

The Impact of Remodeling Psychological Status on Prognosis of Major Burns Patients

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ABSTRACT

Background: Psychological distress among people who have severe burns is common. The time taken for burn wounds to heal cannot be fully explained by physical factors, such as wound size and depth. A growing body of evidence indicates that psychological factors impact the wound healing process.

Patients and Methods: Hospital based cross sectional survey at burn unit, Menoufia University Hospital, Egypt and Astoon general hospital, Alkhobar, Kingdom of Saudi Arabia within the period of 2 years (2015-2017). The study included 45 patients of four different nationalities (Egyptian, Saudi, Philippine's and Indian patients). Psychological distress as depression and anxiety were assessed using the Hospital Anxiety and Depression Scale in these patients to show if patient has psychological distress or not.

Results: Psychological distress was common in burn patients. It was observed that before psychological intervention, females complained of psychological disorders than males. But after psychological intervention, the response improvement in psychological status in females was better than males. Psychological disorders were high in all age groups. While, after psychological intervention, the response and improvement in the psychological status was better in the young and middle ages than in old ages. Also, it was found that after psychological interventions, burn patients with low psychological distress stayed for a shorter duration at hospital with less surgical intervention than those with psychological distress.

Conclusion: Psychological intervention to severe burn patients during inpatient hospitalization has good impact on psychological state of these patients and decrease the duration of hospital stay and wound healing.

Key Words: Major burns – Psychological status.

INTRODUCTION

The impact of psychological factors on wound healing has been recently a basic corner in developing recent strategies of burn treatment, as it is an aspect that has been poorly covered in older strategies; but has been found to have great influence on burn healing, especially in major burn patients [1].

As the major burn patient suddenly faces pain, loss of control, fear and the demands of burn rehabilitation, psychiatric disorders begin to arise such as depression, anxiety and losing the will of living. And with time and neglecting dealing with these disorders, wound healing and recovery are negatively affected in comparison to normal population and even to trauma population [2].

“Psychoneuroimmunology” has been a popular term used recently to express the relation between psychological distress and healing of the skin. Psychoneuroimmunology is concerned with the complex interaction between the central nervous system, endocrine and the immune system, and the ways in which psychological stressors can modify these interactions [12].

Some theories suggested the activation of the hypothalamic-pituitary-adrenal and the sympathetic-adrenal-medullary axes [21]. Also, enhanced glucocorticoid and catecholamine production during psychological distress can directly influence several components of the healing process, as retarding the inflammatory process of wound healing [12].

Several studies began to investigate this term deeply, for example Bosch et al. (2007) highlighted the impact of negative emotions on wound healing using a punch biopsy model on 193 volunteers, and those with high levels of depressive syndromes were almost 3.6 times slower in wound healing than their non-depressed colleague [13].

Then studies began to expand to investigate the effect of alteration of the depressive state by social support and environmental enrichment on wound healing. As Gouin et al. (2010) reported in an experimental blister wound study, spouses who demonstrated positive communication behaviors had higher levels of oxytocin hormone. And those who higher levels of oxytocin expressed faster wound healing [14].

The general approach to assessment and care of burn survivors is a behavioral approach based on learning principles (e.g. operant conditioning, cognitive restructuring, and social learning theories) where maladjusted behavior itself is the target of intervention. Assessment and treatment are integrally related and both occur simultaneously throughout the recovery and rehabilitation process [5].

Predicting problematic issues for patients enables them to view their concerns in a context of normal reactions rather than as symptoms of psychological impairment. For convenience in describing this pattern, three phases of recovery during hospital stay have been designated: Admission, critical care, in-hospital recuperation [6].

Admission phase: On admission, the primary psychological tasks are to establish therapeutic rapport, diminish anxiety, and assess the psychosocial strengths and needs of the patient. The first two tasks are addressed immediately by orienting a patient, by assisting the patient to focus on immediate priorities, and by assuring the patient that the burn team is composed of knowledgeable experts who will provide excellent care [6].

Critical care phase: From hospital admission until the majority of open wounds are covered, the emphasis in treatment of a burned patient is necessarily on intensive medical and surgical care to resolve physiologic crises. This period is psychologically critical as well. A patient experiences great anxiety during much of this time. Fear of death blends into fear of pain and fear of treatment procedures. A multitude of organic factors stemming from both the injury and its treatment, as well as premorbid conditions, can all contribute to psychological symptoms of disorientation, confusion, sleep disturbance, transient psychosis and delirium which are commonly observed among adolescent and adult patient [7].

In-hospital recuperation phase: In this phase, patients are just beginning to comprehend the extent of their injury and to realize that their bodies are changed forever. Their anxieties now are increasingly about the future and less about the past and present. Patients are confronted with new physical limitations imposed by their injuries; they experience their bodies now as incompetent and disfigured. Patients involved in this struggle shift rapidly in affective behaviors reflecting rapid shifts in cognition. Psychotherapeutic work at this phase intensifies and is largely focused on working with the rest of the team to help patients combat feelings

of hopelessness and helplessness. Important toward this end is structuring treatment sessions to promote patients' experience of control, achieving success, and feeling rewarded while progressing through difficult procedures [6].

The aim of this study was to study the impact of psychological intervention to severe burn patients during inpatient hospitalization and its impact on duration of hospital stay.

PATIENTS AND METHODS

A Hospital based cross-sectional observational study conducted within the period of 2 years (2015-2017) at burn unit, Menoufia University Hospital, Egypt and Astoon General Hospital, Alkhobar, Kingdom of Saudi Arabia. The primary study endpoint was to study the impact of psychological intervention to severe burn patients during inpatient hospitalization and its impact on duration of hospital stay. The study was approved by the Ethics Committee of the burn units.

The study included 45 patients of aged between 5 and 55 years, both sex were included and of four different nationalities (Egyptian, Saudi, Philippine's and Indian patients). They were followed until discharge. Using convenience sampling, eligible patients were invited to participate in the study and those who agreed signed a written informed consent.

For patients under the age of 18, informed consent was taken from their parents but the data of the questionnaire was collected from the patient.

Patients that couldn't express themselves, as patients below 3 years, non-cooperative patients, as well as patients with previous comorbid chronic medical, neurological and psychiatric disorders were excluded.

All relevant ethical aspects were considered in conducting the research. The participants were assured that their participation in the study is voluntary and that they can withdraw at any time; confidentiality and privacy of the participants were respected. Also, informed consents were taken from the patients declaring their will to participate in the study.

A self-administered questionnaire sheet was developed by the research psychiatric partner and used to collect demographic data such as age, gender as well as race. Psychological distress as depression and anxiety were assessed using the Hospital Anxiety and Depression Scale (HADS) which comprises 14 questions (7 for anxiety sub-

scale [HADS-A] and 7 for depression subscale [HADS-D]) with a 4-point Likert answer (0 to 3). The final score for each subscale ranges from 0 to 21. If the patient scored 0-8, this means he is normal. If scored 8-10, this means borderline psychological distress (possibility of anxiety and depression) need observation and re-evaluation later. If scored more than 10, this means that he has psychological distress (either anxiety or depression or both) needing attention and interventions. The Arabic HADS was used in this study.

Social workers, burn unit nurses with psychiatric training or others with similar expertise were involved in assessment and treatment programs for all burned patients throughout the recovery process, beginning as soon as possible.

Some Interventions applied in this study by the psychosocial team:

Active social support:

- A nurse, that had been trained by psychiatrist to do psychological intervention of the same nationality, had been selected (one nurse for each patient) and told him/her the main problem concerning the patient as was concluded from the questionnaire. And asked him/her to reassure him concerning this problem in two separate visits daily, the visit was 15 minutes during hospital stay till discharge. This helped us in gaining his trust and telling us more about his fears.
- Family visits were allowed but with strict medical precautions. And for foreigners, they were encouraged to contact their families and were provided with tools if they don't have it.
- Contacting patients of the same nationalities who have healed, and accepted to volunteer in helping us, to visit admitted patients and talk with them about their experience during and after admission.

Environment enrichment:

- Change rooms or roommates in case that the patient expresses his discomfort and will of change.
- Allowance of any entertainment device according to patients desire e.g. CD players, Televisions, Mobile phones or books.

Allowance and providing patients with types of food they like.

Follow-up:

The patients that required interventions were re-evaluated weekly. But only concerning the positive points of the questionnaire. The new score of the [HADS] was recorded till discharge.

Statistical analysis:

Chi-square test (χ^2) was used to study the association between qualitative variables. Whenever any of the expected cells were less than five, Fischer's exact test with Yates correction was used. p -value of <0.05 was considered statistically significant.

RESULTS

The study included 45 patients of aged between 5 and 55 years arranged in groups (28.8% were <25 years, 26.6% were between 25-45 years and 44.4% were >45 years) both sex were included (80% were male and 20% were female) and of four different nationalities (35.5% were Egyptian, 22.2% were Saudi, 35.5% were Philippine's and 20% were Indian patients).

Regarding psychological distress before intervention (either anxiety or depression) in studied burn patients according to HADS (Hospital Anxiety and Depression Scale) were as follow: 53.3% of males and 77.7% of females were psychologically distressed. 66.6% of age group less than 25 years, 69.2% of age group between 25-45 years and 50% of age group more than 45 years were psychologically distressed. 50% of Egyptian patients, 40% of Saudi patients, 55.5% of Indian patients and 50% of Philippines patient were psychologically distressed.

While after psychosocial intervention, 38.8% of males and 22.2% of females were psychologically distressed. 50% of age group less than 25 years, 30.7% of age group between 25-45 years and 55% of age group more than 45 years were psychologically distressed. 56.2% of Egyptian patients, 80% of Saudi patients, 44.4% of Indian patients and 30% of Philippines patient were psychologically distressed.

It was observed that before psychological intervention, females complained of psychological disorders than males. But after psychological intervention, the response improvement in psychological status in females was better than males which was expressed by statistical significance (p -value <0.05) toward the data collected (Table 1).

It was also is observed that psychological disorders were high in all age groups. While, after psychological intervention, the response and improvement in the psychological status was high in the young and middle ages (Fig. 1) while was less in old ages, this was expressed by statistical significance (p -value <0.05) toward the data collected (Table 2).

It was observed as well that the rate of improvement of Philippine's and Indian patients (Figs. 2,3) was much better than Egyptian and Saudi patients which was expressed by statistical significance (p -value <0.05) toward the data collected (Table 3).

After psychological interventions, burn patients (with 20-30% burn injury area) with low psycho-

logical distress stayed for a shorter duration (less than 25 days) at hospital than those with psychological distress, and burn patients (with 36-49% burn injury area) with low psychological distress stayed for a shorter duration (less than 50 days) at hospital than those with psychological distress (Table 4).



Fig. (1): Female Egyptian patient 5 years old with a burn 20% 2nd degree due to contact with hot water: (A) After 2 days of admission, (B) After 23 days of admission.



Fig. (2): Male Indian patient 21 years old with a burn 15% 2nd degree due to contact with hot flame: (A) After 2 days of admission, (B) After 22 days of admission.



Fig. (3): Male Indian patient 45 years old with a burn 22% 2nd degree due to contact with hot flame: (A) After 2 days of admission, (B) After 24 days of admission.

Table (1): Relation between psychological distress and gender before and after psychological interventions.

Gender	Normal	Borderline	Psychological distress	Total
<i>Male:</i>				
Before int.	6	2	24	36
After int.	22	–	14	36
<i>Female:</i>				
Before int.	2	–	7	9
After int.	7	–	2	9

Table (3): Relation between psychological distress and different nationalities before and after psychological interventions.

Nationality	Normal	Borderline	Distress	Total
<i>Egyptian patient:</i>				
Before int.	3	5	8	16
After int.	7	–	9	16
<i>Saudi patient:</i>				
Before int.	3	3	4	10
After int.	2	–	8	10
<i>Indian patient:</i>				
Before int.	1	3	5	9
After int.	5	–	4	9
<i>Philippines patient:</i>				
Before int.	2	3	5	10
After int.	7	–	3	10

DISCUSSION

The impact of psychological factors on wound healing is an important and interesting field of research. There is sound evidence to demonstrate that the effects of psychological stress on wound

Table (2): Relation between psychological distress and age groups before and after psychological interventions.

Age	Normal	Borderline	Psychological distress	Total
<i><25 years:</i>				
Before int.	2	2	8	12
After int.	6	–	6	12
<i>25-45 years:</i>				
Before int.	2	1	9	13
After int.	8	–	4	13
<i>>45 years:</i>				
Before int.	5	5	10	20
After int.	9	–	11	20

Table (4): Duration of hospital stay according to burn injury area after psychological intervention.

	Low psychological distress	Psychological Distress	Total
<i>Hospital stay in Patients with 20-35% burn injury area:</i>			
Less than 25 days	18	2	20
More than 25 days	2	8	10
30			
<i>Hospital stay in Patients with 36-49% burn injury area:</i>			
Less than 50 days	8	2	10
More than 50 days	1	4	5
15			

healing are significant [8]. The number of recently published reviews that focus on psychological influences on wound healing, post-surgical recovery and psychological interventions that have impacted on healing is in growing interest [1].

In this study, After psychological interventions, burn patients (with 20-30% burn injury area or with 36-49% burn injury area) with low psychological distress stayed for a shorter duration at hospital than those with psychological distress. This is consistent with several studies that have discussed psychological influence on burn wound healing; Tarrier et al. [9] reported that patients with depression and psychosis after burn injuries had longer time of wound healing and longer time of hospital stays than non-psychotic control patients. Also Wisley et al. [10] reported similar results and concluded that heightened levels of psychological distress had a negative impact on the recovery rate related to burn injury.

Fauerbach et al. [11] found that the rate of recovery in a group of patients following burn injury was slower in patients with larger burn size and patients with psychological distress. Concluding that interventions that aimed to reduce in-hospital distress might accelerate both psychological and physical recovery after burn injury.

It was observed in this study that before psychological intervention, females complained of psychological disorders than males. But after psychological intervention, the response improvement in psychological status in females was better than males which are believed to be due to the emotional nature of females. This is not consistent with Orr et al. [15] that showed that gender has been found to impact post-burn adjustment. For example, being male has been found to be significantly related to better self-esteem and body image after burn injury.

Also, we observed that psychological disorders were high in all age groups. That's why after psychological intervention, the response and improvement in the psychological status was high in the young and middle ages, which is usually due to lack of life experiences and believing in the ability of productivity. While was less in old ages, due to fear of not finding proper help while old and loss of self-dependence.

The literature varied on how age impacted psychological adjustment to burn injury. Several studies suggest that age at the time of the burn was related to post-burn psychological adjustment [16,17,18]. However, Abdullah et al. [19] found no significant correlation between age at time of injury and psychological outcome. Contradictory findings give reason to evaluate this variable further.

We also observed that the rate of improvement of Philippine's and Indian patients was much better than Egyptian and Saudi patients. This is believed

to be due to the tight traditional and community relations of the former nationalities. This is consistent with Campbell et al. [20] who showed that race has also been shown to impact post-burn psychological adjustment. For example, African-American children were reportedly more depressed than Caucasian children.

Conclusion:

Psychological intervention to severe burn patients during inpatient hospitalization has good impact on psychological state of these patients and decrease the duration of hospital stay.

Clinicians should give consideration to the importance of psychological influences on the wound healing process within burns care, and also to the potential for psychological interventions to lessen patients' distress and improve wound healing outcomes.

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