

# The Relationship between Perceived Stress and Coping Strategies among Nurses in the Burn Care Unit at the Main Alexandria University Hospital

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## Abstract

Nurses caring for burn injured patient had high stress levels in the workload and time pressure. The main stressful factors among burn injured patient care are high patients' death, emergency situations, and low supportive relationships. Prolonged stress without effective coping strategies may negatively contribute to the nurses' quality of life and quality of care delivered. **Aim of the study:** Assess perceived stress and coping strategies among nurses caring for burn injured patient and to investigate the relationship between perceived stress and coping strategies among those nurses. **Design:** A descriptive correlational design was utilized for this study. **Setting:** The study was conducted in burn unit at Main Alexandria University hospital. **Subjects:** All nurses are working in burn care unit (45 nurse) were included in the study. **Tools:** Socio-demographic and work characteristics interview schedule, Perceived Stress and Brief Cope Scale. **Results:** Results of the study revealed that, more than half of the studied nurses had moderate level of perceived stress and rest of them having high level. The majority of the studied nurses had moderate level of problem-focused, emotion focused and dysfunctional coping strategies. A positive statistical significant relationship between nurses' perceived stress and behavioral disengagement & self-blame coping strategies and a negative statistical significant relationship between perceived stress and active coping & planning, seeking emotional support and positive reframing coping strategies were found. **Conclusion & recommendations:** Perceived stress among studied nurses negatively related to problem- focused & emotion- focused coping strategies and positively related to dysfunctional coping strategies. Based on the findings, it is recommended to implement programs to tackle nurses' stress level and improve their coping skills.

**Keywords:** Perceived Stress, Coping Strategies, Nurses, Burn Care Unit.

## Introduction:

Nursing is considered as stressful profession, nursing staff are usually influenced by many physical and emotional stressors as workload, closed interaction with patients, high emotional involvement and being responsible of patients' life (Rajabi et al., 2018, Hanrahan et al., 2017 & Brennan, 2017). In addition, Stressors of nursing at hospitals is reported to be significantly higher than other working settings (Brusselsaers et al 2010). In specialized units as the Burn Treatment Unit, the relationship with patients in situations of intense physical and emotional pain, this cannot always be managed through nursing care. Exposure to intense emotions, especially those aimed at caring for the child and the adult patients at risk of death may provoke different feelings and reactions, which may arouse the experience of stress (Bayuo, 2017).

In care delivery for burned patients, nurses are confronted with a routine of great work as wounds care, intensive monitoring for burned patients, poor pain control, depression, disturbed sleep pattern, impaired mobility, end of life symptoms and other factors, not just related to the patients, but also to their relatives (Martins et al., 2014 & Antonioli et al., 2018) Those factors made nurses feel powerlessness and physical, emotional exhaustion as they are responsible for direct care delivery to individual, family and community (Vinothkumar et al., 2016). These causes of physical and emotional exhaustion have been described as stressors to which nurses must respond to by coping (Kornhaber & Wilson 2011).

In this context, stress is defined as any discomfort perceived by the individual that is stimulated by activities perceived as too intense

and frequent, which exceed a person's coping capabilities and resources to manage (Bayuo et al., 2019). Stressors also identified as a result of environmental factors, patient characteristics and caregivers' personalities. Other authors explain stress as psychological effects of working in a burn unit and the attitudes of nurses toward their patients (Hebrani, 2008).

Moreover, exposure to stress for long period can result in burnout, lower efficiency, and frequent absences from work, reduction in patients' satisfaction, family problems, alcohol and drug abuse, depression, and even suicide (Kumar, 2016). Successfully management of stress influences by person's ability to adapt using coping strategies (Bayuo et al., 2019).

The purpose of coping is to maintain psychological health and wellbeing and alleviate the stress-associated symptoms. Thus, nursing staff use different coping strategies that are determined by their evaluation and affect their managing a particular stressor source (Cairney et al., 2014). Badger defined coping as the person's response to a stressful situation perceived as exceeding to the person's resources (Badger, 2005).

The coping responses can be focused on the problem or on the emotion. Problem-focused coping includes action-oriented strategies, such as planning or performing specific activities and seeking informational support. Emotion-focused strategies, on the other hand, include seeking social support, denial, drug use. These two coping styles complement each other rather than constitute independent categories (Carver & Connor-Smith, 2010).

Carver and Connor-Smith have made a distinct difference between engagement coping and disengagement coping. Engagement coping includes problem-focused and some forms of emotion-focused coping as seeking social, positive reframing and acceptance (Carver & Connor-Smith, 2010). On the other hand, disengagement or dysfunctional coping includes strategies such as denial, avoidance, substance use, self-blame. Disengagement coping is generally ineffective in reducing distress over the long term. Ineffective coping may elevate the level of perceived stress (Mark, 2012 & Schreuder et al., 2012)

Facing with a stressful situation especially in sensitive and stressful area as burn treatment unit, nurses develop different coping strategies may be related to personal factors, situational demands and available resource. It is important to note that the types of coping strategies used in a specific situation vary according to the personality or experiences of the individual and characteristics of stressful situation. Thus, coping strategies are intended to maintain well-being and decrease the harmful effects of stressful situations (Laal & Aliramaie 2010).

In view of the importance of coping for nurses and the limited studies regarding the nurses who work in the care of burned patients. Addressing perceived stress and coping strategies among nurses caring for burned patients will help in identifying possible actions to decrease the negative consequences of the stressors experienced in burn treatment unit and promoting personal quality of life and labor, which will definitely lead to improvement in the care delivered (Antonioli et al., 2018 & Kornhaber, 2011).

### **Aim of the study**

This study aimed to:

- Assess perceived stress and coping strategies among nurses caring for burn injured patient.
- Identify the relationship between perceived stress and coping strategies among nurses caring for burn injured patient.

### **Research questions:**

- What are the levels of nurses' perceived stress and their coping strategies?
- Is there a relation between nurses' perceived stress and their coping strategies?

### **Materials and Method:**

#### **Materials**

**I- Research design:** A descriptive correlational design was utilized in this study.

**II- Setting:** This study was conducted at Main University hospital in Alexandria. The hospital is affiliated to Alexandria University. The study was carried out in burn treatment unit. The burn treatment unit is the one of the special surgical units. The unit is dedicated to

deliver of free quality and contemporary care to patients with entire spectrum of burns with different degree and percentages. The unit has total 30 beds that served Alexandria, ElBehara, Kafr ElSheikh, and Matrouh. Burn unit provides treatment as dressing, hydrotherapy and ozone therapy; surgical procedures as grafting; rehabilitation and follow up.

### III-Subjects:

Convenience sampling was used to include all nurses are working in burn care unit (45 nurse) were included in the study. There were 32 practical nurses and 13 registered nurses who providing care for burned patients.

### IV-Tools:

Data of the present study were collected using the following tools:

#### **Tool I: A socio-demographic and work characteristics interview schedule:**

It was developed by the researchers to collect basic data about the study subjects such as age, sex, level of education, years of working experience and perceived causes of stress.

#### **Tool II: Perceived Stress Scale (PSS):**

This was developed by (Cohen, 1983), and modified by (Cohen & Williamson 1988) to include 10 items only. Each response is rated on a five-point Likert-type scale that ranges from (0) indicating "never" to (4) indicating "very often". Four statements from the scale are negatively stated and reversely scored. Total score is obtained by summing up all item scores and is ranging from 0 to 40. The scores from 0 - 13 are considered as low level of perceived stress, scores from 14 - 26 as moderate level and scores from 27 - 40 as high level. The scale has been tested for internal consistency and reliability by the original authors. Cronbach's alpha for the entire instrument was 0.87.

#### **Tool III: Brief Cope Scale:**

It was developed by (Carver, 1997). It is a self-report questionnaire used to assess a number of different coping behaviors and thoughts a person may have in response to a specific situation. It consists of 28 items are rated on frequency of use by the participant with a scale of 1 reflecting ("I haven't been doing this at all") to

4 reflecting ("I've been doing this a lot"). It is made up of 14 subscales and represented by 2 items for each: self-distraction, active coping, denial, substance use, use of emotional support, use of informational support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame. Internal reliabilities for the 14 subscales range from Cronbach's alpha= 0.57-0.90.

Items 2,7,10, 14, 23, and 25 were classified as problem-based coping and the rest of the items fell into emotion-based coping. Another model grouped the 14 subscales into three categories: problem-focused (active coping, planning, use of instrumental support) represented by 6 items, emotion-focused (use of emotional support, positive reframing, acceptance, religion, humor) represented by 10 items, and dysfunctional coping (venting, denial, substance use, behavioral disengagement, self-distraction, self-blame) represented by 12 items (Bayuo & Agbenorku 2018). Total score of problem-focused coping strategies is obtained by summing up all item scores and is ranging from 6 to 24. The scores lower than 12 are considered as low level of problem-focused coping strategies, scores from 12 to 18 as moderate level and scores from 18 to 24 as high level. Total score of emotion-focused coping strategies is ranging from 10 to 40. The scores lower than 20 are considered as low level of emotion-focused coping strategies, scores from 20 to 30 as moderate level and scores from 30 to 40 as high level. Total score of dysfunctional coping strategies is ranging from 12 to 48. The scores lower than 24 are considered as low level of dysfunctional coping strategies, scores from 24 to 36 as moderate level and scores from 36 to 48 as high level.

### Method:

- 1- The approval of Ethical Research Committee of Alexandria Faculty of Nursing was obtained before conducting the research.
- 2- An official approval was obtained from the medical director of Main University hospital in Alexandria after explaining the purpose of the study to conduct the study and collect the necessary data.
- 3- Asocio-demographic and work characteristics interview schedule (tool I) was developed by the researchers.

- 4- Tools II and III were translated into Arabic language. They were submitted to a jury composed of seven experts in the field of Psychiatric Nursing and Mental Health and Medical- Surgical Nursing to test content validity of the scales. Tools proved to be valid.
- 5- A pilot study was done on 5 nurses, to ascertain the clarity and applicability of the study tools and to identify the obstacles that may be faced during data collection. The pilot study revealed that tools were clear, understood, and applicable.
- 6- The reliability of the study tools were ascertained by measuring the internal consistency of their items using the Cronbach alpha coefficient test. Tools proved to be reliable, for tool II  $\alpha = 0.725$  and tool III  $\alpha = 0.836$ .

#### Actual Study:

- All nurses in burn unit are included in the study after excluding the names of those who participated in the pilot study.
- Each nurse was interviewed individually, and the researcher explained the aim of the study. The form of the study tool was then explained to the nurses.
- The questionnaires were distributed to the nurses, collected, and revised for any missing data.
- Data collection was completed over a period of about 2 months from 1st of January 2020 and ending at the 30th of February 2020.

#### Ethical considerations:

For each recruited subject, the following issues will be considered:

1. Securing the subject's written informed consent after explanation of research purpose.
2. Assuring confidentiality of the subject's data.
3. Right to voluntary participation of the study subjects.

#### Statistical analysis:

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). Data were analyzed descriptively to obtain number and percentage, means, and standard deviation. Significance of the obtained results was judged at the 5% level.

#### The used tests were:

##### 1 - Student t-test

For normally distributed quantitative variables, to compare between two studied categories.

##### 2 - F-test (ANOVA)

For normally distributed quantitative variables, to compare between more than two categories.

#### Results:

**Table (1)** shows the distribution of studied nurses according to their socio-demographic and work characteristics. The age of the studied nurses ranged from 20 to 59 years with a mean age of  $40.29 \pm 10.10$  years. It was found that 42.2% of them were from 30 to less than 40 years. The table also shows that more than half of nurses (57.8%) were married. About 46.7% of the studied nurses had diploma level; while 24.4% & 28.9% of them had technical, bachelor consequently.

Regarding of experience, the nurses' years of experience ranged from 1 to 30 years with a mean score  $13.89 \pm 7.23$ . More than half of nurses (57.8%) had more than 10 years of experience in nursing. It was also noticed that working hours/day ranged from 6.0 to 12.0 hours with mean score  $10.0 \pm 2.21$ . It was found that 53.3% of nurses were working 12 hours/day. In relation to working shift, 46.7% of nurses were working in all shifts, while 31.1% of them were working in morning and evening shift. In addition, number of patients assigned to each nurse by the end of the shift, 53.3% of nurses assigned from 2 to 4 patients.

**Table (1):** Distribution of studied nurses according to their socio-demographic and work characteristics (n= 45):

Socio-demographic data	No.	%
<b>Age (year)</b>		
20 - <30	7	15.6
30- <40	19	42.2
40- <50	10	22.2
50 – 59	9	20.0
Min. – Max.	20.0 – 59.0	
Mean ± SD.	40.29 ± 10.10	
<b>Sex</b>		
Male	0	0
Female	45	100
<b>Marital status</b>		
Single	8	17.8
Married	26	57.8
Divorced / Widowed	11	24.4
<b>Level of education</b>		
▪ Diploma	21	46.7
▪ Technical	11	24.4
▪ Bachelor	13	28.9
<b>Years of experience</b>		
1-10 years	19	42.2
More than 10 years	26	57.8
Min. – Max.	1.0 – 30.0	
Mean ± SD.	13.89 ± 7.23	
<b>Working hours/day</b>		
6 – 8	4	8.9
8	17	37.8
12	24	53.3
Min. – Max.	6.0 – 12.0	
Mean ± SD.	10.0 ± 2.21	
<b>Working shift</b>		
Morning	10	22.2
Morning & Evening	14	31.1
All	21	46.7
<b>Number of patients assigned to each nurse</b>		
2 – 4	24	53.3
5– 8	13	28.9
More than 12	8	17.8

**Table (2)** shows the distribution of the studied nurses according to perceived sources of stress. The table illustrates that 33.3% of studied nurses reported nature of burn wounds and care requirements of the burned patient as main source of stress, while 22.2% reported caring for severely burned patients at the end of life and 13.4% reported heavy workload & challenges of pain management as main source of stress.

**Table (2):** Distribution of the studied nurses according to perceived sources of stress:

Sources of stress*	N= 45	%
Heavy work (workload)	6	13.4
Time pressure	3	6.6
Challenges of pain management	6	13.4
Nature of burn wounds and care requirements of the burned patient	15	33.3
Caring for severely burned patients at the end of life	10	22.2
More than one source	5	11.1

\*Answers are not mutually exclusive.

**Table (3)** represents distribution of the studied nurses according to their levels of perceived stress. It can be noted that about more than half (57.8 %) of the studied nurses had moderate level of perceived stress, followed by 42.2% had high scores, with a total mean score of  $25.0 \pm 3.28$ .

**Table (3):** Distribution of studied nurses according to levels of perceived stress (n= 45):

Variables	Level	Range	No.	%	Mean score
Levels of perceived stress	Low	0 – 13	0	0.0	25.0 ± 3.28
	Moderate	14 – 26	26	57.8	
	High	27 – 40	19	42.2	

**Table (4)** shows distribution of the studied nurses according to their levels of coping strategies. It can be noted that the majority of the studied nurses (68.9 %) had moderate Problem-focused coping strategies with mean score of  $16.24 \pm 3.16$ , while only 24.4% of them had high Problem-focused coping strategies. The mean scores of the three subscales of Problem-focused coping strategies (active coping, planning, and seeking informational support) were  $5.93 \pm 0.94$ ,  $5.64 \pm 1.32$  and  $4.67 \pm 1.71$  respectively. It can be also found that 75.6% of the studied nurses had moderate emotion focused coping strategies with mean score of  $27.91 \pm 4.0$  and 20.0% of them had high emotion focused coping strategies. The mean scores of the five subscales of emotion-focused coping strategies (seeking emotional support, positive reframing, acceptance, religion and humor) were  $4.84 \pm 1.46$ ,  $5.11 \pm 1.15$ ,  $6.36 \pm 1.05$ ,  $7.56 \pm 0.89$  and  $4.22 \pm 1.65$  respectively. Regarding dysfunctional coping strategies, it can be noticed that 95.6% of the studied nurses had moderate dysfunctional coping strategies with mean score  $31.0 \pm 3.30$ . The mean scores of the six subscales of dysfunctional coping strategies (Denial, Substance use, Venting, Behavioural disengagement, Self-distraction and Self-blame) were  $4.38 \pm 1.11$ ,  $2.04 \pm 0.21$ ,  $6.40 \pm 1.34$ ,  $5.53 \pm 1.10$ ,  $6.51 \pm 0.97$  and  $6.13 \pm 1.12$  respectively.

**Table (4):** Distribution of studied nurses according to their levels of coping strategies (n= 45):

Variables	Subscales	Range	No	%	Mean score
Problem-focused coping strategies	Active coping	Low <4	0	0.0	5.93 ± 0.94
		Moderate 4 – 6	37	82.2	
		High 5 -8	8	17.8	
	Planning	Low <4	2	4.4	5.64 ± 1.32
		Moderate 4 – 6	31	68.9	
		High 5 -8	12	26.7	
	Seeking informational support	Low <4	11	24.4	4.67 ± 1.71
		Moderate 4 – 6	26	57.8	
		High 5 -8	8	17.8	
Overall Problem-focused coping strategies		Low <12	3	6.7	16.24 ± 3.16
		Moderate 12 – 18	31	68.9	
		High 18 -24	11	24.4	
Emotion-focused coping strategies	Seeking emotional support	Low <4	10	22.2	4.84 ± 1.46
		Moderate 4 – 6	29	64.4	
		High 5 -8	6	13.3	
	Positive reframing	Low <4	4	8.9	5.11 ± 1.15
		Moderate 4 – 6	37	82.2	
		High 5 -8	4	8.9	
	Acceptance	Low <4	0	0.0	6.36 ± 1.05
		Moderate 4 – 6	24	53.3	
		High 5 -8	21	46.7	
	Religion	Low <4	0	0.0	7.56 ± 0.89
		Moderate 4 – 6	8	17.8	
		High 5 -8	37	82.2	
	Humor	Low <4	16	35.6	4.22 ± 1.65
		Moderate 4 – 6	25	55.6	
		High 5 -8	4	8.9	
Overall Emotion-focused coping strategies		Low <20	2	4.4	27.91 ± 4.0
		Moderate 20 – 30	34	75.6	
		High 30 -40	9	20.0	
Dysfunctional coping strategies	Denial	Low <4	8	17.8	4.38 ± 1.11
		Moderate 4 – 6	35	77.8	
		High 5 -8	2	4.4	
	Substance use	Low <4	45	100.0	2.04 ± 0.21
		Moderate 4 – 6	0	0.0	
		High 5 -8	0	0.0	
	Venting	Low <4	0	0.0	6.40 ± 1.34
		Moderate 4 – 6	21	46.7	
		High 5 -8	24	53.3	
	Behavioural disengagement	Low <4	0	0.0	5.53 ± 1.10
		Moderate 4 – 6	32	71.1	
		High 5 -8	13	28.9	
	Self-distraction	Low <4	0	0.0	6.51 ± 0.97
		Moderate 4 – 6	27	60.0	
		High 5 -8	18	40.0	
Self-blame	Low <4	0	0.0	6.13 ± 1.12	
	Moderate 4 – 6	24	53.3		
	High 5 -8	21	46.7		
Overall Dysfunctional Coping strategies		Low <24	0	0.0	31.0 ± 3.30
		Moderate 24 – 36	43	95.6	
		High 36 -48	2	4.4	

**Table (5)** demonstrates correlation between perceived stress and coping strategies among the studied nurses. The table reveals that there was a statistically significant negative relationship between perceived stress with total score of problem-focused coping strategies & active coping and planning subscales. While there was a statistically significant negative relationship between perceived stress and two subscales of emotion focused coping strategies (seeking emotional support and positive reframing). Moreover, a statistically significant positive relationship between nurses' perceived stress and two subscales of dysfunctional coping strategies (behavioral disengagement and self-blame) were found.

**Table (5):** Correlations between perceived stress and coping strategies among the studied nurses (n=45)

Coping strategies	Perceived stress	
	R	P
Active coping	-0.324*	0.030*
Planning	-0.294*	0.049*
Seeking informational support	-0.171	0.263
Problem-focused coping strategies	-0.312*	0.037*
Seeking emotional support	-0.408*	0.005*
Positive reframing	-0.397*	0.007*
Acceptance	0.053	0.730
Religion	-0.155	0.309
Humor	0.143	0.350
Emotion-focused coping strategies	-0.149	0.329
Denial	-0.118	0.440
Substance use	0.0	1.000
Venting	0.078	0.612
Behavioural disengagement	0.567*	<0.001*
Self-distraction	-0.122	0.426
Self-blame	0.433*	0.003*
Dysfunctional coping strategies	0.292	0.052

**r:** Pearson coefficient

\*: Statistically significant at  $p \leq 0.05$

**Table (6)** the table represents the relation between perceived stress, coping strategies and socio-demographic & work characteristics of the studied nurses. It can be observed that, single and divorced/ widowed nurses had higher level of perceived stress, problem-focused coping strategies, emotion-focused coping strategies and dysfunctional coping strategies with a statistical significant difference ( $F = 12.715, p \leq 0.01, F=7.060, p \leq 0.05, F=14.279, p \leq 0.01, F=8.402, p \leq 0.05$  respectively). Additionally, there is a statistically significant positive difference at level of 0.05 between nurses who had years of work experience from 1 year to 10 years and dysfunctional coping strategies ( $t = 2.430$ ). Also, nurses whose working during morning and evening shift had higher level of dysfunctional coping strategies than other working shifts with a statistical significant difference ( $F=3.603$  and  $P \leq 0.05$ ).

**Table (6):** Relation between perceived stress, coping strategies and socio-demographic & work characteristics of the studied nurses (n=45):

Socio-demographic data	Perceived stress	Coping strategies		
		Problem-focused coping strategies	Emotion-focused coping strategies	Dysfunctional coping strategies
<b>Age (year)</b>				
20 - <30	78.0 ± 12.15	15.86 ± 3.63	29.14 ± 5.81	33.0 ± 2.77
30- <40	74.74 ± 7.64	16.32 ± 3.42	27.95 ± 3.24	31.0 ± 3.30
40- <50	71.30 ± 12.37	15.30 ± 3.37	26.10 ± 5.24	29.20 ± 4.29
50 – 59	79.0 ± 0.87	17.44 ± 1.74	28.89 ± 1.27	31.44 ± 1.01
<b>F</b>	1.401	0.758	1.092	2.044
<b>Marital status</b>				
Single	82.63 ± 8.99	18.50 ± 3.30	31.25 ± 3.77	33.88 ± 2.36
Married	70.62 ± 8.04	14.92 ± 2.88	25.77 ± 3.39	29.58 ± 3.47
Divorced / Widowed	81.18 ± 3.12	17.73 ± 2.10	30.55 ± 1.81	32.27 ± 0.47
<b>F</b>	12.715**	7.060*	14.279**	8.402*
<b>Level of education</b>				
Diploma	75.48 ± 9.37	16.90 ± 3.0	28.19 ± 4.0	30.05 ± 3.46
Technical institute	75.09 ± 11.01	15.36 ± 3.29	27.82 ± 5.42	32.45 ± 2.30
Bachelor	75.31 ± 7.59	15.92 ± 3.30	27.54 ± 2.70	31.31 ± 3.45
<b>F</b>	0.006	0.953	0.106	2.105
<b>Years of experience</b>				
1-10 years	75.58 ± 9.78	15.74 ± 3.63	28.21 ± 4.34	32.26 ± 2.49
More than 10 years	9.78 ± 8.80	16.62 ± 2.77	27.69 ± 3.80	30.08 ± 3.54
<b>t</b>	0.153	-0.921	0.425	2.430*
<b>Working hours/day</b>				
6 – 8	79.25 ± 0.96	18.75 ± 0.96	28.75 ± 1.50	31.50 ± 0.58
8	76.88 ± 7.28	16.24 ± 2.77	28.53 ± 3.10	31.29 ± 2.80
12	73.58 ± 10.70	15.83 ± 3.51	27.33 ± 4.78	30.71 ± 3.88
<b>F</b>	1.059	1.497	0.530	0.200
<b>Working shift</b>				
Morning	73.80 ± 7.25	16.20 ± 2.94	27.20 ± 2.53	29.60 ± 2.55
Morning & Evening	77.71 ± 6.22	16.0 ± 2.54	28.29 ± 3.05	32.79 ± 1.31
All	74.48 ± 11.33	16.43 ± 3.71	28.0 ± 5.09	30.48 ± 4.04
<b>F</b>	0.701	0.075	0.217	3.603*
<b>Number of patients assigned to each nurse</b>				
2 – 4	75.46 ± 9.13	16.08 ± 3.12	28.33 ± 4.02	31.08 ± 3.17
5 – 8	77.77 ± 7.95	16.69 ± 3.47	28.77 ± 3.09	31.92 ± 3.33
More than 12	71.0 ± 10.41	16.0 ± 3.07	25.25 ± 4.59	29.25 ± 3.33
<b>F</b>	1.393	0.179	2.338	1.697

**t:** Student t-test    **F:** F for ANOVA test    \*: Statistically significant at  $p \leq 0.05$

\*\* : Statistically significant at  $p \leq 0.01$ .

**Table (7)** illustrates the relationship between sources of stress according to the studied nurses' perception and their perceived level of stress & coping strategies. It can be observed that coping strategies of the studied nurses weren't affected by their sources of stress. It can be also noticed that there was significant statistical relation between perceived stress and sources of stress in which the ANOVA Test was ( $F=3.426$ ,  $P=0.012$ ). It can be seen from the table that the level of perceived stress increases with nature of burn wounds and care requirements of the burned patient with mean score  $27.0 \pm 2.93$ .

**Table (7):** The relation between sources of stress according to the studied nurses' perception and their perceived level of stress and coping strategies:

Sources of stress		Perceived stress	Problem-focused coping strategies	Emotion-focused coping strategies	Dysfunctional coping strategies
Heavy work (workload) (n=6)	Mean±SD	22.67±2.80	16.83±3.31	27.17±5.81	29.83±4.79
	Range	20.0-27.0	13.0-21.0	19.0-37.0	24.0-37.0
Time pressure (n=3)	Mean±SD	21.33±1.15	17.0±4.36	26.0±7.55	29.0±4.36
	Range	20.0-22.0	12.0-20.0	18.0-33.0	24.0-32.0
Challenges of pain management (n=6)	Mean±SD	24.17±2.40	17.33±1.75	29.33±1.97	31.83±3.54
	Range	20.0-27.0	14.0-19.0	27.0-32.0	25.0-35.0
Nature of burn wounds and care requirements of the burned patient (n=15)	Mean±SD	27.0±2.93	15.33±2.89	27.33±3.04	31.47±2.56
	Range	20.0-31.0	11.0-22.0	21.0-31.0	25.0-36.0
Caring for severely burned patients at the end of life (n=10)	Mean±SD	24.50±3.31	16.20±3.55	28.90±4.38	31.20±3.29
	Range	20.0-30.0	11.0-21.0	24.0-37.0	25.0-37.0
More than one source (n=5)	Mean±SD	26.0±3.16	16.60±4.34	28.0±3.81	30.80±3.35
	Range	23.0-31.0	12.0-22.0	24.0-32.0	25.0-33.0
F		3.426*	0.452	0.486	0.489
P		0.012*	0.809	0.785	0.782

F: F for ANOVA test

\*: Statistically significant at  $p \leq 0.05$

## Discussion

Caring for a burn injured patient has been observed to cause various stressors to nurses. Thus, working in the burn care unit may be filled with various stressors that nurses need to respond to by coping (Bayuo & Agbenorku 2018). In this regard, the present study aimed to determine the level of perceived stress and coping strategies among nurses caring for burn injured patients. As well, to investigate the relationship between these variables.

The results of the present study revealed that more than half of the studied nurses had moderate level of perceived stress and rest of them having high scores. Possible explanations for this finding were the studied nurses deliver complex, repetitive care and deal with the pain and often with the death of burned patients (Bayuo, 2018). Also, nurses experienced high level of physical and emotional stress whilst

caring for severely burned patients. Care of severely burned patients was associated with inability to resolve patients' symptoms and unclear guidelines of care (Bayuo, 2017). Furthermore, challenges of pain management, and nature of burn wounds and care requirements of the burned patient are added sources of stress (Bayuo J, Agbenorku 2015). Another reason may be insufficient workplace training and lack of support which considered as workplace stressors (Rakhshani et al 2018). Moreover, there was burn injured children, who may cause further stress, make the studied nurses have difficulties to take care of these patients (Martins et al 2014).

This result is congruent with (Antoniolli et al., 2018 & Murji et al., 2016) who reported that burn treatment unit generate several stressful situations due to clinical instability and the possibility of death. Also, this finding is in line with those of (Negble et al., 2014) as they identified that caring for severely burned

patients was associated with significant physical and emotional tiredness. Moreover, (Bayuo, 2017) revealed that several aspects of burn care were physically and emotionally exhausting for nurses. These factors included the extent of burn wounds; intensive monitoring required by the burned patient, poor pain control and end of life symptoms which made nurses feel powerless.

The result of the present study showed that most of studied nurses had moderate level of problem-focused, emotion-focused and dysfunctional coping strategies. Such finding may be due to all coping strategies may be reciprocally used according to situation. As, problem-focused coping strategy may be effective in a changeable situation, while avoidant (dysfunctional) coping strategies would be more effective in an unchangeable situation and sometimes, the use of strategies to regulate the emotional state associated with stress (emotion-focused coping strategy) become more appropriate. Thus, it may be that effective coping with burn care requires all types of coping strategies (Shin et al., 2014 & Antonioli et al., 2018). Moreover, combination of various coping strategies may be the most effective way for nurses to cope with stress related to patients' pain (Gamst-Jensen et al 2014). Another explanation for the obtained results may be due to more than half of the studied nurses has more than ten years of experience. As, experience may enable the senior nurses to cope with the demands of burns caregiving (Bayuo, 2017).

Similarly, Badger (2005) who assess coping strategies used by medical intensive care unit nurses and reported that MICU nurses used a variety of coping strategies including cognitive, affective, and behavioral techniques to cope with end-of-life care transitions. Also, (Antonioli et al., 2018) reported that the studied nurses caring for burn injured patients have greater use of problem focused than emotion-focused coping strategies. Accordingly, most nurses were able to identify the problem, determine the alternatives, propose and implement a plan of action.

Regarding to coping strategies used in the present study, it was found that most of the studied subjects use a religion as a way of

coping. This may reflect that nurses use spiritual practices as reading Quran and pray in coping with the demands of caring for the burn injured patient. This result is congruent with (Jannati et al., 2011) who noted from their grounded theory study that Iranian nurses practiced prayers, reading the Quran and trust in God as ways of coping. Also, (Harris, 2013) have been reported that a major coping resource among practitioners in hospice/palliative care units takes the form of prayers and meditation. This may indicate that spirituality may play a central role in caring for patients. It also found that nearly all the studied nurses did not use substance as a way of coping. This result may be related to the shame and stigma that a female in Egyptian culture would encounter if she disclosed substance use. In addition, the current study found that most of the studied nurses use venting as a way of coping. The use of recreational activities or hobbies may enhance relaxation and help nurses to recover from the periods of exhaustion and this may be a form of distancing oneself from the source of stress (Auduly et al., 2016). In similar line, (Coffey et al., 2011) reported that trying to relax and having a hobby serve as coping strategies for nurses.

The present study also revealed that there was significant negative relation between perceived stress and problem- focused coping strategies especially with active coping and planning. This finding may reflect that use of coping strategies directed to the decision making were important coping mechanisms to overcome adverse situations, resulting from the daily coexistence with patients and caregivers. It is necessary for nurses to provide unique care, information, counseling and support for each patient and their families. Therefore, it was observed that coping strategies focused on the problem, especially during nursing procedures, were essential to decrease the occurrence of stressful events (Lewis, et al 2016). In this respect, (Antonioli et al., 2018) revealed that problem-focused coping strategies may be best way to solve specific stressful situations as in cases of interpersonal conflicts between the nursing team, which directly interfere with the continuity of care (Murji, 2016).

The present study shows significant negative relation between perceived stress and seeking emotional support & positive reframing. This finding may reflect that nurses release her stress through sharing stories about his/her patients with her/ his colleges and family. Also, they focus on positive perspectives of stressful events (**Wamsler & Brink 2014**). This result nearly agreed with (**Goussinsky & Livne 2016**) who found that using effective coping strategy for regulating emotions can protect nurses from the depletion of emotional resources. Also, it was found that religion and positive reframing were examples of coping strategies that regulate nurses' emotion to cope with stress.

The current study also reported that there was statistical positive relation between perceived stress and behavioral disengagement and self-blame as a dysfunctional coping strategy. This finding could be interpreted as studied nurses disengaged from the stressful situation and emotions that go along side with it, causes lack of control over stressful events, which can further lead to poorer wellbeing. Moreover, self-blame also leads to self-criticism during stress, which promotes helplessness during a stressful situation (**Dijkstra, Homan 2016 & Mróz, 2015**). Along the same line, several studies found that perceived stress level was mostly aggravated by blaming and behavioral disengagement (**McMeekin et al., 2017 & Alharbi 2019**). (**Bamonti et al., 2019**) also found that dysfunctional coping was significantly associated with emotional exhaustion and depersonalization.

The result of the current study shows statistical significant relation between nurses who had years of work experience less than ten years and dysfunctional coping strategies. This finding may reflect that junior nurses didn't have enough experience to cope with the demands of burns caregiving (**Kronsberg, 2018**). According to (**Dominquez-Gomez & Rutledge 2009**), who found that junior nurses were noted to avoid challenging patient situations. The reason for this action may be to avoid the stressful situation or decrease their stress levels.

The result of the present study also revealed that nurses worked during morning-evening shift (long day) had higher level of dysfunctional coping strategies than other working shifts. This result may be explained as long period of care especially day hours have negative impact on nurses which leads to avoidance or distancing oneself from source of stress as a way of coping to eliminate stress.

The current study also shows that the level of perceived stress increases with nature of burn wounds and care requirements of the burned patient as a perceived source of stress. This result may be due to disfigurement associated with burn wound. They also stressed because of various challenges associated with caring of burn injured patient with burn extent 65% of the body surface (**Anne Kornhaber & Wilson 2011**). The results of the present study can be attributed to the fact that nurses are witnesses to human suffering and this creates various stressors. Nurses in the present study had performed several coping strategies to deal with stressors regarding caring for burn injured patients.

## Conclusion

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Based on the findings of the present study, it can be concluded that more than half of the studied nurses had moderate level of perceived stress and rest of them having high level. Also, most of studied nurses had moderate level of problem-focused, emotion-focused and dysfunctional coping strategies. Moreover, perceived stress negatively related to problem- focused & emotion- focused coping strategies and positively related to dysfunctional coping strategies.

## Recommendations

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- Nurses at burn care unit are in need for work support programs to tackle their level of stress in relation to their work environment.
- Regular workshops for nurses caring for burn injured patient are required to enhance their coping strategies to decrease their perceived stress and improve the quality of care provided to burn injured patient consequently.

- Further studies are needed to explore other indicators of susceptibility to stress among nurses caring for burn injured patient.

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