

Sexual Violence Against Persons With Disabilities: A Meta-Analysis

Amylee Mailhot Amborski¹, Eve-Line Bussièrès¹,
Marie-Pier Vaillancourt-Morel¹, and Christian C. Joyal¹

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Abstract

A growing number of large-scale studies suggest that people with disabilities are at greater risk of sexual victimization than nondisabled individuals. However, certain results are inconsistent and whether potential moderators explain this variability in previous findings remain to be considered. This meta-analysis aimed to determine the magnitude of the difference in risk of being sexually victimized based on the presence of a disability. An additional objective was to evaluate the relative influence of gender, age, type of disability, type of sexual violence, and relationship with the perpetrator on the association between the presence of a disability and sexual victimization. Studies were searched using pertinent databases and retained if they included a group with a disability, provided data that quantify the occurrence of abuse, indicated the type of sexual violence, and was published between 1970 and 2018 in French or English. A total of 68 studies, allowing 84 independent samples and 12,427 participants, were included. Individuals with disabilities were at significantly higher risk of sexual victimization than persons without disabilities (odds ratio = 2.27). The risk of sexual victimization among individuals with a disability was significantly higher in adult participants compared with the risk in minor participants. Sensory impairment was the type of disability associated with the highest risk of sexual victimization. Odds of sexual victimization among individuals with a disability were significantly higher in African countries compared with all others, and odds in Western Europe were significantly lower than in the United States. No significant differences emerged across eras.

Keywords

disability, sexual violence, victimization, meta-analysis

Sexual violence is a major public health concern and a violation of human rights that has well-established long-lasting detrimental consequences (World Health Organization, 2013). Sexual violence is defined as any sexual act that is committed or attempted by another person without freely given consent of the victim or against someone who is unable to consent or refuse (Basile et al., 2014). It includes forced or alcohol/drug-facilitated penetration of a victim (rape), forced or alcohol/drug-facilitated incidents in which the victim was made to penetrate a perpetrator or someone else (ordered rape), non-physically pressured unwanted penetration (i.e., being worn down by someone who repeatedly asked for sex or showed they were unhappy, feeling pressured by being lied to, being told promises that were untrue, having someone threaten to end a relationship or spread rumors, and sexual pressure due to someone using their influence or authority), unwanted sexual contact (i.e., having sexual body parts fondled or grabbed and being kissed in a sexual way), and noncontact unwanted sexual experience (i.e., someone exposing his or her sexual body parts, flashing, or masturbating in front of the victim, someone making a victim look at or participate in sexual photos or videos, or someone harassing the victim in a public place in a way that

made the victim feel unsafe; Basile et al., 2016). Inability to consent is defined as an impossibility to give a free agreement to this sexual act because of age, illness, mental or physical disability, being asleep or unconscious, intoxication through voluntary or involuntary use of alcohol or drugs, and misuse of authority or threats (Basile et al., 2014; Krug et al., 2002).

Sexual violence is widespread globally and affects men and women across the life span from childhood to adulthood. Research indicates that particular groups are at significantly greater risks of being the victim of sexual violence (e.g., women, children, racial/ethnic minorities, sexual, and gender minorities; Black et al., 2011; Breiding et al., 2014; Conroy & Cotter, 2017). Still, a growing number of comparative large-scale studies suggest that people with disabilities are at

¹ Department of Psychology, Université du Québec à Trois-Rivières, Québec, Canada

Corresponding Author:

Eve-Line Bussièrès, Department of Psychology, Université du Québec à Trois-Rivières, C.P. 500, Trois-Rivières, Québec, Canada G9A 5H7.

Email: eve-line.bussieres@uqtr.ca

even greater risk of sexual victimization across their life span than nondisabled individuals (e.g., Basile et al., 2016; Beadle-Brown et al., 2010; Casteel et al., 2008; Cohen et al., 2006; Cotter, 2018; Grossman & Lundy, 2008; Harrell, 2017; Haydon et al., 2011; Khalifeh et al., 2013; Krnjacki et al., 2016; Martin et al., 2006; Mitra et al., 2016; Nixon et al., 2017). However, these studies are based on heterogeneous definitions of disability (physical, intellectual, sensory, and developmental), sexual violence (e.g., with or without contact; by spouse vs. stranger), and varying timing of abuse (e.g., before age of 12, before age of 18, during adulthood, lifetime, during the previous 12 months), often mixing them together. Therefore, the results need to be untangled as it remains difficult to estimate the prevalence of sexual violence reported by persons with different types of disability. The aim of the present meta-analysis was to quantify available evidence concerning the risk of sexual violence against individuals with disabilities compared with individuals without disabilities and to evaluate statistically the influence of potential moderators such as gender, age at first abuse, type of disability, type of sexual violence, and relationship with the perpetrator.

Based on 2010 global population estimates, about 15% of the world's population have some form of disability (World Health Organization, 2011). Individuals with disabilities is a broad term that encompasses everyone with a long-term physical, intellectual, or sensory impairment which, in interaction with contextual factors (environmental and personal factors), may hinder their full and effective participation in society on an equal basis with others (United Nations, 2006; World Health Organization, 2011). Individuals with disabilities are thus heterogeneous in their health conditions and their degree of limitation but are often lumped together without consideration for these differences. In addition to risk factors already present in the general population (e.g., women, sexual minority), people with disabilities may be at greater risk of sexual violence due to other factors such as social isolation, limited sexual education, dependence on others including for intimate hygiene, reduced physical defenses, and communication barriers that prevent disclosure of the abuse (Barron et al., 2019; Briggs, 2006; Hollomotz, 2009). Some disabilities may also limit the individual's capacity to consent (or withdraw a previous consent) to sexual activity as defined by law (Murphy & O'Callaghan, 2004; Nosek et al., 2001; O'Callaghan & Murphy, 2007).

Given these considerable vulnerabilities that place individuals with disabilities at risk of sexual violence, an increasing amount of research has been done to quantify the risk in this population. In a sample of 5,326 women, those who considered themselves as having a disability were more than 4 times (odds ratio [OR] = 4.89) more likely to report a sexual assault in the previous year (Martin et al., 2006). In a nationally representative survey of 11,878 young adults (aged 26–32) in the United States, women with physical disabilities, compared to women without physical disabilities, had greater odds of reporting physically forced but not coerced (defined as being forced in a nonphysical way; e.g., through verbal pressure, threats, or being given alcohol or drugs) sexual activity, whereas the

opposite pattern was observed in men with physical disabilities, who had greater odds of reporting coerced but not physically forced sexual activities compared to those without physical disabilities (Haydon et al., 2011). According to the 2010 U.S. National Intimate Partner and Sexual Violence Survey (based on 16,507 respondents), both women and men with a self-reported disability (defined as physical, mental, or emotional problems) were at significantly increased risk of sexual coercion (same definition) and noncontact unwanted sexual experiences during the previous 12 months (Basile et al., 2016). Similar results were obtained for sexual abuse in the past 12 months and since the age of 15, especially in women (the Australian Personal Safety Survey, $N = 17,050$ adults; Krnjacki et al., 2016). In Canada, results from the General Social Survey on Victimization showed that women with a disability were nearly twice as likely as women who did not have a disability to have been sexually assaulted in the previous 12 months (Cotter, 2018). Accordingly, lifetime prevalence of sexual violence victimization was significantly higher for both men and women with disabilities compared to adults without disability in the American Behavioral Risk Factor Surveillance System Survey ($N = 25,756$; Mitra et al., 2016; Smith, 2008). Rates of sexual violence victimization are also significantly higher for high-school and college students (both girls and boys) with a disability compared to those without disability (Alriksson-Schmidt et al., 2010; Findley et al., 2016; Mitra et al., 2016). In fact, men and women with a disability from all age strata from 12 to 65 years are at significantly higher risks to be victimized from serious sexual violence than persons without a disability in the United States (Harrell, 2017).

It is worth noting that some studies failed to find significantly different rates of sexual violence between subgroups of persons with versus without disability (Haydon et al., 2011; Khalifeh et al., 2013; Mueller-Johnson et al., 2014; Young et al., 1997). Generally, these subgroups represent specific demographic strata based on age and gender, that is, young women. This lack of between-group difference seems to be due to high base rates of sexual abuse victimization among young women in the general population (21% coerced sex victimization among young female adults in Haydon et al., 2011; e.g., 21% victimized from contact and 39% from noncontact sexual aggressions among ninth-grade girls without physical disability in Mueller-Johnson et al., 2014). Therefore, both age and gender represent good moderator candidates in the relation between disabilities and odds of sexual violence victimization. Wide definitions of disability (e.g., "long-standing physical or mental health conditions or disabilities limiting day to day activities") might be too inclusive, lowering the mean prevalence of sexual violence in the subgroup, generating statistically negative results (Khalifeh et al., 2013). Another potentially significant moderator is the type of disability. Although most studies on sexual victimization among persons with disability grouped together several types of conditions, results from the National Crime Victimization Survey of the American Bureau of Statistics (Harrell, 2017) indicated that certain types of disabilities (e.g., hearing defect) are

significantly less associated with violent crime victimization than others (e.g., intellectual deficiency). It remains to be seen whether similar conclusions apply to sexual violence. Finally, different culture or publication time might generate different results. In Canada, for instance, rates of sexual offenses reported to the police significantly increased after the #MeToo movement (Moreau, 2019).

Overall, discrepancies in these studies may be at least partly attributable to the population sampled (e.g., women only, youth), the time of occurrence of the victimization (e.g., childhood vs. past 12 months), differences in the disability examined (e.g., sensorial, physical, intellectual, all combined), the type of sexual violence assessed (e.g., penetration or noncontact abuse), the relationship with the perpetrator, the publishing epoch (e.g., 1970 vs. 2015), and the country of data collection (e.g., with a high vs. low gender gap index; from Global North vs. Global South). In view of these somewhat mixed findings, scholars have begun to synthesize available research. Older systematic reviews stressed that literature on the link between physical disabilities and sexual violence was extremely sparse (Curry et al., 2001), even questioning the validity of the association (Govindsheny & Spencer, 2007). More recent systematic reviews concluded that although the literature is still plagued by methodological shortcomings, it suggests that children (McEachern, 2012; Stalker & McArthur, 2012) and adults (Stone, 2018), men and women (Hughes et al., 2011; Plummer & Findley, 2012), with physical, developmental (Mahoney & Poling, 2011), or intellectual (Byrne, 2018) disabilities are at higher risk of sexual violence. However, the strength of the association between disability and sexual violence has rarely been quantitatively synthesized.

A meta-analysis of studies published between 1990 and 2010 reported a pooled prevalence estimates of 13.7% for sexual violence against children with disabilities ($k = 15$, $n = 14,675$) and a risk 2.9 higher ($k = 9$) of reporting sexual violence than nondisabled children (Jones et al., 2012). Another meta-analysis of studies published between 1990 and 2010 examining violence against adults with disabilities reported that there was only a sufficient number of studies focusing on mental illnesses as a disability, as opposed to studies on physical, sensory, or intellectual disabilities, to estimate a pooled prevalence of sexual violence. Thus, combining four studies ($n = 2,230$), the pooled prevalence of sexual violence in the previous 12 months was 5.5% in adults with mental illnesses (Hughes et al., 2012). To our knowledge, no meta-analysis combined studies on sexual violence across the life span (i.e., childhood and adulthood, lifetime prevalence, and not just recent abuse) and included physical, intellectual, and sensory disabilities. These limitations lead to concerns about estimates of the true magnitude of the risk of sexual violence against individuals with disabilities. A clearer picture of this risk could ensure that individuals with disabilities are included in sexual violence prevention and intervention programs, if needed. With a more detailed meta-analysis encompassing all disabilities (i.e., physical, intellectual, and sensory) and all types of sexual violence across the life span,

it would be possible to combine and contrast estimates across these different studies to determine whether some moderators explain the variability in previous findings. For example, it has not yet been determined whether a specific disability is most strongly related to sexual violence or whether individuals with disabilities are at greater risk of a specific type of sexual violence or from a specific perpetrator. Most studies also seem to rely on samples from high-income countries, thus we know little about sexual victimization of persons with disabilities in low-middle-income countries and how disparities between countries may affect the pooled risk of sexual violence against individuals with disabilities compared to individuals without disabilities. Identification of particularly vulnerable subgroups would enrich our understanding and help tailor prevention programs to target individuals with disabilities with the greatest need.

Objective of the Current Study

The main goal of this study was to determine the relative risk of sexual violence against individuals with disabilities compared to individuals without disabilities. An additional goal was to assess the possible moderating effect of gender, age, type of disability, type of sexual violence, relationship with perpetrator, country of data collection, and year of publication.

Method

Inclusion and Exclusion Criteria

To be included in this meta-analysis, studies had to (1) include at least one group with an intellectual, physical, or sensory disability; (2) provide data that could be used to quantify the frequency of abuse; (3) indicate the type of sexual violence (e.g., with or without physical contact); (4) cover a period between 1970 and December 2018; and (5) be written in English or French.

Literature Search Strategy

We searched PsycINFO, CINAHL, and MEDLINE for published studies and ProQuest and Statistics Canada for unpublished documents. The key words used in both cases were (*Prevalence*) AND (*Sex Offense** OR *Sexual Coercion* OR *Sexual Violence** OR *Sexual Abuse** OR *Sexual harassment* OR *Sexual Assault* OR *Adult Survivors of Child Abuse* OR *Child Abuse* OR *Incest* OR *Rape* OR *Completed nonconsensual sex* OR *Attempted nonconsensual sex*) AND (*Disabilities* OR *Disabled Person* OR *Disabled Child* OR *Person with Disability** OR *People with Disability** OR *Handicapped* OR *Handicapped Children* OR *Cognitive impairment** OR *Mental retardation** OR *Intellectual deficit** OR *Autism** OR *Physically Handicapped* OR *Physically Challenged*). We carefully analyzed the reference lists of articles identified in the first step to ensure that no relevant study was missed in the review. The same procedure was followed for articles identified manually.

Data Extraction

Two of the researchers extracted the data independently. They coded the articles based on the following elements: type of disability (autism/developmental/ intellectual/learning disorder, neurological, physical, sensory, and mixed), type of sexual violence, sexual violence, proportion of women, average age at which the first sexual violence occurred which was codified into minor versus adult (i.e., below vs. equal or higher than 21 years old), relationship with the perpetrator, year of publication, and country in which the study was conducted. For studies without control (nondisabled) group, the population-based statistics on sexual violence of Pereda and colleagues (2009) were used. Studies concerning psychological or emotional disability exclusively were not included in the meta-analysis (e.g., Rees et al., 2011). However, these types of disabilities were entered separately in the database when they were parts of studies including other types of disabilities to assess the magnitude of the effect related with them (e.g., Ballan et al., 2014; Blum et al., 2001; Turner et al., 2011). Learning disabilities as well as intellectual, developmental, and neurological disabilities were pooled in the analyses to form the broader category of intellectual/developmental disabilities to limit the number of categories. For studies that examined more than one type of sexual violence (e.g., sexual with and without physical contact), we used only the more severe category, which is rape (e.g., Basile et al., 2016; Dickman & Roux, 2005) or forced sexual intercourse (e.g., Kvam, 2004; Puri et al., 2015) to ensure that severity of sexual violence would be similar across studies and that participants victimized from multiple types of sexual violence (e.g., rape and harassment) would not be considered twice or more (overlap avoidance; Lipsey & Wilson, 2001). This strategy prevents comparisons between subtypes of sexual violence (e.g., with vs. without contact). When both lifetime and past year prevalence of sexual violence were reported (Devries et al., 2014; Mitra et al., 2011), only lifetime prevalence was considered.

Statistical Analyses

This meta-analysis was conducted using *Comprehensive Meta-Analysis Version 2.0* (Borenstein et al., 2005). For each study, a measure of effect size was calculated from the occurrence of sexual violence for individuals with and without disabilities to obtain an *OR*. An *OR* of 1 indicates no difference between the two groups with respect to the risk of sexual victimization. If the *OR* is less than 1, it means that individuals with disabilities have less risk of being sexually abused than those without disabilities and, if greater than 1, the former have more risk of being sexually abused than people without disabilities. The software assigns a relative weight to each study based on sample size.

Analysis of the Risk of Bias Across Studies

To ensure that a bias was not present in our data, we created a funnel plot illustrating the dispersion of studies, including the

effect size according to the standard error. As studies with a smaller effect size (larger standard error) have more variation in the estimate of their effect size, especially since random variations have a greater impact in such studies, the plot was expected to be shaped like a funnel; conversely, studies with larger samples have less variation in their effect size (Duval & Tweedie, 2000). The presence of a publication bias was illustrated by the presence of asymmetry in the dispersion of effect sizes (Borenstein, 2009).

For each study, a *Z* score (Fisher's *Z*) was calculated as a normally distributed equivalent of Cohen's *d*. The standardized *Z* score was used to verify the presence of extreme values. In this meta-analysis, however, we did not find any extreme values, that is, *Z* below -3.29 or above 3.29 (Tabachnik & Fidell, 2001).

Effect Sizes

In the studies analyzed, data on the prevalence of sexual violence were generally dichotomous and were transformed into *ORs*. Combined effect sizes were then calculated. Significance tests and analyses based on the various moderators were done using a random effects approach, which assumes that the studies were not necessarily conducted in the same way and that some methodological differences were present. Unlike a fixed effect model, calculation of the significance test is based on the number of studies and not the total number of participants, which reduces the statistical power and increases the weight given to small studies relative to the others. However, generalization of the results is better using a random effects approach.

Results

Study Selection

In the literature search, 409 studies were found. Based on the title and abstract, 103 studies met the inclusion criteria. After a closer examination, 18 studies were excluded for various reasons (e.g., literature review and not an original study, statistics not usable, sample overlap between two different articles). When the same sample was used in two separate studies, we retained only the study with the larger sample to avoid duplicating participants. This meta-analysis included 68 articles involving 84 independent samples, for a total of 12,427 participants with disabilities. The characteristics of the selected studies are shown in Table 1.

Main Analysis

The results of this meta-analysis show that individuals with disabilities are at significantly higher risk of being sexually victimized in their lifetime than people without disabilities ($OR = 2.27, p < .001, Q = 3,143.32, k = 84$).

Visual examination of the funnel plot of this meta-analysis suggests that there is a publication bias in favor of studies reporting positive results (Figure 1). The trim-and-fill method (Duval & Tweedie, 2000) was used to calculate the effect of a

Table 1. Characteristics of Selected Studies.

Authors	Year	Country	With Disabilities		Without Disabilities		Type of Disability	Age Category (Minor or Adult)		OR
			<i>n</i>	<i>n</i>	Normative	Minor		Adult		
Alriksson-Schmidt et al.	2010	United States	899	6,294			Physical	X		1.57
Ammerman et al.	1989	United States	150	9,911,748	X		Mixed	X		.83
Anderson & Leigh	2011	United States	100	3,060			Sensory		X	4.06
Austin et al.	2016	United States	743	1,304			Mixed	X		1.79
Ballan et al.	2014	United States	74	9,911,748	X		Developmental		X	4.55
			499	9,911,748	X		Physical		X	6.98
			120	9,911,748	X		Sensory		X	2.38
Barrett et al.	2009	United States	6,309	16,845			Mixed		X	2.17
Basile et al.	2016	United States	2,162	4,762			Mixed		X	3.30
Beadle-Brown et al.	2010	United Kingdom	1,926	9,911,748	X		Intellectual		X	1.56
Beail & Warden	1995	England	88	9,911,748	X		Intellectual		X	2.49
Blum et al.	2001	United States	1,301	15,689			Intellectual	X		1.91
			167	15,689			Physical	X		2.45
Brown	1988	United States	26	9,911,748	X		Physical		X	1.78
Brown & Turk	1994	England	119	9,911,748	X		Intellectual		X	17.94
Brownlie et al.	2007	Canada	74	168			Language	X		3.28
Brownridge	2006	Canada	1,092	5,935			Mixed		X	3.18
Bryen et al.	2003	United States	40	9,911,748	X		Mixed		X	9.14
Cohen et al.	2006	Canada	1,521	7,250			Physical		X	2.53
Curry et al.	2004	United States	47	9,911,748	X		Mixed		X	.16
Devries et al.	2014	England	608	3,098			Mixed	X		1.24
Diaz-Olavarrieta et al.	1999	United States	1,000	9,911,748	X		Neurological		X	.93
Dickman & Roux	2005	South Africa	100	9,911,748	X		Intellectual		X	22.42
Euser et al.	2016	England	3,300	9,911,748	X		Intellectual	X		.04
Findley et al.	2016	United States	101	9,911,748	X		Mixed		X	2.73
Fogden et al.	2016	Australia	2,600	4,830			Intellectual		X	6.27
Giraldo-Rodriguez et al.	2015	United Kingdom	1,089	9,911,748	X		Mixed		X	.06
Hasan et al.	2014	United States	226	9,911,748	X		Mixed		X	7.09
Haydon et al.	2011	United States	N/A	6,450			Physical		X	1.49
			N/A	5,428			Physical		X	1.9
Hershkowitz et al.	2007	Israel	476	35,493			Mixed	X		1.11
Khalifeh et al.	2013	England	9,037	35,361			Mixed		X	1.08
Krnjacki et al.	2016	Australia	5,456	11,594			Mixed		X	2.31
Kvam	2000	Norway	83	1,210			Mixed	X		2.84
Kvam	2004	Norway	302	1,833			Sensory	X		4.25
Kvam	2005	Norway	333	1,850			Sensory	X		18.22
Longobardi & Badenes-Ribera	2018	Italy	236	9,911,748	X		Mixed		X	.13
Maddowall et al.	2013	England	N/A	N/A			Mixed		X	2.06
			N/A	N/A			Mixed		X	2.02
Mandell et al.	2005	England	156	9,911,748	X		Autism	X		1.50
Mansbach-Kleinfeld et al.	2015	Israel	121	743			Intellectual	X		3.6
			54	807			Sensory	X		3.2
Martin et al.	2006	United States	1,385	3,941			Mixed		X	4.89
McCabe et al.	1994	Australia	30	50			Intellectual		X	4.18
McCarthy & Thompson	1997	United Kingdom	185	9,911,748	X		Intellectual		X	1.06
McGaw et al.	2007	United Kingdom	49	9,911,748	X		Intellectual		X	5.15
Milberger et al.	2003	United States	177	9,911,748	X		Mixed		X	3.50
Mitra & Mouradian	2014	United States	25,167	77,049			Mixed		X	2.7
Mitra et al.	2011	United States	4,397	12,340			Mixed		X	4.4
Mueller-Johnson et al.	2014	United Kingdom	174	3,335			Physical	X		2.78
			186	3,054			Physical	X		1.29
Nixon et al.	2017	Germany	426	219			Intellectual		X	5.9
Nosek et al.	2001	United States	475	406			Physical		X	1.11

(continued)

Table 1. (continued)

Authors	Year	Country	With Disabilities		Without Disabilities		Type of Disability	Age Category (Minor or Adult)		OR
			<i>n</i>	<i>n</i>	Normative	Minor		Adult		
Oktaç & Tompkins	2004	United States	84	9,911,748	X		Intellectual	X	1.01	
Opoku et al.	2016	Ghana	6	9,911,748	X		Intellectual	X	37.37	
			10	9,911,748	X		Physical	X	11.21	
			25	9,911,748	X		Sensory	X	15.88	
			336	9,911,748	X		Intellectual	X	.42	
Pan	2007	Taiwan	336	9,911,748	X		Developmental	X	2.40	
Platt et al.	2017	United States	350	9,911,748	X		Sensory	X	2.54	
Pollard et al.	2014	United States	80	8,000			Sensory	X	17.36	
Pollard et al.	2014	United States	141	8,000			Sensory	X	46.81	
Pollard et al.	2014	United States	81	8,000			Sensory	X	5.06	
Pollard et al.	2014	United States	165	8,000			Sensory	X	5.06	
Powers et al.	2008	United States	342	9,911,748	X		Mixed	X	1.08	
Puri et al.	2015	Nepal	475	9,911,748	X		Mixed	X	2.04	
Roberts et al.	2015	England	213	9,911,748	X		Autism	X	4.96	
Slyater	2009	United States	141	681			Mixed	X	1.07	
Smith	2008	United States	49,756	170,155			Mixed	X	2.38	
Smith	2015	United States	70	9,911,748	X		Sensory	X	16.31	
Sobsey et al.	1997	Canada	217	1,387			Mixed	X	1.10	
Stöckl et al.	2011	Germany	559	3,307			Physical	X	1.71	
Stromsness	1994	United States	27	9,911,748	X		Developmental	X	14.95	
Sullivan & Knutson	2000	United States	3,262	36,949			Intellectual	X	.54	
			3,262	36,949			Language	X	.54	
			3,262	36,949			Physical	X	.21	
			74	9,911,748	X		Developmental	X	4.82	
Sullivan et al.	1991	United States	39	9,911,748	X		Intellectual	X	5.20	
			87	9,911,748	X		Language	X	9.20	
			212	9,911,748	X		Sensory	X	8.53	
			259	3,787			Developmental	X	.94	
Turner et al.	2011	United States	250	3,796			Physical	X	1.13	
			82	9,911,748	X		Intellectual	X	.00	
Vadysinghe et al.	2017	Sri Lanka	82	9,911,748	X		Physical	X	1.32	
Young et al.	1997	United States	439	421			Physical	X	1.32	

Note. OR = odds ratio.

potential publication bias. Eighteen studies were identified as not being symmetrically matched and requiring a corrective adjustment, that is, by calculating an effect size and adjusted confidence interval (CI). The new effect size was adjusted downward ($OR = 1.49$; 95% CI [1.27, 1.76]). Although smaller than the original overall effect size ($OR = 2.27$), this adjusted effect size confirms that individuals with disabilities have a higher risk of being sexually abused than people without disabilities.

Analyses of Moderators

Because the measure of heterogeneity (the Q statistic) was significant ($p < .001$; $Q = 3,143.32$), the moderators were considered for further analyses (i.e., gender, age, type of disability, type of sexual violence, relationship with perpetrator, year of publication, and country in which the study was conducted). As shown in Table 2, persons with a disability are at significantly higher risk than those without disability to be sexually victimized both when they are minors (aged under 21; $OR = 1.40$, $p = .02$, $k = 30$) or adult (age of 21 or higher;

$OR = 2.84$, $p < .001$, $k = 54$). This variable has a significant moderating effect: Compared with the general population, odds of being sexually victimized are significantly higher for adults than for minors with a disability ($Q' = 8.21$, $p = .004$).

The type of disability also had a significant moderating effect ($Q' = 41.11$, $p < .001$), although the number of studies about autism and language impairment were insufficient ($k < 4$) to be considered. Taking separately, intellectual deficits ($OR = 1.81$, $p = .011$, $k = 24$), physical disability ($OR = 1.71$, $p = .007$, $k = 16$), sensory disability ($OR = 7.57$, $p < .001$, $k = 12$), and mixed types of disability ($OR = 1.76$, $p < .001$, $k = 28$) were all associated with significantly higher risk of being sexually victimized than the general population (Table 2). The highest risk was associated with sensory disability (Table 2). Studies including participants with a psychological or emotional disability among their disability sample yielded OR similar ($OR = 2.54$, $p < .001$, $k = 7$) to studies without psychological or emotional disability ($OR = 2.22$, $p < .001$, $k = 77$), as the difference between these OR was nonsignificant ($Q = 1.09$, $p = .296$).

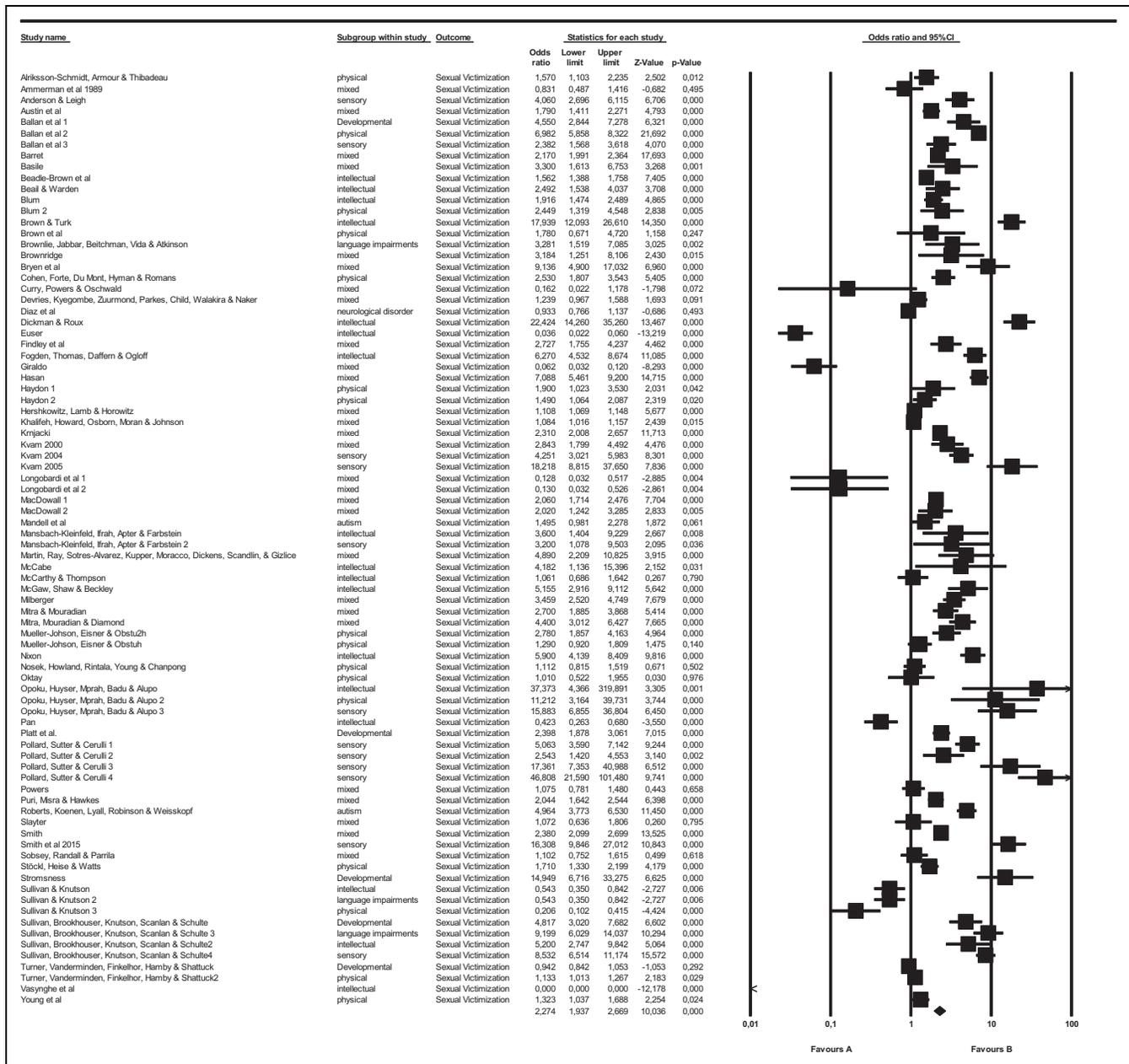


Figure 1. Forest plot.

Significantly higher risk of sexual victimization for persons with a disability are observed in most countries or continents of the world (Canada, United States, and Western Europe), although studies based in Australia, Israel, and Asia are still insufficient ($k < 4$) to be included in the analyses (Table 2). The moderating effect of the country where the study was conducted was significant ($Q' = 126.63, p < .001$), with odds of sexual victimization being higher in African countries in comparison with all other countries and being lower in Western Europe ($Q' = 4.37, p = .037$) in comparison with the United States (Table 2).

No significant difference was found for the size of the effect size as a function of publication year (Table 2). The differential

effect between men and women could not be examined as most studies did not report the prevalence separately between genders. The effect of relationship with the abuser could not be assessed because such information was lacking in most primary studies.

Discussion

The main goal of this meta-analysis was to evaluate the risk of sexual violence against persons with disabilities compared to nondisabled individuals. Results showed that individuals with disabilities of all ages are twice as likely to be the victim of sexual violence during their lifetime than the general population. This rate is a little lower than the one reported in another meta-analysis focusing specifically on sexual violence against

Table 2. Analysis of Moderators.

Moderators	k	OR	Confidence Interval [LL, UL]	Q' (p)	Slope
All studies	84	2.27	[1.94, 2.67]		
Age category					
Minor (<21)	30	1.65***	[1.25, 2.17]		
Adult (≥21)	54	2.72***	[2.22, 3.34]		
Contrast analysis				8.21 (.004)	
Type of disability					
Autism	2	2.75	[0.85, 8.93]		
Intellectual/development	24	1.81**	[1.14, 2.87]		
Language	2	5.79***	[2.12, 15.82]		
Physical	16	1.71**	[1.16, 2.52]		
Sensory	12	7.57***	[4.88, 11.73]		
Mixed	28	1.76***	[1.44, 2.16]		
Contrast analysis				41.11 (.000)	
Emotional/psychological handicap					
Yes	7	2.54***	[2.12, 3.03]		
No	76	2.18***	[1.82, 2.6]		
Contrast analysis				1.09 (.296)	
Country/region					
Africa	4	20.02***	[13.77, 29.10]		
Asia	3	0.01**	[0.00, 4.16]		
Australia	3	3.84**	[1.66, 8.89]		
Canada	4	2.17**	[1.23, 3.83]		
Israel	3	2.09	[0.84, 5.24]		
United States	45	2.57***	[2.06, 3.2]		
Western Europe	22	1.60*	[1.1, 2.35]		
Contrast analysis	84			126.63 (.000)	
Year of publication	84				0.003 (.170)

Note. OR = odds ratio; LL = lower limit; UL = upper limit.

* $p < .05$. ** $p < .01$. *** $p < .001$.

children ($OR = 2.9$, $k = 9$; Jones et al., 2012). As this meta-analysis included both sexual violence in childhood and adulthood, our results may be more representative of the true magnitude of the risk of sexual violence against persons with disabilities across their lifetime. This finding shows that sexual violence is a major problem for persons with disabilities as they are at increased risk. Sexual violence prevention and education curriculum should be offered specifically for this vulnerable population (Barger et al., 2009).

A second objective was to determine whether that rate is influenced by moderators such as gender, the age of the victim, the type of disability, the type of sexual violence, the relationship with perpetrator, publication year, and country in which the study was carried out. Unfortunately, data were lacking to assess the effects of gender and relationship with the sexual offenders. Regarding gender, it would have been interesting to address the potential moderating role of sexual and gender diversity on sexual victimization, but it was not possible due to lack of information in primary studies.

The Moderating Effect of Age

Persons with disabilities were at significant higher risk than those without disabilities to be sexually victimized both when

they were minors (age < 21; $OR = 1.40$) and adults (age ≥ 21; $OR = 2.84$), but the risk ratio was significantly higher in adults compared with the one in minors. This result suggests that although the risk of being sexually victimized diminishes after entering adulthood for persons without a disability, it remains relatively stable (if not higher) for persons with disabilities. In adulthood, individuals with disabilities still have the same limitations to consent and, in some cases, are still dependent on other people for care or personal assistance which may place them at higher risk of sexual violence than nondisabled people. These limitations are more similar between youth with and without disabilities. Moreover, adults with disabilities will likely have the same sexual needs as adults without disabilities, but the lack of adequate sexual education and social attitudes surrounding the sexual need and right of people with disabilities may place them at risk of sexual violence when trying to meet these sexual needs. Intimate partner sexual violence also represents a significant portion of sexual violence committed toward persons with disabilities, mostly involving adults (Wade, 2002).

The Moderating Effect of Disability Type

Among persons with disabilities, the highest risk to be sexually victimized was associated with a sensory impairment with a

Table 3. Summary of Critical Findings.

-
- Individuals with disabilities are at significantly higher risk of sexual victimization than persons without disabilities, even after controlling for publication bias
 - The highest risk of sexual victimization was associated with sensory impairment
 - The risk of sexual victimization among individuals with a disability was significantly higher in adult participants compare with the risk in minor participants
 - Evidence-based data are still lacking about important moderating factors such as gender, subtype of disability, and country of origin
-

rate nearly 4 times higher than that for other types of disability (intellectual/developmental, physical, or mixed; $OR = 7.57$). This finding contrasts with the results of Harrell (2017) which reported that hearing disabilities, a type of sensory impairment, had the lowest rate of violent victimization among the disability types examined. However, this meta-analysis specifically focused on sexual violence whereas Harrell included all violent victimization, such as robbery. Globally, these results support the importance of adapting prevention programs to the type of disability.

The Moderating Effect of Region

OR s for sexual victimization of persons with a disability were significantly higher in African countries ($OR = 20.01$) than in all other countries, whereas it was lower in Western Europe countries ($OR = 1.60$) than in the United States ($OR = 2.57$). Although further studies in African (and Asian) countries are warranted, these results are more likely to reflect sociocultural differences than genuine risk difference. On the one hand, social movements such as #MeToo led to a significant increase in report of sexual violence to the police in North America (e.g., Moreau, 2019). On the other, official rates of sexual violence are known to be lower in countries with larger gender gap difference (e.g., Alyazzi del Frate, 2010), which might also affect (if not more) persons with a disability. Factors such as poor financial support, insufficient scientific taskforce, and lack of awareness or willingness to study the link between disabilities and odds to be sexually victimized should be addressed. Rates of sexual victimization for persons with a disability did not vary significantly across eras.

Summary of Critical Findings

The critical findings of this meta-analysis are summarized in Table 3.

Limitations

There are several potential limitations of this meta-analysis. First, even if one aim was to examine the moderator role of type of abuse (with or without physical contact) and relationship with the perpetrator, this information was not systematically reported in the studies reviewed. The type of housing

(e.g., private house vs. institutional; independently vs. with daily support) might also represent a significant moderating factor in the link between disability and sexual victimization.

Second, since not all authors have the same definition of sexual violence, the prevalence rates may vary according to the position taken by the researchers. For instance, some will take a more conservative approach and decide to exclude all sexual violence without physical contact (e.g., exhibitionism, sexual harassment, indecent proposals), while others will prefer to use a more inclusive definition of sexual violence. When these prevalence rates are pooled, it is hard to interpret the estimated combined effect since the relative proportions involving sexual violence with and without physical contact can no longer be identified. Although this heterogeneity was reduced by the need to limit ourselves to just one form of sexual violence to avoid duplicating participants, the subcategory we used (rape) was not always present or identified using the same terminology (e.g., coercive sexual violence). Despite the conscious effort we made to select a form of abuse that referred substantially to the chosen concept or was as close to it as possible, some authors preferred to study the phenomenon of sexual victimization against individuals with disabilities from a broader perspective, that is, without using categories and sometimes without providing their definition of sexual violence in their study (Giraldo-Rodríguez et al., 2015; Krnjacki et al., 2016; Platt et al., 2017).

The same situation was observed for the definition of disability, which could vary from one study to the next. Although some definitions appeared more often than others in the selected studies (such as one based on two questions, the first concerning the presence of limitations in activities of daily living and the second concerning the use of assistive devices), there was great variability in the measures used by researchers to establish whether or not a participant had some kind of disability. For example, some researchers recruited participants who self-reported as having a disability based on a few questions (e.g., Austin et al., 2016; Krnjacki et al., 2016; Martin et al., 2006; Mueller-Johnson et al., 2014), while others recruited participants who had received a diagnosis confirmed by a professional or with standardized measuring instruments (e.g., Brownlie et al., 2007; Haydon et al., 2011; Kvam, 2000; Mandell et al., 2005) or who had been admitted to a specialized treatment unit for people with disabilities (e.g., Ammerman et al., 1989). Thus, it would be reasonable to assume that the participants had differing degrees of disability and that, because of this heterogeneity in the degree of severity, we should be cautious when interpreting the risk rates obtained for each type of disability.

In addition, for certain subtypes of disability, such as developmental, neurological, language, learning disorder, and autism, there has not been enough research done to be able to interpret their respective risk rates. In fact, the small number of studies that include participants with these types of disabilities could be indicative of the real difficulty they have in being able to express the trauma they have suffered relative to others and not that they face less danger of being the victim of sexual

violence. Yet the lack of results for these five categories of disability should not be confused with the absence of risk of sexual victimization.

Implications for Practice, Policy, and Research

These results have several implications for practice and policy. First, they show that school health and general health care professionals should be aware of and better equipped to (e.g., receiving specialized training, having access to validated instruments) assess sexual victimization of persons with disabilities. Second, public policy, the criminal justice system, and clinical settings should adopt systematic and standardized assessing and recording of possible sexual violence of persons with disabilities. Third, access to information and knowledge about available services for persons with disabilities should be readily accessible. Nationwide publicity should be provided and targeted to persons with disabilities and related professionals (through specialized websites, for instance). Fourth, physical and adapted access (e.g., for motor, sensory, and/or communication impairments) to authorities and support services should be assured (e.g., arranging transportation; providing sign-language interpretation or Braille written questionnaires). Fifth, reluctance to disclose sexual violence by persons with disabilities due to a lack of awareness of rights, fear of losing a home or social, and financial/disability-related support should be recognized and addressed. Sixth, sexual education should be provided to adolescents and adults with disabilities to enhance their knowledge about their rights, the notion of consenting, and the definitions of intimate partner violence and illegal sexual acts in general. Overall, health care screening of individuals with disabilities for sexual victimization (including intimate partner violence) is warranted, not only for prevention but also for intervention and treatment.

These results also have several implications for research. First, it is clear that the link between sexual violence and certain types of disabilities (especially autism and language impairment) is understudied and deserves further attention. Second, sexual victimization of persons with disabilities is also understudied in certain countries, especially in the Global South. Better awareness of the phenomenon and higher financial support for research about it are critically needed, all the more so in these countries. Finally, several types of possible moderating factors such as gender, type of perpetrator (e.g., school staff, caretaker, family member), type of disability (e.g., cognitive vs. motor vs. sensorial), and living arrangement (e.g., private home, supervised home, institutional) deserve further investigation.

Authors' Note

Amylee Mailhot Amborski and Eve-Line Bussi eres contributed equally to this work.

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Supplemental Material

Supplemental material for this article is available online.

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Author Biographies

Amylee Mailhot Amborski is a graduate student in psychology at the Université du Québec à Trois-Rivières. She conducted this meta-analysis as a partial fulfillment of her doctoral essay.

Eve-Line Bussièrès is an associate professor in psychology at the Université du Québec à Trois-Rivières and supervises Amylee Mailhot Amborski. She works in the field of autism with an expertise in meta-analyses.

Marie-Pier Vaillancourt-Morel is an assistant professor in psychology at the Université du Québec à Trois-Rivières. Her research focuses on the effects of sexual violence on adults' sexual and relational functioning as well as on the emergence of sexual difficulties in couple relationships.

Christian C. Joyal is a full professor in psychology at the Université de Québec à Trois-Rivières. He works in forensic neuropsychology, neuroimaging, and sexology.