

## Original Research Article

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# Psychological evaluation of adult burn survivors: a pilot study

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## ABSTRACT

**Background:** Survivors of disfiguring burn injury often become social handicaps. Therefore, it is of utmost importance to understand their perception of body image, their coping skills, their appraisals about social support and self-monitoring behaviour in social situations and explore the factors that can promote better psychological adjustment.

**Methods:** Using a single group cohort design, a sample of 18 individuals with burn injury, were recruited through purposive sampling. Personal data sheet, self-monitoring scale (SMS) and satisfaction with appearance scale (SWAP) were administered when the patients were admitted post-injury. Social support appraisal scale (SSA), coping with burns questionnaire along with SMS and SWAP were administered at one-month post-discharge.

**Results:** The findings indicated that gender and education played a significant role in body image, coping, social support appraisal and self-monitoring behaviours. Further, higher scores on coping strategies were associated with better body satisfaction.

**Conclusions:** The findings indicate the need to look into the variables of coping, body image, social support, self-monitoring behaviours of burns patients and the need to develop interventions for improving their quality of life. A mixed-method study design for better understanding of the psychosocial factors impacting adjustment post-burn injury would be beneficial. Although a larger cohort needs to be studied for understanding the impact of these factors, one may already notice definite indicators that are risk factors that may lead to poorer psycho-social wellbeing of burn victims and potential areas where interventions may be effective.

**Keywords:** Satisfaction with appearance, Coping with burns, Self-monitoring, Social support appraisal

## INTRODUCTION

Burn injuries are among the most devastating of all injuries and is a distressing trauma accompanying long-lasting effects manifested in psychological, physical, economic and social areas along with burn-related disfigurements and disabilities. Problems with interacting in social settings and social life along with psychological

difficulties because of scarring are among the major problems faced by burns patients. These impediments are often linked to demographics and individual variables.<sup>1</sup> In addition, delayed reintegration into society and decreased quality of life resulting after burn injuries are the most important challenges in burn rehabilitation.<sup>2</sup> The difficulties faced by disfigured patients in their everyday life compared to a more attractive individual is often

based on two overlapping perspectives - "view from the outside" and "view from the inside".<sup>3</sup>

The key concepts in attitudinal body image include overall satisfaction and dissatisfaction with one's external appearance, emotions like anxiety, discomfort or distress related to the appearance of self, excessive concerns of one's external appearances, faulty cognitions and schemas concerning body appearance and avoiding social situations due to body image disturbances.<sup>4-6</sup> For burns patients, coping with their new body image is often a traumatic task. The perceived threat causes cognitive and behavioural effects either adaptive or maladaptive.<sup>7-9</sup> Social support plays a vital role in both the physical and mental health of the patients.<sup>10-12</sup> Society has predetermined views and attitudes about physical attractiveness and social behaviour. So here the role of self-presentation plays a major role in social adjustment.

Therefore it is of utmost importance to understand the burn survivors' perception of their body image, the coping mechanism they use as a result, their appraisals about social support and self-monitoring behaviours in societal situations, to explore the factors that can promote better psychological adjustment in the long run. This study aimed to put forth the evidence for the inevitability of psychological input in a follow-up service for survivors of burn injuries by exploring body image perception, coping, social support appraisal and self-monitoring behaviours among adult burn survivors.

## METHODS

A prospective cohort study was conducted from May 2018 to October 2018 in the Burns Intensive Care Unit of the Department of Plastic Surgery at Kasturba Medical College, Manipal. Adults of age range 18-60 who can read and write English or Kannada with a minimum of 1-week admission in the burns intensive care unit were included in the study after obtaining signed informed consents. Patients with self-inflicted burns or those in delirium and intellectually disabled were excluded from the study.

A 14 item questionnaire, satisfaction with appearance scale (SWAP), previously developed by Lawrence et al was used to assess both the subjective appraisal and social or behavioural components of the body image among burn survivors.<sup>13</sup> A 23 item instrument, social support appraisal (SSA) developed by Vaux et al was used to tap the extent to which the individual believes he or she is loved by, esteemed by and involved with family, friends, and others.<sup>10</sup> Coping with burns questionnaire (CBQ) designed by Stanton et al was employed to measure coping after discharge.<sup>14</sup> Self-monitoring Scale (SMS) developed by Snyder et al was used to measure the extent to which the patient consciously employ impression management strategies in social interactions.<sup>15</sup>

The study was carried out after obtaining approval from the Institutional Ethics Committee. Data was collected from the patients when they were admitted in the burns ICU after the injury and at one-month post-discharge. SMS, SWAP and personal data sheet were administered when the patients were admitted after the injury. SSA, CBQ along with SMS and SWAP were administered at one-month post-discharge. The completed questionnaires were entered into an online spreadsheet for data analysis. Statistical Package for Social Sciences 25 version (SPSS-25) was used for statistical analysis.

## RESULTS

Mean age of the patients was 41.72 with a standard deviation of 12.8, indicating an age range of 29-53. The mean score for hospital stay (in weeks), was found to be 3.22 with a standard deviation of 1. Mean and standard deviation for TBSA were found to be 22.9 and 20.6 respectively. The frequency distribution of males and females were males- 11 (61.1%) and females- 7 (38.9%). Frequency distribution according to the level of education and the distribution were as follows: - school educated - 11 (61.1%) and college-educated- 7 (38.9%). Majority of the patient had thermal burns, n=16(88.9%). The rest of the patients had electrical burns (n=2, 11.1%). Patient demographics have been summarised below in Table 1. Mean and standard deviation of satisfaction with appearance during admission was 24.2 ( $\pm 9.49$ ) and for satisfaction with appearance during 1 month follow up it was 20.07 ( $\pm 10$ ). Mean and standard deviation for scores on self-monitoring behaviour during admission and self-monitoring behaviour during 1 month follow up were 12 ( $\pm 3.1$ ) and 10.9 ( $\pm 3.2$ ). Mean and standard deviation of changes in SWAP scores and SMS scores on 2 different occasions were 2.27 ( $\pm 5.7$ ) and 1 ( $\pm 2.3$ ).

**Table 1: Demographics of patients recruited into the study (n=18).**

Characteristics	No.	%
<b>Gender</b>	Male	11 61.1
	Female	7 38.9
<b>Education</b>	School educated	11 61.1
	College educated	7 38.9
<b>Type of burns</b>	Thermal burns	16 88.9
	Electrical burns	2 11.1

For coping with burns (total score), the mean and standard deviation were found to be 102.9 ( $\pm 7.4$ ). For the subscales, mean and standard deviation were, 9.8 ( $\pm 1.9$ ) for emotional support, 25 ( $\pm 3$ ) for optimism/problem solving, 19.8 ( $\pm 3.3$ ) for avoidance, 25.7 ( $\pm 3.2$ ) for reevaluation/adjustment, 9.3 ( $\pm 1.7$ ) for self-control and 13.2 ( $\pm 2.1$ ) for instrumental support.

**Table 2: Correlation between SWAP, SMS, SSA and CBQ (n=18).**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<b>1.SWAP1</b>	1																
<b>2.SMS1</b>	-0.205	1															
<b>3.SWAP2</b>	.656**	.017	1														
<b>4.SMS2</b>	-0.248	.278	-0.053	1													
<b>5.SWAP_IMPR</b>	-0.151	-0.087	.606*	.097	1												
<b>6.SMS_IMPR</b>	.179	-0.527*	.078	.652**	-0.048	1											
<b>7.SSA_T</b>	-0.202	.083	-0.106	.425	-0.033	-0.286	1										
<b>8.SSA_FNDS</b>	-0.095	-0.044	.226	.467	-0.192	-0.468	.524*	1									
<b>9.SSA_FMLY</b>	.123	.088	-0.230	.249	.389	-0.157	.810**	.212	1								
<b>10.SSA_OIG</b>	-0.091	-0.085	.050	.078	-0.171	-0.073	.831**	.229	.611	1							
<b>11.CBQ_T</b>	-0.608*	.068	-0.613*	-0.104	.119	.160	-0.036	-0.025	.010	-0.222	1						
<b>12.CBQ_ES</b>	-0.368	-0.020	-0.072	-0.148	-0.383	.128	-0.286	-0.199	-0.380	-0.208	.541*	1					
<b>13.CBQ_O/PS</b>	.023	-0.225	-0.282	-0.379	.282	.110	.253	-0.077	.416	.222	.251	-0.142	1				
<b>14.CBQ_A</b>	-0.311	.200	-0.166	.260	-0.077	-0.021	-0.169	.052	-0.145	-0.438	.452	.183	-0.361	1			
<b>15.CBQ_R/A</b>	-0.315	.001	-0.562*	.156	.546*	-0.145	.107	.111	.125	-0.046	.451	.024	.097	-0.073	1		
<b>16.CBQ_SC</b>	-0.380	.033	-0.748**	-0.113	.521*	.098	-0.082	-0.096	.156	-0.262	.667**	-0.050	.289	.382	.267	1	
<b>17.CBQ_IS</b>	-0.567*	.139	-0.246	.094	-0.387	.083	.347	-0.023	.143	.326	.576*	.419	.170	.032	.229	.124	1

Note: SWAP1=Satisfaction with appearance during admission, SMS1=Self-Monitoring Scale during admission, SWAP2=Satisfaction with appearance during 1 month follow up, SMS2=Self-Monitoring Scale during 1 month follow up, SWAP\_IMP=Change in SWAP scores on 2 different occasions, SMS\_IMPR=Change in SMS on 2 different occasions, SSA\_T=Social Support Appraisal Total, SSA\_FNDS=Social Support Appraisal friends Subscale, SSA\_FMLY=Social Support Appraisal family subscale, SSA\_OIG=Social Support Appraisal Others In General subscale, CBQ\_T=Coping with Burns scale total, CBQ\_ES= Coping with Burns scale Emotional Support subscale, CBQ\_O/PS= Coping with Burns scale Problem Solving subscale, CBQ\_A= Coping with Burns scale Avoidance scale, CBQ\_R/A= Coping with Burns scale revaluation/adjustment subscale, CBQ\_SC= Coping with Burns scale Self Control subscale, CBQ\_IS= Coping with Burns scale Instrumental Support Subscale. Correlation coefficients represent Spearman's rho. \*p<0.05; \*\*p <0.01, (2-tailed).

For social support appraisal (total), the mean and standard deviation were found to be 34.3 ( $\pm 10.2$ ). For the subscales, mean and standard deviation were, 9.2 ( $\pm 2.2$ ) for friends, 12.1 ( $\pm 5.2$ ) for family and 12.8 ( $\pm 3.5$ ) for others in general. There was no significant difference according to the gender on the scores of satisfaction with appearance, self-monitoring and social support appraisal variables. No significant gender difference was observed on the overall scores on coping and its subscales emotional support and optimism/problem solving as well. Mann-Whitney U test was used to compute the difference between the male and female group. P value was found to be significant ( $p \leq 0.05$ ) for the variable revaluation/adjustment. The mean ranks on revaluation/adjustment for males was 6.35 and females were 11.3. Results indicated that revaluation/adjustment was significantly greater for females than for males.

P value was found to be significant ( $p \leq 0.05$ ) for self-monitoring behaviour during 1 month follow up. The mean ranks on self-monitoring behaviour during 1 month follow up of the school-educated group was 10.22 and the college-educated group was 4.67.

P value was found to be significant ( $p \leq 0.05$ ) for change in scores on SWAP on two different occasions (while admitted and after one month follow up). The mean ranks on change in scores on SWAP on two different occasions of the school-educated group were 9.89 and the college-educated group was 5.17. Results indicated that change in scores on SWAP on two different occasions was significantly greater for school-educated than for a college-educated group.

P value was found to be significant ( $p \leq 0.05$ ) for social support appraisal (total) and social support appraisal relating to the family. The mean ranks on social support appraisal overall of the school-educated group was 10 and the college-educated group was 5. Results indicated that overall negative social support appraisal was significantly greater for school-educated than for the college-educated group.

The mean ranks on social support appraisal relating to the family of the school-educated group were 10.22 and the college-educated group was 4.67. Results indicated that negative social support appraisal relating to family was significantly greater for school-educated than for the college-educated group.

P value was found to be significant ( $p \leq 0.05$ ) for emotional support. The mean ranks on the emotional support of the school-educated group were 6.11 and the college-educated group was 10.83. Results indicated that emotional support (coping) was significantly greater for college-educated than for a school-educated group.

No significant difference in education was observed on the overall scores on coping subscales such as avoidance, revaluation/adjustment, self-control, and instrumental

support. A strong negative correlation was found between the total score of coping with burns (CBQ\_T) with the score of satisfaction with appearance during admission (SWAP1) and satisfaction with appearance during 1 month follow up (SWAP2) having ( $r = -0.608, p < 0.05$ ) and ( $r = -0.613, p < 0.05$ ) respectively (Table 2). The presence of revaluation/ adjustment coping strategy (CBQ\_R/A) showed a moderate negative correlation with satisfaction with appearance during 1 month follow up (SWAP2) and a moderate positive correlation with change in SWAP scores on 2 different occasions (during admission and during follow up) (SWAP\_IMPR) having ( $r = -0.562, p < 0.05$ ) and ( $r = +0.546, p < 0.05$ ).

A strong negative correlation was found between self-control coping strategy (CBQ\_SC) and satisfaction with appearance during 1 month follow up (SWAP2) having ( $r = -0.748, p < 0.01$ ). The difference in SWAP scores on 2 different occasions (during admission and during follow up) (SWAP\_IMPR) was found to have a moderate positive correlation with self-control coping strategy (CBQ\_SC), having ( $r = +0.521, p < 0.05$ ). The total score of satisfaction with appearance during admission (SWAP1) had a moderate negative correlation with instrumental support coping strategy (CBQ\_IS) having ( $r = -0.567, p < 0.005$ ).

Total body surface area (TBSA) was found to have a strong positive correlation with self-monitoring scale during 1 month follow up (SMS2) and a moderate negative correlation with change in SMS on 2 different occasions (SMS\_IMPR), having Spearman's rho factor of ( $r = 0.622, p < 0.05$ ) and ( $r = -0.525, p < 0.05$ ). A strong negative correlation was observed between total scores of coping with burns (CBQ\_TOTAL) and the length of hospital stay, having ( $r = -0.639, p < 0.05$ ). Length of hospital stay was found to have moderate negative correlation with emotional support coping strategy (CBQ\_ES), having ( $r = -0.531, p < 0.05$ ) and self-control coping strategy (CBQ\_SC) had a strong negative correlation with total body surface area (TBSA) of burn injury, having ( $0.072 = -0.732, p < 0.001$ ). No significant difference was observed based on treatment received on the variables such as changes in satisfaction with appearance, self-monitoring scores, social support appraisal, and coping.

## DISCUSSION

The present study was a single group cohort study, planned to investigate the nature of the relationship between psychosocial variables namely body image, coping, social support appraisal and self-monitoring behaviour among adult burn survivors.

Previous research has shown that risk factor to depression was related to the female gender in combination with disfigurement of the face. But in the current study, there was no significant difference according to the gender on the scores of satisfaction with appearance, self-

monitoring and social support appraisal variables. The fact that no of females in the samples was less could be a reason for the finding. Further research into specific coping strategies and the sources of stressors, may help tailor interventions which are more comprehensive and effective.

Self-monitoring behaviour during one month follow up was significantly greater for school-educated than for the college-educated group. People with school education are mostly from lower socioeconomic classes. They might be prone to anxieties relating to financial constraints, physical injuries, scarring and might lead to hypervigilance which might in turn increase self-monitoring behaviours. These self-monitoring processes profoundly channel, influence and affect one's views about the world and behaviour and social situations.

Overall negative social support appraisal and negative social support appraisal relating to family was significantly greater for school-educated than for the college-educated group. Financial aspects and education of family members could be a factor for the same. These calls for further research in the area of social support addressing these variables and their effect on social support and caregiving. Emotional support was significantly greater for college-educated than for the school-educated group. No significant difference in education was observed on the overall scores on coping subscales such as avoidance, revaluation/adjustment, self-control, and instrumental support. Small sample size could be a possible reason for the same.

Previous studies among burn patients with traumatic experiences had shown that among the coping styles, avoidant coping was connected with worse mental health consequences, whereas active coping and seeking social support were accompanied with improved mental health outcomes.<sup>8</sup> The study showed a negative correlation of the total score of coping with burns (CBQ-T) with dissatisfaction with appearance during admission (SWAP1) and during 1 month follow up (SWAP2). Overall coping resources reduced the body dissatisfaction in the patient. Prior research which explored the most effective coping strategies to deal with altered appearance found that reasoning and humour were the strategies that helped the patients to come in terms with their injury and changed appearance.<sup>16</sup>

The presence of revaluation/ adjustment coping strategy (CBQ R/A) showed a moderate negative correlation with dissatisfaction with appearance during 1 month follow up (SWAP2) and a moderate positive correlation with the change in SWAP scores on 2 different occasions (during admission and during follow up) (SWAP\_IMPR). Revaluation/ adjustment coping strategy includes statements about adjusting, changing and restricting thoughts about the burn accident and lifestyle to feel better. Revaluation of life values reflects acceptance. This diminishes the gap between personal capacity and

situational demands by approaching the stressors by changing oneself.

The results can be compared adjunct with the study done by Kildal, Willebrand, Andersson, Gerdin, & Ekselius, which showed that there's no relationship between injury characteristics and coping strategies except in individuals with total burn surface area more than 10% who showed more revaluation or adjustment.<sup>17</sup> The strategy that was most clearly linked with "bad outcome" in Burn specific health scale was avoidant coping strategies, which included cognitive and behavioural efforts to divert their attention far from reminders or difficulties of the tragic accident by wishful thinking, day-dreaming, by the use of substances and by avoidance of activities and people and emotional support was found to be the most valuable coping strategy.

A strong negative correlation was found between self-control coping strategy (CBQ\_SC) and dissatisfaction with appearance during 1 month follow up (SWAP2). Use of more self-control coping strategies reduced dissatisfaction with appearance. This could be because self-control involves cognitive and behavioural skills to maintain self-motivation and gain personal goals. The difference in SWAP scores on 2 different occasions (during admission and during follow up) (SWAP\_IMPR) was found to have a moderate positive correlation with self-control coping strategy (CBQ\_SC) as well. However, self-control strategies can also reflect efforts to restrain emotional expression, which may lead to more distress. This can be supported by the findings in previous studies, where they had found that avoidance, revaluation/adjustment, self-control, and instrumental action were related to poorer health status and avoidant coping was generally thought of as a maladaptive coping.<sup>18</sup>

The total score of dissatisfaction with appearance during admission (SWAP1) had a moderate negative correlation with instrumental support coping strategy (CBQ\_IS). This means more instrumental support, lesser body dissatisfaction. More instrumental support may enable the person to seek practical help or advice which may lead to better adjustment post-injury.

Self-control coping strategy (CBQ\_SC) had a strong negative correlation with burn total body surface area (TBSA). That is less self-control coping with higher TBSA. Stoddard, Norman et al found that among patients who had greater than 30% TBSA, there was significantly higher psychological distress.<sup>19</sup> Previous researches have looked into measures of injury as a variable in predicting psychosocial adjustments in burn injury patients. While perceived social support and male gender predicted more positive body image and better self-esteem, location of scarring and TBSA did not in adolescent and young adult burn survivors. In addition, the site of injury and TBSA were not predictive of who would receive reconstructive surgery while psychological factors such as post-burn psychosocial adjustment predicted it.<sup>9</sup>

Burn TBSA is an important factor in predicting the psychological adjustment in burn patients. Prior researches had shown that high rates of depression and anxiety were associated with burn injuries and related to burn depth and shown a statistically significant association between deep burns and depression, anxiety, and low self-esteem. Additionally, full-thickness burns shown to affect body image.<sup>20</sup> Patients with full-thickness burns and greater than 20% total body surface area experienced higher levels of anxiety and were more concerned about their health.<sup>21</sup>

Total body surface area (TBSA) was found to have a strong positive correlation with self-monitoring scale during 1 month follow up (SMS2) and a moderate negative correlation with the change in SMS on 2 different occasions (SMS\_IMPR). Self-monitoring processes profoundly channel influence and affect one's views about the world and behaviour in social situations.<sup>22</sup> Burn victims may vary in the degree to which they regulate their self-presentation and expressive behaviour. Prior study found that greater TBSA was associated with higher psychological distress which might influence the patients' ways for regulating self-presentation and expressive behaviour as more burn TBSA causes scarring and other physical problems.<sup>19</sup>

There were studies which concluded that self-monitoring did not change over time and the location of burns scars did not affect coping or self-monitoring. At 8 weeks post-burn females had encountered more stresses and did more coping than males (females use more emotion-focused coping than males).<sup>22</sup>

A strong negative correlation was observed between total scores of coping with burns (CBQ\_TOTAL) and the length of hospital stay. Length of hospital stay was found to have a moderate negative correlation with emotional support coping strategy (CBQ\_ES), which indicated that lesser the length of hospital stay more emotional support received. It can be further studied the kind of emotional support the patient receives at home versus the kind of support the patient can receive while admitted in the hospital. It calls forth the need for psychological care the patient can utilize while being admitted in the hospital.

Length of hospital stay was found to predict physical functioning but not psychological functioning in a previous study.<sup>23</sup> However, previously it was also found that increased length of hospital stay had a negative impact on the quality of life perception.<sup>24</sup>

Social isolation, loss of employment and financial problems can arise with the long hospitalization needed for burn injury treatments. Scarring is inevitable even with optimal treatment for deep burns. Treatment and rehabilitation often continue for many years to enable the burn survivor to attain an acceptable level of functioning.<sup>25</sup>

This study compared if there's any significant difference in the kind for coping, self-monitoring behaviour, social support appraisal, and body image perception for patients who undergo different treatment procedures while were admitted in the burns ICU namely, conservative management and surgical interventions (allograft, combination of allograft and split skin grafting (SSG), SSG alone). No significant difference was observed based on treatment received on the variables such as changes in satisfaction with appearance, self-monitoring scores, social support appraisal, and coping.

There's improved survival following large burns due to the advances in surgery and critical care. A person with a burn of 40% of body surface area, in the early 1970s, had a 50% chance of survival.<sup>25</sup> This has improved vastly. However, survival after a major burn injury is only the first step in a long process of adjusting and returning to life. More research and knowledge is required concerning the long-term outcome and the risk factors during recovery and rehabilitation.

Current study paves the way to the understanding of the need for psychological aid for patients with burn injury during the hospital stay and post-discharge. The psycho-social difficulties faced by this group of patients are much wider and varied compared to other somatic illnesses. The study put forth the need for a tailor-made psychological and psychiatric treatment approaches for burn injury patients. Society has predetermined views and attitudes about physical attractiveness and social behaviour. People who are disfigured or blemished by burns injury may feel handicapped socially due to the stigmatization of the individual, as the society interprets this stigma as a personal or moral defect. So here the role of self-presentation plays a major role in social adjustment. The findings from the study indicated significant differences in patients' way of coping with burns, self-monitoring behaviours, appraisals of social support and satisfaction with appearance based on several psychosocial factors. This serves as a foundation for future studies in India on burn injury patients as the psychosocial circumstances here in India are much varied compared to the western countries and is subjected to cultural biases.

## CONCLUSION

The current study paves the way to the understanding of the need for psychological aid for patients with burn injury during the hospital stay as well as post discharge. The psycho-social difficulties faced by this group of patients are much wider and varied compared to other somatic illnesses. The study puts forth the definite need for tailor made psychological and psychiatric treatment approaches for burn injury patients. The findings also indicate significant differences in patients' way of coping with burns, self-monitoring behaviours, appraisals of social support and satisfaction with appearance based on a number of psychosocial factors. These serve as a foundation for future studies on burn injury patients

specific to the Indian societies as the psychosocial circumstances here are subjected to varied cultural biases and differ remarkably when compared to existing literature based on other societies.

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