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## FULL-LENGTH REPORT



# Who feels affected by “out of control” sexual behavior? Prevalence and correlates of indicators for ICD-11 Compulsive Sexual Behavior Disorder in the German Health and Sexuality Survey (GeSiD)

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## ABSTRACT

**Background and aims:** The purpose of this study was to examine the prevalence and correlates of indicators consistent with Compulsive Sexual Behavior Disorder (CSBD)—defined and operationalized according to the ICD-11 guidelines—in a large ( $n = 4,633$ ; 50.5% male; 49.5% female) probability-based German national sample. **Methods:** Participants were asked if they had ever experienced “intense and recurring sexual impulses or sexual urges that I had difficulty controlling and resulted in sexual behavior” over a period of several months. Those who reported this experience were queried about the associated distress. **Results:** Overall, 4.9% of men [95% CI = 3.9–6.1] and 3.0% of women [95% CI = 2.3–3.9] reported experiences consistent with ICD-11 diagnostic requirements for lifetime diagnosis. In the 12 months preceding the study, 3.2% of men [95% CI = 2.4–4.2] and 1.8% of women [95% CI = 1.2–2.5] reported experiences consistent with CSBD requirements. Compared to controls and participants who reported elements of compulsive sexuality but without accompanying distress, strict religious upbringing was most prevalent in the CSBD group. The CSBD group was more likely to view sexual practices like men having sex with men as unacceptable and to report the belief that pornography has negative impacts on their sex life and life in general. Compared to the other two groups, the CSBD group was significantly more likely to have received psychiatric treatment for depression or another mental health problem during the past 12 months. **Discussion and conclusions:** The current study provides novel and important insights into the prevalence and characteristics of CSBD in the general population.

## KEYWORDS

compulsive sexual behavior disorder, German health and sexuality survey (GeSiD), ICD-11, sexual health, sex survey

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## INTRODUCTION

In 2019, the World Health Organizations member states endorsed the ICD-11 (World Health Organization, 2019), which came into effect as a basis for statistical reporting by WHO member states on 1 January 2022 (World Health Organization, 2022). Significant changes have been made in many areas - including sexual disorders (Reed et al., 2019). While the ICD-10 included the disorder “excessive sexual drive” in the sexual dysfunctions section, the ICD-11 includes “compulsive sexual behavior disorder” (CSBD)—which is, notably, placed in the grouping of impulse control disorders (Briken, 2020; Kraus et al., 2018; Reed et al., 2016; World Health Organization, 2022). CSBD is characterized by a persistent pattern of failure to control intense, repetitive sexual impulses or urges, resulting in repetitive sexual behavior over an extended period (6 months or more) that causes marked distress or impairment in personal, family, social, educational, occupational, or other important areas of functioning. Distress that is entirely related to moral judgments and disapproval about sexual impulses, urges, or behaviors is not sufficient to meet this requirement (Kraus et al., 2018; Reed et al., 2022).

CSBD is an umbrella construct (Briken, 2020) that can involve behaviors as diverse as compulsive masturbation, problematic pornography use or promiscuous sexuality. It can be conceptualized using a common sexual science etiological theory - the dual control model (Bancroft & Vukadinovic, 2004; Bancroft, 2008). Accordingly, CSBD can be understood as a dysbalance in the relationship between overwhelming sexual needs (excitation) and a diminished capacity for sexual self-control (sexual inhibition) (Briken, 2020; Pfaus, 2009; Rettenberger, Klein, & Briken, 2016; Walton & Bhullar, 2018). This leads to recurrent sexual behaviors that are accompanied by distress and negative consequences and are often perceived as not satisfying or only momentarily satisfying.

While many individuals struggle with CSBD symptoms, this condition has a controversial history (Fuss et al., 2019; Grubbs, Kraus, Perry, Lewczuk, & Gola, 2020; Klein, Briken, Schroeder, & Fuss, 2019; Levine & Troiden, 1988). These controverse discussions were accompanied by a fear that a mental disorder diagnosis that focuses on high frequency of sexual behaviors, especially when associated with formally culturally stigmatized behaviors such as masturbation, could lead to the pathologization of common sexual behaviors (Fuss et al., 2019; Walton & Bhullar, 2018). This discussion was further complicated by various dilemmas about the etiology of and correct classification of the disorder (as behavioral addiction, impulse control disorder, or obsessive-compulsive disorder (Briken, 2020; Briken & Turner, 2022; Grubbs, et al., 2020; Kafka, 2010)). One of the consequences is that a high frequency of sexual behavior alone is not the focus of the ICD-11 diagnostic requirements for CSBD (Reed et al., 2022). The ICD-11 diagnostic requirements make clear that CSBD should not be diagnosed based on a high level of sexual interest and behavior alone (e.g., due to a high sex

drive) in the absence of impaired control over sexual behavior and significant distress or impairment in functioning (Štulhofer, Jurin, & Briken, 2016).

## Prevalence rates of compulsive sexual behavior/ compulsive sexual behavior disorder

In the remainder of this paper, we use the term compulsive sexual behavior (CSB) as a term for symptoms and self-report of impaired control over sexual behavior, when the clinical disorder (CSBD) has not been assessed. We reserve the term compulsive sexual behavior disorder (CSBD) for the diagnostic construct assessed according to the ICD-11 guidelines.

Since the 1980s, a prevalence of 3–5% of CSB has been assumed in the general population, without having been empirically substantiated (Carnes, 1983). Studies on the prevalence of clinically relevant indications of compulsive sexual behavior in the general population are still rare. The Swedish study by Långström and Hanson (2006), which investigated correlates of compulsive sexual behavior in a Swedish sample, was, to our knowledge, the first to assess a prevalence estimation in the general population. More recently (Dickenson, Gleason, Coleman, & Miner, 2018), a study on prevalence using a screen cut point of a score of 35 or higher on the Compulsive Sexual Behavior Inventory (CSBI) -13 was carried out in the US American population, which produced very high prevalence estimates (10.3% in men; 7.0% in women). Given its operationalization of the phenomenon, the study might overestimate the proportion of individuals who were in need of clinical treatment. The CSBI-13 is a screening instrument developed before the publication of the ICD-11 guidelines for CSBD. It asks about frequencies of problem areas (e.g., “felt unable to control sexual behavior”). The answers are ranked on a 5-point Likert scale ranging from “never” to “very frequently”. The sum score of the CSBI-13 is likely to be related to the presence or absence of CSBD, but it is unclear how sensitive and specific it is in relation to the ICD-11 diagnostic requirements. Operationalization in studies has varied widely (Böthe et al., 2018; Dickenson et al., 2018; Långström & Hanson, 2006), which makes the range of figures not comparable. Prior to the publication of ICD-11, measures used in studies focusing on CSBD were not based on specific clinical guidelines. However, in their study on the development of the ICD-11-based Compulsive Sexual Behavior Disorder Scale (CSBD-19), Böthe et al. (2020) reported prevalences for the four study samples after establishing a cut-off of 50 points (out of possible 76 points). These were three community samples but also a national probability-based sample of Hungarians ( $n = 473$ ) who use the Internet at least once a week. 5.2% of men and 3.3% of women of the probability sample were above the cut-off and thus belonged to the group with evidence of CSBD. Despite the rapidly growing literature on CSB and CSBD, no study so far explored the phenomenon using a large probability-based national sample and assessing factors that differentiate between those individuals likely to have CSBD and those who do not.



## Correlates of compulsive sexual behavior

Across studies, CSB seems to be substantially more prevalent in men than in women (Böthe et al., 2018; Dickenson et al., 2018). CSB has frequently been investigated in men who have sex with men (Coleman, 1991; Coleman et al., 2010; Ni et al., 2021) and often in association with sexual risk taking (Rooney, Tulloch, & Blashill, 2018). Sexual urges and the frequency of sexual behavior (e.g., total sexual outlet) are age-dependent (Peters, Pullman, Kingston, & Lalumière, 2022), with CSB being negatively related to age. Characteristics such as number of partners, masturbation frequency, number of orgasms per day or week (i.e., total sexual outlet) (Peters et al., 2022), and non-existent or infrequent condom use (as a potential risk factor for STI infection; Ni et al., 2021; Luo et al., 2018; Scanavino et al., 2018), are important correlates of CSB. Whether education, migration status, and relationship status play any role in CSB is currently unknown. People with a low educational status are more likely to be affected by health problems than people with high educational status (Autorengruppe Bildungsberichterstattung, 2014). This correlation is due to the fact that the chances of social participation and the availability of health-related resources decrease with the quality of educational attainment. Migration status is an important determinant of health in Europe as migrants are more vulnerable towards particular health problems, such as certain communicable diseases, poor mental health and less access to health services. Psychological distress and precarious working conditions are linked to the process of migration (Gushulak, Pace, & Weekers, 2010), which in consequence may also be associated with CSBD. It is obvious that relationship status influences solitary sexual behaviors (e.g., masturbation, pornography use) as well as sex within and outside of romantic relationships. Migration status has not previously been explored as a specific correlate in relation to CSBD (e.g. Dodge, Reece, Cole, & Sandfort, 2004; Grubbs, et al., 2020).

Other correlates include the history of being sexually abused as a child among people who exhibit CSB (Blain, Muench, Morgenstern, & Parsons, 2012; Rooney et al., 2018; Slavin et al., 2020a, b). Clinical, as well as cross-sectional, studies show that people who report CSB are also more likely to report other mental health problems, such as depression (Camilleri, Perry, & Sammut, 2020; Grubbs, et al., 2020). However, there is also the question of reduced general life satisfaction (Blum et al., 2018; Daspe et al., 2018), which to the best of our knowledge has not been explored thus far in persons showing CSBD.

Moral incongruence in CSB is conceptualized as the experience that one's sexual behaviors are inconsistent with one's beliefs (Grubbs et al., 2019; Grubbs & Perry, 2019). Up to now, there has been no prevalence estimate of CSBD that accounts for the possible confounding influence of moral incongruence. As noted above, with CSBD there is a particular concern about false positive diagnoses and the pathologization of sexual behaviors (Fuss et al., 2019). The ICD-11 guidelines for CSBD, however, take precautions against an anticipated risk of a false positive diagnosis. CSBD should not be diagnosed if distress from compulsive

sexual behavior can *only* be explained by attitudes that are hostile to sexuality or moralistic (Kraus et al., 2018). In practice, such differentiation might be challenging (Kraus and Sweeney, 2019), as sexuality-hostile attitudes and the related experience of moral incongruence (e.g. the interaction between the disapproval of pornography and its actual use) can contribute to symptoms that appear similar to CSBD (Grubbs, Wilt, Exline, Pargament, & Kraus, 2018; 2019a, b; 2020; Lewczuk, Glica, Nowakowska, Gola, & Grubbs, 2020). However, distinguishing between distress related to moral incongruence and actual CSBD is extremely important to provide appropriate help. People who are distressed because of moral incongruence about “normal” sexual behavior and do not have a problem with sexual self-control may need some sort of treatment or counseling, but they do not fulfill the diagnostic guidelines for CSBD. In the area of personal and sexual history, a strict religious upbringing could reinforce the experience of moral incongruence in relation to sexual behaviors like pornography use (Grubbs et al., 2018; 2019a, b; 2020). Considering that CSBD should not be diagnosed if the distress is *only* driven by moralistic or sex-negative attitudes, we hypothesized that such attitudes nevertheless would possibly be meaningful as correlates. For example, people with CSBD experience their pornography use as distressing or negative. We were therefore interested in examining how prevalence rates might be influenced by factors potentially related to moral incongruence (e.g., strict religious upbringing).

## Current study

The purpose of this study was to examine, in a nationally representative sample, how many participants have experienced their sexuality as difficult to control over an extended period of time (CSB) and what distinguishes those who felt at least moderately affected by the condition (CSBD) from those who did not feel affected. The current study focuses on differences between individuals with and without perceived problems with sexual self-control. More clarity about what distinguishes these two groups—from each other, but also from individuals who do not report difficulties with sexual self-control—would have clear clinical implications. The study focuses particularly on the assessment of links between specific beliefs and attitudes about sexuality and the perception of problems in sexual self-control as distressing. It also tests the utility of the main descriptors in the ICD-11 guidelines in a large-scale epidemiological study. By this we aim to provide the first estimation of possible prevalence of CSBD—defined and operationalized according to the ICD-11 guidelines—in a large probability-based national sample. Such estimates are relevant to (sexual) health care providers, as they can be used for resource and intervention planning.

## METHODS

### Participants and data collection

We used data from the first German national sex survey (GeSiD: German Health and Sexuality Survey). The sample

for the current study included 4,633 participants. The total sample included 4,955 participants. Those with missing information on CSB were excluded. All participants were German-speaking residents, aged between 18 and 75 years. The study used a two-stage stratified register-based sampling, with 178 municipalities (200 sampling points) selected in the first stage, and a random proportional to size sample of residents per sampling point selected in the second stage. Young adults aged 18–35 years, the part of the population that is most sexually active and most vulnerable to sexually transmitted infections, were oversampled to enable more detailed insights into sexual risk taking and the associated reproductive and sexual health outcomes. The dataset was weighted for age, gender, education, nationality, and region to be broadly representative of the adult German population (for a detailed description of the GeSiD study methodology, see [Matthiesen et al., 2021](#)). Calculated according to the 2016 guidelines of the American Association for Public Opinion Research (AAPOR), which were adapted for use in the context of German public opinion surveys ([Stadtmüller et al., 2019](#)), the study response rate was 30.2%. Fieldwork was carried out between October 2018 and September 2019 by 257 trained interviewers employed by the Kantar GmbH social research institute. Prior to an interviewer's visit (interviewer's gender was matched with participant's), all selected participants received a personal letter with a short study information, an endorsement letter from the German Federal Centre for Health Education, and the research team's contact information. Written informed consent was obtained from all participants; 30 EUR (about \$34 USD) was offered as a token of appreciation.

The survey was conducted using a combination of computer assisted personal interviewing (CAPI) and, for more sensitive questions, computer assisted self-interviewing (CASI). During the CASI phase, the interviewer stayed in the same room as the participant but was instructed to position themselves so that they could not see what the participant was typing. The interviewer's role was to provide support, if needed. On average, the interview took about 50 min to complete (median completion time was 48 min). The questionnaire consisted of 260 questions, which were divided into 18 modules that focused on different aspects of sexual health. It was extensively pretested in 2016/2017 using a sample of 1,555 individuals ([Matthiesen, Dekker, & Briken, 2018](#)).

## Measures

**Sociodemographic characteristics.** We asked for age, gender, education (no school-leaving qualification, primary, secondary, and tertiary education), migration background (dichotomized into no migration experience vs. first or second generation migrants; for more information about definition see ([Wiessner et al., in press](#)), and current relationship status (dichotomized into single vs. married/in a relationship). In addition, the following question was used to address sexual identity: "Please select the answer which describes best how you see yourself at present?" Answers were anchored on a 7-point scale. The first five points ranged from 1 = exclusively heterosexual to 5 = exclusively

homosexual/gay, while the final two points denoted asexual and other identities. The numbers were: exclusively heterosexual (88.8%), mainly heterosexual (7.8%), bisexual (1.4%), mainly lesbian/gay (0.4%), exclusively lesbian/gay (1.0%), asexual (0.5%), Other (0.1). Due to sample size considerations, we classified participants into sexual minority (bisexual, mainly lesbian/gay, solely lesbian/gay, asexual, other) vs. heterosexual.

**CSB/CSBD.** Following the ICD-11 guidelines, participants were asked if they had ever experienced the following difficulty over a period of several months: "I experienced intense and recurring sexual impulses or sexual urges that I had difficulty controlling and resulted in sexual behavior." (yes/no). If a problem was affirmed, a question was asked regarding distress and impairment (5-point Likert scale: "not at all" to "very severe"). We also asked for occurrence during the past 12 months (yes/no). In the presentation of the results, participants who confirmed that they experienced control difficulties but reported no or only slight distress/impairment formed the CSB group, while those with *moderate, severe* or *very severe* distress/impairment were assigned to the CSBD group. We use the term compulsive sexual behavior (CSB) following the first part of the WHO definition ("...a persistent pattern of failure to control intense, repetitive sexual impulses or urges resulting in repetitive sexual behavior"). We use the compulsive sexual behavior disorder (CSBD) label to characterize participants who were at least moderately affected by perceived distress, although this does not necessarily indicate a positive clinical diagnosis.

**Personal (sexual) history.** Participants were asked about being raised religiously. This indicator was formulated as: "I experienced a strict religious upbringing in my childhood and youth", with a corresponding scale ranging from 1 = "does not apply to me at all" to 5 = "totally applies to me." Answers 4 and 5 were defined as strict religious upbringing. An experience of child sexual abuse was measured by asking "Has a person ever tried to touch you against your will with sexual intent or tried to make you touch him/her?", with the possible answers "no" or "yes, it has happened to me or someone attempted this with me". Participants were then asked how old they had been, when this had occurred for the first time. If they had been below the age of 18 and the abusing person was at least 5 years older they were defined as having experienced any form of child or adolescent sexual abuse. First lifetime experience with pornography was measured by asking: "How old were you when you watched pornography for the first time" (numeric answers were dichotomized into "prior to age 15" vs "15 and above"<sup>1</sup>). Participants were also asked "Did pornography influence your knowledge of sexuality while growing up?"

<sup>1</sup>We intended to investigate if a first lifetime experience with pornography at a young age (prior to age 15) is associated with CSBD. The cut-off 15 years was chosen because in Germany with completion of the 14th year people are legally no longer children are criminal responsible and no longer a child within the meaning of protective provisions under sexual criminal law.





with the possible answers “no” or “yes”. The total number of sex partners was measured by asking “How many men/women have you had sex with in total (i.e., in your entire life)” (numeric answers were dichotomized into “less than 10” vs “10 or more”<sup>2</sup>). Participants were also asked if they had “ever paid for sex” with the possible answers “no” or “yes”.

**Sexual behavior.** Frequency of masturbation and pornography use in the past 12 months was measured with two separate items on a 5-point scale ranging from 1 = “never” to 5 = “daily”. For this analysis we recoded this to “never”, “sometimes” (“once or several times per year”/“once or several times in the past four weeks”), and “frequently” (“several times a week” or “daily”). The number of orgasms was assessed for the past 4 weeks – regardless of how orgasm was achieved (masturbation, partner sex etc.). Condom use in the past 12 months was measured on a 4-point scale ranging from 1 = “never” to 4 = “always”.

**Attitudes towards sexuality and perceived impact of pornography.** Attitudes towards sexuality in general were measured with a single-item indicator (“Many people use terms ‘liberal’ and ‘conservative’ to describe their attitude toward sexuality (...) to which group do you belong?”). A 7-point scale, ranging from 1 = “liberal (open-minded)” to 7 = “conservative (traditional)”, was used to record responses. Attitudes towards different sexuality related practices were assessed in the following form: “People may have different opinions on what is and what is not acceptable in the areas of love, sexuality and family planning. How acceptable are the following situations to you?” 5-point scales, ranging from not at 1 = “not at all acceptable” to 5 = “totally acceptable” were used to rate the following practices: married person has sex with someone else; men having sex with men; women having sex with women; women having an abortion; person having sex with prostitutes; person having sex with many different partners; and person having sex without love. Self-evaluated impact of pornography use was assessed by the following two questions: “Has your pornography consumption ever resulted in...?” Then six different problem options (e.g., relationship problems) were given, as well as no problem option. If at least one option was mentioned, this was counted as a negative impact of pornography on everyday life. Secondly, “Did your consumption of pornography have an impact on your sex life?” was asked. Four choices were offered: 1 = “no impact”, 2 = “a positive impact”, 3 = “both a positive and negative impact”, and 4 = “a negative impact” (answers were dichotomized into “negative impact” vs “no impact, positive impact, or mixed impact”<sup>3</sup>).

<sup>2</sup>We categorized this variable as measure of a relatively high number of lifetime sex partners which has also been done that way in the Natsal survey (Mercer et al., 2013).

<sup>3</sup>We were particularly interested in the relationship between a negative impact of pornography use and CSBD as we hypothesized that that the other three categories would not show relevant differences between each other in their associations with CSBD.

**Health, sexual health, and life satisfaction.** Lifetime experience of a sexually transmitted infection (STI) was measured using the following question: “Has a doctor or any other member of the health care system ever informed you that you were suffering from one of the following diseases/infections?”, followed by a list of 15 different conditions/infections. If the participant reported at least one of them, he/she was categorized as a person diagnosed with an STI. Drinking problems were assessed in the following way: “Please rate how far you believe you have your alcohol consumption under control”. A 4-point scale, ranging from 1 = “completely under control” to 4 = “not at all under control”, was used to record responses.

Participants were also asked if they had received treatment for depression or any other mental illness in the previous 12 months. Finally, general life satisfaction was measured using a 7-point scale, ranging from 1 = “not at all satisfied” to 7 = “completely satisfied” by asking the question “All things considered, how satisfied are you currently with your life?”

## Statistical analysis

Lifetime prevalence and prevalence in the past 12 months of indicators for CSBD and CSB were computed by survey analysis, which accounted for the two-stage stratified sample design and individual weighting to achieve population representativeness. Three groups of participants (indicators for lifetime CSBD, lifetime CSB, and no lifetime CSB) were compared, separately, on personal history, sexual behaviors, attitudes towards sexuality, health status, and life satisfaction using multinomial logistic regression. The assumptions of independence of errors and no multicollinearity, which are important for the estimation of the multinomial logistic regression models, were fulfilled. The largest of the three groups (no lifetime CSB) was used as the reference category. Odds ratios adjusted for sex, age, migration background, education, religious upbringing, and attitudes towards different sex practices are reported with the corresponding 95%-confidence interval. We conducted a sensitivity analysis regarding the prevalence of lifetime CSBD and lifetime CSB by excluding all participants in these two groups that reported either a strict religious upbringing or conservative attitudes towards sexuality. Thereby, we intended to calculate a lower boundary for the prevalence which incorporates the potential moral incongruence experienced by the participants. All computations were performed as a complete case analysis, and carried out in the complex samples module of SPSS (IBM SPSS Statistics for Windows, version 27.0; Armonk, NY: IBM Corp).

## Ethics

All GeSiD study procedures were approved by the Ethical Board of the State Psychotherapy Chamber in Hamburg.

## RESULTS

### Prevalence of CSBD indicators

Overall, 4.9% of men [95% confidence interval (CI) 3.9%–6.1%] and 3.0% of women [95% CI 2.3%–3.9%] reported



experiences consistent with ICD-11 diagnostic requirements for lifetime CSBD ICD-11 diagnosis. They reported difficulties in controlling sexual behaviors over an extended period of time and reported being at least moderately distressed or impaired by this. During the past 12 months, 3.2% of men [95% CI 2.4%–4.2%] and 1.8% of women [95% CI 1.2%–2.5%] had met these requirements. The lower boundary (excluding all participants who reported either a strictly religious upbringing or conservative attitudes towards sexuality) revealed the following numbers: lifetime men: 2.5% [95% CI: 1.9%–3.3%]; lifetime women: 1.6% [95% CI: 1.1%–2.2%]; 12 months men: 1.6% [95% CI: 1.0%–2.4%]; 12 months women: 0.9% [95% CI: 0.6%–1.4%]. From the assessment of lifetime prevalence of CSBD we excluded 64 participants; 42 individuals were omitted from the assessment of CSBD in the past 12 months.

### Sociodemographic characteristics

Participants with evidence of CSB as well as CSBD were more likely to be male, younger, and more likely to have a migration background (Table 1).

### Personal (sexual) history

Strict religious upbringing was reported most often in the CSBD group (OR 1.70; 95% CI 1.14–2.55). Members of the CSB and the CSBD groups (CSB: OR 1.76; 95% CI 1.18–2.61; CSBD: OR 1.83; 95% CI 1.16–2.89) were more likely to report a history of child or adolescent sexual abuse (more than 32%) than the group not reporting CSB (nearly 27%). More than 74% of the participants in the CSB and the CSBD groups stated that their knowledge about sexuality was influenced through the use of pornography (compared to 59.5% in the non-CSB group; CSB: OR 2.06; 95% CI 1.24–3.41; CSBD: OR 2.06; 95% CI 1.27–3.33). A comparable proportion in all three groups reported they had 10 or more sexual partners by the time of participation in the study. Individuals in the CSBD group were more than twice

(OR 2.50; 95% CI 1.59–3.92) as likely as the non-CSB group to have paid for sex during their lifetime (see Table 2).

### Sexual behavior

In both the CSB and the CSBD groups, participants reported more frequent masturbation (CSB: OR 2.48; 95% CI 1.33–4.61; CSBD: OR 6.87; 95% CI 3.24–14.56) and pornography use (CSB: OR 2.12; 95% CI 1.02–4.39; CSBD: OR 4.35; 95% CI 2.15–8.78) than the group not reporting CSB. Compared to the reference group, orgasmic frequency was substantially higher in the CSB group: more than 30% had experienced 15 or more orgasms during the last four weeks (OR 2.89; 95% CI 1.72–4.87). There were no differences between the three groups in the proportion of people who reported that they never or rarely used a condom during sex (see Table 2).

### Attitudes towards sexuality and pornography

The majority of participants of the CSB group were characterized by liberal attitudes (71.5%) towards sexuality in general (OR 0.84; 95% CI 0.74–0.97). In contrast with that, participants of the CSBD group were more likely (OR 0.98; 95% CI 0.95–1.00) to view sexual practices like men having sex with men, women having sex with women, or having sex with many different partners or without love as unacceptable (42.9%). Participants in the CSBD group were more than three times more likely (OR 3.36; 95% CI 2.15–5.23) to indicate they believed that pornography had a negative impact on their sex lives and about four times more likely (OR 3.90; 95% CI 1.95–7.78) to endorse the belief that pornography use had a negative impact on their lives in general (see Table 2).

### Health and life satisfaction

Participants in the CSB group were more likely to have ever received an STI diagnosis (OR 1.83; 95% CI 1.03–3.28) than the reference group, although the reported lifetime incidence in the CSB group, as well as in the CSBD group, was relatively low (around 16%). The CSBD group was also

Table 1. Sociodemographic characteristics

	Persons without CSBD (unweighted N = 4,276, weighted N = 4,198)	Persons with CSB (unweighted N = 187, weighted N = 173)	Persons with CSBD <sup>1</sup> (unweighted N = 170, weighted N = 179)	P-value
Male gender (%)	49.4	65.0	62.9	<0.001
Age (M (SD))	46.6 (15.5)	37.7 (15.1)	40.7 (16.2)	<0.001
Migration <sup>2</sup> background (%)	24.1	32.6	33.7	0.007
Education (%)				0.875
Low	29.7	29.3	34.1	
Medium	32.1	32.1	29.5	
High	38.2	38.6	36.5	
In relationship (%)	76.3	74.1	68.9	0.177
Sexual minority (%)	3.2	4.4	6.4	0.197

<sup>1</sup>Note. no formal ICD-11 diagnosis; indicator for CSBD is defined by at least feeling moderately affected by difficulties to control sexual behavior (lifetime).

<sup>2</sup>Coding. migration background = 1, no migration background = 0; in a relationship = 1, not in a relationship = 0; Sexual minority: heterosexual = 1, sexual minority = 2.



Table 2. Crude and multivariable analyses of CSBD

	Persons without CSB (unweighted N = 4,276, weighted N = 4,198)	Persons with CSB (unweighted N = 187, weighted N = 173)			Persons with CSBD (unweighted N = 170, weighted N = 179)		
	Percent of population	Percent of population	Adjusted OR <sup>1</sup>	95% CI	Percent of population	Adjusted OR <sup>1</sup>	95% CI
Personal (sexual) history							
Strictly religious upbringing	22.6	20.3	1.02	0.63–1.66	32.0	1.70	1.14–2.55
Experienced child or adolescent sexual abuse	26.9	32.3	1.76	1.18–2.61	32.9	1.83	1.16–2.89
First lifetime experience with pornography prior to age 15	26.4	43.2	1.23	0.85–1.78	39.2	1.43	0.94–2.20
Knowledge about sexuality influenced by pornography	59.5	77.6	2.06	1.24–3.41	74.6	2.06	1.27–3.33
Number of sex partners ≥10	27.8	35.0	1.33	0.92–1.92	27.5	1.02	0.65–1.60
lifetime experience with sex worker	13.0	20.9	1.37	0.83–2.28	28.0	2.50	1.59–3.92
Sexual behavior							
Frequency of masturbation (last 12 months)							
Never	31.7	18.8	1.00		13.6	1.00	
Sometimes	54.4	49.2	1.27	0.73–2.21	52.4	2.67	1.35–5.30
Frequently	13.9	32.0	2.48	1.33–4.61	34.0	6.87	3.24–14.56
Frequency of pornography consumption (last 12 months)							
Never	39.6	19.7	1.00		23.6	1.00	
Sometimes	49.3	59.4	1.66	0.95–2.89	49.8	1.76	1.00–3.11
Frequently	11.2	20.9	2.12	1.02–4.39	26.5	4.35	2.15–8.78
Number of orgasms (last 4 weeks)							
0 to 4 orgasms	56.8	30.4	1.00		44.9	1.00	
5 to 14 orgasms	29.5	37.9	1.85	1.16–2.93	32.2	1.28	0.80–2.06
15 or more orgasms	13.7	31.7	2.89	1.72–4.87	22.9	1.77	0.98–3.20
Condom use (last 12 months; never or sometimes)	75.2	69.1	1.00	0.64–1.56	68.7	0.89	0.56–1.42
Attitudes towards sexuality and perceived impact of Pornography							
Attitudes towards sexuality in general <sup>2</sup>			0.84	0.74–0.97		0.95	0.83–1.10
1–3 ( <i>liberal</i> )	52.2	71.5			56.7		
4	23.0	12.6			16.6		
5–7 ( <i>conservative</i> )	24.8	15.9			26.7		
Attitudes towards different sexuality related practices <sup>2, 3</sup>			1.02	0.99–1.06		0.98	0.95–1.00
1st Tertile ( <i>not acceptable</i> )	36.1	31.9			42.9		
2nd Tertile	34.8	31.4			36.6		
3rd Tertile ( <i>acceptable</i> )	29.1	36.7			20.5		
Negative impact on sex life due to pornography	11.1	20.9	1.45	0.88–2.39	32.6	3.36	2.15–5.23
Negative impact on everyday life due to pornography	34.3	58.4	2.40	1.04–5.53	72.3	3.90	1.95–7.78
Health and life satisfaction							
Lifetime STI <sup>4</sup>	13.0	16.8	1.83	1.03–3.28	16.3	1.70	0.93–3.11

(continued)



Table 2. Continued

	Persons without CSB (unweighted N = 4,276, weighted N = 4,198)	Persons with CSB (unweighted N = 187, weighted N = 173)			Persons with CSBD (unweighted N = 170, weighted N = 179)		
	Percent of population	Percent of population	Adjusted OR <sup>1</sup>	95% CI	Percent of population	Adjusted OR <sup>1</sup>	95% CI
Uncontrolled alcohol consumption	18.2	26.2	1.37	0.91–2.06	23.8	1.30	0.89–1.90
Treatment for depression or other mental illness (last 12 months)	10.0	7.0	0.79	0.42–1.47	23.1	3.29	2.15–5.04
Life satisfaction <sup>2</sup>			0.90	0.75–1.07		0.71	0.62–0.82
1–3 ( <i>not satisfied</i> )	6.3	6.7			15.0		
4	10.1	8.1			16.2		
5–7 ( <i>satisfied</i> )	83.7	85.2			68.8		

Notes. <sup>1</sup>Odds ratios adjusted for sex, age, migration background, education, religious upbringing, and attitudes towards different sexuality related practices.

<sup>2</sup>For these variables percentages are given for categories (ordinal scales), OR are calculated with predictors as metric scales.

<sup>3</sup>The following sexuality related practices were considered: married person has sex with someone else, men having sex with men, women having sex with women, women having an abortion, person having sex with prostitutes, person having sex with many different partners and person having sex without love.

<sup>4</sup>Sexually Transmitted Infections.

significantly more likely (OR 3.29; 95% CI 2.15–5.04) to have received psychiatric treatment for depression or another mental health problem during the past 12 months. General life satisfaction was lower in the CSBD than in the non-CSB reference group (OR 0.71; 95% CI 0.62–0.82) (see Table 2).

## DISCUSSION

This study provides first estimates of the prevalence of indicators consistent with ICD-11 CSBD guidelines in a large, nationally representative sample of a Western European country. In addition, we assessed factors that differentiate between three groups of individuals: those reporting impaired but non-distressing sexual self-control (CSB), those reporting distressing impaired sexual self-control (CSBD), and individuals not reporting impaired sexual self-control. We found a lower prevalence for CSBD than previous studies, especially with the calculation of a possible lower boundary based on the exclusion of individuals with likely moral incongruence. There was no significant difference between the three groups regarding the proportion of participants belonging to sexual minority groups but an influence of migration background. We found an elevated rate of history of sexual abuse as a child in both the CSB and the CSBD group. Our results support the significance of moral incongruence in connection with CSBD and the association of CSBD with other mental health problems and lower life satisfaction.

The prevalence of CSBD obtained by using the ICD-11 screener are similar to estimates that have been proposed in the literature (Briken, 2020; Böthe, et al., 2020; Carnes, 2001; Grubbs et al., 2018). However, calculating a lower boundary by excluding participants whose distress might be caused by

their religious upbringing or conservative attitudes towards sexuality led to much lower estimates. Both estimates are markedly lower than those reported by Dickenson et al. (2018), who used a different conceptualization and measurement. Gender differences observed in our study are in line with previous reports (Böthe et al., 2018; Dickenson et al., 2018; Långström & Hanson, 2006). We found no difference in educational status, unlike in other health-related problems (Autorengruppe Bildungsberichterstattung, 2014). As Grubbs, et al. (2020) pointed out in their systematic review, most previous studies did not report relationship status. We included relationship status, but found no differences between the three groups. Compared to Dickenson et al. (2018), who found that ethnic minorities were more likely to report CSBD in the current study, participants with a migration background were more likely to be classified both in the CSB and the CSBD group. It should be noted, however, that migrants' status in Germany is different from the situation in the US. More research on ethnic minorities and CSBD seems warranted.

Sexual minorities were more common in the CSBD group (6.4%) than in the CSB (4.4%) and the group that did not report problems with sexual self-control (3.2%). However, these differences were not significant. Thus, our results differ from those reported in Dickenson et al. (2018) where CSBD was 3–4 times more likely in sexual minority groups and the highest in individuals “who identified as other”. Again, this may be due to the different method of assessing distress, different sensitivity of the instrument, and/or the degree to which sampled sexual minority individuals represented the respective population. Unlike Dickenson et al. (2018), we compared three and not two groups. Although our sample size was larger, we have grouped together individuals belonging to sexual minority and also included





self-identified asexuals. The difference may reflect culture-specific issues related to sexual minorities in Germany compared to the US, an issue that should be investigated in more detail in further studies.

Similarities between the two groups of interest, the CSB and CSBD individuals, are found in the experience of child or adolescent sexual abuse before the age of 18 years and an early use of pornography. In their systematic review, [Slavin, Scoglio, Blycker, Potenza, and Kraus \(2020\)](#) described the association between experienced sexual abuse in childhood, CSB, and risky sexual behavior. In the current study, participants in the CSB group and those in the CSBD group reported significantly more often a history of sexual abuse than those in the group not reporting problems in sexual self-control. The experience of childhood sexual victimization does not appear to distinguish between participants who experienced distress (the CSBD group) and those who did not (the CSB group). The links between early abuse and CSB are likely to be multiple ([Slavin, et al., 2020](#)), ranging from neurobiological and attachment problems to the development of problematic sexual scripts. It has also been hypothesized that CSB may represent an attempt to turn an uncontrollable situation experienced as a child into a controllable one through adult sexual behavior—escaping the experience of powerlessness. If sexual behavior could also be a resource in dealing with previously experienced traumatic events, it would be interesting and of clinical relevance to investigate how this may be related to the experience of feeling distressed by CSB.

Unsurprisingly and supportive of the criterion of “intense, repetitive sexual impulses or urges resulting in repetitive sexual behavior” ([Kraus et al., 2018](#); [World Health Organization, 2022](#)), both groups were characterized by substantially more frequent sexual activity compared to the reference group. Interestingly, more orgasms were reported in the CSB compared to the CSBD group.

Although we are not aware of a similar methodological approach in the literature, the findings from a number of clinical and non-clinical studies are compatible with the results of our study. The CSB group differed from those without reported problems with sexual self-control in more liberal attitudes towards sexuality. Participants in the CSBD group were characterized by high frequency of sexual behavior, which was perceived as difficult to control, religious upbringing, the perception that pornography has a negative impact on their sex lives and lives in general, psychological problems like depression ([Briken, 2020](#)), and a lower general life satisfaction. Although not investigated more specifically, these findings seem to support the importance of moral incongruence in the development of distress related to perceived problems with sexual control ([Grubbs et al., 2018, 2019, 2020](#)). However, if a clinical examination determined that the condition resulted solely or primarily from negative attitudes toward sexuality or specific sexual behaviors, such as use of pornography or masturbation, the diagnostic requirements for CSBD would not be met ([Kraus et al., 2018](#), [Kraus and Sweeney, 2019](#); [World Health Organization, 2022](#)). This is the reason why we also

calculated a lower prevalence bound adjusting for these factors.

Our results indicate that, in addition to the frequency of sexual behavior and the reported experience of loss of control over one’s sexuality, a few other constructs increased the odds of belonging to the CSBD group. People from the CSBD group seem to be more psychologically burdened and less satisfied with their life than individuals not reporting difficulties with sexual self-control. It has been repeatedly suggested that individuals with CSBD may use sexuality in response to negative mood ([Bancroft & Vukadinovic, 2004](#); [Ciocca et al., 2021](#); [Efrati, Kraus, & Kaplan, 2021](#)). This seems to be in line with our finding that members of the CSBD group had significantly higher odds of being treated for mental health problems than individuals from the control group. However, it may also be the case that CSBD is more likely to co-occur with other mental disorders.

### Strengths and limitations

Strength of the study is its sampling strategy and statistical power achieved. In addition, this seems to be one of the first national representative studies ([Böthe, et al., 2020](#)) to conceptualize and assess CSBD in a manner that is consistent with the ICD-11 diagnostic requirements. Our study also has limitations, some of which are common in large-scale sex surveys ([Matthiesen et al., 2021](#)). Surveys of this type cannot avoid the challenge of using predominantly brief or single-item indicators to enable addressing a broad range of phenomena of interest in the questionnaire. A number of constructs in the current study were assessed by single-item indicators, many of which have been used in other sexuality-related studies (for a detailed description [Mathiessen et al., 2021](#)). An additional limitation is that our key measure, the ICD-11 CSBD screener, was used here for the first time and is only a two-item measure. The fact that it is closely based on the ICD-11 diagnostic requirements helps to mitigate this limitation. In addition, the nature or source of distress or impairment related to CSB was not assessed. For the lower-boundary prevalence rate, it is still not known whether moral incongruence or some other or additional factor was the source of distress or impairment. An individual may exhibit moral incongruence and still meet CSBD symptom criteria, when the moral incongruence is not the exclusive source of distress and dysfunction. Additionally, the lower-boundary prevalence rate does not necessarily account for individuals who may have had a strict religious upbringing but have since then developed more liberal sexual attitudes. Therefore, the lower-boundary prevalence estimate in the current study may have screened out religious individuals who would otherwise meet the diagnostic criteria for CSBD and thus resulted in an overly restricted prevalence estimate. This reciprocal relationship between the rate of false negatives and the rate of false positives is common in psychopathology research, and should be investigated in future studies of CSBD that employ more detailed clinical assessments.



## Conclusion and recommendations for further research

The current population-based study did not only measure standard sexual health disturbances (i.e., sexual dysfunctions) (Briken et al., 2020), but also CSBD operationalized according to the new ICD-11 guidelines. This seems optimal for arriving at more robust estimate of the prevalence of CSBD in the general population and on this basis estimating the need for specific health services. It is hoped that future national surveys of sexual behavior will also explore the prevalence of CSBD using the short screener used in this study or other emerging validated measures. The current study's findings are in line with previous research carried out in convenience and clinical samples (Grubbs, et al., 2020). In the clinical sense, our findings suggest that experiences of childhood sexual abuse are important in the assessment of CSBD, although more research is needed to illuminate underlying mechanisms of influence (e.g., mood disorders). Finally, the importance of moral incongruence in the assessment of CSBD should not be overlooked. Future research should try to distinguish between distress that is mainly or exclusively caused by moral incongruence and distress that is related to a combination of moral incongruence and a lack of sexual self-control typical of CSBD. These two types of distress would require different clinical interventions (Kraus and Sweeney, 2019). Finally, CSBD among sexual minority individuals (Jennings, Gleason, & Kraus, 2022), but also in migrant populations, should receive more empirical attention.

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**Authors' contribution:** PB, AD, VK, JF, GMR study concept and design. PB, CW, AS, VK, JF, GMR analysis and interpretation of data. CW, PB statistical analysis. PB, AD obtained funding, PB, AD study supervision. All authors had full access to all data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

**Conflict of interest:** P. 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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