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)[1]
- Preventing 'disability' after injury thus of great importance
- Important challenges to obtaining robust estimates of injury-related disability – in the global context

[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, quali[illegible]e
- Need clear distinction between [illegible]at environmental and indi[illegible]vels

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
    of which 29 studies were eligibl

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=[illegible]), participation (n=17), quality of life (n=[illegible]), multiple (n=6)
- Most studied adults (n=25) rather than children (n=2); one study combined adults and children

Results: environmental factors studied

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

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

Most accessible toilet for people with paraplegia, from study in Cameroon
(Allotey, Reidpath, et al, Soc Sci Med 2003)

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, [illegible] 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

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