Sexual functioning in men with and without disabilities: Findings from a representative sample of Australian males.

Abstract

Introduction. Studies on sexual function in men with disabilities have mainly relied on clinical samples; population-based evidence on this topic is limited.

Aim. We aimed to compare aspects of sexual function between disabled and non-disabled men using a representative sample.

Methods. We used data from Ten to Men, a national cohort study of Australian men aged 18 to 55 years. We first compared the prevalence of 15 sexual function-related difficulties in disabled versus non-disabled men. Next, we used Poisson regression to examine associations between disability and sexual function. The main analytic sample had 8,496 men. Weights and adjustments appropriate to the sampling methodology were applied. Models adjusted for potential confounders. Results were reported as prevalence ratios (PRs). P-values of <0.05 were considered statistically significant.

Outcomes. Outcomes were 15 individual items from the Natsal-SF, a validated measure of sexual function with items in 3 domains: physio-psychological aspect; relational aspect; and global self-rating (the 16th item on help-seeking was excluded). These were coded as binary variables denoting past-year sexual problems.

Results. Disabled men had higher prevalence of all outcomes than non-disabled men. 25.6% of men with disabilities and 15.1% of non-disabled men experienced at least 2 out of 15 difficulties. The most prevalent problems were 'orgasmed too early' (43.8% of disabled men, 37.1% of non-disabled men), imbalance of sexual desire between partners (47.6% of disabled men, 39.2% of non-disabled men), and overall sexual dissatisfaction (39.4% of disabled men, 26.7% of non-disabled men). All adjusted PRs were greater than 1.00 for disability; associations were statistically significant except 'partner experienced sexual difficulties' (PR 1.23; 95% CI 0.99, 1.53; p=0.058) and 'orgasmed too early' (PR 1.16; 95% CI 1.00, 1.35; p=0.050). 'Presence of discomfort/pain' had the largest adjusted PR for disability (PR 2.77, 95% CI 1.89, 4.06; p<0.001).

Clinical Translation. This population-based comparative analysis helps contextualize evidence from clinical studies on the relationship between disability and sexual function, and may lead clinicians to new insights about sexual function in male patients with disabilities.

Strengths & Limitations. Two major strengths of this study are that the sample included a non-disabled reference group and results are generalizable to Australian men. A key limitation is that disability and sexual function measures are self-reported.

Conclusion. This study provides a broad foundation of population-based evidence about sexual function in men with disabilities, relative to men without, showing positive associations between disability and 13 of 15 sexual difficulties.

Keywords: sexual function, sexual dysfunction, sexual satisfaction, disability, men, male

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Introduction

Clinical research has suggested that sexual difficulties are prevalent among men with disabilities, including those with multiple sclerosis [1], spinal cord injury [2], and physical disabilities more broadly [3]. These studies are not representative of the diverse population of people with disabilities, whose conditions or impairments may be physical, cognitive, intellectual, psychosocial, or sensory. While some population-based research has revealed disparities in sexual function between men with and without disability [4, 5], the aspects of sexual function they report on are limited. To support disabled men in the general population, it is important to gain a more complete understanding of sexual function using representative data.

The estimated prevalence of disability is approximately 15% globally [6]. Disability may be present from birth or acquired later in life; it comprises a range of conditions and impairments that affect individuals to varying degrees of impact, permanence, and comorbidity. Two of the most well-known conceptual frameworks for understanding disability are the medical model, which frames disability as an individual affliction to be treated or managed, and the social model, which understands disability as the product of barriers that are imposed on individuals with conditions or impairments, limiting their full participation in society [7, 8]. While these two models are often portrayed in opposition, the World Health Organization's (WHO's) International Classification of Functioning, Disability and Health (ICF) integrates aspects of both. Under the ICF, disability is defined by multi-directional relationships between individual characteristics, functional difficulties in performing activities, environmental factors, and barriers to social participation [9].

Like disability, sexual function is not exclusively biomedical [10]. Dimensions of sexual function include physio-psychological aspects (e.g. arousal), relational aspects (e.g. partners' emotional connection), and appraisal of one's sex life (e.g. sexual satisfaction) [11]. Mitchell and colleagues (2012) define sexual function as "the extent to which an individual is able to participate in a sexual relationship as he or she would wish" [11, p. 410] – recognizing its multidimensionality and personal meaning.

Although sexual problems are framed as abnormal [12, 13], population-based studies have shown that male sexual dysfunction is common [4, 5, 13, 14]. For example, an analysis of data from a population-based sample of adult Australian males aged 18 to 55 years revealed that over half had experienced at least one of eight sexual difficulties for three or more months of the past year, with over one-third reporting that they reached climax too quickly and almost one in five reporting that they lacked interest in sex [4]. Data from a representative study in Great Britain showed that approximately one-third of male subjects aged 16 to 74 years were not satisfied with their sex life [5]. In both studies, sexual problems increased with age and were associated with lifestyle factors including chronic health problems and disability [4, 5]. Aside from this research, population-based evidence on relationships between disability and sexual function is scarce.

While medical and psychological research has assessed sexual function in men with disabilities, these analyses focus largely on people with acquired or progressive disabilities that have physical symptoms, such as spinal cord injury, multiple sclerosis, or arthritis. On the whole, the evidence suggests that difficulties related to sexual function are common in this population [1, 2, 15]. Some studies have demonstrated that while sexual satisfaction tends to decline immediately after disability acquisition, it may improve over time as men adapt to their disability [15, 16]. A disadvantage of these studies is that they mostly draw on small, non-representative samples, often without non-disabled comparison groups. Thus, our understanding of sexual function in men with disabilities in the broader population remains limited.

This analysis aims to investigate associations between disability and sexual function in the general male population. We draw on a nationally representative sample of Australian men aged 18 to 55 years from Ten to Men, a study of male health. Unlike clinical studies, Ten to Men uses a broad measure for disability (i.e. is not limited to people with specific condition/impairment types), enables comparison with a non-disabled reference group, and is generalizable to the population. Studying the association between disability and sexual function in Ten to Men therefore establishes a backdrop of population-based evidence, helping to contextualize clinical findings, which are biased because their samples are restricted to people receiving clinical treatment.

Our work builds on the recent cross-sectional analysis by Schlichthorst and colleagues (2016) that identified disability, alongside other personal characteristics such as self-rated health and smoking status, as a key predictor of 8 sexual difficulties, using data from the first wave of Ten to Men [4]. Here, we focus on disability and examine its association with 15 aspects of sexual function. We pose the following research questions: (1) For 15 adverse outcomes related to sexual function, does the proportion of men with disability who experience problems differ from non-disabled men? (2) What is the relative prevalence of these 15 adverse outcomes in disabled versus non-disabled men?

Material and Methods

Data source

Data were sourced from waves 1 and 2 of Ten to Men, a population-based longitudinal study of male health involving 14,000 Australian men aged 18 to 55 years. The procedures and materials used in Ten to Men have been described elsewhere [17]. Briefly, the Ten to Men cohort was recruited in 2013/14 using stratified, multi-stage, cluster random sampling with households as the primary unit of sampling (eligible men were aged 55 and younger). Adult participants completed paper questionnaires with content across five domains (physical health, mental health and wellbeing, health behaviors, social determinants of health, and health service utilization and health knowledge). The response rate for adult men in wave 1 was 36% and retention into wave 2, conducted in 2015/16, was 76%. The study received approval from the University of Melbourne Human Research Ethics Committee and conformed to Declaration of Helsinki principles.

Variables

Disability (main exposure) was measured using the Washington Group short set questionnaire (WG-SS), an internationally used disability identifier based on the ICF framework. Questions in the WG-SS

are designed to capture common functional limitations without identifying specific conditions or impairment types [9]. Respondents stated if they had difficulty in six core activity domains: seeing, hearing, walking or climbing stairs, remembering or concentrating, self-care, and understanding or communicating. Following Washington Group guidelines [18], men who reported "a lot of difficulty" or "cannot do at all" in at least one domain were classified as having disability. Subjects with missing and invalid responses (n=206) were not included for analysis.

Outcomes of interest were 15 individual items from the Natsal-SF [11], a measure of sexual function developed for the British National Survey of Sexual Attitudes and Lifestyles (Natsal 3) and validated for use in community surveys. The male version has 16 items for those who report past-year sexual activity (oral, vaginal, or anal sex). Items span three sub-scales: physio-psychological aspect (e.g. erectile difficulty); relational aspect (e.g. compatibility of sexual preferences with one's partner, for those in at least a 12-month relationship); and global self-rating (e.g. sexual satisfaction). Although the Natsal-SF is designed to be scored as a unitary, continuous measure of sexual function, previous studies have reported on individual items [4, 5, 19]. As our interest was in comparing sexual function between disabled and non-disabled men—and a summary Natsal-SF score may conceal differences—we analyzed items independently as binary variables, signifying the presence of sexual difficulty. The 16th item on help-seeking was not included because it does not directly measure an aspect of sexual function. Further details on the Natsal-SF and outcome variable classification are outlined in Appendix A.

Statistical models adjusted for potentially confounding sociodemographic variables, including age (18-25, 26-35, 36-45, and 46-55 years); employment status (employed; unemployed and seeking work; unemployed but not seeking work); educational attainment (year 12 or greater, year 11 or less), country of birth (Australia or another country); and area-based socioeconomic disadvantage (categorized into quintiles based on the Index of Relative Socio-Economic Disadvantage (IRSD) [20] with the lowest quintile representing residence in areas of greatest disadvantage). Income was not included due to high frequency of non-response (n>1,000) and Aboriginal and Torres Strait Islander

status was not included to due insufficient distribution of ATSI participants with disabilities across confounder strata [21].

Approach to analysis

For each sexual difficulty item, we first calculated prevalence proportions and their differences between men with and without disabilities. We then used multivariate Poisson regression to estimate adjusted prevalence ratios (PRs) for the association between disability and sexual difficulties, fitting each Natsal-SF item as an outcome in 15 models, all adjusting for the same potential confounders. We used two waves of data to ensure that disability and covariate classification preceded the reporting of sexual function outcomes. Disability and covariates, which refer to the present time, were measured at wave 1. Natsal-SF items (sexual difficulty outcomes), which refer to the 12-month retrospective period, were measured at wave 2. Based on previous work by Schlicthorst and colleagues (2016) [4], we planned a priori to examine interactions between disability and age, fitting two-way interactions between disability and age group (dichotomized at 18-34 and 35+ years due to limited statistical power) and assessing goodness of fit with Wald tests.

<INSERT FIGURE 1>

Analyses used two samples: a main sample for Natsal-SF physio-psychological aspect and global self-rating questions and a 'relationship' sub-sample for those who responded to the relational aspect questions. Figure 1 displays sample flow details. There were 13,892 male participants aged 18-55 in wave 1. After excluding those who did not provide data on disability and covariates at wave 1, and Natsal-SF physio-psychological and global self-rating items at wave 2, the main analytic sample included 8,496 men. The second analytic sample was restricted to the 7,309 men who were currently in a relationship for at least 12 months and responded to the Natsal-SF relational aspect items. Analyses were conducted in Stata version 15.0 (manufacturer: StataCorp LLC; location: College Station, Texas, USA) [22]. Data were analyzed using methods appropriate for survey data (i.e. with

sample weights and adjustments for clustering and stratification) [23]. A statistically significant p-value was defined as <0.05.

Results

<INSERT TABLE 1>

Descriptive findings

Disability prevalence in the main analytic sample was 5.6% (95% CI 5.0, 6.3). Characteristics of the main sample at Wave 1, stratified by disability, are displayed in Table 1. Tables 2-4 display results by Natsal-SF sub-scale: physio-psychological aspect (main sample, Table 2); relational aspect (relationship sub-sample, Table 3); and global self-rating (main sample, Table 4).

Across all sub-scales, most sexual difficulties were common. Prevalence proportions for over half of the 15 outcomes exceeded 25.0% among men with disabilities and 15.0% among non-disabled men. Compared to non-disabled men, men with disabilities had higher prevalence of all 15 sexual difficulties. Among the 7,309 participants who responded to all 15 items, 18.8% of non-disabled men and 27.5% of men with disabilities had 1 sexual difficulty; 15.1% of non-disabled men and 25.6% of men with disabilities had 2 or more (data not shown). A large proportion of participants reported 0 sexual difficulties: 66.2% of non-disabled men and 46.9% of men with disabilities had 0 out of 15 (data not shown).

<INSERT TABLE 2>

Differences in prevalence proportions between disabled and non-disabled men were generally lower for relational aspect (relationship sub-sample, Table 3) than physio-psychological aspect (main sample, Table 2) and global self-rating items (main sample, Table 4). The three items with the smallest prevalence differences were all relational aspect items: incompatibility in sexual preferences (difference: 5.0%, 95% CI 1.3, 8.8; p=0.004); partner experienced difficulties (difference: 4.6%, 95% CI 0.6, 8.7; p=0.018); and lacked emotional connection (difference: 3.0%, 95% CI 0.6, 5.3; p=0.002). Prevalence differences exceeded 15.0% for inability to reach orgasm, lacked interest in having sex,

and lacked sexual enjoyment. Differences ranging from 10 to 15% were observed for erectile dysfunction; anxious during sex; lacked arousal/excitement during sex; overall dissatisfaction with sex life; and avoided sex. Items with high prevalence (relative to other items) were not always associated with the largest prevalence differences; for example, 'imbalance in levels of desire' had a prevalence of 39.2% for non-disabled men and 47.6% for disabled men—an 8.4% (95% CI 3.8, 13.8; p<0.001) difference. Similarly, some low-prevalence items had relatively large prevalence differences, such as lack of sexual arousal/excitement (6.9% of non-disabled men and 18.4% of disabled men; difference: 11.5; 95% CI 8.1, 15.0; p<0.001).

<INSERT TABLE 3>

Statistical models

We found no evidence of interaction between disability and age group; results are therefore presented as aggregate estimates for men with disabilities, relative to non-disabled men. Most estimated PRs were statistically significant and above 1, indicating positive associations between disability and each outcome. Although PRs were non-significant for 'orgasmed too early' (main sample, Table 2) and 'partner experienced sexual difficulties' (relationship sub-sample, Table 3), the 95% confidence intervals predominantly did not include the null value of 1. PRs for the associations between disability and relational aspect items (relationship sub-sample, Table 3) were modest compared to most physio-psychological aspect (main sample, Table 2) and global self-rating items (main sample, Table 4). Estimates ranged from 1.23 for 'partner experienced sexual difficulties' (95% CI 0.99, 1.53; p=0.058) to 1.69 for 'lacked emotional connection' (95% CI 1.07, 2.66; p=0.025). 'Orgasmed too early' had an estimated PR of 1.16 (95% CI 1.00, 1.35; p=0.050) for disability, a considerably smaller estimate than those for other physio-psychological aspect items. Lack of sexual enjoyment, lack of sexual arousal/excitement, and presence of discomfort/pain from sex had estimated PRs for disability greater than 2. Men with disabilities had an adjusted relative prevalence of dissatisfaction with and distress about one's sex life approximately 50% greater than non-disabled men (dissatisfaction: PR 1.48; 95%

CI 1.27, 1.72; p<0.001; distress: PR 1.53; 95% CI 1.23, 1.92; p<0.001). Of the global-self-rating items, the PR of 2.14 (95% CI 1.71, 2.67; p<0.001) for 'avoided sex' was the highest in magnitude.

<INSERT TABLE 4>

Discussion

This analysis provides comprehensive evidence on associations between disability and sexual function in a representative sample of sexually active men aged 18-55, adding breadth to a sparse area of population-based research. After adjustment, there was a positive association between disability and all 15 adverse outcomes except 'partner experienced sexual difficulties' and 'orgasmed too early'. 'Presence of discomfort/pain' had the largest estimated PR for disability at 2.77. In general, adjusted PRs for disability were lower in magnitude for the relational aspect outcomes relative to estimates for physio-psychological aspect and global self-rating items. This comparison should be interpreted with caution, however, given that relational aspect respondents were a sub-sample of those who responded to the other Natsal-SF items.

It is important to consider that the Natsal-SF was designed to measure sexual function, not dysfunction [11]. Here, we presented findings in terms of dysfunction to accurately convey data for individual items, as Natsal-SF questions are worded in terms of adverseness (e.g. "Have you felt anxious…?"; "I feel distressed…"). Reframing findings, we observe that most disabled (and non-disabled) men gave responses consistent with sexual function on all 15 items.

Our results contradict those from an earlier analysis using representative data from the Australian Study of Health and Relationships (ASHR); here, Richters and colleagues (2003) did not find evidence of association between disability and sexual problems in men aged 16 to 59, a similar age range to that of Ten to Men [13]. However, in their study disability referred to mobility restrictions, whereas here disability included but was not limited to difficulty walking/using stairs. Furthermore, sexual function in the ASHR analysis was classified as a binary variable (0 versus 1-9

sexual problems). Because nearly half of males in their sample had 1 or more sexual problems, dichotomization may have caused information loss [24].

The high magnitude estimated PR for disability associated with pain in this study is in some regards reasonable to expect, given that pain accompanies many disabilities and is a defining feature of some conditions. For pain as a result of sex as well as other difficulties, future analyses of sexual function in men with disabilities would benefit from more detailed analysis, such as disaggregation of disability by domain of functioning or type of impairment. Here, we lacked statistical power to disaggregate data by WG-SS domain of function.

Sexual satisfaction is understood to contribute to relationship satisfaction in certain circumstances [25], and some research has documented associations between sexual satisfaction and health [26], as well as quality of life [11, 27, 28]. While over a quarter of men in this study were dissatisfied with their sex lives, men with disabilities in this study still had 50% greater adjusted prevalence of dissatisfaction than non-disabled men. Given this finding, more research may be warranted to understand how sexual satisfaction impacts the lives of men with disabilities.

The estimated PR for 'lacked interest' resonates with results from the National Survey of Sexual Attitudes and Lifestyles in Britain, in which the presence of disability or long-standing illness predicted lack of interest in sex [29]. Yet, in a small, Australian, mixed-methods study by Taleporos and McCabe (2001), fewer than one in five participants (male and female) with physical disabilities agreed or strongly agreed with the statement, '*Because I have a disability*, I am not interested in sex' (emphasis added) [30]. Their finding, albeit with a non-representative sample, suggests that factors beyond individual condition or impairment—such as social barriers or internalized stigma [30]—may contribute to a lack of interest in sex among some men with disabilities.

Although men with disabilities are sexually active, people often assume that they do not experience sexual attraction or cannot have sex [7, 16, 31]. Societal attitudes and social exclusion may limit opportunities for men with disabilities to express their sexuality, lower confidence in the context of sexual relationships, or perpetuate normative expectations for sexual performance, in which men with disabilities feel pressure to overcome their perceived 'limitations' to satisfy their partners [32-

34]. Such experiences could feasibly impact aspects of sexual function including distress, anxiety, perceived performance, or avoidance of sexual activity. At the same time, all members of society grapple with normative expectations surrounding sexual function [13]. Tools like the Natsal-SF do not examine individuals' decisions to subscribe to, redefine, or reject normative expectations about sexual function; they measure what is, on average, meaningful to members of society [11].

This analysis has several limitations. Although it uses two waves of data, it does not analyse incident sexual difficulties, but rather their prevalence within a retrospective one-year period. Because WG-SS disability questions refer to current difficulties, it was not possible to examine how sexual function varies by disability duration, permanence, or timing of acquisition—though the future availability of more waves of data will enable this. Additionally, the WG-SS does not identify individuals with milder conditions and impairments [35].

There are several limitations related to the Natsal-SF questions. Consistent with other studies, Ten to Men participants were only eligible to respond to the Natsal-SF if they were sexually active in the past 12 months [19, 36]. This means that the observed associations between disability and Natsal-SF items are only generalizable to sexually active males. The Natsal-SF is less aligned with diagnostic criteria for sexual dysfunction than measures like the International Index of Erective Function (IIEF) [37] or the Premature Ejaculation Diagnostic Tool (PEDT) [38]; this limits its clinical relevance and comparability against other evidence. Because responses to the Natsal-SF are subjective, participants may have different perceptions of what constitutes problems like climaxing 'too quickly'. Another limitation is that relational aspect items are only measured in participants in a 12+ month relationship, even though men in other relationship circumstances could theoretically respond to questions about their sexual partnership(s). Relational items also pose interpretational challenges; for example, compatible sexual preferences may not be as important to sexual function as effective communication and consent practices.

Finally, selection bias may limit the generalizability of findings. A recent appraisal of the representativeness of Ten to Men found that even though the overall response fraction at wave 1 was 35 percent, and despite older, Australian born, and non-urban dwelling men being overrepresented

among participants relative to their population counterparts, the sample has sufficient heterogeneity across key demographic characteristics to estimate generalizable exposure-outcome associations [17]. Still, attrition between waves may have contributed to selection bias, even though retention into the second wave of Ten to Men was comparable to other contemporary longitudinal cohort studies [39, 40].

Conclusions

Sexual function in men with disabilities is often problematized. Our representative findings add perspective to this under-researched area. While comparatively more men with disabilities than men without experienced problems related to sexual function, many of these problems were common regardless of disability status. This suggests that when male patients with disabilities present with sexual difficulty, clinicians should not assume that the problem is necessarily linked to their condition or impairment. Our results also highlight where disparities between disabled and non-disabled men were negligible, such as for premature ejaculation, versus more pronounced, such as sexual excitement. This information may help identify knowledge gaps and steer future research in the area. Further study is needed to understand the contribution of social factors like disability-based stigma to sexual function, and to examine the importance of sexual function to the wellbeing of men with disabilities.

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Conflict of interest

None to declare.

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