Influence of environmental factors on Participation, activities and quality of life following injury

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Conceptualising disability

• ‘Medical’ model
  – Level of disability determined solely by individual degree of impairment

• ‘Social’ model
  – Level of disability a product of social and physical environments

• International Classification of Functioning, Disability and Health (ICF)
  – Both impairment and environment influence an individual’s activities and participation in society
Disability after injury

• 1/3 of global injury burden accounted for by years lived with disability (YLD)\textsuperscript{1}
• Preventing ‘disability’ after injury thus of great importance
• Important challenges to obtaining robust estimates of injury-related disability – in the global context

\textsuperscript{1}Begg and Tomijima 2000
Preventing post-injury disability

Opportunities to reduce post-injury disability include:

– Injury prevention
– Effective treatment
– Rehabilitation
– Environmental modification
– Effective policies in many spheres (e.g., education, employment, transport, etc) that discourage violation of human rights among those who ‘survive’ injuries
Eligibility criteria for this review

- **Participants**: injured people
- **Exposure**: environmental factors, excluding medical treatment and rehabilitation
- **Outcomes**: activities, participation, quality of life
- **Need clear distinction between factors at environmental and individual levels**
Searches and data items

• Searched MEDLINE using keywords and MESH terms according to following structure:
  – injury AND environment AND (participation OR quality of life OR (disability AND activity))
• Reviewed reference lists of relevant review articles and included papers
• Collected data on:
  – Study design
  – Participant demographic factors (age and sex)
  – Country settings
  – Environmental variables
  – Outcomes for participation, activities and quality of life
Results

• Search results
  – 2336 citations identified from database search plus reference lists
  – 118 potentially eligible and full-text papers retrieved, of which 29 studies were eligible.
Results: Study characteristics (29)

- 24 cross-sectional studies, five prospective
- All conducted in high-income settings
- Most studied people with SCI (n=16), TBI (n=6) or both (n=1); 1 study of general trauma patients (n=1)

Outcomes: activities (n=6), participation (n=17), quality of life (n=13), multiple (n=6)

- Most studied adults (n=25) rather than children (n=2); one study combined adults and children
## Results: environmental factors studied

<table>
<thead>
<tr>
<th>ICF environmental categories</th>
<th>Studies</th>
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</thead>
<tbody>
<tr>
<td><strong>e1. Products and Technology</strong></td>
<td>4 studies, including housing design (n=2)</td>
</tr>
<tr>
<td><strong>e2. Natural Environment &amp; Human-made Changes to Environment</strong></td>
<td>No studies</td>
</tr>
<tr>
<td><strong>e3. Support and Relationships</strong></td>
<td>12 studies, including social support (n=8), family environment (n=4)</td>
</tr>
<tr>
<td><strong>e4. Attitudes</strong></td>
<td>6 studies, including compensation eligibility (n=3) and transportation (n=3)</td>
</tr>
<tr>
<td><strong>e5. Services, Systems and Policies</strong></td>
<td>Environmental factor summary scores (n=9), geographical variables (n=3)</td>
</tr>
<tr>
<td>Not classifiable according to ICF domain</td>
<td></td>
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</tbody>
</table>
Findings of included studies

• Factors associated with less disability included:
  – Fewer environmental barriers based on summary scores (9 studies found effect; 3 studies no effect)
  – More social support (6 studies found effect; 2 studies no effect)
  – More family support (3 studies found effect; 1 study no effect)
  – Better access to transport (3 studies found effect)
Summary

• A number of studies show associations between environmental factors and disability
• Few studies in comprehensive injury populations: most in SCI and TBI
• No studies on some types of environmental factors
• Significant need for studies in low- and middle-income countries where environmental barriers are likely to be highest \(^1,^2\)

\(^1\) Allotey et al 2003; \(^2\) World Report on Disability & Rehabilitation
Limitations and methodological challenges

• Some studies may not have been detected by our review (not all relevant studies use ICF terms)
• Challenges differentiating environment- and individual-level factors
  – Effects of impairment versus effects of environment
• Higher levels of participation may mean more opportunities to encounter environmental barriers
• Intervention studies needed to show both influence on outcome and effectiveness, if modified
Implications for assessing injury burden

• Environmental barriers are likely to substantially influence the scale of injury-related disability burden between and within countries

• Need to know more about
  – how barriers vary between (and within) countries, which are most important and cost-effective to modify
  – perspectives of people living with disabilities, carers, service providers, and implications of culture, terminologies, and social exclusion / inclusion
  – what actions and approaches are most likely to influence policy and system changes?
Environmental interventions for reducing post-injury disability

• Intervention studies needed to:
  – Establish causality in environment/disability relationship
  – Demonstrate modifiability of environmental influences on disability
  – Identify most effective approaches for reducing disability through environmental modification

• Should include focus on settings with greatest barriers, especially LMICs
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References


• World Report on Disability & Rehabilitation, WHO (in press)