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Sexual Addiction or Hypersexual Disorder: Different Terms for the Same Problem? A Review of the Literature

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Abstract: Sexual addiction, which is also known as hypersexual disorder, has largely been ignored by psychiatrists, even though the condition causes serious psychosocial problems for many people. A lack of empirical evidence on sexual addiction is the result of the disease's complete absence from versions of the Diagnostic and Statistical Manual of Mental Disorders. However, people who were categorized as having a compulsive, impulsive, addictive sexual disorder or a hypersexual disorder reported having obsessive thoughts and behaviors as well as sexual fantasies. Existing prevalence rates of sexual addiction-related disorders range from 3% to 6%. Sexual addiction/hypersexual disorder is used as an umbrella construct to encompass various types of problematic behaviors, including excessive masturbation, cybersex, pornography use, sexual behavior with consenting adults, telephone sex, strip club visitation, and other behaviors. The adverse consequences of sexual addiction are similar to the consequences of other addictive disorders. Addictive, somatic and psychiatric disorders coexist with sexual addiction. In recent years, research on sexual addiction has proliferated, and screening instruments have increasingly been developed to diagnose or quantify sexual addiction disorders. In our systematic review of the existing measures, 22 questionnaires were identified. As with other behavioral addictions, the appropriate treatment of sexual addiction should combine pharmacological and psychological approaches. Psychiatric and somatic comorbidities that frequently occur with sexual addiction should be integrated into the therapeutic process. Group-based treatments should also be attempted.

Keywords: Sexual addiction, sex addict, sexual dependence, impulsivity, compulsive sexual behavior, compulsive sex, sexual compulsion, excessive sexual behavior, hypersexual, and hypersexuality.

I. INTRODUCTION

Sexual addiction, which is also known as hypersexual disorder, has largely been ignored by psychiatrists, even though there is evidence that the condition poses serious psychosocial problems for many people [1]. Since the appearance of sexual addiction in the clinical literature, various terms have been used to name the condition, including nymphomania, Don Juanism, satyriasis [2], sexual compulsivity, sexual impulsivity[3], out-of-control sexual behavior [4], sexual addiction, and hypersexual behavior(a theory-neutral term) [5, 6].

In 1812, excessive sexual behaviors were clinically documented by Rush, a physician and founding father of the United States [7]. In the 1900s, Krafft-Ebbing described patients with what he called hyperesthesia sexual; it represented the first case of an abnormally increased sexual desire [8]. The concept of sexual addiction was introduced in the mid-1970s. Orford was the first to conceptualize an excessive nonparaphilic sexual behavior as a sexual dependence. Orford identified this out-of-control sexual behavior as a sexual addiction and compared the behavior to alcohol addiction. He described the behavior as a maladaptive pattern of use and impaired control over a behavior that was associated with adverse consequences [9]. In his best-selling book *Out of the Shadows: Understanding Sexual Addiction*, Patrick Carnes popularized sexual addiction as a psychopathological condition [10]. The book led to the publication of a series of books and articles about excessive sexual behavior. Later, Kinsey and colleagues developed the concept of total sexual outlet. The concept corresponds to the total weekly number of orgasms that are achieved by any combination of sexual outlets (e.g., masturbation, sexual intercourse, oral sex)[11]. According to Mick and Hollander, sexual addiction can be conceptualized as disorder on the impulsive-compulsive spectrum. From this perspective, both impulsivity and compulsivity coexist. First, an impulsive component (pleasure, arousal, or gratification) initiates the cycle, and then a compulsive component leads to the persistence of the behavior[3].

A lack of empirical evidence on sexual addiction is the result of the disease's complete absence from versions of the Diagnostic and Statistical Manual of Mental Disorders (DSM). The DSM-3-R (1987) referred to sexual addiction as a sexual disorder "not otherwise specified." The two versions of the DSM-4 omitted sexual addiction. However, the Work Group on Sexual and Gender Identity Disorders has proposed diagnostic criteria for hypersexual disorder to be considered for inclusion in the DSM-5 [6]. Empirical research on hypersexual behavior has increased in recent years [6, 12, 13], which has led to considerable interest in developing measures that assess problematic hypersexual behavior [14]. While there are many similarities in how researchers and clinicians define hypersexual behavior, some differences are apparent across studies. Recently, the American Psychiatric Association Board of Trustees rejected several proposals for new disorders. Hypersexual disorder does not appear in the new DSM-5. Even though clinicians have been treating the disorder, the Board of Trustees estimated that there was not enough research to consider adding the disorder to Section 3 (disorders that require further research) of the DSM-5 [15].

Given the variation in definitions, conceptualizations, and assessments of sexual addiction or hypersexual disorder and its rejec-

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tion by the DSM-5, the purpose of the current review is to emphasize the clinical usefulness of the disorder and to provide clinicians with a detailed description of aspects of its management. Sexual offenses and paraphilias are not discussed in this article. Literature searches were conducted for the period from January 1978 to June 2013 using PubMed, EMBASE, PsycInfo, and Google Scholar databases. The following search terms were included: sexual addiction, sex addict, sexual dependence, impulsivity, compulsive sexual, compulsive sex, sexual compulsion, excessive sexual, hypersexual, and hypersexuality.

II. EPIDEMIOLOGICAL DATA

To date, no large epidemiological studies of sexual addiction have been conducted using standardized diagnostic criteria [6, 16]. However, some studies have estimated the prevalence of sexual addiction [17]. The prevalence of sexual addiction-related disorders ranges from 3% to 16.8% [18-21]. In a Swedish sample of 2450 participants from the general population, Langström and Hanson estimated that 12% of men and 6.8% of women present with hypersexuality[22]. Laumann and colleagues reported that 7.6% of American males (n = 1320; ages 18-59) engaged in partnered sex four or more times/week for at least one year, and 1.2% of the men masturbated more than once/day during the year leading up to the survey [23]. However, the majority of studies estimate the prevalence of sexual addiction to be 3% to 6%in the general adult population [12, 24, 25]. Higher rates have been suggested in specific populations, such as sexual offenders, HIV patients [26] and people with hypersexual disorders and paraphilias [27]. The evidence suggests that men have a higher prevalence of sexual addictions than women; the estimated ratio of sexual addictions is between 3 and 5 men for every one woman [6, 28-30]. It is worth noting that the dissimilar prevalence rates reported can at least partially be attributed to the use of different classification criteria along with the use of different screening instruments and/or cut-off criteria.

III. NEUROBIOLOGICAL BASIS OF SEXUAL BEHAVIOR AND ADDICTION

A number of imaging studies have been undertaken of human sexual behavior in normal subjects and subjects with sexual disorders using both PET and fMRI to identify neuranatomic correlates of visual sexual stimuli. These studies have demonstrated that visual sexual stimuli are associated with the activation of reward-related circuitry, including the limbic and paralimbic regions (anterior cingulate gyrus, orbitofrontal cortex) and the striatum (head of the caudate nucleus, putamen). Notably, these regions contain DA projections that are essential elements of the brain reward network. Gender effects are observed in these studies, with males showing significantly greater amygdala mobilization that perhaps reflects differences in how men and women process sexual signals [31]. It is interesting to note that amygdala activation in males characterizes the "appetitive" phase of sexual behavior, whereas ejaculation, which characterizes the "consummatory" phase of sexual behavior in males, is associated with a reduction in amygdala activity [32]. The sexual addictive process is described by Goodman as an interaction of impairments in three functional systems: motivation-reward, affect regulation, and behavioral inhibition [33].

IV. CLINICAL DATA

IV.1. What Clinicians Should Know

More than 90% of people who are categorized as having a compulsive, impulsive, addictive sexual disorder or a hypersexual disorder reported having obsessive thoughts and behaviors or sexual fantasies [34]. One study estimated that hypersexual men (12.1% of the sample) and women (6.8% of the sample) were more likely to be younger and to have been separated from their parents during childhood. On average, these subjects initiated sexual behaviors at an earlier age, had a higher frequency of sexual behaviors, and had experienced more diverse sexual experiences than subjects who were not hypersexual. The authors specified that the most important gender difference was the link between sexual addiction and a history of sexual abuse for women [22]. Other authors found that sexual abuse was linked to promiscuous or risky sexual behavior[35, 36]. A dysfunctional attachment during childhood is a hallmark risk factor for sexual addiction. Early negative childhood attachment experiences may negatively impact upon individuals' affective, cognitive, and behavioral development, and favor the development and maintenance of sexual addiction [37-41].

Sexual addiction has been found to follow a cyclical pattern [13, 42-45]that is similar to that of drug addiction. Sexual addiction can be defined as a clinical syndrome that is characterized by the experience of sexual urges, fantasies, and behaviors that are recurrent, intense, and cause a distressful interference in one's daily functioning [46].

Adapted from Carnes's work, the following signs of sexual addiction have been described and can be used by clinicians [38] (Table **1**):

Table 1. Signs of Sexual Addiction.

Signs of sexual addiction
– out-of-control sexual behavior;
– inability to stop the sexual behavior;
– persistent pursuit of high-risk behavior;
– ongoing desire or effort to limit sexual behavior;
– sexual behavior used as a primary coping strategy;
– presence of the tolerance phenomenon;
– severe mood changes associated with sexual activity;
– excessive time spent obtaining sex;
– excessive time spent being sexual or recovering from sexual experiences;
– severe social, physical, and psychological consequences.

More than 70% of sexual addiction patients report withdrawal symptoms between sexual episodes. Withdrawal symptoms include nervousness, insomnia, sweating, nausea, increased heart rate, shortness of breath, and fatigue [38, 42, 47]. Men are less likely to feel satisfied with their sexual life, have more relationship-associated problems and are more likely to have consulted professional help for their sexual problems [28].

In clinical practice, sexual addiction disorders can be divided into two types that involve behavioral symptoms or cognitive and emotional symptoms.

Behavioral symptoms include seeking new sexual partners, having frequent sexual encounters, engaging in compulsive masturbation, the frequent use of pornography, repeated unsuccessful attempts to reduce or stop excessive sexual behaviors, engaging in sexual activities without physiological arousal, engaging in risky sexual activities, paying for sexual services, and resisting behavioral changes to avert HIV risk [38, 40, 48, 49]. Cognitive and emotional symptoms include obsessive thoughts of sex, feelings of guilt about excessive sexual behavior, the desire to escape from or suppress unpleasant emotions, loneliness, boredom, low self-opinion, shame, secrecy regarding sexual behaviors, rationalization about the continuation of sexual behaviors, indifference toward a regular sexual partner, a preference for anonymous sex, a tendency to disconnect intimacy from sex, and an absence of control in many aspects of life[10, 28, 40, 42, 48].Finally, some studies find that sexual addiction is associated with or in response to dysphoric affects [30, 50-53] or stressful life events [54].

IV.2. Proposed Diagnostic Criteria

In recent years, some claims have emerged against the inclusion of the condition in the DSM-5. Authors argued that this diagnosis was unnecessary and would be harmful to patients, whereas others suggested that the disorder does not exist [51] [52]. Recently, it was decided not to include hypersexual disorder as a new condition in section 3 of the DSM-5 (research appendix). Although a consensus is still needed on the status of sexual addiction, it is useful to describe here the past attempts to define the diagnostic criteria for the condition. In the nineties, Goodman replaced the term "substance" in the DSM-4's definition of "substance dependence" with "sexual behavior"[43]. The following criteria were used to describe sexual addiction disorder:

A. Recurrent failure to resist impulses to engage in a specified sexual behavior;

B. Increasing sense of tension immediately prior to initiating the sexual behavior;

C. Pleasure or relief at the time of engaging in the sexual behavior;

D. At least five of the following criteria:

(1) Frequent preoccupations with sexual behavior or with activity that is preparatory to the sexual behavior;

(2) Frequent involvement in sexual behavior to a greater extent or over a longer period than intended;

(3) Repeated efforts to reduce, control, or stop sexual behavior;

(4) A great amount of time spent in activities necessary for engaging in sexual behavior, or for recovering from its effects;

(5) Frequent involvement in sexual behavior when the subject is expected to fulfill occupational, academic, domestic, or social obligations;

(6) Important social, occupational, or recreational activities given up or reduced because of the behavior;

(7) Continuation of the behavior despite knowledge of having a persistent or recurrent social, financial, psychological, or physical problem that is caused or exacerbated by the sexual behavior;

(8) Tolerance: need to increase the intensity or frequency of the sexual behavior to achieve the desired effect, or diminished effects obtained with sexual behavior of the same intensity;

(9) Restlessness or irritability if unable to engage in sexual behavior.

E. Some symptoms have persisted for at least one month, or have occurred repeatedly over a longer period of time.

Others authors proposed to use the term "hypersexual disorder" [6, 55, 56]. The diagnostic criteria for hypersexual disorder showed good validity with theoretically related measures of hypersexuality, impulsivity, emotional dysregulation, and stress proneness; the criteria for hypersexual disorder also displayed good internal consistency [56]. The primary criteria included the following:

Over a period of at least 6 months, recurrent and intense sexual fantasies, sexual urges, and sexual behavior in association with four or more of the following five criteria:

(A1) A great deal of time is consumed by sexual fantasies and urges and by planning for and engaging in sexual behavior;

(A2) Repetitively engaging in these sexual fantasies, urges, and behaviors in response to dysphoric mood states (e.g., anxiety, depression, boredom, irritability);

(A3) Repetitively engaging in sexual fantasies, urges, and behaviors in response to stressful life events;

(A4) Repetitive but unsuccessful efforts to control or significantly reduce these sexual fantasies, urges, and behaviors;

(A5) Repetitively engaging in sexual behavior while disregarding the risk for physical or emotional harm to self or others.

B. There is clinically significant personal distress or impairment in social, occupational, or other important areas of functioning associated with the frequency and intensity of these sexual fantasies, urges, and behaviors.

C. These sexual fantasies, urges, and behaviors are not due to the direct physiological effect of an exogenous substance (e.g.,a drug of abuse or a medication) or to manic episodes.

D. Person is at least 18 years of age.

These criteria are not included in the DSM-5, but are similar to those proposed by Goodman to define sexual addiction. Whether the disorder should be conceptualized as an addictive disorder remains controversial [34].

IV.3. Various Aspects of the Disease

Sexual addiction/hypersexual disorder is an umbrella construct that encompasses various types of problematic behaviors[16, 44, 57].

Coleman and colleagues have classified seven subtypes of impulsive-compulsive sexual behavior: compulsive cruising and multiple partners, compulsive fixation on an unattainable partner, compulsive masturbation, compulsive use of erotica, compulsive use of the Internet for sexual purposes, multiple compulsive love relationships, and compulsive sexuality in a relationship[48]. Bancroft suggests that two types of sexual behavior are especially likely to become out of control: masturbation and the new and exceedingly important development of the sexual use of the Internet. A growing number of men and women use the Internet for sexual purposes. Men are more likely to access sexually explicit material online; on the contrary, women are more likely to use the Internet for interactions and cybersex [4]. According to Kafka, the various proposed subtypes of hypersexual disorder are excessive masturbation, which is the most common sexual outlet for single and married individuals over the life course[58], cybersex, pornography use, sexual behavior with consenting adults, telephone sex, strip club visitation, and other behaviors[6].

IV.4. Consequences

The adverse consequences of sexual addiction are similar to the consequences of other addictive disorders[57]. However, there are also direct risks associated with unprotected and anonymous sexual encounters, such as HIV/AIDS, other sexually transmitted diseases, and unwanted pregnancy [10, 28, 59]. Hypersexual men and women also engage in a variety of other risky behaviors, including tobacco use, alcohol and illicit drug abuse (e.g., cocaine, Gamma-ButyroLactone (GBL), and new designer drugs). Among men, gambling is particularly prevalent [6]. Furthermore, hypersexual men tend to be dissatisfied with their psychological health and life in general[55]. Sexual addiction is commonly associated with psychiatric comorbidities, including mood disorders that are linked with sleep and appetite dysregulation (increases or decreases), social phobia, anxiety disorder, dysthymia, impulsivity, attention deficit hyperactivity disorder [3, 16, 60] and post-traumatic stress disorder [38]. As an illustration, Carnes emphasized that a significant number of sexual addicts present more than one psychiatric disorder. The most frequently encountered comorbidities are alcohol and drug addiction, eating disorders, and other behavioral addictions (e.g., compulsive buying, workaholism and gambling)[10, 28]. The widely reported coexistence of sexual addiction and other addictions suggest that these disorders share etiological mechanisms, such as neurobiological and psychosocial factors (e.g., personality traits, cognitive deficits or bias) [33]. Studies reveal that sexual addiction often coexists with other psychiatric disorders, addictive behaviors, mood disorders, anxiety disorders, and atten-

tion deficit hyperactivity disorders. However, studies of neurocognitive deficits are inconsistent [61].

V. ASSESSMENT OF SEXUAL ADDICTION

In recent years, research on sexual addiction has proliferated, and screening instruments have been increasingly developed to diagnose or quantify the disorder (see [62] for a review). In our systematic review of the existing measures, 22 questionnaires were identified. Five new questionnaires have been created since a 2010 review by Hook and colleagues (see Table **2** for a comprehensive description of the existing measures). These questionnaires assess symptoms of sexual addiction and/or the adverse consequences of the disorder. The psychometric qualities of the existing measures are globally low, and further validation studies are required[62]. The primary concerns for and limitations regarding the existing measures include (1) the absence of valid cut-offs to identify sexual addiction; (2) a lack of generalizability (e.g., some instruments have only been used in very specific samples, such as men who have sex with men); and (3) variation in reliability, response format (dimensional versus categorical responses), and factorial structures.

Carnes was one of the first authors to create an instrument to assess sexual addiction[10]. The Sexual Addiction Screening Test (SAST) was one of the first tools to measure sexual addiction symptoms. The SAST is composed of 25 dichotomous items that are designed to measure symptoms of sexual addiction in mostly heterosexual men. The total scores range from 0 to 25, and a score of 13 or higher suggests the presence of a sexual addiction. The internal consistency of the SAST was measured in four samples, and the Cronbach's alpha coefficients for the total score ranged from .85 to .95. The SAST can discriminate between male sex addicts and non-addicts 63]. The SAST displays convergent validity and is related to other measures of sexual addiction [64-66]. Since the first version of the SAST was published, Carnes has developed two other versions: the WSAST (the SAST for women) [67] and the GSAST (the SAST for men who have sex with men (MSM)) [68]. However, there is little evidence in support of the clinical utility of these tools. Consequently, the authors have developed a new version of the SAST: the SAST-R [69]. The new version applies to heterosexual men, women, and MSM. The SAST-R measures Internet use, preoccupation, loss of control, relationship disturbance, and affect disturbance. The internal consistency of the SAST-R is good and is comparable to the 25-item SAST [69].Recently, Carnes and colleagues created the PATHOS, which is a short instrument that assesses sexual addiction. The PATHOS has six items that relate to preoccupation, shame, treatment-seeking, hurting others, out-of-control behavior, and sadness [70]. These items are included in the SAST and the SAST-R. A French validation of the tool is currently underway.

Table 2. Existing measures of sexual addiction.

Instrument	Author(s)	Samples studied	Component(s)	Items	Reliability/Validity
Sexual Addiction Screening Test (SAST)	Carnes, P. (1989)	Psychotherapy clients Community members College students Sex offenders Veterans Heterosexual men	Sexual addiction symptoms	25-item dichotomous	Internal consistency :α range from .89 to .95 Temporal stability not reported Factor evidence : 1 factors cross-validated
Sexual Addiction Screening Test—Women (WSAST)	Carnes and O'Hara (2000)	College students Heterosexual female	Sexual addiction symptoms	25-item dichotomous	Internal consistency not reported Temporal stability not reported Factor evidence not reported
Sexual Addiction Screening Test—Gay Men (GSAST)	Carnes and Weiss (2002)	Community members Gay men	Sexual addiction symptoms	25-item dichotomous	Internal consistency not reported Temporal stability not reported Factor evidence not reported
Sexual Outlet Inventory (SOI)	Kafka (1991)	Psychotherapy clients Male	Incidence and frequency of sexual fantasies, urges, and activities during a designated week. Sexual behaviors are divided into two categories: conventional and unconventional	6-item administered by a clinician	Internal consistency not reported Temporal stability not reported Factor evidence not reported

(Table 2) Contd….

Instrument	Author(s)	Samples studied	Component(s)	Items	Reliability/Validity
Perceived Sexual Control Scale (PSCS)	Exner, Meyer-Bahlburg, and Ehrhardt (1992)	Community members College students Gay men	Sexual self-control: Control of sex drive Control of risk behavior	20-item Likert (5 point)	Internal consistency :α range from .85 to .88 Temporal stability not reported Factor evidence : 2 factors not cross-validated
Sexual Compulsivity Scale (SCS)	Kalichman and Rompa (1994)	Community members College students People with HIV Heterosexual men and women, gay men and lesbians	Sexually compulsive behavior Sexual preoccupations Sexually intrusive thoughts	10-item Likert (4 point)	Internal consistency : α range from .59 to .92 Temporal stability : r = .95 (2 weeks) r ranged from .64 to .80 (3 months) Factor evidence : 2 factors not cross-validated
The Sexual Addiction Scale (SAS) of the Disorders Screening Inventory (DSI)	Carter and Ruiz (1996)	Psychotherapy clients Male	Compulsion Control loss Consequences Codependent response Covertness	5-item Likert (5 point)	Internal consistency :α=.83 Temporal stability not reported Factor evidence not reported
Sexual Dependence Inventory (SDI-R)	Delmonico, Bubenzer, and West (1998)	Psychotherapy clients Community members Sex offenders Heterosexual	Fantasy Seductive role playing Voyeurism Exhibitionism Paying for sex Trading sex Pain exchange Intrusive sex Exploitive sex Anonymous sex	179-item Likert	Internal consistency :α=.99 Temporal stability : r = .89 Factor evidence not reported
Sex Addicts Anonymous Questionnaire (SAAQ)	Mercer (1998)	Psychotherapy clients Sex offenders Sex offenders Male	Sexual addiction	16-item Likert (3 point)	Internal consistency not reported Temporal stability not reported Factor evidence not reported
The Garos Sexual Behavior Index (GSBI)	Garos and Stock (1998)	Psychotherapy clients Community members College students Inmates Sex offenders Male and female	Discordance Sexual obsession Permissiveness Sexual stimulation	70-item Likert (5 point)	Internal consistency : Discordance: α = .82 Sexual obsession: α = .80 Permissiveness: α = .70 Sexual stimulation: α = .72 Temporal stability (18 days) : Discordance: r = .33 Sexual obsession: r = .79 Permissiveness: r = .91 Sexual stimulation: r = .89 Factor evidence : 4 factors not cross-validated

(Table 2) Contd….

Instrument	Author(s)	Samples studied	Component(s)	Items	Reliability/Validity
The compulsive sexual behavior Inventory (CSBI)	Coleman, Miner, Ohlerking, and Raymond (2001)	Psychotherapy clients Community members College students Heterosexual men and women, gay men	Control (ability to control sexual behavior) Abuse (past history of abuse) Violence (experience of sexual violence)	28-item Likert (5 point)	Internal consistency :α range from .67 to .87 Temporal stability (7-10 days) : r = .86 Factor evidence : 3 factors cross-validated
Sexual Symptom Assessment Scale (S-SAS)	Raymond, Lloyd, Miner, and Kims (2007)	Psychotherapy clients Male	Intensity of current sexual urges; severity of problematic sexual behavior	12-item Likert (5 point)	Internal consistency :α=.92 Temporal stability (1 week) : r = .94 Factor evidence not reported
Diagnostic Interview for Sexual Compulsivity (DISC)	Morgenstern *et al*. (2009)	Community members Gay and bisexual men	Symptoms of sexual addiction	Semistructured interview	Internal consistency not available Temporal stability not reported Factor evidence : 1 factor not cross-validated
The Yale-Brown Obsessive Compulsive Scale—Compulsive Sexual Behavior (YBOCS—CSB)	Morgenstern *et al*. (2004)	Community members Gay and bisexual men		10-item Likert (5 point)	Internal consistency : α range from .80 to .91 Temporal stability not reported Factor evidence : 1 factor not cross-validated
Cognitive and Behavioral Outcomes of Sexual Behavior Scale (CBOSB)	McBride *et al*. (2007)	College students	Consequences associated with sexual addiction (legal/occupational; psychological/spiritual; social; physical (pain/injury); physical (disease/pregnancy); financial. 2 subscales: Cognitive outcomes scale Behavioral outcomes scale	20-item Likert (4 point) 16-item dichotomous	Internal consistency : Subscale: αs ranged from .75 to .95 Cognitive: α = .89 Behavioral: α = .75 Temporal stability not reported Factor evidence : 6 factors not cross-validated
Compulsive Sexual Behavior Consequences Scale (CSBCS)	Muench *et al*. (2007)	Community members Gay and bisexual men	Consequences associated with compulsive sexual behavior	21-item Likert (5 point)	Internal consistency : α range from .86 to .89 Temporal stability (3 months) : r = .70 Factor evidence not reported
Internet sex screening test (ISST)	Delmonico and Miller (2003)	Community members Heterosexual men and women, gay men	Online sexual compulsivity Online sexual behavior-social Online sexual behavior-isolated Online sexual spending Interest in online sexual behavior	25-item dichotomous	Internal consistency : α =.78 Temporal stability not reported Factor evidence : 5 factors not cross-validated

(Table 2) Contd….

Instrument	Author(s)	Samples studied	Component(s)	Items	Reliability/Validity
Hypersexual Behavior Inventory (HBI)	Reid, Garos and Carpenter (2011)	Outpatients sex addicts Male	Control Consequences Coping	19-item Likert (5 point)	Internal consistency : Overall scale : α range from .95 to .96 Subscales : Control : α range from .94 to .95 Coping : α range from .90 to .91 Consequences : α range from .87 to .89 Temporal stability (2 weeks) : r = .91 Factor evidence : 3 factors not cross-validated
Hypersexual Behavior Consequences Scale (HBCS)	Reid, Garos and Fong (2012)	Hypersexual patients Patients with a general psychiatric condition Male and female	Consequences of hypersexual behavior	22-item Likert (5 point)	Internal consistency : α =.84 Temporal stability (2 weeks) : r = .76 Factor evidence : 1 factors not cross-validated
PATHOS	Carnes, Green, Merlo, Polles, Carnes, and Gold (2011)	Outpatients and inpatients sex addicts College students Male and female	Preoccupied Ashamed Treatment Hurt others Out of control Sad	6-item dichotomous	Internal consistency : α range from .77 to .94 Temporal stability not reported Factor evidence not reported
Sexual Addiction Screening Test Revised (SAST-R)	Carnes, Green, and Carnes (2010)	College students Clergy Outpatients and inpatients sex addicts Heterosexual men and women, gay men	Preoccupation Loss of control Relationship disturbance Affect disturbance	45-item dichotomous	Internal consistency : α range from .77 to .91 Temporal stability not reported Factor evidence not reported
Pornography Consumption Effect Scale (PCES)	Hald and Malamuth (2008)	Heterosexual men and women (18-30 years old)	Positive and negative effects of pornography consumption	47-item Likert (7 point)	Internal consistency : Positive effect dimension : α =.91 Negative effect dimension : α =.82 Temporal stability not reported Factor evidence : 2 factors not cross-validated

One of the most frequently used scales is Kalichman and Rompa's Sexual Compulsivity Scale (SCS). The SCS is a 10-item questionnaire that assesses sexual compulsive behavior, sexual preoccupations and intrusive sexual-related thoughts. The items are scored on a 4-point Likert scale, which allows for the measurement of dimensions of sexual compulsivity. The total scores range from 10 to 40, with higher scores indicating higher levels of sexual addiction. A cut-off score of 24 or higher has been used to indicate problems with sexual addiction [71]. The SCS displays good psychometrical properties. The internal consistency of the scale has been measured in 30 samples, and the Cronbach's alpha coefficients for the total score ranged from .59 to .92. Only one sample reported an alpha of less than .70. The temporal stability coefficient was .95 for 2 weeks and ranged from .64 to .80 for 3 months (see [62]). The SCS displays evidence of having convergent validity and is related to other measures of sexual addiction [71]. The SCS also has discriminant validity and displays evidence of being unrelated to ethnicity [72, 73], education, and income [72]. Miner and colleagues report that the SCS can predict the practice of engaging in unprotected sex, a large number of sexual partners, the use of co-

caine in HIV-positive men and a high frequency of sex-seeking behavior on the Internet [54].

VI. THERAPEUTIC APPROACHES

Because of a lack of consensus and empirical research on sexual addiction/hypersexual disorders, clear diagnostic criteria are needed to test the efficacy of psychological and pharmacological treatments in controlled studies. However, as with other behavioral addictions (e.g., pathological gambling, compulsive buying) the appropriate treatment of sexual addiction should include a combination of pharmacological and psychological approaches [74]. Psychiatric and somatic comorbidities that frequently occur with sexual addiction should be integrated into the therapeutic process. Group-based treatments should also be attempted.

Pharmacological treatments have limited evidence of success. To date, no large double-blind clinical trials have been conducted in patients with sexual addiction/hypersexual disorders. One small 12-week randomized trial showed an effect of selective serotonin reuptake inhibitors (SSRIs) (citalopram 20-60 mg) on sexual desire, sexual drive, frequency of masturbation, and pornography use [75]. Open-label studies and case reports of fluoxetine [76], other SSRIs [77], naltrexone [78] and topiramate [79] show promise in decreasing the frequency of excessive sexual behavior.

Motivational interviewing, cognitive behavior therapy, and couples and family therapy have been shown to be potent interventions for several forms of drug and behavioral addiction[80-82]. Behavioral therapies may be associated with reductions in substance use and may have effects on the neural systems that are involved in cognitive control, impulsivity, motivation and attention [83]. These effects may also benefit patients with behavioral addictions. Further research is needed to explore this area.

Group-based treatments are an adjunct therapeutic possibility [84]. While Sex Addicts Anonymous is not affiliated with any other organization, the basic principles of the group are found in the twelve steps and twelve traditions of Alcoholics Anonymous.

VII. CONCLUSION

The expression and power of sexual urges and addiction, together with personality and the developmental and personal characteristics of patients, can determine the clinical picture characterized by preoccupation and obsession with sex or sexual activity. Patients lack control of this activity, which has long-term harmful consequences both functionally and socially, as well as sometimes economically and legally. Although the neurobiological and psychological mechanisms of sexual addiction have begun to unfold, currently there is no validated pharmacological or psychological treatment for this disorder. This absence of validated treatment is at least partly because sexual addiction is an umbrella construct that regroups different subtypes of problematic behaviors. Future research should thus be conducted by taking into account the heterogeneity of the condition.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflicts of interest.

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