nurses.

## Methods

**Study design:** This study was descriptive cross-sectional hospital based, using correlational design to explore the effects of nurse's stress and burnout on the quality of nursing care and patient's satisfaction within the clinical environment, that include nurses and patients in critical care hospitals units.

**Study setting:** This study was carried out at critical care units in three governmental public hospitals in Wad Medani city as following; Wad Medani Cardiac Centre, Wad Medani Renal Hospital, and National Cancer Institute of Gezira University.

**Study population:** We covered all nurses working in critical care units and hospitalized patients during the study period. Nurses and patients from three centers as follow; Wad Medani Cardiac Centre 38 nurses, 21 patients, Wad Medani Renal Hospital 36 nurses, 34 patients, National Cancer Institute of Gezira University 43 nurses, 39 patients. With total of nurses 117 and 94 patients.

**Data collection tools:** In this study we used four instruments to collect data, (1) General questionnaire, divided into three sections: nurse sociodemographic characteristics, nurse job characteristics, and patient sociodemographic characteristics. (2) Pamela Gray-Toft and James Anderson (Pamela and Anderson, 1981) created the Nursing Stress Scale (NSS), which was intended in a simple, accessible English language form to evaluate stress related to clinical nursing (Gray-Toft & Anderson, 1981). In the clinical nursing setting, the Nursing Stress Scale assesses the origins of stress and perceived stressful circumstances. Each subscale item is evaluated based on the frequency with which

respondents perceive these circumstances to be stressful, with response possibilities ranging from one to four points. Higher scores indicate higher levels of felt stress. Likert-scale format: (0) never, (1) occasionally, (2) frequently, and (3) very frequently; higher scores indicate higher levels of experienced stress.

(3) The Maslach Burnout Inventory, developed by Christina Maslach (1986), is a tool for assessing burnout. It is a questionnaire that addresses three burnout constructs; Exhaustion emotional: it depicts the feeling of having one's emotional resources consumed and having no source of replenishment; Depersonalization: it captures negative and cynical feelings about one's patients or colleagues; and Reduced Personal Accomplishment: is a feeling of inadequacy about one's ability to relate to patients, which can lead to a self-imposed failure verdict (Maslach & Jackson, 1981).

(4) The Karen instruments for measuring quality of nursing care, The Karen-patient and Karen-personnel tools are very new, having been created by Andersson in 1995 to assess nursing care quality. Karen's instruments are wide and generic, and they've been utilized in prior research (Andersson and Lindgren 2008; Andersson and Lindgren 2013), whereas other instruments tend to focus on a single aspect of quality. It is feasible to quantify essential dimensions of care quality from both a patient and a nurse's viewpoint by utilizing the Karen instruments' components (Andersson & Lindgren, 2008).

## Results:

In demographic characteristic of nurses as shown in table (1) most of nurses were female (77.8%) and had bachelor's degree in nursing (74.4%), more than half (58.1) their age between 20 – 31 years, married (57.3%), they have more than five years' experience in

nursing (57.3). More than two thirds of nurses (69.2%) live in Wad-Medani city, most of them (72.6%) work more than three years with fixed job in the hospital; with monthly salary ranged between 1000 – 2000 SDG (67.5%).

**Table (2)** shows that nearly half of nurses (46.2%) working five days per week at high dependency unit (43.6) with high patient to nurse ratio (82.1%). Most nurses (59.8) work in the morning shift; with additional paid shift (40.2%) voluntary (35.9).

In **Table (3)** the result showed that the most of patients (61.7%, 59.6%) were male from rural area of Wad-Medani city respectively; nearly half of them (47.9%) their age above 51 years old, (22.3%) have a secondary school education. The majority of patients (77.7%) have health insurance and they duration of the hospitalization was 3-7 days, as the first time in this hospital (43.6%), about two third of them reported that their incomes were inadequate to meet their needs (64.9%).

**Table (4)** shows that the highest average in emotional exhaustion was awarded to variable: (Working with people directly puts too much stress on me) with mean 3.62 and standard deviation 1.62, followed by variable: (I feel used up at the end of the day) with mean 3.46 and standard deviation 1.43. While the lowest average was awarded to variable: (Working with people all day is a real strain for me) with mean 1.27 and standard deviation 1.70.

In depersonalization, variable (I feel clients blame me for some of their problems) has the highest average value 1.15 and standard deviation 1.50. In contrast variable (I feel I treat some clients as if they were impersonal objects; I don't really care what happens to some clients) obtained the lowest value of mean and standard deviation  $0.12 \pm 0.51$ ;  $0.12 \pm 0.43$  respectively.

Regarding personal accomplishment, the highest average was awarded to variable: (I feel exhilarated after working closely with clients) with mean 5.04 and standard deviation 1.43. While the lowest average was awarded to variable: (In my work, I deal with emotional problems very calmly) with mean 4.31 and standard deviation 2.01.

**Table (1): Demographic characteristics of nurses(n= (n=117)**

Item (s)	n	%	Total
<b>Gender:</b> Male	26	22.2 %	117 (100 %)
Female	91	77.8 %	
<b>Age:</b> 20 – 30 years	68	58.1 %	117 (100 %)
31 – 40 years	33	28.2 %	
41 – 50 years	13	11.1 %	
51 – 60 years	3	2.6 %	
<b>Education level:</b> Diploma	15	12.8 %	117 (100 %)
Bachelor	87	74.4 %	
Master	14	12 %	
Doctorate	1	0.8 %	
<b>Place of residence:</b> City	81	69.2 %	117 (100 %)
Rural area	36	30.8 %	
<b>Marital status:</b> Single	49	41.9 %	117 (100 %)
Married	67	57.3 %	
Divorced	1	0.8 %	
<b>Nursing experience:</b> Less than 3 years	23	19.7 %	117 (100 %)
3 – 5 years	27	23 %	
More than 5 years	67	57.3 %	
<b>Working period in the hospital:</b> 1 – 3 years	32	27.4 %	117 (100 %)
More than 3 years	85	72.6 %	
<b>Monthly income:</b> 500 – 1000 SDG	26	22.2 %	117 (100 %)
1000 – 2000 SDG	79	67.5 %	
2000 – 3000 SDG	7	%	
3000 SDG	5	4.3 %	
≥ 3000 SDG			

**Table (2): Work characteristics of nurses (n = 117)**

Item (s)	Frequency	Percent	Total
<b>Work Shift:</b> Morning	70	59.8 %	117 (100 %)
Afternoon	9	7.7 %	
/Night	24	20.5 %	
Nights	14	12 %	
<b>Work unit:</b> Coronary care unit	6	5.1 %	117 (100 %)
Intensive care unit	12	10.3 %	
Emergency room	4	3.4 %	
Hemodialysis unit	28	23.9 %	
High dependency unit	51	43.6 %	
Operating room	16	13.7 %	
<b>Patient-to-nurse ratio:</b> 1: 1	10	8.5 %	117 (100 %)
1: 2	11	9.4 %	
≥ 1: 3	96	82.1 %	

Item (s)	N	%	Total
<b>Working days per week:</b> 3 days	15	12.8 %	117 (100 %)
5 days	54	46.2 %	
Full week	48	41 %	
<b>Overtime Performed at Work:</b> Yes	47	40.2 %	117 (100 %)
No	70	59.8 %	
<b>Voluntary</b>	42	35.9 %	47 (40.2 %)
<b>Pressured expected</b>	5	4.3 %	
<b>Paid</b>	47	40.2 %	47 (40.2 %)

**Table (3): Demographic characteristics of patients (n = 94)**

Item (s)	N	%	Total
<b>Gender:</b> Male	58	61.7 %	94 (100 %)
Female	36	38.3 %	
<b>Age:</b> 20 – 30 years	18	19.1 %	94 (100 %)
31 – 40 years	15	16 %	
41 – 50 years	16	17%	
51 – 60 years	25	26.6 %	
More than 60 years	20	21.3 %	
<b>Education level:</b> Illiterate	17	18.1 %	94 (100 %)
Khalwa	12	12.8	
Primary school	16	% 17	
Intermediate school	14	% 14.9	
Secondary school	21	22.3 %	
Graduate	13	13.8 %	
Postgraduate	1	1.1 %	
<b>Residence place:</b> Ghadarif state	8	8.5 %	94 (100 %)
Kassala state	3	3.2 %	
Blue Nile state	9	9.5 %	
Northern state	3	3.2 %	
Wad -Medani city	15	16 %	
Wad -Medani rural area	56	59.6 %	
<b>Previous hospitalization:</b> None	7	7.4 %	94 (100 %)
First time	41	43.6 %	
2– 3 times	27	28.7 %	
More than 3 times	19	20.2 %	
<b>Days of hospitalization:</b> 3 – 7 days	73	77.7 %	94 (100 %)
8 – 15 days	14	14.9 %	
16 – 21 days	4	4.3 %	
22 – 30 days	2	2.1 %	
More than 1 month	1	1 %	
<b>Health insurance coverage:</b> Yes	73	77.7 %	94 (100 %)
No	21	22.3 %	
<b>Monthly income:</b> < 1000 SDG	61	64.9 %	94 (100 %)
1000 – 2000 SDG	33	35.1 %	

**Table (4): Mean and standard deviations of burnout dimensions variables among nurses (n=117)**

	Subscales variables	Mean	SD
Emotional exhaustion	I feel emotionally drained from my work	2.80	1.55
	I feel used up at the end of the day	3.46	1.44
	I feel tired when I get up in the morning and have to face another day at work	3.32	1.77
	I feel burned out from my work	2.30	1.82
	I feel frustrated by my job	2.03	1.88
	I feel I am working too hard on my job	2.69	1.76
	Working with people directly puts too much stress on me	3.62	1.62

	I feel like I am at the end of my tether	1.85	1.73
	Working with people all day is a real strain for me	1.27	1.70
	<b>Total Mean / SD</b>	<b>23.34</b>	<b>10.60</b>
Depersonalization	I feel I treat some clients as if they were impersonal objects	0.12	0.51
	I have become more callous toward people since I took this job	0.86	1.61
	I worry that this job is hardening me emotionally	0.92	1.54
	I don't really care what happens to some clients	0.12	0.44
	I feel clients blame me for some of their problems	1.15	1.50
	<b>Total Mean / SD</b>	<b>3.17</b>	<b>3.69</b>
Personal accomplishment	I can easily understand how clients feel about things	4.48	1.84
	I deal effectively with the problems of clients	4.87	1.63
	I feel I am positively influencing other peoples' lives through my work	4.76	1.62
	I feel very energetic	4.73	1.57
	I can easily create a relaxed atmosphere with clients	4.66	1.56
	I feel exhilarated after working closely with clients	5.04	1.43
	I have accomplished many worthwhile things in this job	4.42	1.87
	In my work, I deal with emotional problems very calmly	4.31	2.02
	<b>Total Mean / SD</b>	<b>37.27</b>	<b>9.40</b>

## Discussion

This study was descriptive cross-sectional hospital based, using correlational design to explore the effects of nurse's stress and burnout on the quality of nursing care and patient's satisfaction within the clinical environment.

The study showed that most nurses were female (77.8%). This is in line with the United States Census Bureau report, that men still make up only a small percentage (9%) , while female nurses are (91%) of nurses working in the United States (*Male Nursing Statistics / Fastaff Travel Nursing*, n.d.).

The study showed that the patients to nurse ratio was high, it was found more than 1:3; among (82.1%) of nurses. And this may worsen patients care outcome (Sakr et al., 2015).

Regarding nurses satisfaction, study showed that most of them (77.8%) are satisfied with nursing profession, and about (24.6%) they have a plan for continue education in nursing field; (33.3%) intent leaving Sudan due to poor, unsatisfied economic status and low wages. this may be led to nursing shortage

(Spetz & Given, 2003), which affect quality of patients care (Aiken et al., 2002).

The study showed that most of patients (61.7%, 59.6%) were male from rural area respectively; nearly half of them (47.9%) their age above 51 years old. This is because the incidence of renal, cardiac, and caner diseases is more common among this group of age (Chiao et al., 2016; O'sullivan et al., 2017; Thakkar et al., 2014).

Also, (85 %) of patients their education level did not exceed secondary school; about two third of them reported that their incomes were inadequate to meet their needs (64.9%); this is because most rural area populations work in agriculture.

Regarding stress level among nurses, the most important finding of this study was that all nurses experienced stress in the low (2.6%) and moderate level (97.4%). When comparing this result, the prevalence of stress among participant was higher than what has been reported in previous studies (Kibria et al., 2018)(Al-Makhaita et al., 2014).

Emotional issues related to death and dying was identified as the most frequent source of stress for the present study at mean (10.41), these finding supported by two studies (Chatzigianni et al., 2018)(Sarafis et al., 2016).

The second most reported stressor was workload at mean (10.05), this is in line with the findings of (Makie, et.al 2006) (Makie, 2006). Also, statistically significant relationship was not found between stress level and demographic characteristics; work characteristics of nurses and nurse's opinion regarding they job, these finding supported by two studies (Al-Makhaita et al., 2014; Shivaprasad A H, 2013).

Furthermore, the study results revealed highly significant positive association between stress level and all seven subscales of nursing stress scale at P-value (0.000), across Maslach Burnout Inventory; as a group the findings of the present study revealed that the nurse's participants experienced burnout in the moderate levels of emotional exhaustion; personal accomplishment and low level in the depersonalization. These finding supported by (Shafaghat et al., 2016), when compared to one of the Malawian studies, level on emotional exhaustion and personal accomplishment were similar and participants depersonalization in this study was lower than has been reported in the study (Thorsen et al., 2011).

The results indicated that the burnout burden in the nurses were mainly on the subscales of emotional exhaustion and reduced personal accomplishment, mainly on the subscales of emotional exhaustion and reduced personal accomplishment, but not depersonalization, these finding in line with the findings of Shafaghat (Shafaghat et al., 2016). The study reveals that (63%, 21%, 50%) of nurses experienced moderate and high level of burnout via emotional exhaustion, depersonalization, and personal accomplishment subscales, respectively.

Regarding relationship between job burnout and nursing stress level; the study found a significant effect of stress on emotional exhaustion. The overall regression was significant,  $F = 25.25$ ,  $p < 0.001$  ( $R^2 = 0.18$ ), that mean the independent variable (Job stress) accounted for 18 % of the variation of the emotional exhaustion. Also, it was found significant effect for stress on depersonalization. The overall regression was significant,  $F = 5.193$ ,  $p = 0.025$  ( $R^2 = 0.04$ ), that mean the independent variable (Job stress) accounted for 4 % of the variation of the depersonalization. So, stress is a good predictor of burnout, this finding is supported by

two studies (Meltzer & Huckabay, 2004; Sun et al., 2017).

Furthermore, the quality of nursing care as perceived by nurses and patients were investigated. The findings revealed that the quality level from perspective of both is very good; it was found that patients and nurses seem satisfied with overall quality of care. The patients were less satisfied with integrity regarding a positive atmosphere, and influence, regarding participation in decisions of treatment and planning with the nurses, while nurses were less satisfied with commitment and competence development. The patients perceived that nurse had good competence and excellent care, which is supported by study of Bassett (Bassett, 2002) and study of Andersson and Lindgren (Andersson & Lindgren, 2013).

### **Conclusion**

Based on the findings of present study it was concluded that: All nurses in critical care units were experienced stress at work place; most of them (97.4%) had low level of stress. As a group nurses in critical care units have burnout in moderate levels of emotional exhaustion and personal accomplishment and a low level in depersonalization.

The most stressful factors for critical care nurses are those related to coping with death and dying, workload demands.

### **Ethical consideration**

Approval was taken to conduct the study from the graduate study and scientific research board and ethics Committee in Shendi University. Permission was taken originally from the directors of hospitals and nursing supervisors of critical care units. All the participants (nurses and patients) received a verbal explanation regarding the research purpose.

## Conflicts of Interest

The authors declare that there are no conflicts of interest

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