Prevalence and risk of violence against adults with disabilities: a systematic review and meta-analysis of observational studies

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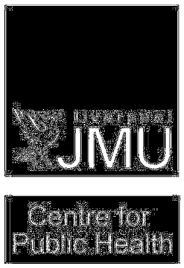

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Summary

Background: About 15% of adults worldwide have a disability. These individuals are frequently reported to be at increased risk of violence, yet quantitative syntheses of studies of this issue are scarce. We aimed to quantify violence against adults with disabilities.

Methods: In this systematic review and meta-analysis, we searched 12 electronic databases to identify primary research studies published between Jan 1, 1990, and Aug 17, 2010, reporting prevalence estimates of violence against adults (aged mainly ≥18 years) with disabilities, or their risk of violence compared with non-disabled adults. We included only studies reporting violence occurring within the 12 months before the study. We assessed studies with six core quality criteria, and pooled data for analysis.

Findings: Of 10 663 references initially identified, 26 were eligible for inclusion, with data for 21 557 individuals with disabilities. 21 studies provided data suitable for meta-analysis of prevalence of violence, and ten for meta-analysis of risks of violence. Pooled prevalence of any (physical, sexual, or intimate partner) recent violence was 24·3% (95% CI 18·3–31·0) in people with mental illnesses, 6·1% (2.5–11.1) in those with intellectual impairments, and 3·2% (2·5–4·1) in those with non-specific impairments. We identified substantial heterogeneity in most prevalence estimates (I^2>75%). We noted large uncertainty around pooled risk estimates. Pooled crude odds ratios for the risk of violence in disabled compared with non-disabled individuals were 1·50 (95% CI 1·09–2·05) for all studies combined, 1·31 (0·93–1.84) for people with non-specific impairments, 1·60 (1·05–2·45) for people with intellectual impairments, and 3·86 (0·91–16·43) for those with mental illnesses.

Interpretation: Adults with disabilities are at a higher risk of violence than are non-disabled adults, and those with mental illnesses could be particularly vulnerable. However, available studies have methodological weaknesses and gaps exist in the types of disability and violence they address. Robust studies are absent for most regions of the world, particularly low-income and middle-income countries.

Funding: WHO Department of Violence and Injury Prevention and Disability

Introduction

Roughly 15% of adults worldwide have disability.[1] This prevalence is predicted to increase because of ageing populations, the increased risk of disability in elderly people, and the worldwide rise in chronic diseases such as cancer, diabetes, cardiovascular disease, and mental illnesses.[2,3] Approaches to disability increasingly emphasise environmental and social factors, with recognition that "disability results from the interaction between persons with impairments and attitudinal and environmental barriers that hinders their full and effective participation in society on an equal basis with others".[4] Protection of the rights of individuals with disabilities, and enablement of their full participation in society has become a major global priority, underpinned by the UN Convention on the Rights of Persons with Disabilities.[4] To support action on this priority, the World Report on Disability[1] gathered evidence about the magnitude of disability worldwide, its effect on well-being, and how the barriers faced by individuals with a disability can be overcome.

About half a million adults die every year because of interpersonal violence;[3] millions more suffer non-fatal violence and the resulting health and socio-occupational consequences. People with disabilities seem to be at an increased risk of interpersonal violence[1] because of several factors: exclusion from education and employment, the need for personal assistance with daily living, reduced physical and emotional defences, communication barriers that hamper the reporting of violence, societal stigma, and discrimination.[5,6] Furthermore, rising numbers of media reports emphasise cases of physical violence, sexual abuse, and hate crime inflicted on individuals with disabilities in homes, institutions, communities and other settings.[7-10] However, whether this increase indicates a rising prevalence of violence against individuals with disabilities, more consistent reporting to authorities, or greater media coverage than previously is unclear.

Although an increasing amount of research has been done to quantify violence against individuals with disabilities, study methods and definitions of disability and violence vary widely, and no quantitative syntheses of this evidence has been done. Understanding of the magnitude of violence against affected groups is the first step in the public health approach to violence prevention.[11] This step is a basic prerequisite to understand risk and protective factors, develop and rigorously assess interventions, and implement effective programmes to prevent violence. Thus, to support the World Report on Disability, we did a systematic review and meta-analysis of studies of violence against adults with disability. We aimed to identify the characteristics and coverage of research for the prevalence and risk of violence against adults with disabilities; assess the quality of this research; and synthesise evidence on the prevalence and risk of violence against adults with disabilities to identify knowledge gaps and research priorities.

Methods

Search strategy and selection criteria

We searched Medline, PsycINFO, CINAHL, International Bibliography of the Social Sciences, ASSIA, ERIC, Sociological Abstracts, Cochrane Library, Embase, National Criminal Justice Reference System Abstracts Database, Social Care Online, and Social Sciences Citation Index to identify primary research studies published between Jan 1, 1990, and Aug 17, 2010, that reported prevalence estimates of violence against adults (mainly aged ≥18 years) with disabilities, or the risk of violence in disabled adults compared with non-disabled adults. A search strategy was developed and adapted for each database with a combination of free text and controlled vocabulary terms (webappendix). We compiled

search terms from two categories relating to disability (eg, "physical*", "intellectual*", "learning", "disabilit*", "disabl*", "handicap*") and violence (eg, "violence", "aggression", "neglect*", "maltreat*"). We placed no language restrictions on the searches or search results. Additional strategies included hand searches of journals not indexed in the electronic sources, web-based searches, and screening of reference lists of retrieved studies for further potentially relevant articles. Two reviewers from a team of six (KH, LJ, SW, LE, EMC, GB) retrieved and independently screened full-text copies of some articles. For inclusion, studies had to meet the following criteria: (1) be a cross-sectional, case control, or cohort (including longitudinal) study; (2) measure violence against adults with disabilities; (3) report specific disability types (eg, vision loss), illnesses (eg, psychiatric illnesses), needs (eg, specialised equipment use), or activity limitations; (4) report definitions and measurement for violent outcomes; (5) report either prevalence or odds ratios, or raw data to enable their calculation; and (6) report violence occurring within the 12 months before the study. This last criterion aimed to reduce the likelihood of inclusion of individuals who had become disabled after experiencing violence. However, a focus on recent prevalence will result in lower prevalence estimates than if lifetime prevalence was used.

We excluded studies if they were based on selected populations affected by violence (eg, homeless or prison populations or individuals with a primary diagnosis of a substance use disorder), focused mainly on individuals younger than 18 years, had a response rate of less than 50%, or if no response rate was reported. For the review on risk of violence, we excluded studies that used other disability types as controls or historical populations. When findings from iterations of the same survey were reported, we included data only from the most recent survey.

Quality assessment and data extraction

All included studies were quality assessed independently by two reviewers using six core quality criteria based on the standard principles of quality assessment (appendix).[12] Two additional criteria were used to assess studies that provided prevalence estimates, and four were used to assess those that provided estimates of risks of violence. Maximum quality scores were eight for prevalence and ten for the risk of violence. For each study, one reviewer extracted data for the study setting, participants (number, mean age, sex, disability type), outcome measurement (violence type and timeframe), and the comparison group for studies measuring the risk of violence; a second reviewer checked for accuracy (appendix).

Studies included individuals with several disability types with various definitions. We grouped individuals according to type of disability: non-specific impairments, intellectual impairments, disability associated mental illnesses, physical impairments, and sensory impairments (panel). Our key outcomes of interest were physical violence, sexual violence, intimate partner violence, and any violence. Because physical, sexual, and any violence might include acts inflicted but intimate partners, some overlap will have occurred (panel). Studies focusing specifically on violence perpetrated by caregivers were analysed separately.

Statistical analysis

We calculated prevalence rates by extracting raw proportions with 95% CIs calculated with the Wilson method.[39] We calculated pooled proportions with a random effects model (DerSimonian and Laird method[40]) and stabilised the variances of the raw proportions before pooling of data.[41] We calculated pooled odds ratios (ORs) with 95% CIs for the risk of violence in people with disabilities compared with non-disabled controls with a random effects model.[40] We did analyses with StatsDirect (version 2.7.8). We used the I^2 statistic to

estimate heterogeneity in pooled studies. We used the Egger and Begg-Mazumdar tests to estimate risk of bias; however, we noted no evidence of publication bias within included studies. Forest plots were generated to show either prevalence proportions or ORs with corresponding CIs for each study and the overall random effects pooled estimate. We further explored potential sources of heterogeneity by visual inspection of the data and forest plots, and through meta-regression analysis. We did univariate analyses with STATA (version 10.0) to test the individual association of several covariates with pooled estimates: geographical region (USA vs rest of the world); violence outcome (any or physical violence vs intimate partner violence); sex (mixed vs female; male vs female); sample origin (clinical vs community); sample size (n<200 vs n≥200 for prevalence studies; n<1000 vs n≥1000 for risk studies); and quality assessment score. Because we noted only a few covariates to be individually significant, we did not develop a multivariate meta-regression model.

Role of funding source

The funding source helped to develop the protocol for the analysis, provided advice about the undertaking of the analysis, and contributed to writing of the analysis. All authors had full access to all the data in the study and the corresponding author had final responsibility for the decision to submit the publication.

Results

Of 10 663 abstracts, we identified 26 studies[13-38] that were eligible for inclusion (figure 1, appendix). 22 studies used a cross-sectional design, but four[20,31,34,37] were cohort studies. 14 studies provided data for the prevalence of violence in a sample of individuals with disabilities only, whereas the remaining 12 measured violence in individuals with and without disabilities. Across 24 studies, sample sizes ranged from 38 to 9052, including 21 557 individuals with disabilities. The two remaining studies[16,19] reported population rates without providing the total number of individuals with disability included as participants. 19 studies[15,16,18-20,23-30,32-37] reported findings for mixed sex samples, whereas seven[13,14,17,21,22,31,38] included women only. Across mixed sex studies, in which numbers of men and women were reported separately,[24,27-29,32,35,36] weighted mean of 56·8% of individuals were male. Although most studies used broad age categories, generally ranging from 18 to 64 years, three[20,37,34] focused on young adults (aged 21 years,[34,37] 23 years,[20] and 24 years[37]) and two on older adults (mean age 79.4 years[25] and 81.6 years;[26] appendix).

The panel summarises the characteristics of included studies by type of disability and type of violence reported. Most studies focused on mental illnesses, with far fewer on other disability types (panel). 14 studies of individuals with these illnesses had been done in clinical or community psychiatric service settings (appendix). One study[38] of people with physical disabilities also used a clinical setting. Conversely, seven studies of individuals with non-specific impairments were done in household settings (appendix). Geographically, the WHO region of the Americas was heavily represented, with 15[14,17-21,23,27,28,31-33,35,37] of the 26 studies done in the USA and one in Canada.[13] Four studies had been done in the WHO western Pacific region (two in Taiwan,[16,30] one each in Australia[24] and New Zealand[34]) and five in the European region (UK[15,25,26,29,36]). Only one study had been done in the WHO Africa region (South Africa[22]), and none were done in the WHO regions of southeast Asia or eastern Mediterranean.

Only one[35] of the 24 prevalence studies and none of the 12 risk of violence studies achieved maximum quality scores. All but six studies[23,27,38,31,33,36] used random or whole-population samples, and 11[13-17,19,22,23,33,36,37] had some form of bias in their selection process. Two

studies[23,25] had small sample sizes (n<100) and only six[16,22,26,30,35,36] reported the characteristics of individuals who refused to participate. 24 studies met the criteria for outcome measures, but two[25,26] identified violence through the perpetrator (caregiver) self-reports. Eight studies did not use specific screening or clinical diagnostic methods to diagnose disability: five[13-15,17,19] used self-reported disability; and one each used case records of sexual assault victims,[16] use of in-home supportive services,[18] and self-reported receipt of social security for disability.[21]

Of the 24 studies that reported prevalence estimates, only two[26,35] reported CIs, and four[14,15,17,23] did not describe participants adequately. Only six[14,15,17,20,29,34] of 12 studies reporting risk of violence controlled for confounding factors in their analyses and seven[14,15,17,20,34,35,37] reported ORs with corresponding CIs. All 12 studies used a suitable control group, but in six[14-17,19,35] characteristics of the individuals with and without disability were not adequately described.

21 studies,[13-15,17,20-24,27-38] including 20 197 individuals, reported prevalence of recent violence (within 12 months before the study) in adults with disabilities (figure 2). Three further studies provided prevalence estimates of violence perpetrated by caregivers towards people with dementia[25,26] and those receiving home-support services;[18] we examined findings from these studies separately. We deemed pooling of prevalence estimates across the 21 studies as unsuitable because of the high level of heterogeneity between the prevalence estimates (I^2 99%); therefore, we pooled prevalence rates separately according to whether the type of disability was categorised as a non-specific impairment, a mental illness or an intellectual impairment (table 1). The number of studies was insufficient across other disability categories to enable pooling.

Six[13-15,17,20,21] studies provided prevalence for any violence in people with non-specific impairments, and included 14 275 individuals and 435 cases of violence. Prevalence ranged from 2·0% to 21·3%. We indentified the study with the highest prevalence as an outlier and excluded it from the meta-analysis because it used an uncommon measure of disability.[21] The pooled prevalence was 3·2% (95% CI 2·5–4·1; table 1). This estimate was associated with a moderate amount of heterogeneity (table 1). A pooled prevalence of 24·3% (18·3–31·0) was calculated for 14 studies[14,22-24,27-36] that included 5488 individuals with mental illnesses; however, it was associated with considerable heterogeneity (table 1). For three studies[17,20,37] that included 772 individuals with intellectual impairments, the pooled prevalence proportion was 6·1% (2·5–11·1) and was associated with moderate heterogeneity between estimates (table 1). For types of disabilities for which we could not calculate pooled prevalence, prevalence rates were 0·0% (95% CI 0·0–17.6) and 9·8% (7·5–12·7) for two studies[20,38] that included 529 individuals with physical impairments, and 2.4% (0·4–12·5) for one study[20] that included 41 individuals with sensory impairments.

We further examined pooled prevalence rates according to the type of violence for individuals with non-specific impairments, mental illnesses and intellectual impairments. For physical violence, three studies[15,17,20] that included 10 853 individuals with non-specific impairments had a pooled prevalence of 2·9% (1·9–4·1) with moderate heterogeneity (table 1). Pooling of prevalence estimates for 11 studies[14,24,27-30,32-36] that included 4914 individuals with mental illnesses gave a pooled prevalence of 21·4% (15·0–28·6), with high heterogeneity (table 1). We calculated a pooled prevalence of 9·9% (2·2–22·3) from three studies,[17,20,37] including 772 individuals with intellectual disabilities (table 1). For sexual violence, we recorded a pooled prevalence estimate of 5·5% (1·3–12·2) from four

studies[14,27,34,35] that included 2230 individuals with mental illnesses, although tests of heterogeneity again showed inconsistency within these estimates (table 1). We calculated a pooled prevalence for intimate partner violence of 37·8% (17·9–60·2) for three studies[22,23,31] that included 574 individuals with mental illnesses (table 1).

Three studies not included in the pooled prevalence estimates reported prevalence of violence perpetrated by caregivers towards predominantly older adults (mean age 79.4 years,[25] mean age 81.6 years,[26] mostly >65 years;[18] appendix). Two UK studies[25,26] reported the prevalence of physical violence by caregivers towards older adults with dementia. Prevalence rates were 10·5% (4·2–24·1) and 3·6% (1·9–7·0). One US study[18] of caregiver violence towards recipients of in-home supportive services reported a prevalence of 1·9% (1·3–2·9) for physical violence and 2·1% (1·4–3·1) for sexual violence (defined as unwanted sexual advances).

Ten studies provided data that enabled the calculation of risk estimates for recent violence in people with disabilities compared with general population controls[13-15,17,20,21,33-35,37] (figure 3). One study[35] was identified as an outlier; removal of this study from the meta-analysis resulted in a pooled crude OR of 1·50 (95% CI 1·09–2·05). However, we noted substantial heterogeneity between the risk estimates (I^2 85·7, 95% CI 75·0–90·6). We identified weak evidence of publication bias with Egger's test (p=0.04). Six studies[13-15,17,20,21] provided risk estimates for recent violence for 14 275 individuals with non-specific impairments (figure 3). The pooled crude OR was 1·31 (95% CI 0·93–1·84). These risk estimates were associated with high levels of heterogeneity (table 2). Substantial heterogeneity was shown between risk estimates for recent violence in three studies[33-35] involving 1588 individuals with mental illnesses (table 2). The pooled crude OR was 3·86 (0·91–16·43). Risk estimates for recent violence for 772 individuals with intellectual impairments were provided by three studies (table 2);[17,20,37] however, the number of studies was insufficient for the calculation of the pooled risk estimates for the other types of disabilities.

Visual inspection of the data did not identify any clear sources of potential heterogeneity in the pooled prevalence or risk estimates generated for any types of disability or violence. In a univariate meta-regression analysis, including the 21 prevalence studies, studies of individuals with mental illnesses showed significantly higher prevalence estimates (compared with those with non-specific impairments β 0·62, SE[β] 0·15; p=0·001) as did studies that recruited participants from clinical settings (compared with the general population; 0·46, 0·16; p=0·01). No other covariates were significantly associated with prevalence of violence (data not shown). We explored possible differences between the estimates of risk of violence according to various study characteristics (table 2). With inclusion of all risk studies in a meta-regression analysis, study characteristics that were individually significant were type of disability (mental illnesses vs other types of disability; β 0·54, SE[β] 0·21; p=0·03) and sample size (n<1000 vs n≥1000; β –0·49, SE[β] 0·21; p=0·04). After exclusion of the outlying study[35] from the meta-regression analysis, only sample size remained significant (data not shown).

Two studies[16,19] reporting population rates of violence in people with disabilities compared with non-disabled populations did not provide data in a format that enabled the calculation of prevalence rates or odds ratios. A study in Taiwan[16] showed higher rates of reported sexual assault in individuals with any type of disability than in the general population (0·6 per 1000 population vs 0·2 per 1000 population), with rates highest for those with intellectual impairments (3·3 per 1000; appendix). In a US study,[19] unadjusted rates of violent crime

against individuals with any type of disability were 18·1 per 1000 population (rising to 32·4 per 1000 when adjusted for age for comparison with the non-disabled population), compared with 21·3 per 1000 in non-disabled individuals. For sexual violence, unadjusted rates were 1·2 per 1000 population in individuals with any type of disability (rising to 2·4 per 1000 when adjusted for age), compared with 0·9 per 1000 in non-disabled individuals. Unadjusted rates were provided separately by specific disability categories, and were highest in those with intellectual impairments (appendix).

Discussion

Findings from this systematic review and meta-analysis show that violence is a major problem in adults with disabilities, who are at an increased risk of violence compared with non-disabled adults. Prevalence estimates of any (physical, sexual, or intimate partner) recent violence were highest in individuals with mental illnesses and lowest in those with non-specific impairments. The small number of studies and wide variation in sample and study characteristics mean a great deal of uncertainty exists around the pooled risk estimates calculated.

Adults with disabilities are frequently reported to be at increased risk of violence, yet quantitative syntheses of studies that have examined the question are scarce.[42] Important gaps exist in the types of disability and violence addressed and the geographical coverage of research, in addition to weaknesses in study quality and wide variation in the prevalence and risk of violence reported for different definitions of disability. Most studies have focused on people with mental illnesses, while other types of disability have been neglected. Research is dominated by high-income countries, with most studies done in the USA and the UK. Furthermore, too few studies use designs that allow the identification of whether disability or violence occurred first, and many fail to include comparison groups, which are needed to identify risk. Overall, the quality of studies in this review-which included only the best studies available- was moderate.

With a high prevalence of recent violence and risk of violence, individuals with mental illnesses might be at greatest risk. Interpersonal difficulties are inherent to many mental illnesses, which increases the vulnerability of people with these illnesses.[43] However, the methods used to study individuals with specific disability types might exaggerate differences in violence. All studies of individuals with non-specific impairments and non-clinical samples recruited largely through household surveys that used self-reports to identify disability. These studies might exclude individuals with high-severity disabilities who have communication difficulties (eg, because of severe intellectual impairment), are dependent on an abuser and hence are unlikely to disclose violence, or live in institutional settings. Conversely, most studies of individuals with mental illnesses involved those who were receiving inpatient or outpatient treatment for diagnosed psychiatric illnesses, with many focusing on severe mental illnesses such as schizophrenia. In particular, a high risk estimate emerged from a study comparing individuals with severe mental illnesses recruited in psychiatric settings with individuals in the general population.[35]

For pooled risk estimates, only the association between intellectual impairment and risk of violence was significant. Furthermore, individuals with intellectual impairments had the highest population rates of violence compared with both the general population and individuals with other disability types in two large studies[16,19] that could not be included in meta-analyses. We identified no studies of violence against individuals with intellectual impairments in institutional settings, despite such individuals being regarded as especially

vulnerable to violence.[1] The scarcity of studies of violence against individuals with physical or sensory impairments prevented analyses of pooled prevalence and ORs for these disability types. Only studies of mental illnesses were sufficient in numbers to estimate pooled prevalence of sexual violence or intimate partner violence. This bias could result from increased access to, and reduced communication barriers with, patients with mental illnesses, and the substantial research into links between abuse in childhood and later mental illnesses and into severe mental illnesses as risk factors for violence perpetration.[44] Thus, although our review suggests increased prevalence of violence against those with disabilities relating to mental illnesses, the strength and basis of this finding needs more high-quality studies of violence in individuals with physical, sensory and intellectual disabilities.

Our study had several limitations. First, our estimates of the risk of violence in individuals with non-specific impairments probably underestimate the actual risk of violence against individuals with disability. Disability disproportionately affects older individuals, but violence is typically concentrated in young age groups. In two large studies[15,19] based on crime victimisation surveys, odds of violence increased in disabled individuals after adjustment for age. However, insufficient data were reported in included studies to allow for the calculation of adjusted ORs by age or other factors. Furthermore, our review focused on adults, but the age ranges in four studies[13,15,19,30] were from 12 years, 15 years, and 16 years (appendix). Although data did not allow these individuals to be excluded, in all studies adults accounted for most participants and the inclusion of a small group of children is unlikely to have affected findings.

Second, we excluded many studies on the basis of mainly inadequate sampling methods (eg, self-selected samples), poor compliance, and the use of periods of violence exposure greater than 12 months. Notably, none of the studies of individuals with sensory impairments identified in the searches met our inclusion criteria. Even in included studies, the ability to compare findings and interpret the magnitude of pooled prevalence and risk estimates was severely hampered by an absence of methodological consistency between studies, including variations in samples used, definitions of disability and violence, and methods of data collection.

Last, we limited our review to violence occurring within the past 12 months to include only studies likely to have shown violence against individuals with existing disabilities. However, the cross-sectional designs used by most studies precluded exploration of whether disabilities were an outcome of, rather than a risk factor for, violence.[45] Thus, even within this timeframe, some disabilities could have been caused or exacerbated by violence; this factor might particularly affect studies of individuals with mental illnesses, which make up a large proportion of studies included in the review. Nevertheless, our approach had probably resulted in conservative estimates. Many more will have suffered violence more than 12 months previously.

This study addresses the first step of the public health approach to the prevention of violence; it defines the nature of the problem (violence against adults with disabilities) by attempting to describe its prevalence and risk. About 3% if individuals with non-specific impairments will have experienced violence within the past 12 months, rising to almost a quarter of people with mental illnesses. Lifetime exposure to violence, and the proportions of individuals with disability who are directly threatened with violence or otherwise live in fear of becoming a victim, are likely to be substantially higher than our estimate

Studies included in this review reported on samples from only six high-income countries (Australia, Canada, New Zealand, Taiwan, UK and USA) and one middle-income country (South Africa). Therefore, fundamental prevalence and risk data are absent for most regions of the world, particularly low-income and middle-income countries (where 80% of the world's disabled population live), which often have higher rates of violence than developed countries, and where services for individuals with disability can be inadequate.[1] However, small-scale studies[46,47] from low-income and middle-income countries emphasise the vulnerability of people with disabilities to violence, particularly women, and although such reports did not meet our inclusion criteria, they do indicate the potential value of further rigorous data collection on violence against people with disabilities in low-income and middle-income countries.

Our review shows that the crucial precursor to worldwide action being taken to address violence against people with disability is largely absent. Even in high-income countries, robust evidence for the prevalence and risk of violence against individuals with disability is scarce, and is hampered by methodological weaknesses and poor measurement of disability and violence. To begin to address these gaps in the evidence, high quality epidemiological research is needed that focuses specifically on low-income and middle-income countries and on all disability types, and that uses current standardised measured of disability and violence.

Contributors

KH, MAB, LJ, SW, CM and TS designed the study; and KH, MAB, CM and TS oversaw its implementation. KH, LJ, and SW coordinated the review activities including searches, study selection, data extraction, and quality assessment. KH, LJ, SW, GB, LE and EMC assisted with the initial inclusion and exclusion of abstracts. LJ planned and did the meta-analyses and meta-regression. KH, MAB, LJ, SW, CM, TS and AO wrote the report. All authors reviewed the study findings and read and approved the final version before submission.

Conflicts of interest

We declare that we have no conflicts of interest.

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Panel 1: Search strategy and selection criteria

We searched 12 electronic databases (see Figure 1) to identify primary research studies published between January 1990 and August 2010 that reported prevalence estimates of violence against adults (primarily aged 18 years and older) with disabilities, or the risk of violence in disabled adults compared with non-disabled adults. A search strategy was developed and adapted for each database using a combination of free text and controlled vocabulary terms (see webappendix 1). Search terms were drawn from two categories relating to disability (e.g. physical*, intellectual*, learning, disabilit*, disabl*, handicap*) and violence (e.g. violence, aggression, neglect*, maltreat*). No language restrictions were placed on the searches or search results. Additional strategies included hand-searches of journals that were not indexed in the electronic sources, web-based searches, and screening of reference lists of retrieved studies for further potentially relevant articles. From a total of 10,663 references identified through these methods, full text copies of 846 articles were retrieved and each was independently screened by two reviewers.

Panel 2. Key participant characteristics and outcomes measures of interest

	Number of studies	Number of participants†	References
Type of disability and definition*			
Non-specific impairments: physical, mental, emotional or health problems that limit activities; use of devices such as a cane or wheelchair; self-reported disability; disabling serious injury; receipt of supplementary security income or financial assistance for a disability; recipient of home supportive services assessed as disabled; multiple disabilities; and combined categories of specific disability types.	9	15,333	16,19,24,28-30,34,35,39
Mental health conditions: schizophrenia and schizoaffective disorders; bipolar disorder; major depression; alcohol- or drug-induced psychosis‡; psychosis; major affective disorder; other psychotic disorder; mania; delusions; personality disorder; anxiety (including PTSD); somatoform disorders; and dementia.	17	4,945	17-23,25-28,32,33,37,38,40,41
Intellectual impairments: cognitive impairments (trouble learning, remembering or concentrating); mental retardation; receiving special education for specific learning disabilities; and intellectual disability.	5	772	28,29,34-36
Physical impairments: physical disability limiting one or more major life activities; and cerebral palsy.	3	529	31,34,35
Sensory impairments: hearing loss; and visual impairment.	3	41	28,34,35
Type of violence and definition*			
Physical violence: physical assault (ranging from grabbing and shoving to threats with a gun); victim of violent crime (physical or sexual); and combined categories of physical or sexual aggression.	17	17,456	19,20,23-27,29,31,33-38,40,41
Sexual violence: including forced or threatened sexual activity; rape/sexual assault; and reported sexual assault.	7	4,808	19,23,28,29,34,38,40
Intimate partner violence: violence (physical or sexual) perpetrated by an intimate or dating partner.	5	11,783	16-18,32,39
Any violence: all of the above categories of violence combined.	23	20,204	16-20,23-29,31-41
Violence by a caregiver: physical abuse or unwanted sexual advances by a caregiver.	3	1,353	21,22,30

*Studies included a range of disability and violence types using a variety of definitions and were therefore grouped according to the major categories listed. Studies may explore more than one disability or violence type. †Not including number of participants from studies by Lin and colleagues[28] or Rand and colleagues.[34] ‡Studies that predominantly included individuals with a primary diagnosis of a substance use disorder were excluded; where studies included individuals with a primary or secondary diagnosis of a substance use disorder within a larger sample of individuals with mental health conditions, data on these individuals were excluded from the analyses where possible.

Table 1. Random effects pooled prevalence estimates (95% CIs) for recent violence by type of disability and type of violence

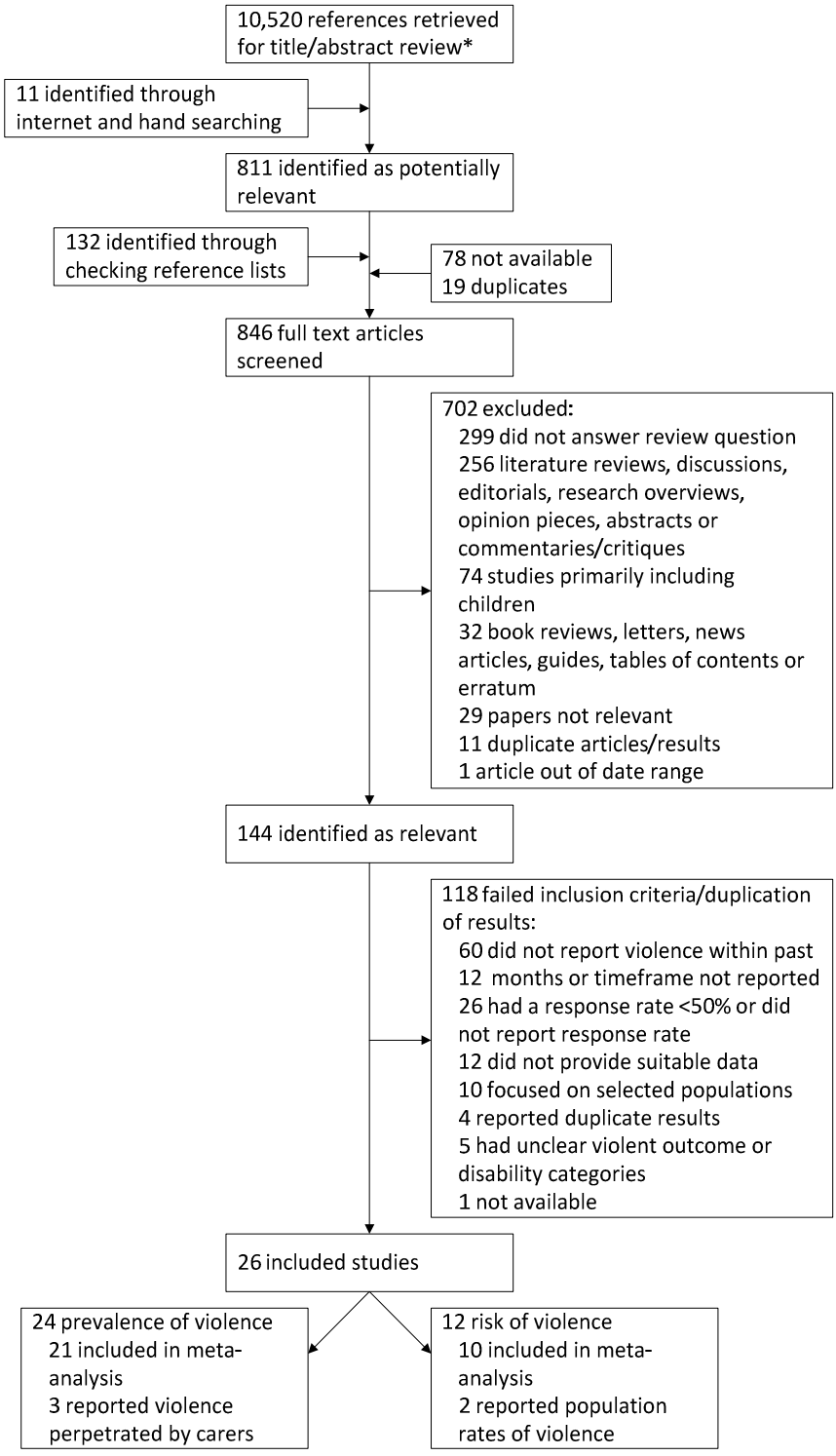
Sample	Any violence			Physical violence			Sexual violence			Intimate partner violence		
	Number of studies	Prevalence (95% CI)	Heterogeneity I^2 (95% CI)	Number of studies	Prevalence (95% CI)	Heterogeneity I^2 (95% CI)	Number of studies	Prevalence (95% CI)	Heterogeneity I^2 (95% CI)	Number of studies	Prevalence (95% CI)	Heterogeneity I^2 (95% CI)
Non-specific impairments	5	3·2% (2·5%-4·1%)	79·8 (45·9-89·1)	3	2·9% (1·9%-4·1%)	79·4 (0·0-91·6)	2	Insufficient sample	Insufficient sample	1	Insufficient sample	Insufficient sample
Mental health condition	14	24·3% (18·3%-31·0%)	96·6 (95·8-97·2)	11	21·4% (15·0%-28·6%)	97·0 (96·2-97·5)	4	5·5% (1·3%-12·2%)	96·6 (94·6-97·7)	3	37·8% (17·9%-60·2%)	95·4 (90·6-97·2)
Intellectual impairment	3	6·1% (2·5%-11·1%)	73·1 (0·0-89·9)	3	9·9% (2·2%-22·3%)	92·8 (80·9-96·0)	0	Insufficient sample	Insufficient sample	0	Insufficient sample	Insufficient sample
Other types of disability	Insufficient sample (physical impairment, n=2; sensory impairment, n=1)			Insufficient sample (physical impairment, n=2; sensory impairment, n=1)				Insufficient sample	Insufficient sample		Insufficient sample	Insufficient sample

Interpretation of heterogeneity: I^2 = 30%-60%: moderate heterogeneity; I^2 = 50% to 90%: substantial heterogeneity; I^2 = 75% to 100%: considerable heterogeneity.

Table 2. Random effects pooled odds ratios (95% CIs) for risk of recent violence by possible sources of heterogeneity

Sample	Any violence		
	Number of studies	Odds ratio (95% CI)	Heterogeneity I^2 (95% CI)
Type of disability			
Non-specific impairments	6	1·31 (0·93-1·84)	83·5 (64·1-90·3)
Mental health conditions	3*	3·86 (0·91-16·43)	98·7 (98·1-99·0)
Intellectual impairment	3	1·60 (1·05-2·45)	0·0 (0·0-72·9)
Type of violence			
Physical violence	7	1·35 (0·91-2·00)	86·1 (71·8-91·5)
Intimate partner violence	3	1·78 (1·42-2·22)	0·0 (0·0-72·9)
Gender			
Female	4	1·39 (0·98-1·96)	74·2 (1·7-87·7)
Mixed	5	1·69 (0·93-3·08)	90·5 (80·4-94·3)
Sample size			
<1,000	6	2·03 (1·66-2·47)	0·0 (0·0-61·0)
≥1,000	4	1·04 (0·74-1·46)	82·4 (34·5-91·4)
Quality assessment score†			
<3	4	1·88 (1·52-2·33)	6·0 (0·0-69·8)
≥3	6	1·21 (0·82-1·78)	83·8 (61·5-90·8)

*Teplin and colleagues[40] included in analysis. †Score on four quality criteria used to assess risk studies.



*Based on searches of: Medline (1,568); PsycINFO (3,173); CINAHL (1,679); International Bibliography of the Social Sciences (897); ASSIA (465); ERIC (1,051); Sociological Abstracts (376); Cochrane Library (128); Embase (4,400); National Criminal Justice Reference System Abstracts Database (1,178); Social Care Online (257); Social Sciences Citation Index (786); and following removal of duplicates

Figure 1. Study selection flowchart

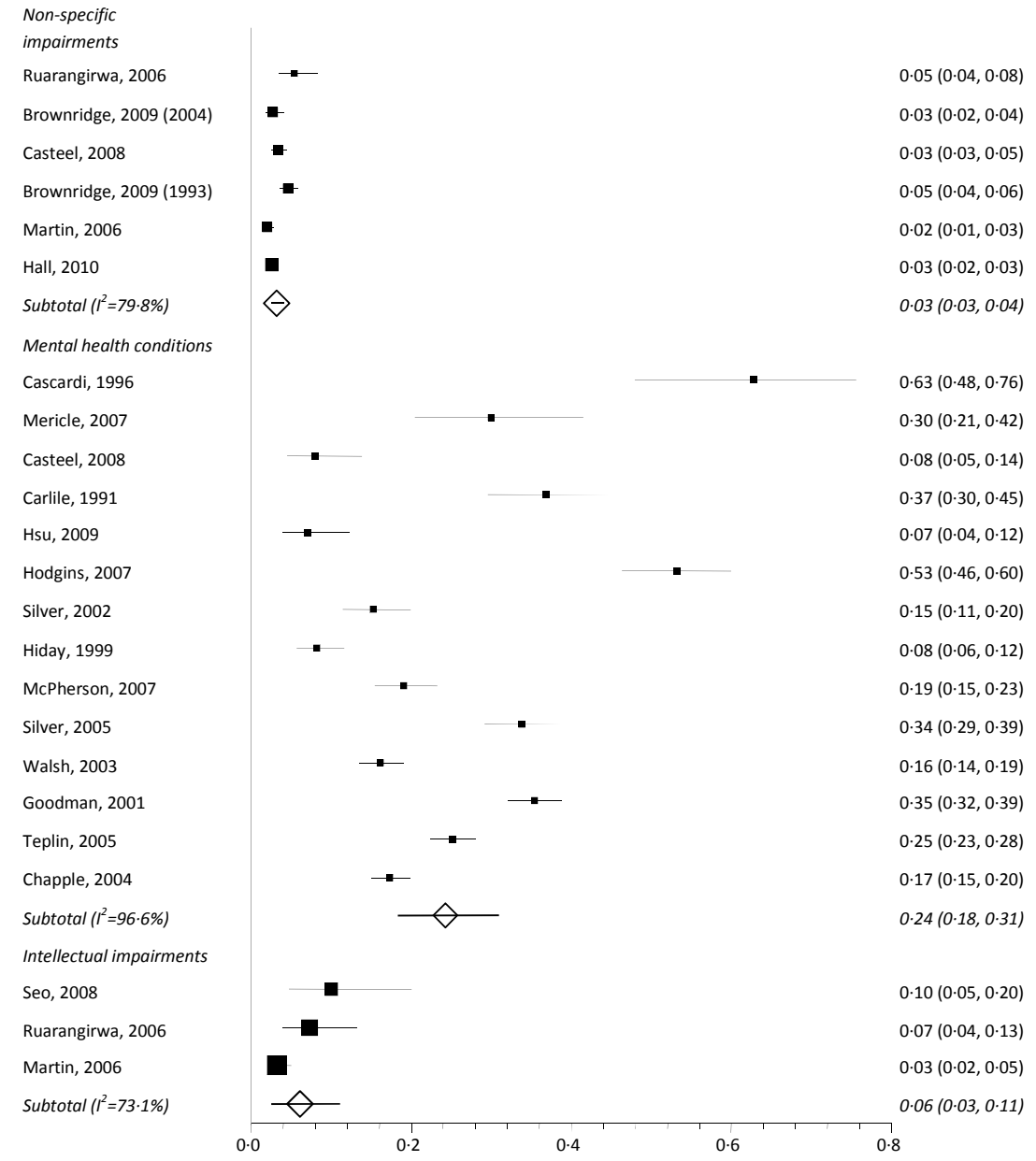


Figure 2. Prevalence of recent violence among people with disabilities according to type of disability

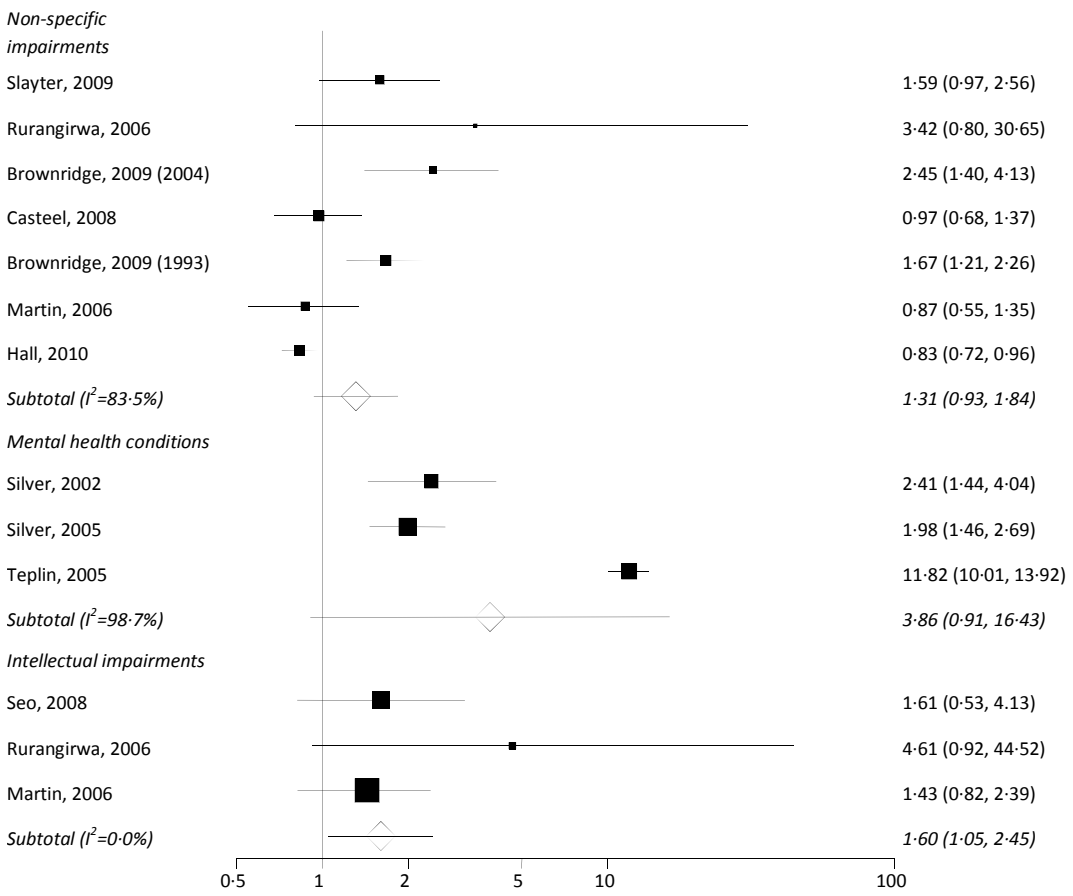


Figure 3. Risk estimates of recent violence among people with disabilities according to type of disability

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Webtable 1. Quality assessment

		All studies						Prevalence only		Risk only				Quality score	
Study	Study design	Sample*	Bias†	Sample size‡	Violence measure§	Disability measure**	Refusers described††	Prevalence CIs‡‡	Subjects described§§§	Confounders controlled***	Odds ratio CIs†††	Suitable control‡‡‡	Subjects described§§§	Prevalence****	Risk††††
Prevalence and risk															
Brownridge[16]	CS	1	0	1	1	0	0	0	1	0	0	1	1	4	5
Casteel[19]	CS	1	0	1	1	0	0	0	0	1	1	1	0	3	6
Hall[24]	CS	1	0	1	1	0	0	0	0	1	1	1	0	3	6
Martin[29]	CS	1	0	1	1	0	0	0	0	1	1	1	0	3	6
Rurangirwa[35]	C	1	1	1	1	1	0	0	1	1	1	1	1	6	9
Seo[36]	C	1	0	1	1	1	0	0	1	1	1	1	1	5	8
Silver[37]	CS	0	0	1	1	1	0	0	1	0	0	1	1	4	5
Silver[38]	C	1	1	1	1	1	0	0	1	1	1	1	1	6	9
Slayter[39]	CS	1	1	1	1	0	0	0	1	0	0	1	1	5	6
Teplin[40]	CS	1	1	1	1	1	1	1	1	0	1	1	0	8	8
Prevalence only															
Carlile[17]	CS	1	0	1	1	1	1	0	1					6	
Cascardi[18]	CS	0	0	0	1	1	0	0	0					2	
Chapple[20]	CS	1	1	1	1	1	0	0	1					6	
Compton[21]	CS	1	1	0	0	1	0	0	1					4	
Cooper[22]	CS	1	1	1	0	1	1	1	1					7	
Goodman[23]	CS	0	1	1	1	1	0	0	1					5	
Hiday[25]	CS	1	1	1	1	1	0	0	1					6	
Hodgins[26]	CS	1	1	1	1	1	0	0	1					6	
Hsu[27]	CS	1	1	1	1	1	1	0	1					7	
Matthias[30]	CS	1	1	1	1	0	0	0	1					5	

McFarlane[31]	CS	0	1	1	1	1	0	0	1					5		
McPherson[32]	C	0	1	1	1	1	0	0	1					5		
Mericle[33]	CS	1	1	1	1	1	0	0	1					6		
Walsh[41]	CS	0	0	1	1	1	1	0	1					5		
Risk only																
Lin[28]	CS	1	0	1	1	0	1			0	0	1	0		5	
Rand[34]	CS	1	0	1	1	0	0			0	0	1	0		4	

CS=cross-sectional study; C=cohort study. 1= study met the criteria. 0= study did not meet the criteria. *Random sample or whole population. †Unbiased sample. ‡n ≥ 100. §Measured through official records or self-reported using appropriate questions. **Clinically diagnosed or screened. ††Descriptive data provided on individuals refusing to participate. ‡‡Confidence intervals (CIs) for prevalence reported. §§Study subject demographics provided. ***Confounding variables controlled for in analysis. †††Confidence intervals for odds ratios reported. ‡‡‡Appropriate control group used; §§§Both case and control subject demographics provided; ****Maximum score = 8; ††††Maximum score = 10.

Webtable 2. Characteristics of included studies

Author Year Country	Study setting, target sample	Inclusion criteria	Mean age	Violence definition *Time frame*	Disability type and gender*	N	Outcomes		Comparison group
							Prevalence (95%CI) %	OR (95%CI)	
Brownridge[16] 2009 *Canada*	Households, women living married or common law	Age 18+	NR	IPV (physical/sexual) *Past 12 months* (1993)	**Non-specific** (AL) ♀	**1268**	**4·6 (3·6–5·9)**	**1·7 (1·2–2·3)**	Individuals from same sample with no disability
		Age 15+		IPV (physical/sexual) *Past 12 months* (2004)	**Non-specific** (AL) ♀	**748**	**2·7 (1·7–4·1)**	**2·5 (1·4–4·1)**	
Carlile[17] 1991 *South Africa*	Clinical, female psychiatric inpatients and outpatients	Married women consecutively admitted	40♀	IPV (physical) *At least once a year*	**Mental** ♀	**152**	**36·8 (29·6–44·7)**	NC	NA
Cascardi[18] 1996 *USA*	Clinical, psychiatric inpatients	Age 18+; no intellectual impairments; >3 months contact with family/ partner (past 12 months)	32.7	IPV (physical) *Past 12 months*	**Mental** ♂♀	**43**	**62·8 (47·9–75·6)**	NC	NA
				Physical family violence *Past 12 months*	Mental ♂♀	48	45·8 (32·6–59·7)		
Casteel[19] 2008 *USA*	Households, women in the general population	Age 18+	NR	Physical violence† *Past 12 months*	**Non-specific** (any disability) ♀	**1265**	**3·4 (2·5–4·5)**	**1·0 (0·7–1·4)**	Individuals from same sample with no disability
					Mental ♀	**137**	**8·0 (4·5–13·8)**		
					Non-specific (AL injury) ♀	449	4·0 (2·6–6·2)		
				Sexual violence *Past 12 months*	**Non-specific** (any disability) ♀	**1265**	**0·8 (0·4–1·4)**	1·5 (0·6–3·1)	
					Mental ♀	**137**	**0·7 (0·1–4·0)**		
					Non-specific (AL injury) ♀	449	1·3 (0·6–2·9)		
Chapple[20] 2004 *Australia*	Clinical and community services, psychiatric in/outpatients	Age 18-64	NR	Physical violence (inc. sexual) *Past 12 months*	**Mental** ♀	**387**	**16·3 (12·9–20·3)**	NC	NA
					Mental ♂	**575**	**17·9 (15·0–21·3)**		
Compton[21] 1997 *UK*	Clinical, elderly psychiatric outpatients	Age 65+, live at home, identifiable caregiver, referred to services over 2 year period	79.4	Caregiver physical abuse *Current*	Mental (dementia) ♂♀	38	10·5 (4·2–24·1)	NC	NA
				Caregiver verbal abuse *Current*	Mental (dementia) ♂♀	38	34·2 (21·2–50·1)		

Author Year Country	Study setting, target sample	Inclusion criteria	Mean age	Violence definition *Time frame*	Disability type and gender*	N	Outcomes		Comparison group
							Prevalence % (95%CI)	OR (95%CI)	
Cooper[22] 2009 UK	Community psychiatric services, psychiatric outpatients	Living at home, referred to services	81·6	Caregiver physical abuse *Past 3 months*	Mental (dementia) ♂♀	220	3·6 (1·8–7·0)	NC	NA
				Caregiver emotional abuse *Past 3 months*	Mental (dementia) ♂♀	220	32·7 (26·9–39·2)	NC	
Goodman[23] 2001 *USA*	Clinical and community services, psychiatric inpatients /outpatients	Age 18-60	43·1♀ 39·7♂	Physical violence (inc. sexual) *Past 12 months*	**Mental** ♀ **Mental** ♂	**317** **458**	**33·4 (28·5–38·8)** **36·7 (32·4–41·2)**	NC	NA
				Physical violence *Past 12 months*	Mental ♀ Mental ♂	316 457	25·6 (21·1–30·7) 34·1 (29·9–38·6)		
				Sexual violence *Past 12 months*	**Mental** ♀ **Mental** ♂	**315** **461**	**20·3 (16·2–25·1)** **7·6 (5·5–10·4)**		
Hall[24] 2010 *UK*	Households, general population	Age 16+	NR	Physical violence (violent crime) *Past 12 months*	**Unspecified** (AL) ♂♀	**9052**	**2·6 (2·3–2·9)**	**0·8 (0·7–1·0)**	Individuals from same sample with no disability
Hiday[25] 1999 *USA*	Clinical, involuntarily admitted psychiatric inpatients	Age 18+; ill for >1 year; hospitalisation in last 2 years, court-ordered to outpatient treatment after discharge	41·3	Physical violence (violent crime) *Past 4 months*	**Mental** ♀ **Mental** ♂	**153** **178**	**7·2 (4·1–12·4)** **9·0 (5·6–14·1)**	NC	NA
Hodgins[26] 2007 *UK*	Clinical, psychiatric inpatients	Age 18-65; speak English; legal resident of UK	40·1♀ 37·2♂	Physical violence (inc. sexual) *Past 6 months*	**Mental** ♀ **Mental** ♂	**85** **120**	**48·2 (37·9–58·7)** **56·7 (47·7–65·2)**	NC	NA
Hsu[27] 2009 *Taiwan*	Clinical, psychiatric service users at a general hospital	Age 12-70; serious mental illness for at least one year, hospitalisation or community rehabilitation within last 12 months	37·4	Physical violence (violent crime) *Past 12 months*	**Mental** ♂♀	**155**	**7·1 (4·0–12·3)**	NC	NA

Author Year Country	Study setting, target sample	Inclusion criteria	Mean age	Violence definition *Time frame*	Disability type and gender*	N	Outcomes		Comparison group
							Prevalence (95%CI)	% OR (95%CI)	
Martin[29] 2006 *USA*	Households, women in general population	Age 18+	53·9♀	Physical violence *Past 12 months*	**Non-specific** (any disability) ♀	**1443**	**2·0 (1·4–2·9)**	**0·9 (0·6–1·4)**	Individuals from same sample with no disability
					Non-specific (AL) ♀	992	1·9 (1·2–3·0)	0·8 (0·5–1·4)	
					Intellectual ♀	**584**	**3·2 (2·1–5·0)**	**1·4 (0·8–2·4)**	
					Non-specific (use of special equipment) ♀	378	1·9 (0·9–3·8)		
				Sexual violence *Past 12 months*	**Non-specific** (any disability) ♀	**1443**	**1·5 (1·0–2·3)**	2·6 (1·4–4·9)	
					Non-specific (AL) ♀	992	1·1 (0·6–2·0)	1·9 (0·8–4·0)	
					Intellectual ♀	584	1·7 (0·9–3.1**)**	2·9 (1·2–6·4)	
					Non-specific (use of special equipment) ♀	378	0·8 (0·3–2.3)		
Matthias[30] 2003 USA	Community, users of state in-home supportive services	Age 18+; in state home-care programme for low income disabled individuals >6 months; no severe intellectual impairment	NR	Caregiver neglect *Past 12 months*	Non-specific (receiving support) ♂♀	1095	13·8 (11·9–16·0)	NC	NA
				Caregiver physical abuse *Past 12 months*	Non-specific (receiving support) ♂♀	1095	1·9 (1·3–2·9)		
				Caregiver unwanted sexual advances *Past 12 months*	Non-specific (receiving support) ♂♀	1095	2·1 (1·4–3·1)		
McFarlane[31] 2001 *USA*	Clinical, women attending speciality clinics	Age 18-64; English or Spanish speaking; no intellectual or communication impairment or mental illness	NR	Any violence *Past 12 months*	**Physical** ♀	**511**	**9·8 (7·5–12·7)**	NC	NA
				Physical violence (inc. sexual) *Past 12 months*	Physical ♀	511	7·8 (5·8–10·5)		
				Disability-related abuse *Past 12 months*	Physical ♀	511	2·0 (1·1–3·6)		
McPherson[32] 2007 *USA*	Clinical/ community agencies, mothers attending mental health services	Female; age 18-55; caring for at least one child age 4-16	36·5♀	IPV (physical/sexual) *Past 12 months*	**Mental** ♀	**379**	**19·0 (15·4–23·3)**	NC	NA

Author Year Country	Study setting, target sample	Inclusion criteria	Mean age	Violence definition *Time frame*	Disability type and gender*	N	Outcomes		Comparison group
							Prevalence % (95%CI)	OR (95%CI)	
Mericle[33] 2008 *USA*	Clinical, patients in short-term residential treatment for mental illness	Age 18-50; English or Spanish speaking; not HIV positive	34·9	Physical violence (inc. sexual) *Past 30 days*	**Mental** ♂♀	**70**	**30·0 (20·5–41·5)**	NC	NA
Rurangirwa[35] 2006 *USA*	General population, young adults with child developmental disabilities	Parent/legal guardian residing in study area when child recruited at age 10	23	Physical violence *Past 12 months*	**Non-specific** (any disability) ♂♀	**358**	**5·4 (3·5–8·3)**	**3·4 (0·8–30·7)**	Individuals from same sample with no disability
					Physical (cerebral palsy) ♂♀	**18**	**0·0 (0·0–17·6)**	1·3 (0·0–37·4)	
					Sensory (vision/hearing) ♂♀	**41**	**2·4 (0·4–12·6)**	1·5 (0·0–29·9)	
					Intellectual ♂♀	**128**	**7·0 (3·7–12·8)**	4·6 (0·9–44·5)	
					Non-specific (multiple disability) ♂♀	**45**	**4·4 (-1·6–10·5)**	2·8 (0·2–40·0)	
Seo[36] 2008 *USA*	School, fifth grade students enrolled in 18 schools in deprived/high crime areas	Fifth grade students; no motor, behavioural, sensory or mild intellectual impairment	21; 24	Physical violence (victimization) *Past 12 months*	(Age 21) Intellectual ♂♀	60	25·9 (15·8–37·2)	1·9 (0·9–3·7)	Individuals from same sample with no disability
					(Age 24) Intellectual ♂♀	**60**	**10·0 (4·7–20·1)**	**1·6 (0·5–4·1)**	
Silver[37] 2002 *USA*	Clinical, psychiatric inpatients	Age 18–40, acute admission, English speaking, White or African American	NR	Physical violence (inc. sexual) *Past 10 weeks*	**Mental** ♂♀	**270**	**15·2 (11·4–20·0)**	**2·4 (1·4–4·0)**	Community sample drawn from same census area as patients in clinical sample
Silver[38] 2005 *New Zealand*	General population, birth cohort in 21st year	Born in Dunedin, New Zealand, between April 1972 and March 1973	21	Physical violence *Past 12 months*	**Mental** (any) ♂♀	**382**	**33·8 (29·2–38·7)**	**2·0 (1·5–2·7)**	Individuals from same sample with no disability
					Mental (anxiety) ♂♀	193	28·5 (22·6–35·2)	1·6 (1·0–2·3)	
					Mental (depression) ♂♀	168	31·0 (24·5–38·3)	1·7 (1·2–2·6)	
					Mental (schizophrenia) ♂♀	38	57·9 (42·2–72·1)	5·3 (2·6–11·2)	
				Sexual violence *Past 12 months*	**Mental** (any) ♂♀	**382**	**8·9 (6·4–12·2)**	10·9 (4·2–35·9)	
					Mental (anxiety) ♂♀	193	11·9 (8.1–17.2)	15·1 (5·5–51·3)	
					Mental (depression) ♂♀	168	10·7 (6·9–16·3)	13·4 (4·7–46·6)	
					Mental (schizophrenia) ♂♀	38	13·2 (5.8–27·3)	16·9 (3·6–76·3)	
Slayter[39] 2009	Households, women from low	Female	36·4♀	IPV (physical) *Past 12 months*	**Non-specific** (receiving support) ♀	**141**	**21·3 (15·3–28·7)**	**1·6 (1·0–2·6)**	Individuals from same

Author Year Country	Study setting, target sample	Inclusion criteria	Mean age	Violence definition *Time frame*	Disability type and gender*	N	Outcomes		Comparison group
							Prevalence % (95%CI)	OR (95%CI)	
USA	income neighbourhoods			IPV (verbal) *Past 12 months*	Non-specific (receiving support) ♀	141	53.9 (45.7–61.9)	0·9 (0·6–1·3)	sample with no disability
Teplin[40] 2005 *USA*	Clinical, psychiatric inpatients and outpatients	On psychiatric medication for 2 years/ever been hospitalised for psychiatric reasons; Not a new client; not receiving crisis management	42·4	Any violence (violent crime) *Past 12 months*	**Mental ♂♀** **Mental ♀** **Mental ♂**	**936** **453** **483**	**25·2 (22·5–28·1)** **27·2 (23·3–31·4)** **23·4 (19·8–27·4)**	**11·8 (10·0–13·9)** - -	Community sample drawn from NCVS
				Physical violence *Past 12 months*	Mental ♂♀ Mental ♀ Mental ♂	936 453 483	19·0 (16·6–21·7) 20·5 (17·6–23·3) 17·5 (14·5–20·5)	15·0 (12·4–18·1) - -	
				Sexual violence *Past 12 months*	**Mental ♂♀** Mental ♀ Mental ♂	**936** 453 483	**2·5 (1·6–3·7)** 4·3 (3·0–5·7) 0·8 (-0·3–1·8)	17·1 (10·1–28·2) - -	
Walsh[41] 2003 *UK*	Clinical, psychiatric inpatients and outpatients	Age 18-65; hospitalised for psychosis >twice and in last 2 years; no primary substance use or organic brain damage diagnosis	NR	Physical violence (inc. sexual) *Past 12 months*	**Mental ♂♀** Mental ♀ Mental ♂	**691** 294 397	**16·1 (13·5–19·0)** 12·6 (9·3–16·9) 18·4 (14·9–22·5)	NC	NA
Studies reporting rates per population							**Unadjusted rates per 1,000 population**		
Lin[28] 2009 *Taiwan*	National record system‡, sexual assault victims	Reported case of sexual assault	NR	Sexual violence *Past 12 months*	Non-specific (any disability) ♂♀ Intellectual ♂♀ Mental ♂♀ Sensory (vision/speech) ♂♀	§ 	0·6 (NR) 3·3 (NR) 1·4 (NR) 1·5 (NR)	General population 0·2 (NR) 	Recorded sexual assaults in the general population
Rand[34] 2009 *USA*	Households, general population	Age 12+	NR	Any violence (violent crime) *Past 12 months*	Non-specific (any disability) ♂♀ Sensory (vision/hearing) ♂♀ Physical ♂♀ Intellectual ♂♀	§ 	18·1 (NR) 11·8 (NR) 13·5 (NR) 27·8 (NR)	General population 21·3 (NR) 	General population without disabilities
				Sexual violence *Past 12 months*	Non-specific (any disability) ♂♀ Sensory (vision/hearing) ♂♀ Physical ♂♀ Intellectual ♂♀	§ 	1·2 (NR) 0·4 (NR) 1·2 (NR) 2·0 (NR)	General population 0·9 (NR) 	

Author Year Country	Study setting, target sample	Inclusion criteria	Mean age	Violence definition *Time frame*	Disability type and gender*	N	Outcomes		Comparison group
							Prevalence (95%CI)	% OR (95%CI)	

NC=not calculated. NR=not reported. NA=not applicable. IPV=intimate partner violence. CI=confidence interval. OR=odds ratio (unadjusted as calculated by review authors). ♀=female. ♂=male. *Mental = mental illness; intellectual = intellectual impairment; Non-specific = non-specific impairment; Physical = physical impairment; Sensory = sensory impairment; see Panel 2. AL = activity limitation; Use of special equipment = use of e.g. wheelchair, cane or special telephone; Multiple disability = individuals with more than one type of impairment; Receiving support =individuals receiving either in-home support services[30] or financial aid[39] for the disabled. †Excludes individuals also reporting sexual assault; ‡n values, prevalence and ORs have been calculated by the authors based on national population rates. §Findings applied to total national populations. Data highlighted in bold included in random effects meta-analyses.

Webappendix

Sample search strategy: Medline (OVID)

1. exp Disabled Persons/
2. ((physical* or intellectual* or learning or psychiatric* or sensory or motor or neuromotor or cognitive or mental* or developmental or communication or learning) adj2 (disabilit* or disabl* or handicap*)).ti,ab
3. exp Mental Retardation/
4. (mental* adj1 retard*).ti,ab
5. ((cognitive* or learning or mobility or sensory or visual* or vision or sight or hearing or physical* or mental* or intellectual*) adj2 impair*).ti,ab
6. ((mental* or emotional* or psychiatric or neurological or neurologic) adj2 (disorder* or ill or illness*)).ti,ab
7. (deaf or deafness or blind or blindness).ti,ab
8. 1 or 2 or 3 or 4 or 5 or 6 or 7
9. exp Domestic violence/sn
10. Violence/sn
11. Crime victims/sn
12. Theft/sn
13. exp Sex offenses/sn
14. ((violence or aggression or neglect* or maltreat* or mistreat* or desert* or abandon* or abuse* or exploit* or assault*) adj3 (prevalence or incidence or victim* or victimisation or victimization or experience* or against or risk or association* or exposure)).ti,ab
15. 9 or 10 or 11 or 12 or 13 or 14
16. 8 and 15 [Limit to: Publication Year 1990-2010]