

Original Article

Estimating the Prevalence of Sexual Dysfunction Using the New ICD-11 Guidelines

Results of the First Representative, Population-Based German Health and Sexuality Survey (GeSiD)

Peer Briken, Silja Matthiesen, Laura Pietras, Christian Wiessner, Verena Klein, Geoffrey M. Reed, Arne Dekker

Summary

Background: The 11th edition of the International Statistical Classification of Diseases (ICD-11) is due to come into force in 2022. The goal of the present partial evaluation of the GeSiD study findings is to provide the first ever estimate of the prevalence of different types of sexual dysfunction in Germany as defined by the diagnostic guidelines that are soon to take effect.

Methods: The representative GeSiD study was carried out in 4955 men and women who belonged to a doubly stratified random sample of data from residence registration offices across Germany. The participation rate was 30.2%. Various types of sexual dysfunction were ascertained for the first time by means of a screening instrument based on the new ICD-11 guidelines.

Results: The reported prevalence of one or more sexual problems, including mild distress, in the previous 12 months was 33.4% in men (95% confidence interval [31.0; 35.9]) and 45.7% in women [43.0; 48.4]. Some 80.4% of men and 72.1% of women stated that they had had at least one sexual contact in the past year. Sexual dysfunction causing marked distress, as per the ICD-11 guidelines, was reported by 13.3% [11.6; 15.1] of the sexually active men (most commonly, erectile dysfunction in 6.6% and early ejaculation in 4.5%), and by 17.5% [15.6; 19.6] of the sexually active women (most commonly, hypoactive sexual desire in 6.9% and orgasmic dysfunction in 5.8%). Orgasmic dysfunction was approximately twice as common in women as delayed ejaculation was in men. The prevalence of erectile dysfunction increased with age, while that of early ejaculation decreased. Women felt particularly impaired by pain associated with sexual activity.

Conclusion: The findings of this study indicate the importance of sexual dysfunction as an obstacle to sexual health. The study provides the first prevalence estimates for the new ICD-11 guidelines and simultaneously offers a screening instrument for sexual dysfunction that can be used economically in routine practice.

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In May 2019, after intense developmental efforts, the 11th Revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-11) of the World Health Organization (WHO) was adopted, to come into effect on 1 January 2022 (1). As part of this revision, changes to the classification of sexual dysfunction were made. While ICD-10 classification distinguishes between organic and non-organic sexual dysfunction and classifies them in separate chapters—Diseases of the Genitourinary System and Mental and Behavioral Disorders, respectively—this distinction has been abandoned in ICD-11 to reflect the empirical evidence (2). It has been replaced by an integrated classification of sexual dysfunction in a new chapter, Conditions Related to Sexual Health. The ICD-11 diagnosis guidelines categorize sexual dysfunction into four main groups:

- Hypoactive sexual desire and arousal dysfunctions
- Orgasmic dysfunction
- Ejaculatory dysfunction
- Sexual pain-penetration disorder

In order to establish the diagnosis, the sexual problem should have been persistent or episodic over an extended period of time (several months); occurred frequently; and been associated with clinically significant distress. Furthermore, the ICD-11 classification uses a system of qualifiers that may be applied across categories. The temporal qualifier, for example, indicates whether the sexual dysfunction is lifelong, i.e., from the commencement of sexual activity, or did not start until later.

In this article, we use the term “sexual problem” to describe abnormalities or difficulties related to sexual functioning. We use the term sexual dysfunction when additional criteria, such as duration, severity of symptoms and distress, are taken into account (3).

Until now, prevalence estimates of ICD-11-classified sexual dysfunction in the general population are unavailable for Germany and internationally. Britain’s third National Survey of Sexual Attitudes and Lifestyles (Natsal-3) recently investigated the prevalence of sexual dysfunction among 11 509 respondents aged from 16 to 74 years who reported having had sex at least once in the year leading up to the survey. However, the Natsal-3 survey was based not on the ICD-11 guidelines but on the criteria

Institute for Sex Research, Sexual Medicine & Forensic Psychiatry, University Medical Center Hamburg-Eppendorf (UKE), Hamburg, Germany: Prof. Dr. med. Peer Briken, Dr. phil. Silja Matthiesen, Laura Pietras, M.Sc., Christian Wiessner, M.Sc., Dr. phil. Verena Klein, Dr. phil. Arne Dekker

Institute for Medical Biometry and Epidemiology, University Medical Center Hamburg-Eppendorf (UKE), Hamburg, Germany: Christian Wiessner, M.Sc.

Department of Psychiatry, Columbia University Vagelos College of Physicians and Surgeons, New York, NY, USA: Geoffrey M. Reed, PhD

Department of Mental Health and Substance Abuse, World Health Organization, Geneva, Switzerland: Geoffrey M. Reed, PhD

of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), a US diagnostic instrument (4, 5). Expanding the criteria of morbidity to include duration, symptom severity, and distress as features of sexual dysfunction in addition to the sexual problem had a significant effect on estimations of prevalence: While 38.2% of the male respondents reported at least one sexual problem, only 4.2% showed indications of a disorder after application of the three morbidity criteria. Similarly, 22.8% of the women stated at least one sexual problem, but signs of a disorder were only found in 3.6%.

It is also known that the prevalence of sexual dysfunction depends on age (6, 7). This can be attributed not least to the increase in physical contributory factors with increasing age. Thus, sexual problems or dysfunction are also a sign of other clinical conditions that are relevant or require clarification (8, 9) and should be explored when documenting the patient's medical history or by additional testing. At the same time, age and the relationship with one's partner affect the level of distress experienced as the result of sexual problems. In women, for example, the level of distress associated with sexual problems peaks in midlife, declines with increasing age, and is dependent on the existence of a partnership (10). In men, the prevalence of sexual dysfunction and associated distress rises with increasing age (11).

The aim of this partial analysis of the German Health and Sexuality Survey ("Studie zu Gesundheit und Sexualität in Deutschland", GeSiD) is to estimate—for the first time in Germany or anywhere else—the prevalence of sexual dysfunction on the basis of the diagnostic guidelines that will come into effect in 2022 and to differentiate these estimates for various age groups.

Method

Data collection

A detailed description of the methods used in the GeSiD study is provided in the *eMethods*. A doubly stratified residence registration office sample was used. At 200 randomly chosen sample points (stage 1), address data of 18- to 75-year-old residents were randomly sampled (stage 2). From October 2018 to September 2019, interviewers from the social science research institute KantarEmnid conducted the survey in the form of computer-assisted personal interviews (CAPI) including an extensive computer-assisted self-administered interview (CASI) component. Altogether, 4955 men and women took part in the interviews, corresponding to a participation rate of 30.2% (AAPOR response rate 4 [12]; *eMethods*). All respondents gave written informed consent.

The survey instrument was developed and tested, to the extent possible, in a pilot study (13). Altogether, it contains approximately 260 questions and 18 question complexes. However, the number of questions which actually needed to be answered depended heavily on the sexual and relationship experiences of

the respondents. The mean interview duration was just below 51 minutes, with a wide range (19–208 minutes).

The GeSiD study protocol was reviewed and approved by the ethics committee of the Hamburg Psychotherapy Association (reference number: 07/2018-PTK-HH).

ICD-11 screener for sexual dysfunction

The survey instrument included a screener for sexual dysfunction based on the new ICD-11 guidelines (14), i.e., an instrument that queries the symptoms in a self-administered format as concisely and hence economically as possible. The screener was developed in collaboration with the responsible WHO expert (GMR). Because of the limited time available due to the fixed start date of the field research part of the GeSiD study, it was not possible to conduct a validity study for the screener.

Statistical analysis

The module for complex samples of the IBM SPSS Statistics for Windows (Version 24.0, released in 2016; Armonk, NY: IBM Corp) statistical software package, which adjusts for data weighting, clustering, and stratification, was used for all analyses. The lifetime and 12-month prevalences of the individual sexual problems as well as the occurrence of at least one problem were calculated after stratification by gender. Distress, duration, and circumstances of occurrence were included in the analyses by first calculating the prevalence rates for the respondents who reported a specific problem. Moreover, the prevalence rates, based on the total sample, are reported for the simultaneous presence of a sexual problem and severe distress for those respondents who were both severely distressed and sexually active. Sexual activity was defined as at least one sexual contact within the past 12 months.

All prevalence rates are reported with 95% confidence intervals. In addition, for the 12-month prevalence the age-specific prevalence rates stratified by gender are reported. To verify a homogeneous age distribution, the chi-square test for complex samples was used. All analyses were performed using a complete case approach (listwise case deletion).

Results

The prevalence rates of one or more sexual problems in the previous 12 months were 33.4% and 45.7% for men and women, respectively (*Table 1*). Some 80.4% of the men and 72.1% of the women had been sexually active in the past 12 months. Of those who had not been sexually active with another person in that period, 69.7% of men and 47.7% of women had been autoerotically active. At least one sexual dysfunction in the past 12 months was reported by 13.3% of the sexually active men and 17.5% of the sexually active women (*Table 1*). *Table 1* shows a marked increase in the prevalence estimates of sexual dysfunction when, in addition to persons with severe and very severe

TABLE 1

Prevalence of and impairment by sexual problems (figures in %, 95% confidence intervals in brackets)

	Lifetime prevalence of problem	12-month prevalence of problem	Of those who reported the problem			Lifetime prevalence and severe distress	Twelve-month prevalence and severe distress (sexually active persons only) ^{3,3}	Twelve-month prevalence and moderate distress (sexually active persons only) ^{3,3}	
			Severe distress	Always experienced since onset of sexual activity ^{1,1}	Problem only occurs in specific situations ^{2,2}				
Men (unweighted: 2206, weighted: 2322)									
Hypoactive sexual desire	27.9 [25.7; 30.2]	14.7 [12.9; 16.7]	19.1 [15.7; 23.0]	12.0 [8.8; 16.2]	64.5 [58.6; 70.0]	5.3 [4.4; 6.5]	3.8 [3.0; 4.8]	3.3 [2.4; 4.4]	8.5 [7.1; 10.3]
Erectile problems	22.3 [20.3; 24.4]	13.6 [11.9; 15.4]	50.9 [45.3; 56.6]	11.0 [7.6; 15.6]	59.8 [53.7; 65.7]	11.4 [9.9; 13.0]	7.9 [6.7; 9.3]	6.6 [5.4; 8.1]	9.6 [8.1; 11.4]
Delayed ejaculation	16.2 [14.5; 18.0]	9.7 [8.4; 11.2]	28.6 [23.9; 33.8]	14.3 [10.1; 19.9]	71.4 [64.6; 77.4]	4.6 [3.8; 5.7]	3.5 [2.8; 4.4]	3.1 [2.3; 4.0]	6.3 [5.1; 7.8]
Early ejaculation	23.0 [21.1; 25.0]	11.7 [10.4; 13.2]	33.3 [28.7; 38.2]	29.4 [24.8; 34.4]	70.5 [65.4; 75.1]	7.6 [6.4; 9.0]	4.7 [3.8; 5.9]	4.5 [3.6; 5.7]	9.2 [7.9; 10.7]
At least one problem experienced	55.1 [52.6; 57.6]	33.4 [31.0; 35.9]	37.9 [34.6; 41.2]	24.6 [21.4; 28.1]	76.1 [72.6; 79.3]	20.1 [18.2; 22.1]	15.0 [13.4; 16.7]	13.3 [11.6; 15.1]	23.6 [21.5; 25.9]
Women (unweighted: 2431, weighted: 2253)									
Hypoactive sexual desire	50.2 [48.0; 52.5]	27.1 [25.1; 29.3]	21.1 [18.7; 23.9]	15.4 [13.1; 18.2]	70.1 [66.9; 73.1]	10.6 [9.3; 13.0]	6.0 [5.1; 7.1]	6.9 [5.8; 8.2]	17.7 [15.9; 19.6]
Sexual arousal problems	42.6 [40.2; 45.0]	23.4 [21.4; 25.7]	23.0 [20.3; 26.0]	17.0 [14.3; 20.1]	75.2 [70.9; 79.0]	9.7 [8.5; 11.1]	5.2 [4.3; 6.2]	5.8 [4.7; 7.0]	15.3 [13.6; 17.0]
Orgasmic problems	40.2 [37.5; 42.9]	23.1 [21.0; 25.3]	24.7 [21.7; 28.0]	37.8 [33.9; 41.8]	72.6 [68.2; 76.6]	9.8 [8.5; 11.4]	5.8 [4.9; 6.9]	6.5 [5.4; 7.9]	17.6 [15.5; 19.9]
Sexual pain	20.6 [18.6; 22.9]	10.9 [9.5; 12.4]	46.7 [41.4; 52.1]	24.5 [20.2; 29.3]	75.8 [70.1; 80.7]	9.6 [8.3; 11.1]	4.9 [4.1; 5.8]	5.7 [4.7; 6.9]	10.6 [9.2; 12.2]
At least one problem experienced	72.5 [69.9; 74.9]	45.7 [43.0; 48.4]	36.2 [33.4; 39.1]	36.1 [32.8; 39.6]	84.1 [81.6; 86.4]	25.2 [23.1; 27.4]	16.5 [14.9; 18.3]	17.5 [15.6; 19.6]	34.4 [31.6; 37.3]

¹ This question has a high non-response rate: 21.7% of men and 16.5% of women with hypoaactive sexual desire left it unanswered.

² This question has a high non-response rate: 33.7% of men and 36.8% of women with hypoaactive sexual desire left it unanswered.

³ Participants who had had sex with another person in the preceding 12 months.

TABLE 2

Prevalence of sexual problems in the last 12 months by age group: men (figures in %, 95% confidence intervals in brackets)

Age in years	Twelve-month prevalence	Twelve-month prevalence and severe distress	Twelve-month prevalence and severe distress (sexually active persons only)
Hypoactive sexual desire			
18–25	10.4 [7.8; 13.8]	1.6 [0.7; 3.7]	1.8 [0.7; 4.5]
26–35	12.8 [9.8; 16.6]	2.5 [1.3; 4.6]	2.5 [1.3; 4.8]
36–45	13.6 [9.9; 18.4]	3.4 [1.7; 7.0]	3.5 [1.6; 7.4]
46–55	14.3 [11.0; 18.5]	2.3 [1.2; 4.6]	2.5 [1.2; 5.1]
56–65	15.9 [11.8; 20.9]	7.4 [4.7; 11.4]	5.9 [3.3; 10.5]
66–75	22.6 [17.2; 29.2]	5.8 [3.2; 10.4]	3.8 [1.7; 8.3]
Erectile problems			
18–25	6.5 [4.3; 9.8]	2.7 [1.5; 4.8]	3.5 [2.0; 6.1]
26–35	6.8 [4.8; 9.4]	4.9 [3.1; 7.6]	4.7 [2.9; 7.4]
36–45	10.2 [7.2; 14.4]	5.0 [3.0; 8.2]	4.3 [2.3; 7.9]
46–55	9.2 [6.2; 13.4]	5.4 [3.5; 8.3]	5.6 [3.5; 8.8]
56–65	20.8 [16.2; 26.2]	13.9 [10.1; 18.9]	10.9 [7.0; 16.7]
66–75	33.7 [27.2; 40.8]	17.7 [13.1; 23.5]	14.4 [9.5; 21.3]
Delayed ejaculation			
18–25	9.3 [6.5; 13.3]	2.6 [1.0; 6.6]	2.6 [0.9; 7.6]
26–35	7.7 [5.6; 10.5]	1.2 [0.6; 2.2]	1.2 [0.6; 2.3]
36–45	8.8 [5.8; 13.1]	1.9 [0.8; 4.5]	2.1 [0.9; 5.0]
46–55	8.5 [5.7; 12.4]	3.5 [2.1; 5.8]	3.7 [2.2; 6.3]
56–65	10.4 [7.2; 14.7]	4.6 [2.6; 7.9]	4.3 [2.2; 8.4]
66–75	15.7 [11.2; 21.4]	8.5 [5.1; 13.7]	5.5 [2.6; 11.2]
Early ejaculation			
18–25	16.3 [12.6; 20.7]	6.2 [3.8; 9.9]	8.0 [4.9; 12.7]
26–35	16.7 [13.6; 20.4]	5.9 [4.0; 8.8]	5.2 [3.4; 7.8]
36–45	10.2 [7.2; 14.4]	3.7 [2.0; 6.6]	3.7 [1.9; 6.9]
46–55	11.2 [8.3; 15.0]	4.0 [2.2; 7.0]	3.6 [1.9; 6.7]
56–65	8.8 [5.9; 12.8]	5.4 [3.2; 8.8]	4.9 [2.7; 8.8]
66–75	6.9 [4.3; 10.8]	3.3 [1.6; 6.5]	1.9 [0.8; 4.8]

Numbers of cases in the various age groups for the 12-month prevalence, stated as age group, unweighted number of cases and, in parentheses, weighted number of cases: 18–25 years: 372 (295); 26–35 years: 518 (428); 36–45 years: 362 (382); 46–55 years: 347 (519); 56–65 years: 350 (428); 66–75 years: 258 (277)

distress, those who experience only moderate distress are included. During the last 12 months before the survey, 14.7% of men and 27.1% of women experienced hypoactive sexual desire (*Table 1*). Over the life span, hypoactive sexual desire had occurred in almost one-third of the surveyed men and in more than half of the women (*Table 1*). However, only about 20% of the respondents reporting hypoactive sexual desire experienced significant distress as a result. In relation to the life span, this means that 5.3% of men and 10.6% of women showed signs of dysfunction in the sense of

hypoactive sexual desire (*Table 1*). Among men, the proportion who perceive hypoactive sexual desire as severely impairing rises with increasing age. The opposite is true for women, where the proportion decreases with increasing age (*Tables 2 and 3*).

More than half of the men experiencing problems with erection felt significantly impaired as a result. However, only a small proportion (11%) of these men reported lifelong erection problems. In the past 12 months 7.9% of male participants reported symptoms of erectile dysfunction as defined by the ICD-11 guidelines, over their lifetime 11.4% (*Table 1*). Problems with erection were most common in the age groups above 55 years, and 17.7% of the 66- to 75-year-old respondents reported symptoms of erectile dysfunction (*Table 2*).

More than 40% of the women had experienced problems with sexual arousal during their lifetime. However, less than 10% of all female respondents showed symptoms of sexual arousal dysfunction as defined by ICD-11 guidelines (*Table 1*). While the prevalence of sexual arousal problems in the last 12 months before the survey was especially high among 46- to 55-year-old women (28.1%), less than 6% of the female respondents in this age group reported associated distress indicative of dysfunction (*Table 3*). Orgasmic problems and signs of orgasmic dysfunction were about twice as common among women as delayed ejaculation was in men (*Table 1*). The lowest 12-month prevalence rates of orgasmic dysfunction were found in the age groups of 36- to 45-year-old and 66- to 75-year-old women.

In the group of men with early ejaculation, almost 30% of the respondents reported having had the problem during their lifetime (*Table 1*). About one-third of those affected experienced significant distress as the result of their symptoms (*Table 1*). Symptoms of dysfunction with early ejaculation were particularly common in the group of sexually active young men, at 8%, and fell with increasing age to 1.9% in the oldest age-group of sexually active men (*Table 2*).

Almost half of the women who experienced sexual pain reported that they were significantly impaired by it (*Table 1*); this was particularly the case in the group of young women. Among 18- to 25-year-old women, 16.2% reported problems and 8.2% symptoms of a sexual pain disorder (9.4% of those who were sexually active; *Table 3*).

Discussion

Representative surveys conducted in the 1990s propagated very high prevalence rates for sexual dysfunction, e.g., estimates of 43% for women and 31% for men (15). In the train of the medicalization of sexual problems through the introduction of 5-phosphodiesterase (PDE-5) inhibitors, these figures were heavily criticized, as it was suspected that they were intended to help increase the demand for such medication (16–19). It is certain that the prevalence of sexual dysfunction was overestimated as a result of

these estimates. When stricter criteria are applied, one arrives at significantly lower estimates which are much closer to reality and to the situation in clinical care—and thus to the challenges in sexual health. Nevertheless, even the lower prevalence estimates in Natsal-3, based on the DSM-5 criteria, and the available data of the GeSiD survey indicate that sexual dysfunction is a highly relevant healthcare problem which needs to be adequately addressed. This is especially true given that sexual dysfunction is commonly associated with physical problems or complaints, in particular erectile dysfunction in men and sexual pain disorder in women (6–9). In line with the results of other survey studies (10, 11), the GeSiD survey found prevalence rates lower than one would have expected given the assumed physical problems, especially in the age groups above 55 years and among women. Apparently, the distress resulting from any sexual problems decreases with advanced age.

Besides the Natsal-3 data, which are based on the DSM-5 criteria (4), the present study is—to the best of our knowledge—the first to distinguish sexual problems from disorder criteria based on the ICD-11 guideline. Comparisons of the frequencies of sexual problems reveal a high level of agreement with regard to the results of Natsal-3, conducted between 2010 and 2012, and the GeSiD data collected in 2019. However, there is one major difference: In Natsal-3, only 6.5% of women reported problems with regard to sexual interest and sexual arousal. Here, it has to be kept in mind that in DSM-5, lack of sexual interest and arousal problems are combined under one diagnosis (female sexual interest/arousal disorder). For this diagnosis to be made, three of six possible symptoms must be present. Natsal-3 approaches this classification by requiring that female respondents must report both lack of interest and lack of arousal. In contrast to Natsal-3, the GeSiD survey collected information about problems and dysfunction related to hypoactive female sexual desire and diminished sexual arousal separately, based on the ICD-11 concept. With this approach, these conditions were reported significantly more frequently. Mitchell et al. (4) themselves stated that because of their approach in Natsal-3 the estimated prevalence was most likely too low. When duration, symptom severity, and distress were added as criteria indicating a disorder of female sexual interest/arousal, the morbidity was 0.6% (compared with 6.9% for the corresponding dysfunction in GeSiD).

Even though prevalence estimates of sexual problems were quite similar in Natsal-3 and GeSiD, the use of DSM-5 criteria in Natsal-3 also leads overall to low sexual dysfunction prevalence rates of about 1% or less over the preceding 12 months. By contrast, the ICD-11 estimates are significantly higher, at about 3 to 7% for the individual dysfunctions. This is explained by the fundamental differences in the reasoning of ICD-11 (covering all areas of health) and DSM-5 (covering only mental disorders). In DSM-5,

TABLE 3

Prevalence of sexual problems in the past 12 months by age groups: women (figures in %, 95% confidence intervals in brackets)

Age in years	Twelve-month prevalence	Twelve-month prevalence and severe distress	Twelve-month prevalence and severe distress (sexually active persons only)
Hypoactive sexual desire			
18–25	19.4 [15.6; 23.8]	6.2 [4.1; 9.2]	7.4 [5.0; 11.0]
26–35	32.5 [28.7; 36.6]	8.9 [6.6; 11.9]	8.9 [6.6; 11.9]
36–45	27.6 [22.9; 32.9]	6.5 [4.5; 9.3]	6.4 [4.4; 9.4]
46–55	31.0 [25.9; 36.7]	7.3 [4.8; 10.9]	8.1 [5.2; 12.4]
56–65	28.8 [24.3; 33.8]	4.7 [2.8; 7.7]	4.6 [2.5; 8.6]
66–75	18.0 [13.1; 24.3]	1.6 [0.5; 4.8]	1.7 [0.5; 5.6]
Sexual arousal problems			
18–25	16.8 [13.4; 20.9]	5.6 [3.5; 9.0]	6.7 [4.1; 10.8]
26–35	26.3 [22.3; 30.8]	8.1 [5.9; 10.9]	8.5 [6.2; 11.5]
36–45	20.8 [16.7; 25.7]	5.0 [3.2; 7.6]	5.4 [3.4; 8.2]
46–55	28.1 [22.9; 33.9]	5.9 [3.8; 9.0]	5.0 [3.0; 8.2]
56–65	26.7 [21.9; 32.3]	4.2 [2.5; 6.9]	4.4 [2.3; 8.3]
66–75	16.9 [11.7; 23.7]	1.5 [0.5; 4.1]	1.2 [0.3; 5.0]
Orgasmic problems			
18–25	27.0 [22.5; 32.1]	6.9 [4.7; 10.1]	7.9 [5.3; 11.5]
26–35	26.2 [22.5; 30.4]	7.4 [5.2; 10.3]	7.0 [4.9; 10.0]
36–45	21.1 [16.8; 26.3]	5.4 [3.2; 8.9]	6.0 [3.6; 9.9]
46–55	28.4 [23.3; 34.2]	6.8 [4.5; 10.1]	6.3 [4.0; 9.9]
56–65	21.0 [16.6; 26.3]	6.4 [4.1; 9.8]	6.9 [3.8; 12.2]
66–75	11.6 [7.6; 17.3]	1.0 [0.2; 4.7]	3.2 [0.7; 14.1]
Sexual pain			
18–25	16.2 [12.3; 21.0]	8.2 [5.8; 11.5]	9.4 [6.6; 13.1]
26–35	12.4 [9.9; 15.5]	5.5 [3.9; 7.7]	5.9 [4.2; 8.3]
36–45	7.9 [5.5; 11.3]	4.0 [2.2; 7.1]	4.4 [2.5; 7.9]
46–55	11.7 [8.6; 15.7]	4.8 [3.2; 7.3]	5.2 [3.3; 8.1]
56–65	10.9 [8.1; 14.5]	5.8 [3.8; 8.8]	6.1 [3.6; 10.3]
66–75	6.8 [4.0; 11.6]	1.4 [0.5; 3.9]	2.4 [0.6; 10.0]

Numbers of cases in the various age groups for the 12-month prevalence, stated as age group, unweighted number of cases and, in parentheses, weighted number of cases: 18–25 years: 352 (256); 26–35 years: 544 (400); 36–45 years: 415 (388); 46–55 years: 464 (490); 56–65 years: 413 (445); 66–75 years: 211 (302)

a positive results requires that the disorder cannot be attributed to a physical disease, stress, violence in a relationship, or medications (2). Thus, the prevalence in our study is based on another, considerably more comprehensive disorder category than used, for example, in the Natsal study. However, the data for the individual disorders are comparable with the prevalence ranges reported in other studies (20). In men, early ejaculation and erectile dysfunction are the most common sexual dysfunctions, while women most commonly suffer from hypoactive sexual desire

Key Messages

- The 11th Revision of the International Statistical Classification of Diseases (ICD-11), coming into effect in 2022, includes a separate chapter on Conditions Related to Sexual Health, which will change the classification of sexual dysfunction significantly.
- In the German Health and Sexuality Survey (GeSiD), prevalence estimates for sexual dysfunction were for the first time obtained in a representative survey using these ICD-11 guidelines.
- Sexual dysfunction is a comparatively common barrier to sexual health and may point to the presence of other diseases.
- This study used a time-efficient screener which can be employed in patients with signs of sexual problems to further explore these conditions in the patient's medical history.

and sexual arousal dysfunction. In contrast to Natsal-3, GeSiD also included respondents who most recently had been sexually active not with a partner but, for example, by masturbation. Furthermore, the GeSiD study data permit statements about the ICD-11 specifications.

The strength of this data analysis is that it is based on a large, representative sample with a broad age spectrum. The response rate is comparatively high (21). The main limitation of the study is that the prevalence according to the ICD-11 guidelines was assessed with a screening instrument which, due to time constraints, had not been cross-validated prior to the start of the study. The screening closely follows the wording of the ICD guidelines. Thus, the accuracy of the estimation cannot match the accuracy of clinical interviews, which typically last 30 to 45 minutes and would not be feasible in a broadly constructed survey. The interviews might tend to introduce a response bias towards denial of sexual problems, resulting in underreporting. However, a high level of privacy is provided to the respondent by the assisted, yet secure answering of questions on dysfunction on the computer, as the interviewer cannot see the responses.

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Conflict of interest statement

Prof. Briken was an advisor to the WHO with regard to the classification of sexual disorders in ICD-11. G.M. Reed was a member of the WHO secretariat and coordinator of the ICD-11 revision process. All views expressed in this article represent the view of its authors, unless explicitly stated otherwise, and do not represent the official policy or position of the WHO.

The remaining authors declare that no conflict of interest exists.

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Corresponding author

Prof. Dr. med. Peer Briken
Institut für Sexualforschung, Sexualmedizin und Forensische Psychiatrie
Universitätsklinikum Hamburg-Eppendorf
Martinistr. 52, 20246 Hamburg, Germany
briken@uke.de

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► Supplementary material

For eReferences please refer to:
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eMethods, eTables:
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Supplementary material to:

Estimating the Prevalence of Sexual Dysfunction Using the New ICD-11 Guidelines

Results of the First Representative, Population-based German Health and Sexuality Survey (GeSiD)

by Peer Briken, Silja Matthiesen, Laura Pietras, Christian Wiessner, Verena Klein, Geoffrey M. Reed, and Arne Dekker

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eMETHODS

Representative, population-based studies on sexual health in the adult population have for many years been conducted in a large number of European countries, in the USA and in Australia. They reveal a significant change in sexual behavior in the second half of the 20th century. These typically government-funded studies help to steer health policy measures and improve sex education and family planning services. For a long time, comprehensive population-based data on sexual behavior have been unavailable in Germany. The German Health and Sexuality Survey (GeSiD), the first nationwide study in this field, is designed to represent the 18- to 75-year-old, German-speaking, residential population of Germany. The method used is described in detail below. The GeSiD study was reviewed and approved by the ethics committee of the Hamburg Psychotherapy Association (reference number: 07/2018-PTK-HH).

Sampling

The approaches to generate sex survey samples which are as representative as possible of the population concerned differ from country to country (e1). The survey strategy depends not only on the available resources and the survey method used—for example, when deciding whether to use online, telephone, or address samples—but also on national peculiarities in the regulations for provision of administrative data. For instance, the Danish online study Sexus (e2) benefits from a public register of e-mail addresses. In the GeSiD interview study presented here, a special framework was created by the German residence registration system: While a residential address sample was used in the British Natsal survey (e3), the generally accepted gold standard of sexual science survey research, the decentralized organization of the residence registration offices in Germany enabled the selection not just of addresses but of actual persons.

As is common practice with high-quality surveys in Germany, the GeSiD used a doubly stratified residence registration office sample. First, a total of 200 sample points, most of which were identical with one residence registration office, were randomly selected (stage 1). Next, at each of these sample points an average of 86 persons aged between 18 and 75 years were drawn from the residential registers (stage 2). In the gross sample, the proportion of 18- to 35-year-old men and women was intentionally increased (oversampling) to enable detailed analyses of this target group, which is of special importance for sexual health risk assessment.

Conduct of the interviews

Once drawn, the address data were allocated to a total of 256 interviewers, who then collected the data between October 2018 and September 2019. A consortium of the social science survey institutes Kantar EMNID, Kantar Public, and Kantar Health was responsible for sampling and data collection (e4).

The target persons were first contacted by means of a letter informing them about the study and inviting them to participate. Compensation of €5 for reading the extensive information material was sent with the letter. The target persons could keep the money even if they decided not to participate. In 966 cases, however, the money was returned: either the target persons explicitly declined to accept it, or the letter could not be delivered to the addressee. Over the following weeks, the interviewers personally visited the target persons and requested their participation. Male interviewers visited male respondents and female interviewers called on female respondents. If a target person decided to participate, the interviews were conducted at their home at a time of their choice. Prior to the start of the interview, the respondents received additional information about the study, anonymization, and data protection and gave, with their signature, their written informed

consent to participation in the study. The interviews started with a computer-assisted personal interview (CAPI). The greater part of the data were subsequently collected in a computer-assisted self-interview (CASI) during which the respondents entered their answers on a laptop. During this process, the interviewers remained in the room, ready to answer any potential questions, but without looking at the answers. Once the self-completion segment was finished, the interviewers no longer had access to the data entered. Name and data of the respondents were separated immediately after the end of the interview to prevent re-identification of the respondent solely on the basis of the dataset. The mean adjusted interview duration was 50.9 minutes (median 48 minutes; 25th percentile 40 minutes; 75th percentile: 59 minutes). On completion of the interview, each participant received an additional allowance of €25. A total of 4 955 interviews were conducted in this manner. The participation rate was 30.2% (AAPOR response rate 4; [e5]) and the cooperation rate was 37.9%. The latter represents the proportion of interviews actually carried out at the homes of the addressees with whom there was at least one contact (AAPOR cooperation rate 4; [e5]).

Survey instrument and items used

The GeSiD questionnaire is the revised version of a survey instrument which was developed in an extensive pilot study and tested on 1155 respondents (8). Different versions of the instrument are available for men and women. It comprises more than 260 questions and question complexes; however, depending on the respondents' previous sexual and relationship experiences, only some of these questions were asked. The topics covered included the following items:

- Life situation
- Knowledge of sexuality
- First sexual experience
- Sexuality in the current stable relationship or as a single
- Gender
- Sexual orientation
- Attitudes to sexuality
- Sexuality via digital media
- Various sexual experiences, including experience with specific sexual practices, masturbation, and prostitution
- General and sexual health

The survey instrument is available from the contributing authors. Except for the variable "gender" which was obtained from the residence registration offices, all variables offered the respondents the option to provide no information.

Items used

As an introduction to this section of the survey instrument, the study participants read the following: "Sexuality is sometimes associated with difficulties or problems. These may occur once, at times, or permanently. There are considerable differences in how people handle and perceive such difficulties. In the following, some common sexual difficulties are listed. Please tick each experience you have made at least once in your life over a period of several months (yes/no)." The time criterion required for the diagnosis of a dysfunction was thus already present ("over a period of several months"). This was followed by the preliminary translation of the individual ICD-11 dysfunctions (14). The various problem areas were addressed in a gender-specific manner (M = male; F = female):

- Hypoactive sexual desire: "I had no or considerably reduced sexual desire or a considerably reduced drive to engage in sexual activity." (M/F)
- Erectile dysfunction: "I could not get or maintain an erection of sufficient duration or stiffness to be sexually active." (M)
- Sexual arousal dysfunction in women: "My response to sexual stimuli was absent or significantly reduced." (F)

- Orgasmic dysfunction: “I only rarely had an orgasm, or my orgasm was less intense or delayed.” (F)
- Ejaculatory dysfunction – early ejaculation: “I ejaculated before or very shortly after starting to have sexual intercourse, without being able to control it.” (M)
- Ejaculatory dysfunction – delayed ejaculation: “I did not ejaculate despite sufficient sexual stimulation, although I would have liked to.” (M)
- Sexual pain disorder: “I had significant—persistent or recurrent—difficulties during sexual intercourse, for example because of tension of the pelvic floor muscles, pain, or fear of pain.” (F)

If a problem was affirmed, questions were asked regarding distress (five-point Likert scale: “not at all” to “very severe”), duration (lifelong or at times), and occurrence in the past 12 months (yes/no), as well as circumstances in which the difficulty occurred.

In the presentation of the results, a condition is termed a sexual problem if abnormalities or difficulties related to sexual function were affirmed by the respondent. If in addition to the existence of a problem a “severe” or “very severe” impairment was stated on the Likert scale, this indicates a sexual dysfunction or sexual disorder according to the ICD-11 guidelines.

Data weighting and statistical analysis

First, the GeSiD data were weighted to correct the oversampling-related differences in selection probability between respondents in different age groups (design weight). Using a second weighting, these grossly representative data were adjusted to the data of the 2018 microcensus with regard to gender, age, educational attainment, nationality, and region (adjustment weight).

All steps of the data analysis were performed using the Complex Samples module of the data analysis software package IBM SPSS Statistics (Version 25.0, released in 2017; Armonk, NY: IBM Corp) to ensure that the stratification and clustering of the complex sample were taken into account.

Representativeness and non-responder analysis

In common with other surveys, the GeSiD study attempts to get as close as possible to the ideal of representativeness for the target group—here, the German-speaking residential population aged between 18 and 75 years. Systematic losses due to refusal to participate raise the question of how representative the sample is and consequently to what extent it is possible to extrapolate the results of the GeSiD sample to the general population. In order to evaluate whether significant differences between responders and non-responders exist, which would be indicative of systematic bias, a brief non-responder survey was conducted. The data were collected in various ways:

- Personal contact by the interviewer (n = 2323)
- Telephone contact by the study hotline (n = 46)
- Contact by e-mail (n = 15)
- Contact by mail (n = 326)

After final adjustment, a total of 2681 (15.6% of the gross sample) short questionnaires completed by non-responders were included.

eTable 1 shows a comparison of non-responders and responders (weighted and unweighted data). Overall, the demographic characteristics of responders and non-responders match well. The already small differences between responders and non-responders are further reduced by applying the weights, which contribute to an increased representativeness of the GeSiD sample.

Sample

eTable 2 shows the demographic characteristics of the sample by gender and age groups.

eTABLE 1

Demographic characteristics of the GeSiD participants by gender and age groups (figures in %)

Variable	Non-responders	Responders	Responders (weighted)
Gender (in %)			
Female	42.3	52.9	49.8
Male	57.7	47.1	50.2
Age group (in %)			
18–25	8.1	15.5	12.0
26–35	14.4	22.3	17.6
36–45	15.9	16.5	16.4
46–55	20.9	17.6	21.8
56–65	23.3	17.6	18.9
66–75	17.5	10.6	13.3
Nationality (in %)			
German	83.3	90.6	85.9
Other	12.4	9.4	14.1
Unknown	4.3		
BIK region type (in %)			
More than 100 000 residents	60.1	65.5	64.2
Less than 100 000 residents	39.9	34.5	35.8

BIK, A system used in Germany to classify areas by population size; GeSiD, German Health and Sexuality Survey (Studie zu Gesundheit und Sexualität in Deutschland)

eTABLE 2

Demographic characteristics of the GeSiD participants by gender and age group (figures in %)

Gender	Men							Women						
Age in years	18–25	26–35	36–45	46–55	56–65	66–75	Total	18–25	26–35	36–45	46–55	56–65	66–75	Total
Marital status (%)														
Single	96.6	61.0	31.9	20.3	10.8	7.7	35.8	93.2	52.2	23.9	14.6	8.8	6.3	29.3
Married/RCP	3.4	37.0	60.2	62.4	68.5	74.0	52.6	5.4	43.4	65.6	63.6	61.6	51.9	51.7
Widowed	0.0	0.0	0.0	0.3	3.5	5.3	1.3	0.0	0.7	0.3	3.2	10.3	25.3	6.4
Divorced	0.0	2.0	7.9	17.0	16.9	13.0	10.1	1.5	3.7	10.2	18.6	19.3	16.5	12.5
Stable relationship (%)														
No	52.9	26.1	20.0	17.2	17.3	16.9	23.7	35.9	17.9	13.5	19.3	28.1	40.1	24.7
Yes, with opposite sex	45.7	71.7	78.5	81.8	82.6	82.1	75.1	63.0	81.0	85.1	79.3	71.0	59.9	74.3
Yes, with same sex	1.4	2.0	1.3	0.8	0.1	0.9	1.1	0.9	0.9	1.4	1.4	0.9	0.0	1.0
Other/not stated	0.0	0.2	0.2	0.2	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0
Educational attainment (%)														
Low	38.2	27.8	28.7	30.0	40.6	49.1	34.8	22.6	17.4	23.0	27.9	34.1	49.2	28.9
Moderate	23.0	23.5	28.3	36.5	30.9	25.2	28.6	21.5	30.1	33.9	42.3	41.5	32.7	34.9
High	38.8	48.7	43.0	33.5	28.5	25.7	36.6	55.9	52.5	43.0	29.8	24.4	18.2	36.1
BIK region type (%)														
> 500 000* ¹	23.9	27.2	30.7	25.9	18.5	22.6	24.9	29.5	31.7	31.3	24.8	20.5	26.0	26.9
> 500 000* ²	9.6	8.8	8.3	10.9	10.4	12.6	10.0	8.5	7.6	8.0	11.4	9.5	7.4	8.9
100 000–499 999* ¹	14.9	17.6	12.0	11.9	11.0	12.1	13.2	18.2	15.0	11.8	16.1	11.5	15.0	14.4
100 000–499 999* ²	14.7	13.2	13.8	15.7	16.0	15.5	14.8	14.1	13.0	13.9	14.1	19.5	16.1	15.2
50 000–99 999* ¹	2.1	3.1	3.4	2.4	2.0	2.4	2.6	2.2	2.6	2.7	2.7	2.3	3.1	2.6
50 000–99 999* ²	9.0	9.3	5.9	9.1	10.3	9.2	8.9	4.9	8.3	10.3	8.4	7.2	5.0	7.6
20 000–49 999	13.8	8.5	10.5	9.8	12.3	10.3	10.7	11.4	9.8	10.9	10.1	13.7	11.8	11.3
5000–19 999	7.7	8.0	10.3	9.6	13.4	7.7	9.7	8.5	7.0	7.1	7.3	9.7	10.6	8.3
2000–4999	3.0	2.9	4.3	2.5	4.7	4.8	3.6	2.5	1.5	3.4	3.9	3.9	3.7	3.2
< 2000	1.3	1.3	0.8	2.3	1.5	2.8	1.7	0.2	3.4	0.7	1.3	2.1	1.3	1.6
Sexual identity (%)														
Heterosexual* ³	92.8	88.3	92.3	95.1	92.7	88.3	92.9	86.8	91.9	93.7	90.7	89.9	93.8	91.2
Homosexual* ³	1.6	1.9	2.9	2.0	0.3	1.2	1.7	0.9	0.9	1.4	1.2	0.4	0.0	0.8
Bisexual	1.1	0.5	1.2	0.8	1.2	0.3	0.9	5.3	3.5	0.7	1.4	0.5	0.0	1.7
Other/not stated	4.5	3.0	3.6	2.1	5.9	10.1	4.6	6.0	3.6	4.0	6.1	9.3	6.2	6.2
Denominator														
Unweighted	389	538	382	366	376	285	2 336	377	565	434	504	498	241	2 619
Weighted	312	450	409	546	460	311	2 487	283	423	402	536	474	349	2 468

BIK, A system used in Germany to classify areas by population size; RCP, registered civil partnership; GeSiD, German Health and Sexuality Survey (*Studie zu Gesundheit und Sexualität in Deutschland*)

*¹ Core area

*² Consolidation area to peripheral area

*³ Predominantly or exclusively