Factors Affecting Return to Work After Hand Injury

(hand rehabilitation, psychological aspects, vocational assessment)

Jane Bear-Lehman

The study of 61 hand-injured subjects suggested that it is more than surgical and technical excellence that facilitates the return-to-work status among the hand-injured wage earners. Financial need, level of activities of daily living, and participation in occupational therapy were found to be directly related to return-to-work status. Additional findings indicated no difference between the rate of return to work for those whose injuries affected their dominant hand over those who had nondominant hand injuries. The amount of medical care needed and whether it was delivered as an outpatient or an inpatient were not associated with the return to work.

The hand-injured subjects' relevant medical history, participation in occupational therapy, capacity in activities of daily living, desire and ability to return to work, and financial support were quantified through chart audit and interview. Occupational development was measured by using the Moorhead Occupational Work History.

Because the human hand is closely associated with adaptive skills and independence in caring for oneself and others, a hand injury may affect a person's financial security, struggle for a better job, pursuit of life goals, as well as the happiness of the family. However, only in the past decade has some attention been given to the sociopsychological aspects of hand injuries. Significant contributions have come primarily from British and Australian writers; particularly Cone (1), Cohney (2), and Pulvertaft (3). The work of Bunwell (4), Kilgore, et al. (5), and Brown (6, 7) has also supported a sociopsychological component to recovery.

The major focus in the periodicals and lectures related to the practice of hand surgery and rehabilitation has been on the perfection of technique (1, 2, 6), and these sources often ignore the sociopsychological aspect of care. At times, articles in the medical literature suggest that the sociopsychological aspect of care may be passed along to the allied health professionals because they "have more time." However, the allied health professionals, following the lead of the medical pro-
Advanced technical skills have not answered the puzzling question of why some patients get well and return to their original work status, while others with a similar or lesser injury remain in the health care system. Patients seek help because of pain, fear, and disability. Their ability to adjust depends on their motivation and the extent of the injury (7). Motivation (6) seldom affects etiology directly, but it can influence both the pathological process and the patient's response to that process. Successful treatment is not only dependent on technical skill, but also on an understanding of all aspects of the injury (6, 8, 9).

Review of the Literature

The loss of hand function through injury may not only be frightening, but often constitutes a crisis by threatening economic security and ego (10). The individual's self-perception is dramatically changed by loss or mutilation of the hand. Adaptation requires that the individual endure the pain, cope with the stress, and reconstruct a new self-image.

Body Image. Hands are visible body parts and are valued and judged by society based on performance and appearance. One's view of his or her body and what the person feels others think of him or her provide the basis for body image (11, 12); an injury to the hand shatters this fixed image of self (8).

Schwab and Harmeling (13) found that patients with visible disorders had more negative feelings toward their bodies than either other medically ill patients or well people. Body image confirms personal identity and reinforces self-esteem. After a hand injury self-image also has to be reconstructed.

Occupational Performance. Injury deprives individuals of independent performance of self-care and homemaking tasks, the ability to communicate independently, and the pursuit of avocations. Debility in these activities negatively affects body image, social behavior, and communication skill. Ultimately persons associated with the injured individual (14) may also be negatively affected. The ability to manage oneself financially, socially, vocationally, and avocationally is fractured. Even months after an injury subtle reminders of a deficit occur, for example, when one cannot reposition a car seat, fasten jewelry, carry a tray, sharpen a pencil, or crawl.

Occupational Development. Work is the primary base for a person's participation in society (15). Trauma to the hand jeopardizes income and the integration into a larger network of social relationships acquired at work. The job held by the head of the household often defines the family's status in society. The individual who cannot resume a former occupation faces changes not only in career, but also in income and in social circles.

In treating the hand-injured individually holistically, caregivers must consider the patient's achieved stage of occupational development. Injury to the hand disturbs the worker's career. In determining a treatment, after taking into account the patient's aspirations, abilities, and self-image, the decision must be made on whether an attempt can be made to return the patient to the original career path or whether modification of the path is required.

Statement of the Problem. One can infer from the literature cited that sociopsychological factors can influence the recovery process. Stress, pain, and disturbed body image are interrelated factors that influence fulfillment in life work tasks. This study explored the relationship between these sociopsychological factors of self-image, occupational development, occupational performance, and social support as they related to return to work in the hand-injured patient.

Methods

Subjects. Sixty-one hand-injured subjects were selected from three facilities: a clinic of a large urban public hospital, a clinic in a private urban hospital, and a private practice. All subjects were regularly employed before their trauma. For the study, the hand injury had to qualify as a lost-time injury of sufficient severity to have disrupted the worker's daily life. Both on-the-job and off-the-job injuries were represented. Diagnostic categories included 42 percent crush or compression injuries, 25 percent lacerations, 15 percent partial traumatic amputations, 11 percent fractures, 3 percent gun shot wounds, 3 percent degloving, and 3 percent other (burn, pain of unknown etiology). The majority of the subjects had at least one surgical intervention and a hospital admission.

The subjects included 17 women and 44 men aged 18 to 65 with an average age of 35.9 years. Thirty-eight percent of the subjects did not complete high school, 24 percent had a high-school diploma, 20 percent participated in some college or vocational schooling, and 8 percent were college graduates.

Time on the job before injury ranged from a few months to 25 years, with an average length of time at the most recent place of employment of 6.2 years. Seventy-
eight percent of the hand-injured subjects were primary wage earners; 22 percent were secondary wage earners. Dividing the subject group by occupations (16), 31 percent worked in machine trades, 18 percent worked in processing, 15 percent worked in transportation and packaging, 11 percent in the service trades, and the remainder were divided among the professional/management, clerical/sales, and the building trades.

Procedure. The Moorhead Occupational Work History (17) was used to tap information on occupational development. It provided information on the subjects' occupational classifications, status as a primary or secondary wage earner, childhood aspirations, and parental, educational, and occupational background.

A chart audit and an interview schedule designed by the author were used to determine activities of daily living status, work status, social support, and referral to occupational therapy. The subjects were interviewed individually not less than 2 months after injury. There was a single interview. All of the patients were in advanced stages of rehabilitation, but had not completed their curriculum of treatment.

Statistical Analysis. A frequency distribution was computed to detect trends and clusterings of responses from each measurement. Chi-square analysis and the t-test were chosen partially because of the small sample size, but more to measure the existence of an effect rather than to determine the magnitude of the effect.

Results
The work status of the subjects fell into three groupings: Return to Work, Potential to Return to Work, and Not Returned to Work. Fourteen subjects (23%) were actively employed in their previous jobs at the time of the interview. Thirty-four subjects (55.7%) were classed as potentially returning to work. They were either back at their old job in a partial capacity doing light duty, or participating in a rehabilitation program aimed at returning them to work. Thirteen subjects (21.3%) decided not to reenter the work force. Some opted for early retirement; others, the secondary wage earners, returned to homemaking rather than to their outside employment.

Significant statistical relationships were found between return to work and the independent variables of social support, activities of daily living, and occupational therapy referral. No statistically supportable relationships were found between return to work and the nature or physical ramifications of the injury.

Social Support. The data in Table 1 suggest that, if a person was receiving medical assistance only, or had no third-party reimbursement available, there was a strong compulsion to return to work in order to earn a paycheck. Of the ten subjects who had no salary benefit and who had returned to work, five would have been expected to return. The average in the return to work category was at the expense of potential to return to work. The number who did not return to work was not expected to return. Those subjects who were self-employed or who did not qualify for the usual workmen's compensation were forced by lack of salary to return to work more quickly than those whose salaries were maintained during the rehabilitation process.

Although not statistically supported, it appeared that those who had a desire to return to work and whose employment status was close to their childhood aspirations had a

<table>
<thead>
<tr>
<th></th>
<th>Returned to Work (Expected)</th>
<th>Potential to Return to Work (Expected)</th>
<th>Had not Returned to Work (Expected)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Medical/No Salary Benefits</td>
<td>4 (2.75)</td>
<td>3 (6.59)</td>
<td>5 (2.56)</td>
<td>12</td>
</tr>
<tr>
<td>Medical Benefits/No Salary</td>
<td>6 (2.30)</td>
<td>4 (5.57)</td>
<td>0 (2.13)</td>
<td>10</td>
</tr>
<tr>
<td>Medical and Salary Benefits</td>
<td>2 (6.43)</td>
<td>20 (15.61)</td>
<td>6 (5.97)</td>
<td>28</td>
</tr>
<tr>
<td>Undetermined</td>
<td>2 (2.52)</td>
<td>7 (6.13)</td>
<td>2 (2.34)</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>34</td>
<td>13</td>
<td>61</td>
</tr>
</tbody>
</table>

$\chi^2 = 16.08 \text{ with } 6 \text{ df, } p < .01$. 

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tendency to return to work. Those subjects who were high school educated and whose parents were also high school educated showed a greater tendency to return to work.

Activities of Daily Living/Occupational Performance. Interview data provided a statistically significant cross-tabulation between the level of activities of daily living performance and return to work status (Table 2). Independence in activities of living was a prerequisite to return to work whether or not adaptive methods were needed. A cross tabulation was unable to statistically prove a relationship between the ultimate level of activities of daily living and referral to occupational therapy.

Occupational Therapy. The data showed that a referral to occupational therapy during the acute recovery period—that is, within a month following the first surgical intervention—was positively related to return to work. Among those who had already returned to work, the number of cases observed and their expected values were the same either with or without occupational therapy referral (Table 3). However, among those who had not yet fully returned to work (potential to return to work), the number of cases receiving occupational therapy was higher than expected. Also, fewer cases than expected did not return to work when occupational therapy was used. When there was no occupational therapy referral, there was less potential to return to work and, more often than expected, the decision was made not to return to work at all. The study showed that occupational therapy did not affect ultimate activities of daily living that are necessary for return to work, and yet there was a positive effect from occupational therapy referral upon return to work.

Table 2
Relationship between Activities of Daily Living Performance and Return to Work Status

<table>
<thead>
<tr>
<th></th>
<th>Return to Work</th>
<th>Potential to Return to Work</th>
<th>Had not Returned to Work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observed</td>
<td>Observed</td>
<td>Observed</td>
</tr>
<tr>
<td>Dependent in Activities of Daily Living</td>
<td>0 (.23)</td>
<td>0 (.56)</td>
<td>1 (.21)</td>
</tr>
<tr>
<td>Requires Assistance in Activities of Daily Living</td>
<td>1 (4.36)</td>
<td>10 (10.59)</td>
<td>8 (4.05)</td>
</tr>
<tr>
<td>Independent ADL—Adaptive Measures Required</td>
<td>9 (5.28)</td>
<td>12 (12.82)</td>
<td>2 (4.90)</td>
</tr>
<tr>
<td>Independent ADL—No Adaptation</td>
<td>4 (4.13)</td>
<td>12 (10.03)</td>
<td>2 (3.84)</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>34</td>
<td>13</td>
</tr>
</tbody>
</table>

X² = 15.83 with 6 df, p < .014.

Table 3
Relationship between Return to Work Status and Occupational Therapy Referral

<table>
<thead>
<tr>
<th></th>
<th>Returned to Work</th>
<th>Potential to Return to Work</th>
<th>Had not Returned to Work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observed</td>
<td>Observed</td>
<td>Observed</td>
</tr>
<tr>
<td>No Occupational Therapy Referral</td>
<td>5 (5.5)</td>
<td>10 (13.40)</td>
<td>9 (5.1)</td>
</tr>
<tr>
<td>Presence of an Occupational Therapy Referral</td>
<td>9 (8.5)</td>
<td>24 (20.6)</td>
<td>4 (7.9)</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>34</td>
<td>13</td>
</tr>
</tbody>
</table>

X² = 6.35 with 2 df, p < .04.
Figure 1
A comparison of the return-to-work status with injury to the dominant hand, to the nondominant hand, to both hands.

Nature and Ramifications of Injury. The interview and the chart audit provided data about the nature and ramification of the hand injury. Cross tabulations were calculated for return to work status with the variables: 1. which hand was injured, 2. whether the injury occurred at home or at work, 3. the number of surgeries, 4. the number of admissions to the hospital, 5. the number of days in the hospital, and 6. the amount of time passed since injury. There were no significant results on all factors.

The subjects presented an equal distribution of types and intensities of hand trauma, and an equal number of dominant and nondominant hand injuries. Based on the findings (see Figure 1), the return-to-work rate is relatively equal between dominant and nondominant hand injuries. In addition, chi-square analysis demonstrated no difference in the type of job to which the hand injured returned. That is, they returned at relatively equal rates to all job classifications following hand injury afflicting either their dominant or nondominant hand.

Further statistical analysis yielded no significant difference in return to work status between those who incurred their injury at home versus those who incurred their injury on the job. In this study, only one in four injuries occurred at home and the remainder occurred at work.

The subjects had varied experiences with regard to hospitalizations, number of surgeries, number of hospital admissions, and number of hospital days. Those who had mandatory hospitalizations for each procedure returned to work at the same rate as those who had all
Discussion
This study attempted to assess the influence of life work tasks in the hand-injured wage-earner population. In addition to surgical and technical excellence, the findings suggest that financial need, activities of daily living level, and participation in occupational therapy are related to return to work.

The relationship among activities of daily living, occupational therapy, and return-to-work status leaves some questions unanswered. The conventional wisdom would be that occupational therapy affects activities of daily living, which affect return to work. However, it was not shown that occupational therapy affected the ultimate levels of activities of daily living. Since occupational therapy did affect return to work, if not through activities of daily living, then through what means did occupational therapy affect return to work?

One possible explanation would be that occupational therapists are paying attention to and supporting the sociopsychological needs of their patients in treatment and this procedure is a "Hawthorne Effect" (18); that is, the attention paid to the patient by the occupational therapist in the ongoing treatment program causes the patient to continue work toward independence in activities of daily living and to keep hope alive for the ultimate achievement—return to work.

No relationship was noted for return-to-work status and which hand was injured, job classification, or hospital-related events that is, those who injured their dominant hand returned to work at the same rate as those who sustained an injury to their nondominant hand.

There was no preference for occupational role or job classification, and category of work did not affect the return-to-work status. In addition, hospital-related events did not make a difference in rate of return to work. The subjects had varying intensities, occurrences, and durations of medical treatment. Whether they received care as inpatients or outpatients, had one surgical intervention or four, or were hospitalized for 2 days or 2 weeks had no bearing on their ultimate return-to-work status.

Conclusion
This study suggests that factors other than therapeutic exercise and wound management influence a hand-injured patient's return to work. Various aspects have suggested that attention ought to be paid to the sociopsychological factors implicit in many occupational therapy treatment plans is the goal of sociopsychological support. By providing special attention through encouragement and expressing hope to patients, occupational therapists may be contributing to the patients' ultimate performance and achievement. Our effort to provide sociopsychological support, then, may be more pronounced than we realize.

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