Correlates of Physical and Psychosocial Functioning Among Burn Patients

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Abstract: The burn injury can one of the most serious and devastating injuries among people of all ages. The aim of the study was to identify correlates of physical and psychosocial functioning among burn patients. The study was conducted at the burn units of El-Mansoura University Hospital. Design: descriptive correlational design was used. Tools which were used for data collection: 1) Sociodemographic data and clinical data. 2) Brief Burn Specific Health Scale is adopted from (**Kildal *et al.*, 2001**), to assess physical and psychosocial function in individual suffering from burn injury. The results of this study showed a statistically significant improvement in the physical and psychological functioning scores among patients from admission to discharge from hospital. This study concluded that Patients with burn injury suffer from a multitude of physical problems that alter their physical and psychosocial functional. Consequently, regular and comprehensive nursing intervention for follow up of these patients is necessary for life saving. Burn patients experience low functional outcome on the admission of hospital, which slightly improves during, by the discharge from hospital. This study recommended replication of the study on a larger probability sample from different geographical areas, to achieve more generalizable results.
[Salwa A. Mohamed and Hanan Soliman. Correlates of Physical and Psychosocial Functioning Among Burn Patients. Journal of American Science 2011; 7(7): 313-318].(ISSN: 1545-1003). http://www.americanscience.org.

Key words: Burn injury, Physical, Psychological functioning

1. Introduction:

The burn injury can one of the most serious and devastating injuries among people of all ages. Burn injury resulting in tissue loss or tissue damage. This tissue injury occurs when energy from heat source is transferred to the tissues of the body, as a result of direct contact or exposure to any thermal, chemical, electrical, or radiation are termed burns (Gomez and Cancio, 2003). Burns severity depends on its depth and the body surface affected. Burn care classified according to the depth of tissue destruction and identified superficial, partial thickness and full thickness injuries (Edelman, 2007).

Burn injuries cause significant physical and psychological complications that require comprehensive rehabilitation treatment and coordination with the acute care burn team. This interdisciplinary rehabilitation treatment is focused on preventing long-term problems with scarring, contractures, and other problems that limit physical function. Adequate pain management and recognition of psychological issues are important components of treatment after burn injuries (Esselman,2007). Kildal *et al.* (2002) showed that perceived health problems after burn injury can persist for several decades. In addition, between 13% and 23% of patients develop depression, and 13–45% develops posttraumatic stress disorder (PTSD) after hospital discharge (Van Loey & Van Son, 2003).

Burns represent an extremely stressful experience for both the burn victims as well as their families. An extensive burn profoundly affects the patient's physical, psychological, economic and family. Patients who suffer from extensive burn injuries frequently die, while others suffer from painful physical recovery. In addition to their dramatic physical effects, burn injuries frequently cause deleterious psychological complication (Hosseini *et al.*, 2007 , Jaiswal *et al.*, 2007). The aims of the present study were to identify correlates of physical and psychosocial functioning among burn patients.

2. Subjects and Methods

Research design:

The research design used is a descriptive correlational design. This design allows the researcher to describe and summarize data obtained from empirical observation.

Study setting:

This study was carried out at the Burn Units of El-Mansoura University Hospital.

Subjects of study:

The subjects of the present study were selected as a convenience sampling. They consisted of fifty patients with burn; the following inclusion criteria were included in this study: Age were 18- 60

years old, both sex, post emergency (the patient was first able to respond to the questionnaire, and the pre discharge stage), willing to participate in the study and free from any chronic disease.

Tools of data collection:

The data for this study were collected using three different types of tools:

Demographic and clinical data:

Demographic data and medical information sheet was designed by the researcher to elicit subjects, patient's name, age, sex, and level of education, marital status, occupation, number of family members, length of hospital stay, site of burn, total body surface area, depth of burn, causative agent, & place of burn.

Brief Burn Specific Health Scale (BSHS-B):

It is adopted from ***Kildal et al.(2001)***. To assess physical and psychological functioning in individual suffering from burn injury. This scale was constructed to identify more specifically the morbidity and other sequelae of burn injury. It consists of 40 items and is used to measure dysfunction and distress across four domains of health physical, mental, social, and general. The physical domain has sub domains of simple ability, hand function, heat sensitivity, and treatment regimens. The mental domain has sub domains of body image and affective status. The social domain has sub domains of interpersonal relationship, sexuality, and work. Overall the instrument measures perceived psychosocial and physical status. It using a 4-point rating scale ranging from 0 (extreme(ly)) to 4 (not/none at all). For each category to give a total scores ranging from 0-160, higher indicated better physical and psychosocial status.

Procedure:

Permission was obtained from the Director of El-Mansoura University Hospital for conducting the study in the burn unit. Informed patients consents were obtained before data collection after explaining the purpose and nature of study to them. Subjects were informed about their voluntary right to accept or refuse participation in the study, and confidentiality was assured. At the beginning of the study demographic data were collected by interviewing subjects individually, while medical information was obtained from patients medical records.

Brief Burn Specific Health Scale was measured by BSHS-B that was filled by the investigator through a structured interview for each subject within 20-30 minutes to measures physical and psychosocial status. At the first alert stage and pre discharge from hospital.

Statistical Analysis:

Data entry and analysis were done using Statistical Package of Social Sciences SPSS version 18.0 appropriate statistical methods were applied. Frequency, mean, and standard deviation, Pearson correlations, *t* tests, chi-square analyses, and analyses of variance were used to examine associations between demographic and medical factors and key study variables. *P* value of .05 was considered significant for all statistics.

3. Results:

Table 1: showed the demographic characteristics of patients involved in the study. The highest percentages of the studied were less than 25 years old. Also more than third (36%) were secondary school. The same table illustrated that more half (54%) were men and half (50%) stayed in the hospital for less than 15 days.

Table (2) revealed the frequency and percentage distribution of sample in relation to degree of burns and location of burns. It points that nearly two thirds (60%) of TBSA were (21-25%). Nearly one fourth incurred (24%) were (15-20%). While (16%) of TBSA were (26-30%). As regard location for burns is not mutually exclusive so that percentages add to more than 100%. The most common location for burns was arms (80%), while the burn location with the least occurrence was buttock (2%).

Table (3) showed distribution of patient's physical and psychosocial status scores on BSHS-B over two times of treatment**.** It indicates that there is an increase of mean scores of subject total physical and psychosocial status from (73.31) from admission to (88.70) before discharge. There was highly statistically significant difference between admission and pre discharge from hospital regard each domains of physical and psychosocial status ($p<0.01$).

Table (4) showed that correlation between BSHS-B, length hospital, percentage burn, location burn and pain at admission. There are statistically significant associations, those patients who had longer stay in the hospital had negative correlation of physical domain on simple ability and mental domain on affect , social domain on personal relationships and work ($p<0.05$). Percentage of burn had negative correlation with social domain on work ($p<0.05$). Also location of burn had negative correlation with social domain on personal relationships ($p<0.05$). In addition, there are positive correlation between mental domain on affect and pain ($p<0.05$).

Table (1): Demographic characteristics of the sample.

Items	No of patients	% of patients
Sex		
Male	27	54%
Female	23	46%
Age (yr)		
<25 years	21	42%
25-35 years	10	20%
35-45 years	10	20%
> 45 years	9	18%
Eudecation levels:		
Illiterate	9	18%
Primary	15	20%
Secondary	18	36%
University	8	16%
Length of hospital stay(days)		
1-15	25	50%
16-28	19	38%
> 28	6	12%

Table (2): Degree of burns and location of burns

Items	No of patients	% of patients
Percentage of burn		
15-20%	12	24%
21-25%	30	60%
26-30%	8	16%
Location of burn		
Face and neck	19	38%
Hand	22	44%
Forearm& shoulder	40	80%
Chest	20	40%
Back	3	6%
Abdomen	5	10%
Buttock	1	2%
Thigh	19	38%

Table (3): Distribution of patient's physical and psychosocial status scores on BSHS-B over two times of treatment.

Items	At admission	Pre discharge	T-test	P- value
	Mean ± S.D	Mean ± S.D		
Physical domain:				
-Simple abilities	3.08±1.80	5.82 ±1.52	16.90	.000
-Hand function	6.64±7.58	9.40 ±4.92	12.70	.000
-Heat sensitivity	8.06±5.47	8.52 ±2.81	4.15	.000
-Treatment regimen	7.74±3.03	9.02 ±2.37	11.10	.000
Mental domain:				
-Affect	12.30±2.83	13.68 ±2.71	7.17	.000
-Body image	5.39±1.63	7.36 ±1.39	7.54	.000
Social domain:				
-Personal relationships	9.72±2.17	9.78 ±1.94	4.16	.001
-Sexuality	8.20±1.76	9.56 ±1.09	5.89	.000
-Work	7.00±3.03	7.56 ±2.06	5.23	.000
TBSHS-B*	73.31±16.44	88.70 ±11.34	17.67	.000

BSHS-B *: Brief Burn Specific Health Scale.

Table (4): Correlation between BSHS-B, length hospital, percentage burn, location burn and pain at administration

Items	Length hospital	Percentage of burn	Location of burn	Pain
Physical domain:				
-Simple abilities	-0.04*	-0.057	0.063	0.088
-Hand function	0.109	-0.106	0.055	-0.066
-Heat sensitivity	0.097	0.102	0.054	0.083
-Treatment regimen	0.062	0.054	0.146	-0.099
Mental domain:				
-Affect	-0.038*	-0.130	-0.052	0.037*
-Body image	0.150	0.500	0.107	0.120
Social domain:				
-Personal relationships	-0.034*	-0.108	-0.041*	0.060
-Sexuality	0.092	-0.088	0.077	-0.083
-Work	-0.044*	-0.010*	0.146	-0.090
TBSHS-B*	-0.145	-0.173	0.102	0.143

* Significant at $p<0.05$

Table (5) showed that correlation between BSHS-B Length hospital, percentage burn, location burn and pain at discharge. There are statistically significant associations, those patients who had longer stay in the hospital had negative correlation of physical domain on hand function ($p<0.05$). Regard location of burn had negative correlation with physical domain on heat sensitivity. Also there are positive correlation between location of burn and mental domain on affect ($p<0.05$).

Table (5) :Correlation between BSHS-B Length hospital, percentage burn, location burn and pain at discharge.

Items	Length hospital	Percentage of burn	Location of burn	Pain
Physical domain:				
-Simple abilities	0.134	0.090	-.160	-.098
-Hand function	-0.043*	-0.097	-.098	.081
-Heat sensitivity	-0.054	-0 .070	-.044*	-.075
-Treatment regimen	-0.116	0.059	0.081	-.105
Mental domain:				
-Affect	-0.173	0.125	0.040*	-.061
-Body image	-0.073	-0.059	-0.075	-.084
Social domain:				
-Personal relationships	-0.146	-0.039	0.103	.089
-Sexuality	.0196	-0.020	0.104	.112
-Work	0.041	-0.105	-0.004	.069
TBSHS-B*	0.115	-0.119	0.159	.185

4. Discussion

Burn injury results in significant impairment of physical and psychosocial function. The spectrum of burn severity and functional loss can be quite broad, and in many cases physical rehabilitation is necessary to improve function and to prevent secondary complications (Sliwa *et al.*, 2005). So the study aimed to identify correlates of physical and psychosocial functioning among burn patients.

The present study revealed that half of the study was males. This result agrees with Khan and Malik (2006) who reported that males were more than females. This might be explained by the higher incidence of industrial and recreational burns among males. Also Abdel-Ghafour (2000) inconsistent with the result of the present study as regard to gender of patients who reported that two thirds of the study group was females.

As regard to age, results of this study revealed that more than third of subjects were aged less than twenty five years. This result supported by the work of Edlich *et al.*(2008) who concluded that the highest incidence of serious burn injury occurs in young adults (20-29y).

In relation to educational level, more than half of study have levels of education (secondary&

university education), while few of them were illiterate. This finding inconsistent with Ahmed (2003) who found that more than two thirds of the groups study were illiterate or could just read and write.

As regard to length of hospital stay, results revealed that the mean days of the study group were around twenty one days. This result supported with Moi *et al.*, (2008) who reported that the mean length of hospital stay was 22.2 days.

The results of the present study reported that more than half of group were having total body surface ranged from fifteen percentages to twenty percentages in study group. This is supported Willebrand *et al.* (2004) who found that the average TBSA around twenty percentage. While Baker *et al.* (2007) stated that total body surface area (TBSA) of burns were 30% or greater.

As regard burn location, in the present study the majority of burn site occur in upper limb for group. Also around half of subjects in study group have burn in chest and face. This finding agrees with Park *et al.* (2008) and Wu *et al.*(2007) reported that most common site of burn patients had in upper limb injury when comparing to other parts of the body.

The results of the current study showed a statistically significant improvement in the total physical and psychological functioning scores among patients from admission to discharge from hospital. This may be attributed to burn process control, response for nursing intervention, and rehabilitation program. This result agrees with Sliwa *et al.* (2005) who reported that significant improvements of functional outcome from admission to discharge among patients admitted for inpatient rehabilitation after a burn injury.

Results of the current study documented that subjects' length of hospital stay was negatively correlated to physical domain on simple abilities, social domain on personal relationship and mental domain on affect at admission. Which means that the high length of hospital stay increase psychological disturbance. These findings were similar to those obtained by Barker *et al.* (1996) who noted that there was negative correlation between length of hospital and physical and psychological functioning. Attia *et al.* (2000) who reported that length of hospital stay is an important measure of morbidity. Therefore, the length of stay is positively correlated with total length of time off work and the post-burn complications requiring physiotherapy, occupational therapy and surgical intervention.

There is a significant correlation between the location of burn and social domain on personal relationship. Which a means that decrease in location of burn is associated with, relatively improvement in personal relationship. These findings are congruent with those of White (1989), who reported that burn severity was associated with social status.

In the present study, there was negative correlation between pain and physical domain on hand function at admission. These findings are congruent with Ullrich *et al.* (2009) have noted that pain and depression may have interactive effects on physical functioning following burn injury.

Results of this study showed there was significant correlation between location of burn and physical domain on heat sensitivity and hand function at the discharge. These findings are congruent with those of White (1989), who stated that full-thickness burns damage the dermal appendages, including the sweat glands, resulting in problems with thermoregulation. The inability to adequately regulate body temperature and sensitivity to heat affects a person's ability to complete physical activity and return to work in hot environments.

Also there are significant correlation between location of burn and mental domain on affect. Agree with some authors have found that psychological distress does not tend to decrease over time (Novelli *et al.*, 2009). A study carried out by Wallace and Lees (1988) who found that the patients who suffer significant psychological disturbances at the time of discharge will still have them six months later.

One weakness of the study is the small sample size and it was selected from one geographical area in Egypt. Another limitation is that the scope of the study was also limited as it was restricted to those patients who voluntarily agreed to participate.

In conclusion, Patients with burn injury suffer from a multitude of physical problems that alter their physical and psychosocial functional. Consequently, regular and comprehensive nursing intervention for follow up of these patients is necessary for life saving. Burn patients experience low functional outcome on the admission of hospital, which slightly improves during, by the discharge from hospital. This study reported length of hospital stay was negatively correlates with physical and psychosocial dimension at admission and predicharge and referral to the location of the burn predicted certain areas of physical and psychological functioning at the first-alert and predischarge stage. It is recommended that replication of the current study on a larger probability sample from different patients' geographical areas, to achieve more generalizable results.

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5/2/2011