Changes in Occupational Role Performance After a Severe Burn: A Retrospective Study

Susan Cheng, Joan C. Rogers

Key Words: burns • independent living • rehabilitation

Ten men with severe burn injuries were interviewed to examine their perceptions of the residual impact of severe burn on performance in self-care, home management, work, and leisure occupations within the year after rehabilitation. Three patterns of occupational role performance after a burn were identified: (a) a resumption of participation in all four occupational categories; (b) a return to independence in self-care with substantive impairment in home management, work, and/or leisure roles, and (c) substantive disruption in all occupational roles. Role loss or disruption was commonly associated with reduced endurance, intolerance for standing and walking, and impaired grip strength and upper extremity skill. Suggestions for rehabilitation programming and research are made.

Susan Cheng, MS, OTR/L, is an occupational therapist in the Hand Rehabilitation Program, Duke University Medical Center, Durham, North Carolina 27704.

Joan C. Rogers, PhD, OTR/L, is Professor of Occupational Therapy at the Western Psychiatric Institute and Clinic, University of Pittsburgh, Pittsburgh, Pennsylvania.

This article was accepted for publication May 16, 1988.
these studies must be applied cautiously to those with severe burns because the data from which these conclusions are drawn were obtained from samples encompassing a wide range of burn severity, including persons with less severe burns.

Premorbid conditions have been found to play a major role in psychosocial adjustment, but injury-related factors may also be influential. The evidence correlating adjustment with burn severity (Andreasen, Noyes, & Hartford, 1972; Williams, 1971) is particularly relevant to this pilot study of severely burned subjects. The findings are not unanimous, however; Browne et al. (1985) and Bowden et al. (1980) failed to replicate this association. The results on adjustment and recency of burn (Andreasen, Noyes, & Hartford 1972; Bowden et al., 1980; Browne et al., 1985) and adjustment and disfigurement (Bowden et al., 1980; Bowden & Feller, 1981; Williams, 1971) also conflict.

The literature is devoid of studies examining performance across occupational roles. Rather, studies have selectively focused on only one or two roles. Work has been the role most investigated. Hamburg et al. (1953) found that, even during the early stages of burn care, patients expressed concerns about future employability. Browne et al. (1985) ascertained that good psychosocial adjustment following a burn injury was best explained by employment status. Employed burned people were found to have higher self-esteem than retired, disabled, or recently burned patients (Bowden et al., 1980). A return to work appears to be expedited by being successfully rehabilitated, being married, resuming the same job, being a skilled worker, and being well-adjusted before being burned (Bowden & Feller, 1982). Total body surface area burned has been identified as a good predictor of a patient's ability to return to work, but age and type of occupation have not (Andreasen, Noyes, & Hartford, 1972; Helm, Walker, & Peyton, 1986).

The majority of people employed before being burned resume employment (Andreasen et al., 1971; Chang & Herzog, 1976; Simons et al., 1978). The mean duration of absence from work is 5 to 6 months; the absence is longer for patients with severe burns (Chang & Herzog, 1976; Helm et al., 1986). Approximately 20% of people who have been seriously burned require a change of jobs (Chang & Herzog, 1976; Korlof, 1966). This is necessitated by an inability to work as long or as hard as before; a fear of objects or situations inherent to the work, such as the use of torches or ovens; and physical impairment (Bowden & Feller, 1982). Bowden et al. (1980) ascertained that there was no difference in self-esteem between workers who changed jobs because of burns and those who did not. However, a substantial minority of burned workers indicated that their injuries negatively affected their occupational progress and income (Bowden & Feller, 1982). In addition, a large number perceived work-related problems attributable to their burn injuries (Bowden et al., 1980; Williams, 1971).

Leisure, home management, and self-care roles have been largely neglected in burn research, and when examined, they have been ancillary to investigations of work or psychological concerns. Hence, data on these roles are scanty. The adaptive potential of leisure skills was identified in research correlating leisure activity involvement with overall adjustment (Bowden et al., 1980; Browne et al., 1985; Hamburg et al., 1953). Leisure activity participation itself has been found to be related to the availability of social support (Davidson et al., 1981). There is also evidence suggesting that relationships outside the family, especially with strangers, are negatively affected by the burn experience (Andreasen et al., 1971; Williams, 1971). It is not surprising to find that people devote more time to solitary leisure pursuits after burn injuries than they did before (Williams, 1971). Similarly, increased time is spent on self-care tasks (Williams, 1971). The research reviewed clearly neglected the self-care and home management roles. However, the only study (Simons et al., 1978) that covered the immediate posthospital period did identify the need for follow-up investigations to evaluate competence in activities of daily living.

In summary, postburn adjustment has been investigated primarily as a psychological process affected by burn-related factors and leading to reemployment. Although much has been learned about psychosocial recovery from burns, little is known about functional capacity in self-care, home management, and leisure roles, or about the skill deficits that preclude or hinder effective task performance. Furthermore, the application of the accumulated research is biased in favor of patients with less severe burns; therefore, information on severely burned patients is limited. In addition, the studies have concentrated on short-term adjustment (during hospitalization) or long-term adjustment (1 to 20 years after hospitalization); little attention has been given to the immediate posthospitalization interval. This is the interval of interest to this study.

Study Methodology

Subject Selection

Subjects were selected from patients discharged from the North Carolina Memorial Hospital Jaycee Burn Center during the 12 months preceding the advent of the study. Criteria for inclusion in the sample were as follows: (a) diagnosis of severe burn; (b) age between 18 and 65 years; (c) receipt of occupational therapy services as an inpatient; (d) current residence...
Table 1
Characteristics of Participants and Nonparticipants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Participants</th>
<th>Nonparticipants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Range</td>
<td>18-55</td>
<td>21-43</td>
</tr>
<tr>
<td>Mean</td>
<td>36.8</td>
<td>31.2</td>
</tr>
<tr>
<td>% TBSA burned</td>
<td>13-85</td>
<td>15-37</td>
</tr>
<tr>
<td>Mean</td>
<td>38.2</td>
<td>21.5</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>White</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/living as married</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Single</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Time since discharge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3 months</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>4-6 months</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>7-12 months</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. TBSA = total body surface area.

Subject Characteristics

Table 2 provides demographic information on each subject along with data on burn characteristics. Burn injury occurred on the job for 5 of the 10 subjects. At the time of injury, the 9 employed subjects all performed manual labor. Five burns resulted from explosions, two from trash fires, two from electrical malfunctions, and one from a house fire. The maximum length of hospitalization was 3 months. When surveyed, no subject was involved in a rehabilitation program, although one had received outpatient treatment, and one had been contacted by vocational rehabilitation services.

Procedures and Instrumentation

Data on each subject’s perception of changes in self-care, home management, work, and leisure roles that were attributable to severe burn injuries were gathered through focused interviews. All interviews, which took approximately 1 to 1½ hours, took place in the subject’s home and were conducted by the first author, who was not an employee of the burn center. Data were recorded by hand.

The interviews consisted of directed but open-ended questions related to the four occupational roles. Self-care included dressing, feeding, bathing, grooming, and hygiene. Home management covered housework, yard work, and car maintenance. Work involved paid employment, and leisure covered non-work activities engaged in for enjoyment and relaxation. In each area of questioning, subjects were asked whether any changes had taken place since they had been burned. They were prompted to compare their preburn and present activities and activity levels. Subjects were asked to describe any changes identified and to indicate reasons for them. Changes indicated both positive and negative alterations. The open-ended nature of the questions allowed the subjects to present their own perceptions and elaborate.

Table 2
Demographic and Disability Characteristics of Subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Disruption in Self-Care</th>
<th>Disruption in Home Management</th>
<th>Disruption in Work</th>
<th>Disruption in Leisure</th>
<th>Age</th>
<th>Race</th>
<th>Marital Status</th>
<th>% TBSA Burned</th>
<th>Burn to Face</th>
<th>Third Degree Burn to Hands</th>
<th>Months Since Discharge</th>
<th>Burn Affecting Mobility/Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Severe</td>
<td>Severe</td>
<td>Severe</td>
<td>Moderate</td>
<td>48</td>
<td>W</td>
<td>M</td>
<td>40</td>
<td>Yes</td>
<td>Yes</td>
<td>11</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Slight</td>
<td>Severe</td>
<td>Slight</td>
<td>Severe</td>
<td>55</td>
<td>W</td>
<td>M</td>
<td>17</td>
<td>No</td>
<td>No</td>
<td>3</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Slight</td>
<td>Moderate</td>
<td>Severe</td>
<td>Moderate</td>
<td>29</td>
<td>B</td>
<td>S</td>
<td>85</td>
<td>No</td>
<td>No</td>
<td>6</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Slight</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>23</td>
<td>W</td>
<td>M</td>
<td>35</td>
<td>No</td>
<td>Yes</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>None</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>55</td>
<td>W</td>
<td>M</td>
<td>50</td>
<td>No</td>
<td>No</td>
<td>11</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>Slight</td>
<td>None</td>
<td>None</td>
<td>Slight</td>
<td>18</td>
<td>W</td>
<td>S</td>
<td>37</td>
<td>Yes</td>
<td>Yes</td>
<td>5</td>
<td>Yes</td>
</tr>
</tbody>
</table>

freely on them. Finally, subjects were asked to identify the aspect of burn injury that was most stressful and the aspect that was most helpful for recovery.

Data Analysis
Two raters independently graded each area of occupational performance as improved, no disruption, slight disruption, or severe disruption. Grades were based on the subject’s perception of those changes in self-care, home management, work, and leisure roles that had resulted from burn injuries. Improved signified performance above the preburn level, and no disruption signified comparable preburn and postburn levels. Slight disruption indicated that, despite some difficulty, the subject was managing tasks independently as before injury or that task dependency was highly isolated. Moderate disruption implied that the person required assistance to complete tasks, needed excessive time to complete them, or performed the role in a way that caused a decrease in independence or activity level. Severe disruption meant an inability to perform an occupational role at all, performance that was more dependent than independent, or a substantive decrease in the activity level associated with a role. The two raters agreed on 37 of the 40 role classifications made regarding the 10 subjects. The three areas of disagreement were resolved through discussion. Data analysis involved quantitative and qualitative descriptions of perceived role changes.

Results
The performance ratings assigned to each subject for each occupational role are given in Table 2. The functional meaning of these ratings is explained in the following discussion.

Self-Care
Of the 10 subjects, 5 reported no changes in their ability to care for themselves, 4 described changes rated as leading to slight role disruption, and 1 described changes rated as leading to severe role disruption.

Changes graded as slight involved the specific tasks of dressing and bathing as well as a more pervasive general skill factor. Subject 2, for example, felt that decreased manual dexterity and restricted shoulder movement slightly increased the time it took him to complete his self-care tasks. Subject 3 expressed discomfort about showering, because he was burned while preparing to take a shower. In addition, due to weakness and limited motion in the upper extremities, his self-care took somewhat longer. Subject 4 had difficulty tying shoelaces and buttoning buttons; he attributed this difficulty to poor grip strength and decreased skill in his dominant hand, which forced him to rely on his nondominant hand for tasks requiring manipulation. Subject 6 was unable to tie shoelaces because his fingers were fused in a functional hook position, but he was dependent only in this isolated task. The soft, loose clothing he wore to accommodate torso tenderness due to scars required little manual dexterity.

Subject 1 was the only subject to describe self-care changes that were rated as severe. He was unable to put on clothing and needed his wife’s help in dressing. It was also impossible for him to independently perform bathing and grooming tasks, such as combing his hair and shaving, because of decreased endurance, limited range of motion in his upper extremities, and bilaterally decreased grip strength. Subject 1 also perceived inadequate grip strength as the cause of his feeding problems, specifically with cutting.

Home Management
Prior to burn injury, 5 subjects (Subjects 1, 2, 5, 8, and 9) participated only in yard work. Three subjects (Subjects 4, 7, and 10) were active in both yard work and car maintenance; 1 subject (Subject 3) was active in yard work and housework; and 1 subject (Subject 6) was active only in housework. Two subjects reported no changes in their home management activities, 2 perceived changes causing slight role disruption, 3 perceived changes causing moderate role disruption, and 3 perceived changes causing severe role disruption.

The minor accommodations noted by Subjects 7 and 8 involved difficulty completing (a) fast motor actions, such as starting a lawn mower or a chainsaw, and (b) fine motor actions, which were now hindered because both subjects had to wear protective gloves. Subjects 3, 4, and 5 indicated a decrease in their performance of yard work and car maintenance; Subjects 1 and 2 reported they were no longer able to perform these activities at all. These changes were attributed to reduced physical endurance, which made even light work such as raking leaves and washing the car problematic. Few subjects participated in housework other than cooking prior to injury, and none added housework tasks afterwards; therefore, burn injury had little impact on these tasks. Although Subjects 3 and 6 had enjoyed cooking prior to injury, they no longer cooked because of a fear of the heat source or of dropping things. Since cooking was the only involvement Subject 6 had had in home management, this change resulted in his loss of this role.

Work
Prior to their burn injuries, 9 subjects had been employed. Three subjects (a mechanic, a truck driver, and a logger) perceived no changes in their ability to
complete work tasks, their relationships with co-workers, or their job satisfaction. All resumed employment almost immediately upon discharge from the hospital. One subject indicated changes that were rated as causing a slight disruption in his work role, and 2 subjects indicated changes that were rated as causing moderate disruption. All of these subjects resumed work within 6 months of discharge. Three subjects who had been discharged 3, 6, or 11 months before being interviewed experienced severe disruption, which was indicated by continued unemployment.

Subject 7, whose role disruption was described as slight, attributed changes in work activities to an inability to accept heavy pressure on the scars on his thumb. Since this impairment only interfered with the operation of an infrequently used machine, he was able to maintain his job as a tobacco farm worker.

Subjects 4 and 5, both viewed as experiencing moderate disruption of the work role, were switched by their employers to tasks requiring less physical labor. Subject 4 was transferred from truck driving and loading to clerking because he no longer had the strength to lift heavy objects. Although he was pleased with the quality of his work, he found his new job less satisfying: He felt confined to one room and sensed a loss of freedom because his supervisor was always present. He was open to considering other jobs and job training opportunities to alleviate his dissatisfaction, but he stated that he would probably remain in this job because of the financial security it provided. Subject 4 was the only subject contacted by vocational rehabilitation services.

Subject 5 was moved from a position as a maintenance mechanic to a desk job. His extreme dissatisfaction with this new position was reflected in his comment: “I don’t do nothing all day. . . . I sit and drink coffee. There is nothing for me to do there. . . . It bothers me to be in that situation.” He attributed his reduced work tolerance to discomfort from a prothesis on one leg and to swelling and itching of the other leg. He was considering opening a business to gain flexibility in scheduling and to be on his own.

All working subjects felt that their relationships with co-workers remained unchanged after their injury. Co-workers were seen as accepting and supportive.

Three of the previously employed subjects were unable to return to work. At the time of his injury, Subject 1 had been managing his own farm and country store. He attributed his inability to resume this work to tenderness in his feet and to the loss of strength and dexterity in his hands. He hoped to be able to return to farming after a series of reconstructive surgeries, which he estimated would take about 10 years. Subject 2 indicated that he was prevented from farming because of unilateral upper and lower extremity impairments. He was uninterested in job retraining. Subject 3 was unable to return to his job as a car detailer because he no longer had the stamina to work full time and because the chemicals used on the job irritated the skin that had been burned. He highly valued work and was optimistic that he would be able to find employment as soon as he was physically able to work.

Leisure

Subjects 8, 9, and 10 perceived no changes in their leisure activities. Subjects 2, 6, and 7 identified changes that involved decreases in social contacts, especially with co-workers and friends; these changes were viewed as causing slight role disruption. The preburn leisure pursuits of these 3 subjects were basically sedentary, with a heavy focus on visiting and television watching. In contrast, the recreational interests of Subjects 1, 3, and 5 were highly strenuous and physical. Activities that were now difficult or impossible were riding a horse; riding a motorcycle; driving a car; training dogs; fishing in remote areas; swimming; waterskiing; bowling; and playing pool, football, or basketball. The 4 subjects all listed physical impairments involving upper and lower extremity strength, hand dexterity, standing, and walking as reasons for activity losses or reductions. Leisure activities in which participation was increased were watching television, reading, visiting, eating out, and walking. For Subjects 1, 4, and 5, changes in leisure activities were evaluated as causing moderate role disruption. Subject 3 described substantive reductions in both physical and social areas; the disruption in his work role was rated as severe.

Subject 3 was the only one that attributed leisure role changes primarily to psychological reasons. Because of his discomfort with himself after being burned, he preferred solitary over social activities. Subject 7 also associated leisure restrictions with nonphysical factors. He commented that he avoided public places because he was self-conscious about the scarring on his hand. Subject 6 indicated an awareness of the potential for psychological factors to inhibit activity participation, but he hastened to add, “Before I was burned, I, too, would stare at people who were different. It doesn’t bother me or keep me from going out.”

Adaptation to Role Performance

For four subjects (Subjects 1, 2, 4, and 10), the most difficult aspect of the burn injury experience was dependency; for 4 others (Subjects 5, 7, 8, and 9), physical pain; for 1 (Subject 6), “staying alive from day to day”; and for another (Subject 3), accepting the dif-
ferences in living since being burned. Five subjects (Subjects 1, 2, 3, 5, and 10) were unable to identify anything in the recovery process that substantively aided their ability to cope. Recovery was eased by the presence and support of family, friends, and burn center staff for 4 subjects (Subjects 4, 6, 7, and 8) and by religious faith for another (Subject 9).

Discussion

These data suggest three patterns of occupational role performance. The first pattern was exhibited by 4 subjects (Subjects 7, 8, 9, and 10), who experienced no or only slight disruption in self-care, home management, work, and leisure roles. Their preburn and postburn statuses were essentially the same. The second pattern, exhibited by 5 subjects (Subjects 2, 3, 4, 5, and 6), was characterized by independence in self-care and a reduction or loss of work in and around the home and in competitive employment. A preburn history of active and strenuous leisure involvement made a substantive disruption in the leisure role more likely. The final pattern, exhibited only by Subject 1, was characterized by substantive disruption in all four occupational roles. A comparison of the role-intact subjects with the role-disrupted subjects suggested that burns affecting mobility or third-degree burns to the hands were markers of functional dependency.

Perceived changes in occupational role performance within the year after a severe burn injury indicated that, although role participation was generally resumed, it was often done so at a reduced level. Reduced physical capacity after a burn resulted in decreased involvement in strenuous, ambulatory, rapidly paced, and highly dexterous tasks and in increased time spent in the light, sedentary, or social activities that remained within the limits of residual physical capacity. Thus, subjects whose preburn occupational role participation was highly dependent on good physical capacity experienced more disruption than those whose initial status was less active. Loss of activity was generally compensated for through an increased investment in familiar activities rather than through the addition of new ones. Activity exploration to search for replacements was apparent in only a few subjects, was confined to the worker role, and was still in the thinking stages. None of the subjects identified any positive aspects of the burn experience, such as a reordering of personal values or a greater appreciation of life.

Regardless of occupational role, functional changes were overwhelmingly attributed to physical status rather than to psychological or social considerations. Nonetheless, in view of the pilot nature of this study, the psychosocial impediments to occupational functioning should not be ignored. Self-consciousness about one's physical appearance was perceived as a limiting factor in relation to only one occupational role—leisure. It is possible that social contacts in leisure settings are less predictable than those in the home or workplace and involve more opportunities for contact with strangers. Hence, they may generate discomfort. Future studies could explore the impact of self-consciousness on the use of discretionary time. Fear deterred the resumption of cooking, even though cooking was not the burn-related activity. It would be worthwhile to investigate the adaptive process in cooks and homemakers who sustain burns, because it may be more difficult for them to relinquish meal preparation than it was for these subjects. Although none of the 5 subjects burned on the job expressed a fear of the job situation, 4 either had not returned to work or had changed jobs.

A return to independence in the self-care role is the most likely outcome of acute burn rehabilitation. One possible reason for this success is that personal self-care tasks are inherently less physically demanding than the home management, work, and leisure tasks relinquished by these subjects. Most can be done from a seated position if standing is a problem, and a slower pace can be readily accommodated. Residual physical impairments can usually be compensated for by the use of different materials or methods. People also may be highly motivated to achieve self-sufficiency in these very basic, highly personal, and often private self-care tasks, especially after experiencing dependency during the acute stage of recovery.

Another factor that contributes to success in self-care is the emphasis of the acute burn rehabilitation program. Hospital treatment focuses on self-care capacity and physical limitations such as restricted joint range of motion, edema, and muscular weakness.

Functional independence in self-care appears to be a minimal occupational expectation for most severely burned individuals. Substantive dependency, however, was reported by 1 subject, and others identified manipulative dysfunctions. Prior research on this population has neglected to examine self-care performance. Although residual self-care dysfunction does not appear to be widespread, the findings suggest the need to document the incidence of dependency and its relationship to function in other roles.

Reintegration into social roles is seen as a component of the posthospital phase. Because this study took place within the year after discharge, it may have been too early in the rehabilitative process for the resumption of more strenuous activity. Alternatively, subjects may have achieved maximal physical recovery, and restriction may have been inherent to the lack of a full recovery. It should be noted, however, that of the 6 subjects experiencing significant role disrup-
tion, only 1 anticipated reconstructive surgery, only 1 had been contacted by vocational rehabilitation services, and only 1 had received outpatient therapy. Postdischarge recovery appeared to be a function of time without planned intervention. These findings suggest a need to appraise whether maximum rehabilitative gains have been attained at discharge or whether postdischarge programs aimed at increasing activity tolerance are needed.

Six of the 9 subjects who had been employed before their burn injuries returned to work, but 2 changed jobs. They returned to work on their own within 6 months of discharge. Third-degree burns to the hands and burns to the feet that limited mobility made disruption in the work role more probable. Chang and Herzog (1976) failed to discern a relationship between area burned and adjustment, but the bodily areas they considered were hands and face. From a functional standpoint, for workers such as the laborers who served as subjects in this study, the feet are of greater consequence than the face. Our findings point out restrictions in home management, work, and leisure activities due to lower extremity impairment. Future research should explore the impact of standing and walking intolerances on occupational functioning.

As reported in other studies, social support is important to adjustment to a burn. The presence of caring and knowledgeable people, rather than the performance of any particular services, was identified as important.

Implications
The value of studying the work role in relation to other roles was illustrated in the differential resumption of roles and the delineation of role patterns. Self-care independence was the most likely outcome within the year after hospitalization, but such independence was not achieved by all subjects and did not coincide with role resumption in home management, work, and leisure areas. Clinically, the findings highlighted perceived residual deficits in grip strength, dexterity, upper and lower extremity strength, range of motion, mobility, and endurance large enough to preclude or reduce the efficiency of occupational performance. Role adjustments involved decreased participation in physically demanding activities and increased involvement in familiar, sedentary pursuits. Further research is needed to clarify the impact of residual burn impairment on performance and achievement in occupational roles.

Acknowledgment
This study was completed in conjunction with Susan Cheng's master's degree requirements at the University of North Carolina, Chapel Hill.

References


