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Review Article

Increased risk of unintentional injuries in adults with disabilities: A systematic review and meta-analysis

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Abstract

Background: An increased risk of unintentional injuries among individuals with disability has been reported in many studies, yet quantitative syntheses of findings from previous studies have not been done.

Objectives: We conducted a systematic review and meta-analysis to characterize the relationship between pre-existing disability and unintentional injuries.

Methods: We searched 14 electronic databases to identify original research published between Jan 1, 1990 and Feb 28, 2013. Included studies reported the odds ratio (OR) or relative risk (RR) of unintentional injuries in adults 18+ years of age with pre-existing disabilities compared with adults without disabilities. Twenty six eligible studies were included covering 54 586 individuals with disabilities. We conducted quality assessments and then analyzed the pooled effects using random-effect models.

Results: The pooled OR of unintentional injuries was 1.77 (95% CI 1.51–2.07) for all studies in individuals with disabilities compared with individuals without disabilities. The pooled ORs were 1.87 (95% CI 1.52–2.30) for overall unintentional injuries, 1.64 (95% CI 1.39–1.94) for falls-related injuries, 1.62 (95% CI 1.24–2.13) for occupational injuries, and 1.91 (95% CI 1.59–2.30) for non-occupational injuries.

Conclusions: Compared with adults without disabilities, individuals with disabilities are at a significantly higher risk of unintentional injuries. Evidence about the association between cognitive disabilities and unintentional injuries is weak. Future researchers are encouraged to use International Classification of Functioning, Disability and Health (ICF) to classify disability and use rigorous evaluation methods to assess and implement the most appropriate injury prevention efforts to mitigate the risks identified.

Keywords: Disability; Unintentional injuries; Falls; Occupational injuries

The 2011 World Report on Disability, published by the World Health Organization (WHO), estimated that more than 1 billion people around the world live with some form of disability, and 110–190 million people have very significant difficulties in functioning.[1] Due to the aging population and the increasing numbers of individuals with chronic health conditions, the prevalence of disability is expected to increase rapidly in the coming years in high-income countries[2] as well as in low-income and middle-income countries.[3,4]

There is increasing awareness that individuals with disabilities are at raised risk of a range of health problems, in addition to their primary health condition.[1] One particular challenge is the significantly higher rate of injuries from both violence and unintentional causes in individuals with disabilities compared with their peers without disabilities. A recent systematic review and meta-analysis of

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observational studies on the risk of violence against adults with disabilities found that adults with disabilities, particularly those with mental illness, are at a significantly higher risk of being victims of violence than adults without disabilities.[5] Similarly, results from a meta-analysis found that children with disabilities also face a significant higher risk of having experienced violence.[6] The majority of studies conducted in developed as well as in developing countries have suggested that people with disabilities seem to be at an increased risk of unintentional injuries.[7,8] However, some studies reported that the difference of unintentional injury risk between individuals with and without disabilities is small and not significant.[9,10] One study, conducted by Lysaght and colleagues, reported a lower risk of all types of unintentional injuries in workers with intellectual disability compared with their peers without disability.[11] Some researchers have postulated that people with disabilities tend to participate in fewer sport activities or are more careful in their daily activities; therefore, they are less likely to sustain unintentional injuries than those without disabilities.[12]

Injuries are among the leading causes of mortality and morbidity around the world.[13] Injury can push families into poverty and poverty increases the risk of subsequent injury, resulting in the 'injury-poverty trap.'[14–16] This issue may be particularly important for individuals with disabilities, with injuries potentially exacerbating health conditions and related financial hardship. Although researchers have investigated unintentional injuries in individuals with disabilities, the types of injuries and the definitions of disability in previous studies vary widely, and no quantitative syntheses of the existing evidence have been done. Because the activities and injury patterns of adults and children are different, we first conducted a systematic review and meta-analysis of studies of unintentional injuries in adults with disabilities. We aimed to synthesize the evidence on injury risk in adults with disabilities, to assess the quality of previous studies, and to identify the need for interventions and effective programs that could reduce the risk of unintentional injuries in adults with disabilities.

Methods

Databases and search strategy

We searched 14 databases (Medline, CINAHL, PsycINFO, ERIC, Alt Health Watch, Sport Discus, Scopus, ISI Web of Knowledge, Cochrane Library, Clinical Key, CAB Abstracts, Global Health, Health and Safety Science abstracts, and National Agriculture Safety databases). Our literature search was limited to studies published between Jan 1, 1990 and Feb 28, 2013 without language restrictions.

A search strategy was developed for each searchable database using a combination of free text or keywords to search throughout the full texts. We used search terms from two categories relating to disability (e.g., "disabilit*", "limit*", "disabl*", "deficien*", and "handicap*") and injury (e.g., "injur*", "hurt*", "trauma", "fall*"and "wound*"). Additional strategies included web-based searches for special literature (recently published abstracts or conference proceedings, or manuscripts in press), and the screening of reference lists of retrieved studies.

Definitions of disability and injury

A number of previous studies have defined disability as cognitive or physical disability. A newer definition of disability, used in more recent research, is based on the WHO International Classification of Functioning, Disability and Health (ICF).[4,17] In the ICF, disability is an umbrella term which refers to impairments of body function and structure, activity limitations, and participation restrictions. The ICF emphasizes the role of personal and environmental factors in definition of disability. We grouped the studies according to types of disability investigated: physical disability, cognitive disability, and ICF-based disability.

Injuries were defined as any injuries serious enough to require medical attention or treatment at a medical facility and that occurred in the 12 months preceding the study. Occupational injuries were defined as injuries that happened while at work, and all other injuries were defined as non-occupational injuries.[18] Definition of an injurious fall[19] was similar to the injury definition but limited to fall events. Because falls are a leading cause of unintentional injury among people with disabilities[18,20] fall-related injuries were the primary focus in some studies while other studies did not separate falls from the overall injuries. We considered overall injuries and fall-related injuries in separate analyses when the studies investigated both types of injuries.

Literature selection

All the retrieved studies were reviewed independently by two of four reviewers in two rounds of screening of the full-text copies. For inclusion, publications must meet all the following criteria: (1) published with an English language abstract; (2) original research published in a peer-reviewed journal; (3) studied injuries among individuals with pre-existing disabilities; (4) reported the exact age or age range, focused primarily on adults, age $\geqslant$18 years old; (5) reported odds ratios (OR) or relative risks (RR) and their confidence intervals (CIs); or provided data so that we could compute these statistical measurements for the disability variable(s); and (6) provided clear definitions of disability and the injury event (non-fatal unintentional injuries) that met the study criteria.

Publications that met any of the following exclusion criteria were excluded from our meta-analysis: (1) review articles, letters, or other commentary papers that did not