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SEX ADDICTION (S KRAUS, SECTION EDITOR)

Substance Use Disorders in Hypersexual Adults

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Abstract
Purpose of Review Understanding the relationship between hypersexual behavior and substance use disorders (SUDs) has implications for assessment, diagnosis, treatment, and case conceptualization among individuals seeking help. This article reviews existing literature linking hypersexual behavior and SUDs, offers possible explanations for associations, and concludes by offering perspectives and suggestions for future research.
Recent Findings SUDs are common in hypersexual populations and research is slowly beginning to highlight more complex relationships such as some of the mediating and moderating variables implicated in this comorbid condition.
Summary Despite several studies investigating comorbid associations of SUDs among hypersexual patients, relationships between these phenomena are poorly understood. Additional research is needed to clarify the relationship between SUDs and hypersexual behavior including greater clarity about possible pathways including mediating and moderating models to explain associations between SUDs and hypersexuality. Outcome research delineating interventions that can successfully attenuate symptoms of hypersexual behavior and SUDs are also needed.

Keywords Hypersexual disorder · Sex addiction · Sexual compulsivity · Substance use disorders · Behavioral addiction · Dual diagnosis

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Introduction

Diagnostic criteria were proposed and given consideration for the DSM-5 to characterize hypersexual disorder (HD) as a pattern involving repetitive and intense preoccupation with sexual fantasies, urges, and behaviors, leading to undesirable consequences and significant distress or impairment in social, occupational, or other important areas of functioning [1••, 2]. Patients seeking help for HD report multiple unsuccessful attempts to control or diminish time spent engaging in sexual fantasies, urges, and behaviors in response to dysregulated mood states or stressful life experiences [3]. HD symptoms must also persist at least 6 months and occur independent of substance use or mania in order for a diagnosis of HD to be established [1••]. While "hypersexual disorder" was ultimately excluded from the DSM-5 for a number of reasons including its controversy, the HD proposal and operationalized criteria continue to be studied among researchers [4•]. Studies focused on relationships between hypersexual behavior and substance use disorders (SUDs) have attempted to elucidate greater clinical and scientific understanding of these respective associations. This article reviews the current literature linking hypersexual behavior with SUDs and concludes by offering perspectives for clinicians and researchers. Insofar as the literature applies various labels to the concept of hypersexual behavior, terms such as sex addiction, sexual compulsivity, or sexual impulsivity will be used interchangeably

throughout this article, although the authors acknowledge there are important etiological, conceptual, and theoretical differences relevant to terminology.

A Review of Existing Literature

A number of articles have highlighted similarities between SUDs and hypersexual behavior in an effort to advance an "addiction" conceptualization of dysregulated sexual behavior [5, 6]. Studies have assessed comorbid SUDs among patients (the majority focused on men) seeking help for hypersexual behavior including correlational relationships with other variables of interest. Overall, findings from research suggest current and lifetime presence of SUDs among treatment-seeking hypersexual patients is common. Indeed, in one of the very first studies examining sexual compulsivity in a sample of gay and bisexual men ($n = 30$), researchers began reporting patterns of significantly higher misuse of drugs/alcohol and sexual behavior compared to healthy controls [7].

The past three decades have replicated and extended these earlier findings. For example, in a community sample ($n = 36$) of individuals with compulsive sexual behavior recruited in the USA, comorbid SUDs assessed by diagnostic interview were notably high: alcohol abuse/dependence (current 19 %; lifetime 58 %) and drug abuse/dependence (current 3 %, 33 %) [8]. Kafka and colleagues have also reported high prevalence rates of comorbid SUDs in three outpatient male samples (total $n = 240$) of hypersexual patients noting 39–47 % met criteria for current substance abuse, particularly alcohol abuse [9–11]. Raymond and colleagues found that 29 % of individuals displaying compulsive sexual behavior had a current substance use disorder and 71 % reported a history of substance abuse/dependence as assessed by a structured diagnostic clinical interview [12]. SUDs were also assessed in a study comparing similarities and differences among individuals with gambling disorder ($n = 2190$) and sex addiction ($n = 59$) drawn from psychiatric hospitals in Spain. Sex addicts (male = 98.3 %) reported daily cigarette use (18 %) alcohol abuse (14 %), and high prevalence of other drug use (although not assessed as a SUD per se) that included cannabis (25 %), cocaine (50 %), and "designer substances" (25 %) [13]. In a large sample ($n = 1604$) of male and female inpatients in residential treatment for a sexual disorder—the majority (79 %) seeking help for sex addiction—Carnes and colleagues reported high prevalence rates of SUDs assessed by the attending psychiatrist at intake including alcohol abuse/dependence (45.8–48.8 %), substance abuse (40.1–53.7 %), and nicotine dependence (25.9–33.5 %) [14]. In a study of gay and bisexual men ($n = 669$) with increased HIV risk among men who have sex with men, sexually compulsive individuals were reported to have 1.5 times higher risk of having a poly substance use disorder [15]. In a sample of Brazilian men ($n = 86$) seeking treatment for compulsive sexual behavior, alcohol use and substance use disorders were observed in 10.2 and 9.3 % of participants [16]. Finally, the risk of SUDs was reported as 1.8 times higher in a Croatian community sample of hypersexual men ($n = 57$) compared to that of healthy control subjects [17]. These studies provide strong evidence supporting comorbid SUDs in hypersexual populations.

Interestingly, some research has attempted to assess the prevalence of hypersexual behavior in populations seeking help for SUDs (as opposed to hypersexuality as the chief complaint). In 211 patients in treatment for an SUD, prevalence rates for *hypersexual behavior* were high in various SUD patients: cannabis abuse/dependence (34 %), cocaine abuse/dependence (32 %), amphetamine abuse/dependence (13 %), opiate abuse/dependence (13 %), and benzodiazepine abuse/dependence (8 %) and alcohol abuse/dependence (53 %) [18]. In large sample of 349 adult men in treatment for SUDs, hypersexual behavior was positively associated with alcohol use disorder but not drug use disorders [19]. Similarly, in a related sample of men ($n = 271$) in residential treatment for SUDs positive correlations were noted between hypersexual behavior and alcohol use disorders but not drug use disorders [20•]. Based on a review of research that included studies on sexual addiction, sexual compulsivity and hypersexual behavior, Sussman and colleagues estimate the co-occurrence of sex addiction with SUDs to be approximately 40 % [21]. In one of the studies reviewed, the Sexual Addiction Screening Test-Revised (SAST-R) was used to assess how frequently patients in treatment for chemical dependency ($n = 485$) scored in the at-risk range (SAST ≥ 6) for sexual addiction across three levels of care. Results showed that patients in the 90-day extended care unit (29 %) had significantly higher prevalence rates of being at risk for sexual addiction than those in the 30-day primary care (18 %) and 30-day relapse (18.6 %) units. Patients at risk for sexual addiction are significantly more likely than those not at risk to have a SUD involving amphetamines, cannabis, or cocaine [22]. Finally, research has also reported associations between high-risk sexual behavior (a facet of hypersexual behavior) and SUDs showing the two covary across several studies where the identified problem was substance misuse rather than hypersexual behavior [23, 24].

Collectively, these studies provide evidence that hypersexual individuals have a higher rate of SUDs (particularly alcohol abuse) and suggest it is a common comorbid issue in this population. Research focused on populations seeking help for SUDs, as opposed to hypersexual behavior, have also found positive associations with hypersexual behavior. While these studies highlight significant comorbidity between hypersexual behavior and SUDs, reasons for these associations are poorly understood necessitating more insight beyond reports of prevalence, comorbidity, and simple correlational relationships.

Beyond Prevalence and Correlational Relationships

As with most behavioral science research, interactions between study phenomena are complex with multiple pathways and variables exerting an effect, often with interaction effects between variables of interest. For example, research investigating hypersexuality as a contributing factor to high-risk sexual behavior in HIV transmission has found this correlational relationship mediated by personal and partner cocaine use in a sample ($n = 112$) of men who have sex with men [25]. Substance use linked to high-risk sexual behavior (such as unprotected sex with multiple partners) has also been shown to be mediated by personality characteristics such as impulsivity or sensation seeking in a sample ($n = 104$) of heterosexual men [26]. Interestingly, smoking status has been shown to moderate the relationship between anxiety sensitivity, alcohol misuse, sexual compulsivity, and suicidality [27].

In a recent study using data from the DSM-5 Field Trial for hypersexual disorder, significant group differences emerged between highly religious and non-religious hypersexual patients on indices of drug and alcohol abuse with the non-religious group exhibiting significantly higher scores for both alcohol and drug use disorders [28]. Interestingly, the relationship of hypersexuality and religiosity is relevant to understanding both SUDs and how hypersexual behavior might be classified. For example, results from samples of both treatment-seeking and non-clinical pornography users have found no direct association between religious affiliation or religiosity and level of pornography consumption, shame, guilt, or motivation to diminish pornography use [29, 30]. However, *even after actual levels of pornography use were held constant*, religiosity and moral disapproval of pornography use was found to be a significant predictor of *perceived* pornography addiction among pornography users [31•]. Moreover, after controlling for actual levels of pornography use, perceived pornography addiction was also significantly associated with psychological distress [31•]. These findings highlight the importance of excising caution when inferring the potential implications of observed relationships between religiosity, hypersexuality, and SUDs, insofar as it may be important to consider that much of the research on the comorbidity of SUDs and hypersexuality has been conducted using treatment-seeking participants and psychological distress related to problematic sexual behavior is typically a highly prevalent, if not necessary criterion for inclusion in studies of hypersexuality. While no causal inferences can be made from these correlational findings, when considered collectively, one interpretation may be that religiosity moderates the relationship between SUDs and hypersexuality in a manner that contextualizes similarities and differences in their respective etiologies.

Although personality traits such as sensation seeking and impulsivity or other characteristics such as religiosity may exert an effect on the presence or severity of SUDs in hypersexual populations, clearly more research is needed to elucidate the constellation of interactions and variables that may influence relationships between hypersexuality and SUDs. For example, emotional neglect, attachment styles, and other psychopathology such as depression and adult ADHD are certainly likely to exert an effect on SUDs among hypersexual individuals. Subsequently, studies need to investigate pathways that include potential mediating and moderating relationships so greater specificity and understanding regarding the associations of hypersexual behavior and SUDs can be attained.

Relevance for the Field of Sex Researchers and Clinicians

There is a paucity of theories about why hypersexual populations may have higher rates of SUDs. Some have suggested individuals may turn to substance misuse to self-medicate from shame or other unpleasant affective states resulting from the consequences of their hypersexual behavior [32]. Further, it is plausible both hypersexual behavior and substance misuse are used to modulate uncomfortable mood states. Some have suggested "cross-addiction" where individuals cycle between multiple addictive behaviors such as substance misuse, hypersexual behavior, problem gambling, and so forth. Common etiological factors may also explain higher prevalence of SUDs among hypersexual populations. For example, high rates of impulsivity and comorbid psychopathology such as ADHD have been shown in both populations [33, 34]. Neuroimaging research has also shown some evidence of cortical activation in response to cue stimuli in common brain pathways for both hypersexual behavior and SUDs [35–38]. Although this latter finding has been challenged by some research contra-indicating an addiction model to explain hypersexual behavior [39], further study in this domain of scientific inquiry is needed.

Another possible explanation for the association between SUDs and hypersexual behavior is that individuals under the influence of psychoactive substances exhibit dysregulated control over their sexual thoughts, urges, and behaviors leading to impaired judgment about sexual decisions when intoxicated. Clarification of this latter relationship is warranted. The DSM-5 proposal for HD purported if hypersexual behavior was primarily associated with alcohol or drug misuse that an HD diagnosis would not be ascertained. The intention of the DSM-5 committee was to delineate a difference between substance-induced hypersexual behavior

and a distinct condition that was independent from psychoactive substance abuse.[1] This was also true for hypersexual behavior that occurred primarily in the context of manic episodes. Hence the requirement for patients to be diagnosed with HD required sexual fantasies, urges, and behavior *not* be attributable to the direct physiological effects of exogenous substances (e.g., drugs of abuse or medications), a co-occurring medical condition, or manic episodes.

A related theory that contextualizes the reliable co-occurrence of specific hypersexual behaviors and SUDs is the concept of what has been labeled addiction interaction. Hypersexual behavior may primarily or completely occur within the context of a SUD in a manner that necessitates the presence of both the hypersexual behavior and the substance of abuse for the desired effect. Using this theory, hypersexual behavior that only occurs in the context of substance abuse is not necessarily understood as substance-induced as it is not attributable to the *direct physiological effects* of the exogenous substance. Instead, the specific combination of substance ingestion and hypersexual behavior potentiates ongoing engagement in both problematic behaviors in a manner that has specific implications for treatment in various populations [9, 40].

In addition to explaining the overall trend of high comorbidity between hypersexual behavior and SUDs, theories of etiology should also encompass explanations for potential moderating variables like religiosity. While such models may account for some of the observed comorbidity between hypersexual behavior and SUDs, this explanation may not hold true for highly religious hypersexual individuals who have been shown to exhibit significantly lower rates of SUDs. An alternative explanation may be that these individuals perceive themselves as sexually addicted and experience significant psychological distress and negative consequences in a manner that is organized primarily around religiosity or culture rather than addiction-related phenomena. Given that human sexual behavior is a complex phenomenon, it is likely hypersexuality is a heterogeneous construct that warrants conceptualization from multiple theoretical and etiological perspectives. With this integrative conceptualization, hypersexuality may be viewed more like an estuary into which various rivers of etiology flow and combine into a set of similar presenting symptoms.

Associations between SUDs and hypersexual behavior may also have implications for clinical work. While treatment implications are beyond the scope of this article, some preliminary evidence suggests interventions reducing SUDs may be helpful in attenuating hypersexual behavior such as mindfulness, motivational interviewing, cognitive behavioral therapy, participation in 12-step programs, and psychotropic medications [41–44]. When SUDs and hypersexual behavior are comorbid in the same patient, consideration should be given to interventions that not only address each of these presenting problems individually but also take into account the combined effects and unique risks of engaging in hypersexual behavior while abusing substances [6]. Thus, it will be important to also assess treatments applied to dual diagnosis patients.

Future Research and Conclusions

Additional research is needed to clarify the relationship between SUDs and hypersexual behavior. Greater clarity about possible pathways including mediating and moderating models to explain associations between SUDs and hypersexuality would benefit the field. Outcome research delineating interventions that can successfully attenuate symptoms of hypersexual behavior and SUDs are needed. Insofar as smoking status is frequently omitted in studies of SUDs, a focus on the relationship between tobacco use disorders and hypersexual behavior is warranted. Similar research exploring smoking status and problem gambling has yielded important findings noting tobacco use disorders constitute a precipitating and perpetuating risk factor in gambling disorder, relapse, and gambling severity [45–47]. Given the field is in its infancy, future research should also investigate possible differences for gender, socio-economic status, ethnicity, physical/intellectual disabilities, and sexual orientation among hypersexual populations. Finally, understanding etiological factors linked to both SUDs and hypersexuality could inform preventative strategies to attenuate the onset of these problematic behaviors.

[1] Note: During the DSM-5 Field Trial for HD, we observed several gay men who abused alcohol or drugs (predominantly methamphetamine) to disconnect from internalized shame about their sexual orientation and create opportunities to engage in hypersexual behavior. Although the majority of hypersexual behavior occurred in the context of substance abuse, these cases were clearly examples where the predominant issue was hypersexuality, not a SUD. The recommendation to the Sexual and Gender Identity Disorders Work Group for DSM-5 was to consider a SUD secondary to HD rather than omit the HD diagnosis based on the current proposed criteria.

Compliance with Ethical Standards

Conflict of Interest Dr. Rory C. Reid and Dr. Monica D. Meyer declare that they have no conflict of interest. Dr. Reid was the principal investigator for the DSM-5 Field Trial for hypersexual disorder conducted by UCLA.

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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- •• Of major importance

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