



# Evaluation and Treatment of Compulsive Sexual Behavior Disorder and Co-Morbid Addictive Disorders: A Narrative Review

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Received: 21 October 2025 / Accepted: 21 January 2026  
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## Abstract

**Purpose of Review** This review aimed to synthesize recent literature on the comorbidity between compulsive sexual behavior disorder (CSBD) and addictive disorders, including substance use disorders (SUD) and behavioral addictions (BA). It sought to examine assessment practices, clinical profiles, treatment strategies, and transdiagnostic mechanisms to inform integrated interventions.

**Recent Findings** CSBD frequently co-occurs with SUD, though less research has emerged on the co-existence with BA. Compulsive sexual behavior often occurs as a maladaptive coping strategy for emotional distress and shared transdiagnostic factors—such as emotion regulation difficulties, impulsivity, and specific personality traits—underlie these comorbidities. Clinical assessments are heterogeneous and evidence for integrated treatment in dual diagnosis remains scarce, though interventions targeting emotion regulation and impulsivity emerged as useful strategies.

**Summary** The literature reveals substantial gaps in standardized assessment and integrated treatment for CSBD with comorbid addictive disorders. Findings underscore the need for multidisciplinary, transdiagnostic care frameworks and further research on shared mechanisms. Future studies should evaluate combined psychotherapeutic and pharmacological interventions to improve clinical outcomes and guide public mental health strategies.

**Keywords** Compulsive sexual behavioral disorder · Comorbidity · Substance use disorder · Behavioral addictions · Assessment · Treatment

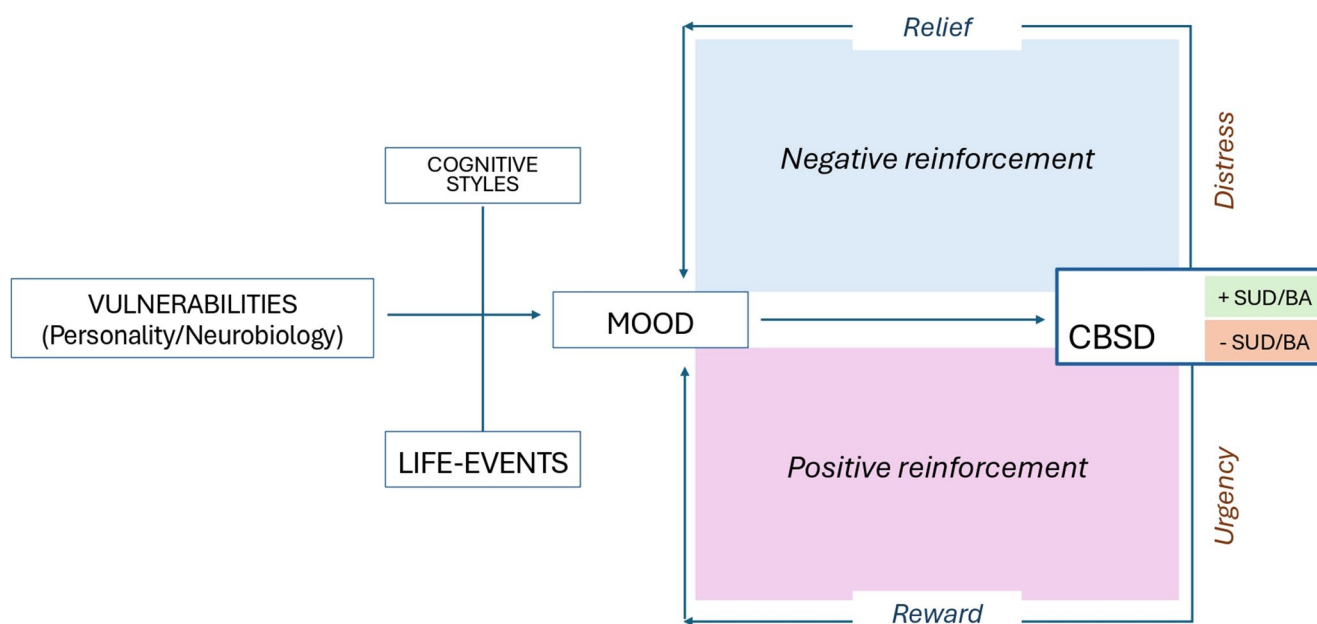
## Introduction

Sexual behavior is highly variable among individuals, and its dysregulated forms constitute a growing subject of clinical and theoretical interest [1, 2]. In this context, pathological sexual behavior has been conceptualized through various models related to the obsessive-compulsive spectrum, impulse control disorders, and addiction [2], reflecting both the complexity and the ongoing lack of consensus in defining dysfunctional sexual activity [1, 2].

In recent years, the eleventh edition of the International Classification of Diseases (ICD-11) has recognized Compulsive Sexual Behavior Disorder (CSBD) as an independent diagnostic entity, classified under impulse control disorders [3]. According to this classification, CSBD is characterized by recurrent and poorly controlled sexual thoughts, urges, or behaviors that lead to significant distress or functional impairment, and may present either persistently or episodically for at least six months [3]. Although prevalence estimates in the general population differ widely

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**Fig. 1** Theoretical Model of Compulsive Sexual Behavior. Compulsive sexual behavior leads to an unpleasant mood state, which in turn triggers further compulsive sexual behavior aimed at temporary relief (positive reinforcement). This short-term relief is followed by heightened emotional distress, perpetuating the cycle of this maladapt-

tive process (negative reinforcement). Individual vulnerabilities, coping styles, and different stressors modulate affect and influence this cycle, making this theoretical model also applicable to the presence of comorbidity with addictive disorders

due to methodological limitations, recent global epidemiological data report an average prevalence of approximately 5% [4], with substantial variation across genders—higher prevalence among men—and cross-national variability [4].

Individuals with CSBD are at increased risk of health issues, like contracting sexually transmitted diseases (e.g., HIV/AIDS, hepatitis B and C, syphilis, or gonorrhea) and physical injuries resulting from repetitive sexual activity, among other complications. Likewise, comorbidity with other mental conditions is also highly common, predominantly affective disorders—such as major depression—and anxiety-related disorders [1, 2]. Additionally, other manifestations closely related to impulsivity and compulsivity are frequently observed, including obsessive-compulsive disorder (OCD), attention-deficit/hyperactivity disorder (ADHD) symptoms, certain personality disorders, suicide attempts, and other impulse control disorders [2, 5].

Of particular relevance given the aim of this study is the not insignificant and frequent co-occurrence of CSBD with addiction-related disorders [6], including both substance use disorders (SUD) and behavioral addictions (BA) such as gambling disorder (GD) and gaming disorder. In the case of SUD, comorbidity prevalence has been estimated at around 40% [6]; regarding BA, existing research has primarily focused on the co-occurrence with GD [6, 7], with comorbidity rates around 5–6.5% [6, 8]. Interestingly, broader conceptualizations of dysfunctional sexual behavior also encompass the concurrent use of illicit drugs during

sexual activity and technology-mediated sexual interactions—cybersex and problematic pornography use (PPU)—[1], which have been typically defined as different forms of “sex addiction” [1, 9, 10].

This notion aligns with those authors who advocate for conceptualizing CSBD within the addiction framework [11–16]. Indeed, there is growing recognition of its overlap with reward and reinforcement mechanisms [17]—such as craving, loss of control, and compulsive engagement despite adverse consequences—, as well as its strong association with difficulties in emotion regulation. In this context, sexual behavior may function as a maladaptive coping strategy for dealing with unpleasant emotional states, potentially intensifying during periods of emotional distress [2]. Thus, shared neurobiological and clinical vulnerabilities may contribute to both the development and maintenance of CSBD and addictive disorders [1, 2, 18, 19]. While further research is needed to deepen our understanding of the nature of CSBD, this perspective supports a transdiagnostic approach that enables an integrated examination of the underlying mechanisms driving these problematic behaviors, emphasizing the need for a holistic approach in clinical settings (see Fig. 1).

CSBD remains a frequently misdiagnosed and under-treated condition, with fewer than 15% of affected individuals actively seeking treatment [1]. This reluctance may stem from sociocultural factors such as guilt and stigma [2]. Instead, individuals with CSBD may primarily seek help for

other concerns, such as medical and psychiatric issues. The identification and management of comorbid conditions are therefore clinically relevant, given their bidirectional influence on clinical profile, severity, prognosis, and treatment response [2, 20]. Consequently, the comprehensive assessment and management of co-occurring health conditions—such as addictive disorders—are essential to optimize clinical outcomes in individuals with CSBD.

Although the clinical relevance of CSBD and its comorbidity with addictive disorders is increasingly recognized, the development of specific, evidence-based protocols for assessment and treatment remains limited. In daily clinical practice, mental health professionals often lack structured tools or guidelines to address these co-occurring conditions simultaneously. This fact poses challenges for accurate diagnosis and effective interventions, highlighting the urgent need for integrated clinical frameworks. In light of the aforementioned gaps, this review aimed to provide an updated overview of the literature on the comorbidity between CSBD and SUD or BA, with a special focus on clinical assessment and treatment. This work examined how comorbidity has been addressed in recent studies and discussed implications for diagnosis, integrated treatment, and future research directions.

## Methods

### Criteria for Inclusion

This review included studies published between October 2019 and October 2024 (five years), in English and with a full-text available, that explored the comorbidity between CSBD and addictive disorders (i.e., SUD or BA), with a special focus on clinical intervention. Eligible study types comprised case reports, original research articles, clinical trials, and systematic reviews and meta-analyses that included clinical data.

Studies were excluded if they involved preclinical research or animal models, lacked a formal diagnosis of either CSBD or an addictive disorder, were classified as study protocols or ongoing trials, were not published in English, did not have full-text available, or were published outside the specified five-year period.

### Study Selection

Three electronic databases—PubMed/MEDLINE, Web of Science, and the Cochrane Library—were systematically searched for relevant articles for inclusion. Search terms included “compulsive sexual behavior disorder”, “hypersexual disorder”, “problematic pornography use”,

“substance use disorder”, “alcohol use disorder”, “nicotine use disorder”, “cannabis use disorder”, “opioid use disorder”, “cocaine use disorder”, “psychostimulant use disorder”, “behavioral addiction”, “gambling disorder”, “gaming disorder”, “comorbidity”, “co-existence”, “assessment”, and “treatment”.

## Results

The initial database search yielded a total of 61 articles. After removing duplicates, the remaining unique articles were screened for relevance. No studies specifically addressed diagnostic or integrated therapeutic interventions for the comorbidity between CSBD and addictive disorders. Despite this, some publications were identified as indirectly relevant, as they explored either CSBD or addictive disorders in populations where comorbid features were present, or discussed conceptual, clinical, or psychological overlaps between these conditions. These studies ( $n=10$ ) were reviewed in full and narratively synthesized to provide contextual insights, explore clinical implications, and highlight gaps in the literature (see Table 1).

### Prevalence and Clinical Manifestations

#### Psychiatric Comorbidity in CSBD

According to the study by *Ballester-Arnal et al.* [21], approximately 90% of individuals with CSBD met criteria for at least one Axis I disorder, especially major depressive disorder and adjustment disorders, and had a higher likelihood of multiple comorbid disorders. Axis II borderline personality disorder was also more prevalent than in controls. Remarkably, among them, elevated rates of alcohol abuse (44%) and dependence (16.2%) as well as psychostimulant or cannabis use (22.1%), were also observed.

#### Comorbidity Between CSBD and SUD

All the reported studies explored the prevalence of CSBD in clinical populations with SUD, who were receiving treatment in an inpatient or outpatient setting [22–26]. Two of them were specifically conducted in women—by the same research group [24, 25]. All the studies grouped samples with representation of different SUD, except for one that focused on opioid use disorder [26]. Interestingly, a couple of works explored PPU [22, 26].

CSBD prevalence in SUD ranged from 3.3% [22] to 24% [23]—based on a larger inpatient adult sample—, and has been associated with younger age [23]. Although *Golder et al.* [22] found no significant differences in CSBD

**Table 1** Overview of referenced articles and key characteristics

Study	Population / Sample	Comorbidity	Design	Main Variables	Key Findings
<i>Ball-ester-Arnal et al.</i> 2020	$n=68$ CSBD (45% males), $n=315$ controls (66% males); 18–27 y.o.; recruited 2012–2015	CSBD+psychiatric disorders (Axis I/II, including SUD)	Cross-sectional; case-control; student sample	CSBD presence and severity, psychiatric comorbidities	~90% CSBD met criteria for $\geq 1$ Axis I disorder; depression (39.7%), adjustment disorder (20.6%), borderline PD (5.9%); elevated alcohol (44%) and illegal substance use (22.1%); impaired behavioral control and emotion regulation suggested as mediators.
<i>Garner et al.</i> 2022	$n=253$ patients with SUD (~70% alcohol-related SUD); men; 18–72 y.o.; recruited 2018–2019	SUD+CSBD vs. SUD-CSBD	Retrospective study; inpatient clinical sample	CSBD, impulsivity (negative urgency), sexual behaviors (unsolicited texting)	CSBD positively associated with negative urgency, alcohol/drug use/problems, and unsolicited sexting.
<i>Snaychuk et al.</i> 2024	$n=793$ patients with SUD (~70% males, 18–77 y.o.); recruited 2019–2022	SUD+CSBD vs. SUD-CSBD	Cross-sectional; inpatient clinical sample	CSBD presence, addiction severity, emotion regulation, psychological distress, depression, anxiety, trauma	CSBD prevalence 24%; younger age associated with CSBD; higher psychological distress, depression, anxiety, trauma; reduction in functional impairment and social/interpersonal domains predicted CSBD severity.
<i>Efrati et al.</i> 2022, 2024	$n=62$ patients with SUD; $n=70$ matched controls; women; mean age 24 y.o.	SUD+CSBD vs. HC+CSBD	Cross-sectional; case-control; inpatient clinical sample	CSBD presence and severity, risky sexual behaviors, substance use problems, psychological distress, emotion regulation, trauma, social support	CSBD prevalence 14% vs. 2.9% controls; severity linked to lack of control and affect dysregulation; childhood abuse associated with higher CSBD severity, SUD risk, and risky sexual behaviors; distress mediated link between SUD, CSBD, and risky sexual behaviors; lower social support in SUD group.
<i>Golder et al.</i> 2024	$n=92$ SUD (65% males, mean age 40 y.o.), $n=92$ controls matched by age, sex, education; recruited Mar–May 2022	SUD+CSBD/PPU/PUD vs. HC+CSBD/PPU/PUD	Cross-sectional; case-control; inpatient clinical sample	Presence of, CSBD, PPU, PUD, sexual motivation, history of pornography use	No significant differences in CSBD (3.3% vs. 7.6%) or PUD (2.2% vs. 6.5%); SUD group reported higher sexual motivation and younger age at first pornography contact.
<i>Stefanovics et al.</i> 2024	$n=1,272$ adults with opioid use disorder (60% males, 18–73 y.o.); recruited 2018–2020	SUD+PPU	Cross-sectional; treatment-seeking clinical sample	PPU, impulsivity, emotional distress	PPU prevalence 4.5%, higher in males; PPU associated with higher negative/positive urgency, sensation-seeking, emotional instability, and psychological distress.
<i>Tang et al.</i> 2020	$n=458$ adults ( $\geq 18$ y.o.) with GD; recruited 2006–2015	GD+BA (including CSBD)	Cross-sectional; treatment-seeking outpatient clinical sample	GD presence and severity, CSBD and other BA, impulsivity, personality traits, psychiatric comorbidities	CSBD prevalence 6.4%; comorbid BA associated with younger age, higher GD severity, more psychiatric comorbidities; higher impulsivity (motor, attentional, non-planning), more dysfunctional personality (i.e., higher novelty seeking and harm avoidance; lower self-directedness and cooperativeness); higher self-transcendence linked to comorbid addictive behaviors.
<i>Mestrebach et al.</i> 2024a, 2024b	$n=359$ adults with GD (92.2% males, mean age 40 y.o.); recruited 2021–2022	GD+PPU	Cross-sectional; treatment-seeking outpatient clinical sample	GD presence and severity, PPU, impulsivity, personality traits, emotion dysregulation, emotional distress	PPU prevalence ~10%; comorbid GD+PPU associated with higher GD severity and illicit drug use, higher impulsivity, emotion dysregulation, maladaptive personality traits; impulsivity mediated co-occurrence between GD and PPU.

Note. BA, behavioral addiction; borderline PD, borderline personality disorder; CSBD, compulsive sexual behavior disorder; GD, gambling disorder; PPU, problematic pornography use; PUD, pornography use disorder; SUD, substance use disorder; y.o., years old

prevalence between individuals with SUD (3.3%) and controls (7.6%), the clinical group was characterized by a first contact with pornography at younger ages and higher sexual motivation. On the other hand, among young adult women with SUD, *Efrati et al.* [24, 25] found a significantly higher CSBD prevalence (14%) than in the control group (2.9%,

$p = 0.042$ ), with higher CSBD severity regarding lack of control, unwanted consequences, affect dysregulation, and negative affect.

*Stefanovics et al.* [26] reported 4.5% prevalence of PPU in adults with opioid use disorder—higher in males—. Nonetheless, *Golder et al.* [22] did not find significantly

higher prevalence of pornography use-related disorder—derived from the combination of a positive screening for CSBD and PPU—among individuals with SUD when comparing with controls (SUD: 2.2%; Control group: 6.5%,  $p = 0.149$ ).

### Comorbidity Between CSBD and BA

Fewer studies examined CSBD with BA, focusing on adults with GD in outpatient settings [27, 28]. Tang *et al.* [27] reported 6.4% prevalence of CSBD. Globally, younger age was associated with a comorbid BA in GD—including CSBD—a subgroup characterized by higher GD severity and other psychiatric comorbidities, although there were not significant differences regarding SUD. Mestre-Bach *et al.* [28] described 10% prevalence of PPU in GD, which was linked to greater GD severity and use of illegal drugs.

### Shared Psychological Features between CSBD and Addictive Disorders

#### Impulsivity

Across SUD [26, 29] and BA populations [27, 28, 30], higher impulsivity traits—negative and positive urgency, sensation-seeking—were consistently observed among individuals with CSBD or PPU. Compulsive sexual behavior was positively associated with emotional impulsivity and drug use/problems [29]. Likewise, higher impulsivity levels predicted co-existence of GD and PPU and mediated their relationship with different factors such as age, personality features, and emotional regulation [30].

#### Personality

Although no study examining the comorbidity of SUD and CSBD specifically aimed to investigate personality structure, an interesting narrative review by Efrati *et al.* [31] described shared personality traits among individuals with CSBD and SUD such as lower conscientiousness, agreeableness, and self-directedness, but higher neuroticism and novelty seeking. In BA, higher novelty seeking, harm avoidance, and self-transcendence characterized the co-existence of GD and other addictive behaviors, including CSBD [27]. On the other hand, the presence of CSBD and PPU was associated with lower levels of self-directedness and cooperativeness [27, 28].

#### Emotion regulation, emotional distress, and coping

Ballester-Arnal *et al.* [21] reported that clinical conditions involving emotion regulation difficulties were more

prevalent among individuals with CSBD, reinforcing the notion that impaired behavioral control and emotional dysregulation may mediate the comorbidity between CSBD, SUD, and other psychiatric disorders. In this regard, different studies found that intense emotional states could trigger impulsive behaviors in individuals with SUD or BA and CSBD [26, 28, 29], which could be also reinforced by shared personality traits linked to greater emotional instability in conditions such as SUD and CSBD [31].

Individuals with SUD and CSBD showed greater mental distress, SUD severity, depression, anxiety, and trauma, with traumatic stress and interpersonal dysfunction predicting CSBD severity [23]. Particularly among women, more negative life events and trauma exposure were related to CSBD severity, SUD, and risky sexual behaviors [24], with psychological distress mediating the SUD–CSBD–risky behavior link [25]. Similarly, the co-existence of PPU and addiction was associated with emotion regulation difficulties, impulsivity, and dysfunctional personality traits, further exacerbating psychological distress [26, 28, 30], which may be also intensified by the presence of additional psychiatric comorbidities [23, 27].

### Evaluation

Overall, studies assessing CSBD comorbid with addiction relied primarily on self-report psychometric instruments, while structured clinical interviews typically focused on the primary addiction—SUD or BA. Diagnosis followed DSM and ICD criteria, and standardized tools for CSBD [21–25, 27, 29], PPU [22, 26, 28, 30], SUD [22–26, 29], and BA [27, 28, 30] were frequently applied—advocating for evaluation of both severity and behavioral patterns—, though with considerable variability across studies. Most studies also incorporated self-report measures of transdiagnostic factors—including impulsivity [26–30], personality traits [27, 28, 31], emotion regulation [23, 25, 28, 30], emotional distress [23, 25, 26, 28, 30], trauma exposure [23, 24], and psychiatric comorbidities [21, 27]. Some studies additionally collected sociodemographic variables [27, 28, 30, 31], perceived social support [25], and sexual history (e.g., pornography use history, unsolicited sexting, sexual motivation, risky sexual tendencies) [22, 24, 25, 29] through clinical interviews or psychometric questionnaires. The study monitoring treatment response also relied on psychometric assessment to evaluate treatment outcomes [23].

### Treatment

A single study assessed treatment outcomes in individuals with co-occurring SUD and CSBD using a standard SUD intervention [23]. Treatment completion rates did not differ

significantly between participants with (83.7%) and without CSBD (88.4%). CSBD severity predicted greater improvements in functional impairment, interpersonal, and social functioning, but not in substance dependence scores. The authors put forward an interesting hypothesis that treatment for SUD—grounded in a combination of cognitive-behavioral and dialectical-behavioral approaches—might have exerted a beneficial effect on CSBD by targeting shared transdiagnostic mechanisms and reducing distress in comorbid participants to levels comparable with those without CSBD. Table 2 shows the clinical domains evaluated and the clinical and psychometric instruments used.

## Discussion

This narrative review aimed to synthesize the existing literature on the co-occurrence of CSBD with SUD and BA, focusing on diagnostic evaluation and treatment strategies. Most research has been conducted in clinical populations with a history of addiction—predominantly SUD—whereas few studies have examined addictive disorders among individuals with CSBD or dual diagnoses in the context of BA. While formal evidence on standardized assessment methods and therapeutic approaches for this dual diagnosis remains virtually absent, findings on prevalence, clinical profiles, and transdiagnostic features may nonetheless offer valuable guidance for clinical practice, suggesting potential directions for assessment and treatment of dual diagnosis.

## Implications for Clinical Practice

Recent evidence indicates that individuals with CSBD exhibit elevated rates of psychiatric comorbidities [21]—including mood, personality, and addictive disorders—consistent with findings in non-clinical populations [1, 2, 6]. This underscores a first key recommendation: comprehensive, multidimensional assessments and systematically screening of overlapping conditions becomes essential, since co-occurring psychiatric profiles likely exacerbate functional impairment and increase the complexity of treatment planning [2, 20].

Particularly, findings on the prevalence of SUD among individuals with CSBD have been mixed across general, student, and outpatient populations [84–88]. Recent evidence [21], however, supports the notion of substantially elevated rates of dysfunctional substance use [6], mainly alcohol misuse and dependence [21]. Alcohol use disorder appears to be the most prevalent SUD in this population [2, 9], though psychostimulants and cannabis misuse have also been reported [21, 89]. Populations with GD and CSBD/PPU similarly exhibited higher rates of illicit drug use [28],

despite inconsistencies regarding overall SUD prevalence [27]. Together, these findings emphasize the need for more systematic research into the comorbidity between CSBD and addictive behaviors, ranging from risky patterns to clinically significant disorders, and for careful monitoring of trends in illicit substance use.

Clinical studies in SUD populations indicated that CSBD and related behaviors, particularly PPU, occur across various substances, including alcohol, opioids, cannabis, and psychostimulants [22–26, 29], though prevalence estimates vary considerably [22–25]. Some authors [22] agreed with previous works [87] on stating no significant differences in SUD prevalence rates compared with controls from the general population, whereas others reported higher prevalence and greater clinical severity [24, 25]. Indeed, a relatively high prevalence of CSBD was observed in a larger SUD inpatient sample (24%), consistent with prior findings [90, 91]. Discrepancies likely reflect differences in sample characteristics—such as sex, age, substance type, and comorbidities—and methodological heterogeneity, limiting direct comparisons. Still, clinical populations appear particularly vulnerable to additional disorders, warranting clinical attention. Supporting this, individuals with SUD have been found to assign greater importance to sex and to report earlier exposure to pornography than controls [22], with younger age has itself been associated with CSBD risk among patients with addiction [23, 27, 30]. Although research on CSBD in women remains scarce [24, 25, 92], findings from adolescent and young adult samples also suggest links between SUD, CSBD, risky sexual behaviors, and heightened sexual risk among females.

Finally, limited evidence from BA (i.e., GD) indicates that co-occurring CSBD / PPU is associated with greater addiction severity, additional psychiatric comorbidities, and psychosocial impairment [27, 28, 30]. However, interactions with emerging BA or modalities—such as Internet gaming disorder and online gambling—remain underexplored. Addressing this gap could further improve clinical profiling, screening, and treatment strategies in the context of increasingly prevalent online-mediated addictive behaviors.

## Common features between CSBD and addictive disorders: a transdiagnostic perspective

Across recent studies, heightened impulsivity linked to difficulties managing intense emotional states (e.g., positive and negative urgency) and psychological distress have been associated with the co-existence of CSBD / PPU and addiction [22–30]. These findings support the notion that sexual behavior may initially serve as a maladaptive coping strategy for regulating undesirable emotions [17, 93–95]. Yet, as

**Table 2** Psychometric and clinical instruments used in research on CSBD comorbid with addiction

Domain	Construct	Instruments	Studies (Refs)
Sexual behavior	CSBD	<i>Sexual Addiction Screening Test-Revised (SAST-R)</i> [32]; <i>Compulsive Sexual Behavior Disorder Scale (CSBD-19)</i> [33]; <i>Individual-Based Compulsive Sexual Behavior scale (I-CSB)</i> [34]; <i>*Hypersexual Behavior Inventory (HBI)</i> [35], the <i>Sexual Compulsivity Scale (SC)</i> [36]; <i>Shorter PROMIS Questionnaire (SPQ)</i> [37]	[21–25, 27, 29]
	PPU	<i>Problematic Pornography Consumption Scale (PPCS-6)</i> [38–40]; <i>Brief Pornography Screen (BPS)</i> [41]	[22, 26, 28, 30]
	*PUD (CSBD+PPU)	<i>CSBD-19</i> [33] + <i>PPCS-6</i> [38–40]	[22]
	Unsolicited sexting	Single-item adaptation from the <i>Sex and Tech Survey</i> [42]	[29]
	Sexual motivation	<i>Trait Sexual Motivation Questionnaire (TSMQ)</i> [43]	[22]
	Risky behaviors	<i>Risky Sexual Action Tendencies</i> [44]	[24, 25]
	Sexual background	Clinical interview or multiple answer questions to explore aspects such as pornography use history.	[22]
SUD	General	Structural clinical interviews following DSM and ICD criteria [45, 46]; <i>Drug Use Disorders Identification Test (DUDIT)</i> [47, 48]; <i>Drug Abuse Screening Test-20 (DAST-20)</i> [49]; <i>Inventory of Drug-Taking Situations</i> [50]; <i>Leeds Dependence Questionnaire (LDQ)</i> [51]; <i>Craving Experience Questionnaire - Severity (CEQS11)</i> [52]	[22–26, 29]
	Alcohol	<i>Alcohol Use Disorders Identification Test (AUDIT)</i> [53]; <i>Michigan Alcoholism Screening Test (MAST)</i> [54]	[22, 24, 25, 29]
	Nicotine	<i>Fagerström Test for Nicotine Dependence</i> [55, 56]	[22]
BA	GD	Clinical interview based on DSM criteria [57, 58]; <i>Gambling Symptom Assessment Scale (G-SAS)</i> [59] <i>South Oaks Gambling Screen (SOGS)</i> [60]; <i>Addiction Severity Index (ASI)</i> [61]; <i>Gamblers' Beliefs Questionnaire (GBQ)</i> [62]	[27, 28, 30]
Transdiagnostic features	Impulsivity	<i>Impulsive Behavior Scale (UPPS-P)</i> [63]; <i>Barratt Impulsiveness Scale (BIS-11)</i> [64]	[26–30]
	Personality	<i>Temperament and Character Inventory (TCI)</i> [65]; <i>*Big Five Personality Traits</i> [66]; <i>*Adult Temperament Questionnaire (ATQ)</i> [67]	[27, 28, 31]
	Emotion regulation	<i>Difficulties in Emotion Regulation Scale (DERS)</i> [68]; <i>Emotion Regulation Questionnaire (ERQ)</i> [69]	[23, 25, 28, 30]
	Emotional distress	<i>Mental Health Index (MHI-5)</i> [70]; <i>Patient Health Questionnaire (PHQ-9)</i> [71]; <i>Generalized Anxiety Disorder 7-Item (GAD-7)</i> [72]; <i>Symptom Checklist-Revised (SCL90-R)</i> [73]; <i>Symptom Identification Scale (BASIS-24)</i> [74]	[23, 25, 26, 28, 30]
	Trauma	<i>Childhood Trauma Questionnaire (CTQ-SF)</i> [75]; <i>Life Experiences Survey (LES)</i> [76]; <i>Posttraumatic Stress Disorder Checklist (PCL)</i> [77]	[23–25]
Comorbidity	Axis I and II psychiatric comorbidities	<i>Structural Clinical Interview based on DSM criteria (SCID-I/II)</i> (78,79); <i>Mini international neuropsychiatric interview (MINI)</i> [80]	[21, 27]
Support	Social support	<i>Perceived Social Support (MPSS)</i> [81]	[25]
Sociodemographic profile	e.g., Age, sex, educational level, civil status	Clinical interview or multiple answer questions	[27, 28, 30, 31]
Treatment	Treatment outcome	<i>Outcome Questionnaire (OQ-45)</i> [82]	[23]
	Motivation for seeking treatment	Clinical interview or multiple answer questions	[22]

Note. BA, behavioral addiction; CSBD, compulsive sexual behavior disorder; DSM, Diagnostic and Statistical Manual for Mental Disorders; GD, gambling disorder; ICD, International Classification of Diseases; PPU, problematic pornography use; PUD, pornography use disorder; SUD, substance use disorder. \*Hypersexual Behavior Inventory (HBI), the Sexual Compulsivity Scale (SC), and the Sexual Addiction Screening Test (SAST): Ballester-Arnal et al. [21] use a previously validated composite index based on these three established instruments [83]. \*PUD: this term was coined by Golder et al. [22] as a result of scores above the cutoff points on both questionnaires, CSBD-19 + PPCS-6. \*Big Five Personality Traits and Adult Temperament Questionnaire (ATQ): these two instruments were highly used to examine personality structure both in SUD and CSBD according to the narrative review by Efrati et al. [31].

loss of control increases [96], with intrusive sexual thoughts and suppression attempts [97], mood disturbances intensify.

A lack of adaptive coping and emotion regulation strategies appears central to both the onset and maintenance of dysfunctional sexual behavior [25]. This is not exclusive to CSBD; emotion regulation has been identified as a transdiagnostic feature among several psychiatric conditions including BA [98]. *Estevez et al.* [99] suggested that such deficits may predict the development of both SUD and BA. Similarly, maladaptive coping—particularly emotion-focused coping deficits—has been linked to GD [100], where greater reliance on maladaptive strategies is consistently observed compared with the general population [101, 102].

Neurobiological evidence further supports the transdiagnostic role of emotion regulation, bridging addictive disorders and dysfunctional sexual behavior [1, 2, 18, 19]. Importantly, emotion regulation impairments could negatively impact treatment response in addictive behaviors [103] and interact with other triggering and maintaining factors, such as impulsivity. In this context, Substance use itself may worsen emotion regulation processes, which may exacerbate impulsivity and risky decision-making [104].

Impulsivity-related traits also emerge at the personality level. High novelty seeking, elevated harm avoidance, and reduced self-directedness and cooperativeness characterize individuals with dual diagnoses, increasing vulnerability to both CSBD and addictions [27, 28, 31]. These personality patterns, similarly observed in BA such as GD and in impulse-control disorders like compulsive buying [105, 106], have been associated with greater disorder severity and poorer treatment outcomes, including higher relapse and dropout rates, both when the addictive behavior occurs alone [107, 108] and when it coexists with other psychiatric disorders [109].

Traumatic experiences and stressful life events were additional factors associated with greater severity of addiction, CSBD/PPU, and risky sexual behaviors [23–25]. Individuals with addiction report more negative life events, which may contribute significantly to both the onset and progression of these conditions [110]. Early adversity has likewise been implicated in CSBD development [111]. Lower social support—often observed in patients with addiction [24, 25]—may act simultaneously as a vulnerability factor and a consequence [112]. Moreover, in comorbid CSBD cases, social impairments predict greater disorder severity [23]. Attachment insecurity, marked by social dysfunction and heightened distress [23–25], may play a particularly salient role in the development and persistence of comorbidity [31].

Overall, these findings underscore the importance of identifying and targeting transdiagnostic mechanisms underlying both CSBD and addiction (see Fig. 1). Interventions integrating emotion regulation training, adaptive coping

strategies, and trauma-informed approaches—alongside standard addiction-focused therapies addressing personality vulnerabilities—may enhance treatment effectiveness. Moreover, emerging research in addiction points to the value of exploring factors such as metacognition and control strategies, which could mediate established mechanisms like impulsivity and offer new therapeutic leverage [97].

## Evaluating dual diagnosis

The reviewed studies reveal substantial heterogeneity in the assessment of CSBD comorbid with addiction, reflecting a lack of consensus on standardized protocols. In line with previous reviews, findings point to the wide range of instruments and heterogeneous criteria employed, although addiction remains the most common theoretical framework [113–116]. This conceptual and methodological variability complicates cross-study comparisons and underscores the need for unified definitions and measurement strategies. Future research may strengthen support for an addictive classification of CSBD, potentially mirroring the transition observed in GD [113].

Reliance on self-report instruments and addiction-focused interviews often underrepresents CSBD-specific phenomena. Crucially, structured clinical interviews should remain the cornerstone of assessment, with questionnaires serving as complementary tools rather than substitutes, to ensure comprehensive evaluation and contextual interpretation. In this line, determining whether sexual behaviors are functional or pathological requires special attention. Assessment must account not only for the objective frequency of behavior but also for subjective distress and broader functional impairment.

Incorporating PPU-specific assessment within routine evaluation may be also useful, as addressing these behaviors could require tailored psychoeducation, coping strategies, and relapse prevention planning alongside standard addiction-focused interventions. Tools like the *Problematic Pornography Consumption Scale* (PPCS-6) [38–40] and the *Brief Pornography Screen* (BPS) [41], validated in clinical populations with GD [117, 118], offer brief and psychometrically sound options for screening probable PPU in treatment-seeking individuals [28, 30]. While the adoption of well-validated instruments in clinical population with addiction would be highly recommended, it remains limited, suggesting a gap between research and clinical practice.

Although many studies included measures of transdiagnostic factors, the absence of agreed-upon core assessment protocols limits reproducibility and generalizability. Furthermore, inconsistent consideration of sociodemographic and sexual history variables points to the need for multimodal frameworks capable of capturing both

disorder-specific and transdiagnostic mechanisms, which would enhance diagnostic precision and inform tailored interventions. Additionally, the assessments of comorbidity seem crucial, and proposals to include co-occurring behaviors, such as substance use, in CSBD diagnostic criteria effect this direction [119]. In this regard, chemsex could illustrate the clinical overlap between SUD and CSBD, with some recent research proposing that this entity may function as a mixed addiction with intertwined neurobiological and behavioral mechanisms [120]. Chemsex refers to the intentional use of psychoactive substances in sexual contexts to facilitate, enhance, or prolong sexual activity. Although most frequently described among men who have sex with men, it is increasingly reported in broader populations. Chemsex is associated with prolonged sexual sessions, heightened sexual risk behaviors, and significant mental and physical health consequences, including substance dependence and psychiatric comorbidity [120]. The difficulty in distinguishing substance-related and sexual compulsivity reinforces chronic relapse risk and challenges current diagnostic boundaries. Future classifications, such as ICD-12, should acknowledge this comorbidity to support more integrated and effective treatment strategies [120].

Differential diagnosis remains another critical challenge. Clinicians must discern whether CSBD represents an independent disorder or emerges secondary to psychiatric, medical, or pharmacological conditions (e.g., bipolar disorder, Parkinson's disease) [121, 122]. In this context, the pattern of substance use and its interaction with sexual behavior (motivation, sequencing, and impact) should be carefully evaluated. Equally important are the temporal dynamics between CSBD and addiction during clinical assessment, as understanding these sequences may directly inform prevention and treatment planning. Dysfunctional sexual behaviors may precede addiction, arise from substance-induced disinhibition, or develop as maladaptive coping strategies for distress [21, 22].

### From Available Therapeutic Interventions to Integrated Treatment Approaches

Interventional evidence remains scarce. The only study evaluating treatment outcomes in patients with comorbid SUD and CSBD found no significant differences in treatment completion [23]. Yet, prior research suggests that individuals with both conditions experience higher relapse and rehospitalization rates and may receive inadequate care for either disorder [123–125]. In GD, PPU has similarly been linked to greater dropout and fewer cognitive-behavioral therapy (CBT) sessions attended [20]. Such findings highlight that interventions designed for addiction or CSBD/PPU in isolation may overlook the reciprocal influences and

reinforcing mechanisms between them, underscoring the need for integrated, tailored treatments.

Some psychological interventions used in addiction, including CBT and acceptance and commitment therapy, have been applied to CSBD. The 12-step program of Alcoholics Anonymous has also been adapted for excessive sexual behavior [113]. However, outcome research remains limited, with few rigorous, high-quality trials and no widely accepted treatment protocols for CSBD, reflecting a substantial gap in clinical practice [113]. Similarly, pharmacological strategies have included opioid antagonists, mood stabilizers, tricyclic antidepressants, serotonin antagonist and reuptake inhibitors, and N-acetylcysteine [126]. Still, evidence for combined pharmacological approaches tailored to dual diagnoses is lacking and, in practice, clinicians may adapt existing frameworks without empirical validation. Current findings support the integration of transdiagnostic factors—such as impulsivity and emotion regulation—into treatment models to improve retention and outcomes [23, 103].

Treatment approaches may also require refinement according to clinical profile, considering age, sex, engagement in PPU, high-risk sexual behaviors, and co-occurring psychiatric conditions such as affective disorders or trauma [113]. Evidence from the reviewed studies suggests several promising directions for intervention, including mindfulness, emotional acceptance, and adaptive coping, which may reduce affect-driven behaviors and negative urgency, particularly among younger populations [29]. The Skills for Improving Distress Intolerance (SIDI) program [127], which targets the ability to tolerate psychological distress, has shown preliminary efficacy in SUD and may benefit individuals with co-occurring CSBD, SUD, and risky sexual behaviors [25].

Treatment setting also plays a role. While acute SUD often requires inpatient care, CSBD, PPU, and most BA are usually managed in outpatient settings. Digital health interventions may complement traditional care, improving access and personalization, especially for women with comorbid conditions [24]. Given frequent comorbidities, pharmacotherapy should complement psychological interventions, which currently hold stronger empirical backing [126]. Further research integrating neurobiological insights is essential to guide targeted pharmacological strategies.

In sum, an integrated treatment model would ideally include comprehensive assessment tools to identify both disorders early, address shared mechanisms (e.g., impulsivity, emotion regulation), and coordinate behavioral and pharmacological interventions. Developing and testing such models remains a critical priority for clinical research. In this line, the *Component Model of Addiction Treatment* conceptualizes addictions as multifaceted conditions

arising from interacting psychological and neurobiological processes that cut across diagnostic categories [128]. By emphasizing shared components such as reinforcement learning, executive dysfunction, and emotion dysregulation, this transdiagnostic framework enables more integrative and individualized treatment planning. It shifts the clinical focus from specific substances or behaviors toward addressing the common mechanisms that sustain addictive patterns [128]. A more widespread testing and further development of such models remains a critical priority for clinical research.

This narrative review is limited by its non-systematic search strategy, potential publication bias, and the restriction to English-language studies published in the past five years. Additionally, the overall scarcity of available studies, particularly in BA compared to SUD, limits the comprehensiveness of the synthesis. Most SUD studies included predominantly male participants and reported heterogeneous patterns of substance use, which may affect the generalizability of findings. The reviewed studies also revealed substantial heterogeneity in the assessment of CSBD comorbid with addiction, reflecting a lack of consensus on standardized protocols. Methodological heterogeneity and, in some cases, small sample sizes across studies further constrain the robustness of conclusions. These factors should be considered when interpreting the results and highlight the need for further empirical research to strengthen the evidence base.

## Conclusions and Future Directions

The comorbidity between CSBD and addictive disorders represents a complex and often overlooked clinical and research challenge, with CSBD–SUD co-occurrence receiving the most attention to date. Despite growing interest, findings remain inconsistent, highlighting the urgent need to investigate CSBD across other addictive disorders and to clarify shared neurobiological, and psychological mechanisms.

Reliable, standardized assessment tools are essential to detect CSBD within addiction treatment settings and, conversely, to identify SUD or BA in CSBD-focused contexts. Harmonized instruments would not only improve diagnostic precision but also facilitate cross-study comparisons and the development of evidence-based, integrative interventions.

A central insight is that CSBD behaviors often function as maladaptive strategies to manage negative emotions, a mechanism common to other addictions. This reinforces the importance of combining emotion regulation, adaptive coping, and conventional therapeutic approaches within coordinated, multidisciplinary care, addressing the reciprocal dynamics between CSBD and co-occurring addictive

disorders to reduce treatment fragmentation and enhance outcomes. Special attention is needed for underrepresented populations—adolescents, young adults, and women—whose vulnerabilities, symptom profiles, and help-seeking patterns differ from adult men.

In our view, advancing integrated, transdiagnostic, and multidisciplinary treatment frameworks is both a clinical and research imperative. By bridging assessment, treatment, and mechanistic understanding, such approaches hold the potential to transform care and inform public mental health strategies for this challenging comorbidity.

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  - It is a study on a large clinical sample with SUD, which characterizes the clinical profile of comorbidity with CSBD and evaluates treatment response.
- Mestre-Bach G, Potenza MN, Granero R, Urizar JC, Tarragón E, Chiclana Actis C, et al. Understanding the Co-occurrence of Gambling Disorder and Problematic Pornography Use: Exploring Sociodemographic and Clinical Factors. *J Gambl Stud*. 2024 Sep 1;40 [3]:1295–314. <https://pubmed.ncbi.nlm.nih.gov/38151657/>
  - It is a clinical study in a treatment-seeking GD population that specifically assesses PPU and serves as the starting point for subsequent studies by the field, which further examine comorbidity and its influence on treatment response.
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  - Focusing on women—and especially those in the youngest age range—this work investigates SUD–CSBD comorbidity and highlights the role of emotional distress in the vicious cycle of addictive behavior and reinforcement.

**Acknowledgements** We thank CERCA Programme/Generalitat de Catalunya for guaranteeing institutional support. This manuscript and research were supported by grants from the Ministerio de Ciencia e Innovación (PDI2021-124887OB-I00 supported by MCIN/AEI /10.13039/501100011033), Instituto de Salud Carlos III (ISCIII) (FIS FIS22053 and FORT23/00032) and FEDER "Una manera de hacer Europa". CIBERObn is an initiative of ISCIII. Additional funding was received by AGAUR-Generalitat de Catalunya (2021-SGR-00824) and European Union's Horizon 2020 research and innovation programme under Grants agreement no. 101080219 (eprObes), no. 101095654 (EP PerMed project "Connect care"), and Ref. AC24/00148 (EP PerMed project "BIOREXIA"). FFA is supported by the Catalan Institution for Research and Advanced Studies (ICREA-Academia, 2024-Programme). The funders had no role in the study design, data collection and analysis, decision to publish, or preparation of the manuscript.

**Author Contributions** IB : Conceptualization, Investigation, Writing - original draft. LM : Conceptualization, Investigation, Writing - original draft. FF-A: Funding acquisition, Supervision, Writing - review and editing. SJ-M : Funding acquisition, Supervision, Writing - review and editing.

**Funding** Open Access funding provided by CERCA through the CRUE-CSIC agreement with Springer Nature.

**Data Availability** No datasets were generated or analysed during the current study.

## Declarations

**Competing Interests** The authors declare no competing interests.

**Human and Animal Rights and Informed Consent** This article does not contain any studies with human or animal subjects performed by any of the authors.

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