Measuring The Social Impact of Burn Injuries:
Conceptual Foundation and Item Pool Development for a Computer Adaptive Test

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**Background & Aims**
- 2 million people in the United States sustain burn injuries every year.
- The mortality rate for burn injuries dropped greatly in the 1970’s and 80’s, and is currently 3.7% for all cases and 6.4% for fire/flame injuries.1,2
- The near universal survival of individuals with burns requires a consideration of long term outcomes.
- Adults who experience burn injuries face considerable physical, psychological, and social challenges throughout their recovery and return to everyday life.
- This project aims to develop a validated conceptual framework for understanding the social impact of burn injuries in adults and develop a large item pool for purposes of calibration using Item Response Theory (IRT) for the future development of a Computer Adaptive Test.

**Methods**
- Comprehensive literature review and consultation with clinical experts and burn survivors about social roles and life areas impacted by burns.
- Items modification from nineteen previously established and published generic, burn-specific, and other condition-specific measures.
- Classification of items by subdomain: group consensus on inclusion, modification, removal and addition of new items based on iterative review process.
- Focus groups with burn survivors and clinicians to validate the framework and revise and augment the initial item pool.
- Item revision, removal and writing based upon feedback from the focus groups.
- Cognitive interviews with burn survivors to assess clarity and consistent interpretation.

**Results**
- Quality results strongly suggest that the conceptual model fits the constructs for societal role and personal relationships with the remaining seven subdomains.
- Although included in the literature, the content subdomain of domestic work was eliminated because burn survivors and experts did not mention it as an integral part of social recovery, and more of an economic support issue.
- The final pool contains 192 items that were tested for clarity and interpretation by burn survivors.
- The resulting measure will be the first to specifically measure the social aspects of burn survivors life throughout the recovery process.

**Discussion**
- This work will lead to future calibration using IRT methods and the development of a CAT for monitoring the social impacts of burn injuries during recovery.
- The measure has the potential to be integrated into electronic health records, which would allow burn survivors and their care providers to measure current social participation, and track the trajectory of social participation throughout the recovery process.

**Future Work**
- This work is supported by The National Institute on Disability and Rehabilitation Research (NIDRR) H133A130023 and H133A120034.

**Acknowledgement**

**Table 1. Sample Characteristics**

<table>
<thead>
<tr>
<th>Focus Groups: Burn Survivors/Partners (n=23)</th>
<th>Focus Groups: Clinicians (n=27)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Gender</td>
</tr>
<tr>
<td>Female</td>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
<td>Male</td>
</tr>
<tr>
<td>Age</td>
<td>Age</td>
</tr>
<tr>
<td>44.7 (13.5)</td>
<td>43.9 (12.3)</td>
</tr>
<tr>
<td>Race</td>
<td>Specialty</td>
</tr>
<tr>
<td>White</td>
<td>Surgeon</td>
</tr>
<tr>
<td>Other</td>
<td>Psychiatrist</td>
</tr>
<tr>
<td>3.7%</td>
<td>RN - Internist</td>
</tr>
<tr>
<td></td>
<td>Occupational Therapist</td>
</tr>
<tr>
<td></td>
<td>Physical Therapist</td>
</tr>
<tr>
<td></td>
<td>Massage Therapist</td>
</tr>
<tr>
<td></td>
<td>Social Worker</td>
</tr>
<tr>
<td>8.2 years</td>
<td>Other</td>
</tr>
</tbody>
</table>

**Table 2. Focus Group Feedback and Item Development**

<table>
<thead>
<tr>
<th>Recreational &amp; Leisure</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>In one way, like I said, you may have to change your mode, but you can overcome those physical obstacles in some way or another.”</td>
<td>I do things I enjoy, even if I have to do them differently.</td>
</tr>
<tr>
<td>I found out that if I went out in public and I was in a good mood – and I learned very early on to look people in the eye. And I learned that if I had a smile on my face, they did not stare…</td>
<td>I can help strangers feel comfortable around me.</td>
</tr>
<tr>
<td>I found out that it’s mainly my attitude that depends on how people receive the scars on me, my outward scars.</td>
<td>My relationship with my partner gets stronger since my burn.</td>
</tr>
<tr>
<td>I wish my parents would have given me that opportunity to really sit down and just cry and just be</td>
<td>My family helps me through my bad days.</td>
</tr>
<tr>
<td>I do things I enjoy,</td>
<td></td>
</tr>
<tr>
<td>“Relating with Strangers”</td>
<td>Relationships</td>
</tr>
<tr>
<td>“Relating with Strangers”</td>
<td>“I had a relationship that pre-dated the fire and it just died and came together in a way after that because we have been through this together you know, I think it moved us 10 years forward in terms of trust and connection and solidarity”</td>
</tr>
<tr>
<td>My relationship with my partner got stronger since my burn.</td>
<td></td>
</tr>
<tr>
<td>My family helps me through my bad days.</td>
<td></td>
</tr>
</tbody>
</table>

**Table 3. Content Model for Personal Relationship Domains**

- Family
- Social Role
- Personal Relationships
  - Romantic
  - Sexual
  - Support
  - Extended family

**Figure 1. Conceptual Framework: Domains Impacted by Burn Injury**

- Societal Role
- Work & Employment
- Domestic Work
- Recreation & Leisure
- Related to Strangers

**Figure 2. Content Model for Societal Role Domains**

- Work & Employment
  - Apprenticeship, training, and higher education
  - Creating, keeping, and terminating a job

**Figure 3. Conceptual Framework: Measuring The Social Impact of Burn Injuries**

- Social Role
  - Play & Leisure
    - Sports
    - Hobbies
    - Socializing
    - Pets
  - Emotional and physical attractions
  - Specific to a particular individual
  - Emotional and physical attractions
  - Communication
  - Support
  - Sexual
  - Romantic
  - Family
  - Informal
  - Specific to a particular individual
  - Emotional and physical attractions
  - Satisfaction with sexual activity
  - Friends
  - Neighbors
  - Acquaintances
  - Cohabiting and peers