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Hypersexuality should be considered an Expression of a Psychopathological Condition - A Joined Position Statement of SIAMS and SOPSI about the Best Practice for the Clinical Psycho-Sexology

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Abstract

Several psychopathological dimensions have been associated with excessive or out-of-control sexual behavior, such as sexual impulsivity, sexual addiction, compulsive sexual behavior, and lately, hypersexuality. Generally, hypersexuality is characterized by a recurrent lack of control of intense and repetitive sexual impulses, which causes distress or clinically significant disorders in important areas of functioning. It has been estimated that hypersexuality may occur in 2-6% of individuals, with a higher prevalence in males and selected populations, such as sex offenders. Its multifaceted nature makes complex to classify hypersexuality as a specific diagnostic category or as comorbidity or a symptom of other psychopathological conditions. In this regard, due to the lack of consensus on the definition(s), the several methodological difficulties in its definition and assessment, and the multifactorial etiology of hypersexuality, its recognition and clinical evaluation still often leads the clinician to underdiagnose this symptom, bringing the patient to a wrong diagnosis and a wrong treatment.

ABBREVIATIONS

SIAMS: Italian Society of Andrology and Medical Sexology; SOPSI: Italian Society of Psychopathology

INTRODUCTION

Several psychopathological dimensions have been associated with excessive or out-of-control sexual behavior, such as sexual impulsivity [1], sexual addiction [2], compulsive sexual behavior [3], and lately, hypersexuality [4]. Generally, hypersexuality is characterized by a recurrent lack of control of intense and repetitive sexual impulses, which causes distress or clinically significant disorders in important areas of functioning [5]. It has been estimated that hypersexuality may occur in 2-6% of individuals [6], with a higher prevalence in males and selected populations, such as sex offenders [7]. Its multifaceted nature makes complex to classify hypersexuality as a specific diagnostic category or as comorbidity or a symptom of other psychopathological conditions. In this regard, due to the lack of consensus on the definition(s), the several methodological difficulties in its definition and assessment, and the multifactorial etiology of hypersexuality [8], its recognition and clinical evaluation still often leads the clinician to underdiagnose this symptom, bringing the patient to a wrong diagnosis and a wrong treatment.

Among the several controversial aspects, some doubts persist concerning the association of hypersexuality with an addiction disorder. Recently, Pfaus and colleagues highlighted the inexistence of experimental data supporting the consideration of hypersexuality as an addiction disorder [9]. Furthermore, the neurobiological feature characterizing an addiction (among the different neurobiological features of addiction we cite the increased responsiveness of glutamate neurons that synapse on the nucleus accumbens) has not been evidenced in hypersexual persons. This evidence promotes the interpretative hypothesis of hypersexuality as a secondary feature in comorbidity with other disorders, such as another sexual, psychological, or psychiatric disorder [9].

Particular attention has been recently paid to other aspects related to hypersexuality, i.e. i) loss of pleasure, ii) sexual frequency and iii) sexual desire. Loss of pleasure, mainly associated with the compulsivity of sexual acts, has been considered as a criterion for the definition of compulsive sexual behavior disorder in the International Classification of Diseases (ICD-11), [10,11]. However, the presence of loss of pleasure has not been often quantitatively studied. Recently, a study found that specific negative effects of hypersexuality, among which the most related are withdrawal (being nervous and restless) and loss of pleasure, can predict the need for help, and, hence, can explain the perceived distress [12,13].

Sexual frequency itself does not appear to be a pathognomonic characteristic, because it does not discriminate between problematic hypersexuality and high sexual desire without distress [14].

Finally, sexual desire and sexual arousal do not characterize univocally hypersexuality, because not all persons with high sexual desire have the risk to develop hypersexuality [15,16].

Following this perspective, and based on evidence of some researches [17], it is possible to consider hypersexuality following a dimensional perspective, where the concept of "quantity of the sexual behaviour" becomes the index of severity of hypersexual behavior. So, we can hypothesize a continuum, where on the one extreme we find the hypoactive sexual desire disorder (HSDD), and on the other one the hypersexual disorder (HD). All the central points during the continuum may be considered softened features of a more or less "normotypical sexual behavior".

Although the paucity of data does not allow drawing an epidemiological picture in the general population, the complexity of hypersexuality suggests that, in its genuine form, it is a rare, but sexologically interesting symptom.

On this ground, this article aims to overview all the known clinical manifestations of hypersexuality and to produce a position statement in order to help the physician, the psychiatrist and clinical psychologist during the assessment of the hypersexual behavior conceived as a symptom related to other psychopathological conditions. All the known psychopathological conditions related to hypersexuality will be discussed here. Finally, a specific section will be dedicated to the most used psychometric tools validated for an accurate evaluation of hypersexuality.

METHODS

Literature search

Epidemiological, behavioral, and clinical data on hypersexuality and its connections to mental health are collected from PubMed, which included Medline and Cochrane Library, SCOPUS, Web of Science, PsychInfo, Embase and Google Scholar. The research in databases was performed by four trained researchers under the supervision of the first author. All the published articles published in English were selected up to June 2020. The combination of the following terms was used in order to achieve the most complete research and clinical picture on hypersexuality ("hypersexuality": 524 results; "compulsive sexuality": 899 results; "compulsive sexual behavior": 673 results; "hypersexuality AND femlaes": 200 articles; "hypersexuality AND gender differences": 28 results; "hypersexuality AND mood disorders": 39 results; "hypersexuality AND depression": 82 results; "hypersexuality AND bipolar disorders": 30 results; "hypersexuality AND Obsessive Compulsive Disorder": 16 results; "hypersexuality AND Attention Deficit Hyperactivity Disorder": 10 results; "hypersexuality AND impulsivity": 228 results; "hypersexuality AND emotional dysregulation": 12 results; "hypersexuality AND alexithymia": 5 results; "hypersexuality AND emotions": 75 results; "hypersexuality AND sexual dysfunctions": 113 results; "hypersexuality AND couple": 16 results; "hypersexuality AND relationship": 69 results; "hypersexuality AND sexualy risky behaviors": 32 results; "hypersexuality AND cybersex": 8 results; "hypersexuality AND pornography": 49 results; "hypersexuality and sexually transmitted diseases": 9 results; "hypersexuality questionnaires": 101 results. The search on PubMed was limited to clinical articles, deleting those pertaining to neurosciences. These studies investigated prevalently with fMRI the cerebral damage in dementia patients showing also hypersexual behavior. In addition, there were deleted also articles not pertaining to hypersexuality, such as the studies investigating other psychiatric disorders. Figure represents the flowchart showing further details on the literature search and the selection of the articles included in this literature review.

Psychopathological factors related to hypersexuality

This paragraph is aimed at describing all the known factors which may concur with the development of hypersexuality.

Mood and bipolar disorders

Bipolar disorders are often comorbid with hypersexuality [12]. In the case of other mood disorders, such association seems not to be present in clinical settings. In fact, literature evidence on hypersexuality in persons with a diagnosis of unipolar depression or major depressive disorder is absent.

For what concerns bipolar disorders, not only hypersexuality but also high sexual drive, frequent sexual fantasies, and impulsivity are all elements observed in the patients during a manic phase [15,18]. Many studies have shown the increase of risky sexual behaviors in patients during manic episodes compared with patients with other diagnoses [19]. In this perspective, the adoption of risky sexual behaviors, comprising flirtation and the related sexual activities with multiple partners, rather than the specific mood cycling, may in some cases bring to a couple break [19]. Three are the most recent studies evaluating sexual functioning and hypersexuality in people with a diagnosis of bipolar disorder [18]. Interestingly, during the maniacal phase, the incidence rate of sexually risky behaviors of bipolar females is significantly higher than that of females with another

psychiatric diagnosis, and of that of bipolar males [19]. In a recent outpatient study on a sample of 71 self-defined subjects referring to hypersexuality, the comorbidity with a mood disorder was indeed very high (64.4%), [20]. Even if the literature data suggest to paid particular attention to the evaluation of a manic mood in hypersexual patients, we believe that the presence of a manic mood in a context of a bipolar disorder should automatically direct the clinician towards the primary diagnosis of a bipolar disorder, rather than of hypersexuality. In fact, the increased sexual behavior found during the manic phase is often associated with a general modification/worsening of the patient's life. In some circumstances, not only the increase in sexual behaviour, but also a general increase in different aspects of the patient's life (e.g., gambling, bulimia, compulsive shopping) is observed [21].

Clinical implication #1: Hypersexuality must be evaluated with a careful mood assessment, considering the presence of mood cycling, with the tendency of the patient to develop manic episodes. However, the clinician must be aware that in the presence of a diagnosis of bipolar disorder the diagnosis of "pure" hypersexuality should not be made.

Obsessive-Compulsive Disorder and Post-Traumatic-Stress Disorder: The concept of sexual compulsivity represents another way to explain hypersexuality in the spectrum of Obsessive-Compulsive Disorder (OCD) [18]. However, OCD seems to be present in a relatively small percentage of hypersexual patients. Wery and colleagues found, in fact, a prevalence of OCD in about 16% of the recruited subjects [12]. Recently [3], it has been evidenced in a large sample of OCD males (n=260) and females (n=279) the presence of hypersexuality in about 6% of subjects. Another important aspect to take into account during the assessment of OCD patients with sexual compulsivity is the higher risk to have also impulse control difficulties, namely Tourette's syndrome, kleptomania, compulsive shopping, and hypochondriasis [3]. Specifically, for this aspect, the theoretical model explaining the link between OCD and hypersexuality patients and hypochondriasis finds the patients with a high rate of self-masturbation preoccupied for this behavior, considered, in their hypochondriac setting, unhealthy. The main worry of these patients is the comprehension of their sexual desire as a normal, or as an "out-of-control" behavior [3].

For what concerns the Post-Traumatic-Stress Disorder (PTSD), literature shows the higher prevalence of hypersexuality in traumatized male military veterans. Among these persons, the rate of concurrent hypersexuality with OCD has been reported as being higher (16.7%) than that of the other psychiatric patients (4.4%) and university students (3%) [6, 14, 15]. However, this relatively high prevalence could be related to the presence of PTSD, which occurs in veterans with a prevalence of 54.2% [23]. Hence, hypersexuality has been considered in the case of male veterans as a symptom of PTSD [16, 17], although the official nosography did not include the problematic sexuality among the diagnostic criteria. However, another recent research demonstrated a strong relationship between trauma and hypersexual behavior on the general population of a convenience sample, with the mediation role of depression symptoms and guilt [18].

In the case of a patient suffering from PTSD, the trauma and the related emotional negative consequences may be managed with the adoption of hypersexual behavior. In light of this hypothesis, hypersexuality in response to a traumatic experience could be considered as a dysfunctional or maladaptive coping strategy [19]. Moreover, the link between hypersexuality and PTSD may be considered an obvious but dramatic risk factor for the adoption of sexually risky behaviors [20].

To date literature data on the presence of hypersexual behaviour in patients not veterans with a diagnosis of PTSD is still scarse, and characterized in some cases of case reports [21]. Future research is needed in order to highlight the moderation effect of PTSD in generating hypersexuality in traumatized people, as also experimental evidence about specific traumatic experiences and the role of complex PTSD condition.

Clinical implication #2: In hypersexual patients with a diagnosis of OCD particular attention must be paid to the copresence of other impulse-control disorders. Particular attention towards the evaluation of comorbid PTSD should be spent in people who lived traumatic experiences.

Attention Deficit Hyperactivity Disorder and Borderline Personality Disorder: The link between Attention Deficit Hyperactivity Disorder (ADHD) and hypersexuality is expressed by the presence in both conditions of impulsivity. Impulsivity is known to be the distinctive tract of several psychiatric disorders, among which different kinds of addictions (e.g., alcohol/drug abuse, compulsive shopping, online behaviors, eating disorders, substance use disorder) [22]. In the case of hypersexuality, the recent literature shows that impulsivity is related to hypersexuality, although not always in a robust manner [22,23]. Some evidence suggests that, in hypersexual patients, the "loss of control" might be only referred to the sexual thoughts or sexual material [24]. Hence, it is reasonable to suppose that ADHD-related impulsivity may be in some cases a co-factor associated with hypersexuality, as well as a co-factor in generating other kinds of behaviors related to the "loss of control" [3,25].

An important clinical condition related to hypersexuality and promiscuity/sexually risky behaviors is Borderline Personality Disorder (BPD). This condition seems to be connected to ADHD. Evidence from the literature shows that, in adulthood, the prevalence of BPD in patients with a diagnosis of ADHD ranges from 19 to 37% [31], while the presence of ADHD in patients with a diagnosis of BPD ranges from 16 to 38% [32-34]. Some authors support the hypothesis that ADHD may be considered a predictor of development of BPD in adulthood [35,36]. Furthermore, ADHD and BPD have in common some clinical features, impulsiveness,

and emotional dysregulation (ED; see later in the text). From a genetic point of view, similar serotonergic and dopaminergic systems associated with impulsiveness and ED have been found in both ADHD and BPD [37]. Moreover, among the environmental factors, the presence of childhood trauma, and specifically of emotional or sexual trauma, seems to be related to the co-diagnosis of adult ADHD and BPD. Some studies have shown the mediating effect of childhood trauma on the transition from child ADHD to adult ADHD +BPD [38,39]. As childhood trauma is often related to ED, hence, it could be hypothesized that hypersexuality, expressed as the product of ED, might be one of the key factors of ADHD or BPD.

Clinical implications #3: ADHD is present only in a minor sample of hyperactive patients referring to the loss of control about sexual thoughts and sexual behaviors. In addition, in hypersexual patients with a history of emotional/sexual childhood trauma should be investigated the presence of ADHD or BPD

Emotional dysregulation and trauma: Emotional dysregulation (ED) is a trans-diagnostic and trans-conceptual construct, which connects compulsive sexual behaviors to their comorbidities. The term "emotional dysregulation" defines several conditions for which the patient appears to be unable to be aware of the emotions, to control impulsive behaviors, and to behave in line with the emotional status [20]. ED seems to have a central role in many psychiatric diseases and internalized problems [25, 26]. The link between ED and hypersexuality is dual. First of all, ED seems to determine hypersexual behavior due to an uncontrolled and excessive involvement in sexual activities characterized by a persistent desire or unsuccessful efforts to stop, reduce, or control sexual behaviors, and by cognitive salience, mood regulation, withdrawal, and functional impairment [12]. The second link is, instead, characterized by the tendency of individuals to adopt hypersexuality in the attempt to cope with intense negative emotions, such as stress, dysphoric mood, or high anxiety [27], or to face adverse life events [12]. In this manner, ED represents a maladaptive coping, but also a failure in the control of sexual impulses, urges, and thoughts [23]. Interestingly, a study makes some considerations regarding the central role of ED in the development of hypersexuality, related to coping with dysfunctional strategies for depressive or dysphoric mood, to achieve a general relaxation through sexual activity [28].

Traumatic experiences can be often found in relationship with the emotional difficulties, being the trauma a trigger for the ED. Among these, child sexual abuse ranges from 30% to 80% [29]. Physical, psychological, and sexual abuse in childhood and adolescence was found to be the most prominent predictor of subsequent hypersexual behavior, as well as of other psychopathological conditions [45-47]. It is also important to consider the relational patterns, in particular the insecure attachment style, considered as an important mediator factor in the development of ED and hypersexual behavior, above all in the addictive personalities [30-32].

Clinical implications #4: during the assessment of the compulsive sexual behavior it is suggested to broaden the emotional dysregulation and trauma, with particular attention to the evaluation of the possible history of child sexual abuse together to the evaluation of personality as measured by the attachment styles.

Psychotic spectrum disorders and antipsychotic drugs: Few pieces of evidence were found on the relationship between hypersexuality and psychosis, although the dysregulation in the sexual behavior represents a problematic aspect of schizophrenia and a brief psychotic episode [51]. Conventionally, the relationship between sexuality and psychosis is unidirectional and is characterized by a decrease in sexual desire and sexual activities due to both the psychopathology and the side effect of antipsychotic drugs [52-54].

In the case of hypersexuality, although without strong scientific evidence, an iatrogenic association between antipsychotic drugs and hypersexuality has been found [33]. This association has been observed also in young adults diagnosed with first-episode psychosis (FEP) [34].

It is worth mentioning that antipsychotic treatments might have beneficial effects on hypersexuality, if already present in the patient. This could be possibly due to the antidopaminergic effect mirrored by the increased prolactin levels (PRL) following treatment with first- and second-generation antipsychotic drugs, such as amisulpride and risperidone, whereas newer drugs such as clozapine, quetiapine and, particularly, the dopamine receptor stabilizer aripiprazole which is to be considered "prolactin-sparing" drug [57], should not decrease desire. This suggests that other mechanisms might be involved in the regulation of sexual behavior for subjects undergoing treatment with antipsychotic drugs; this hypothesis is of course fitting with the multifactorial pathogenesis of sexual dysfunctions. Evidence in regards to such mechanisms is still lacking, clinical awareness on sexuality in psychoses is far from being optimal, and adequately tailored studies are much needed [58].

Clinical implications #5: Also in the presence of a psychotic spectrum disorder, a careful sexological assessment should be made. During the follow-up of antipsychotic treatment, the evaluation of sexuality must be performed to assess the impact of antipsychotic drugs on sexual functioning. The clinician has to consider not only the retirement from the sexual sphere but also its increase (hypersexuality, increased self-masturbation). If the side effects of some antipsychotics worsen sexual functioning, it seems that these treatments might have beneficial effects on hypersexual behavior, although through mechanisms still partly understood

Sexual dysfunctions: The link between compulsive sexual

behavior and sexual dysfunctions is not so intuitive. One neglected characteristic of the hypersexual patient is the loss of the pleasure principle. Some data account, in fact, for the absence of sexual pleasure and satisfaction after the adoption of compulsive sexual behavior [5]. Furthermore, in a significant percentage of hypersexual patients, literature data evidence the presence of the erectile disorder (16%), premature ejaculation (12%), or a paraphilic disorder (60%), [12], among which the most prevalent are the voyeuristic disorder (36%), the fetishistic disorder and the sexual coercive behavior (males: 21%; females: 4%), and of the adoption of sexually risky behaviors (32%) [2]. It could be hypothesized that the higher levels of sexual arousal associated with lower sexual inhibition may promote hypersexual behavior but expose the individual to a worse sexual functioning.

Partly different is, instead, the relationship between viewing visual sexual stimuli (VSS), an aspect which, in some cases, is put in relation to hypersexuality, and the presence of sexual dysfunctions. Recently, a study has evidenced that the VSS induces a stronger sexual response, but is not related to erectile functioning during partnered sexual intercourse [60]. Rather, VSS may induce a stronger sexual desire for sexual intercourse with the partner.

Clinical implications #6: during the sexual assessment the clinician must evaluate all the aspects of sexual functioning, and specifically the sexual desire and arousal, and the presence of paraphilic fantasies and paraphilic behaviors/disorders.

How hypersexuality alters partnered relationships: Patients who suffer from hypersexuality are typically married [12]. However, affection and feelings are in many cases neglected, as are the relationship and the sexual pleasure itself. Engrossment in online sexual activity may mirror a decrease or a lack of partnered sexual activity, with a complete withdrawal from intimacy. In this regard, the Problematic Pornography Use (PPU) is often erroneously considered connected to hypersexuality [28,61]. However, in life periods experienced as potentially critical, such as the loss of job, the diagnosis of illness, the crisis of relational and couple problems the PPU associated with the idiosyncratic masturbation could reactivate hypersexual behavior.

Due to the presence of hypersexuality, subjects frequently refer to a reduction in the attraction and the frequency of sexual activity with their regular partners [35]. However, this reduction is not the result of a decrease in sexual desire and excitement, but rather of its redirection towards the assumption of sexually risky behaviors (often mediated by drug abuse), which may increase the prevalence of sexually transmitted diseases (STIs). The assumption of sexually risky behaviors is not necessarily due to the presence of higher sexual desire. In some cases, the patient may adopt this strategy to cope with problematic situations, sexual dissatisfaction, and internal psychological suffering [12].

An important aspect must be highlighted: the presence of PPU, and the adoption of sexually risky behaviors must induce the clinician in investigating the presence of other psychopathologies, such as bipolar disorder, psychoses, or OCD. The incidence rate of sexually risky behaviors in bipolar females during the manic phase is the highest when compared to female patients with another psychiatric diagnosis and with male bipolar patients [11].

From a relational point of view, studies have observed that hypersexuality is linked to social anxiety, avoidance of intimate relationships [27] and an insecure way of bonding [30]. However, there are some gender differences regarding the variables bearing on the relationship quality. In particular, female bipolar patients report more stable intimate relationships, higher frequency of sexual intercourse with a stable partner, and higher prevalence of the offspring, in comparison to female patients with a different psychiatric diagnosis [30, 36]. On the contrary, the female partners of male bipolar patients refer to higher sexual unsatisfaction and the avoidance of sexual intercourse during the partner manic phase [11]. Similarly, research on male gay couples has shown that higher scores of sexual compulsiveness are more likely associated with unprotected anal intercourse with the highest possible number of male partners outside of the relationship [37].

Clinical implications #6: Psycho-sexological assessment should be based on identifying both individual and couple intervention plans. The psycho-sexologist should delve into the sexual sphere with their patient, considering their social, relational, and cultural background. It is important to analyze the emotional aspects, as well as how the subject looks at intimacy and the role played by pleasure and satisfaction. To properly plan the assessment, the subject’s drives and motivations are fundamental aspects to analyze.

Organic etiologies of hypersexuality: Changes in sexual behavior have long been reported following brain injuries, starting at least since 1954, when the first case reports on hypersexuality in frontal lobe lesions were reported [65]. Several regions are involved in the pathogenesis of such behavioral changes: the frontal and temporal cortices are prominently involved [66], with both focal lesions [67] and atrophy [68] potentially leading to hypersexuality. Rare syndromes affecting several cortical and sub-cortical regions of the brain, such as Kleine Levin Syndrome and Klüver and Bucy Syndrome, frequently feature hypersexual behaviors [65], suggesting that the hypothalamus, amygdala, and striatum might similarly be involved in the pathogenesis of hypersexuality. This hypothesis was confirmed by functional magnetic resonance imaging studies, as first performed by Voon et al. in 2014 [69]: subjects with compulsive sexual behavior showed a significant difference in regards to activation of the dorsal anterior cingulate, ventral striatum, and amygdala compared to controls. Oxytocin signaling has recently been considered as among potential pathways

involved in the pathogenesis of some cases of hypersexuality: a study on genome-wide methylation pattern identified different methylation patterns among subjects with hypersexuality for two CpG-sites linked to MIR708 and MIR4456 [60]. This finding might likely pave the way for new tailored treatment, although more robust evidence will be needed to draw definite conclusions.

Although it is well known that testosterone is involved in many human behaviors, and not only in sexual ones, the link between androgen activity and hypersexuality outside from the forensic setting [70] has not been broadly studied. A recent study [71] found that patients referring to hypersexuality presented higher LH plasma levels than healthy volunteers, but there were no significant differences between the hypersexual patients and healthy controls in terms of plasma testosterone, FSH, prolactin, and SHBG levels. Testosterone was significantly positively correlated with SHBG and LH. Moreover, the authors did not found an association between DNA methylation of hypothalamus pituitary adrenal (HPA) and hypothalamus pituitary-gonadal (HPG) axis coupled genes and plasma testosterone or LH levels after multiple testing corrections. Based on these data, the investigation of neuroendocrine functioning and dysregulation is suggested.

Epilepsy is associated with hyposexuality – although ictal events, as well as temporal lobectomy, may both be triggers for hypersexuality [72]. On the other hand, Parkinson disease, a condition which is *per se* associated with a higher risk of developing psychiatric symptoms with an estimated >60% prevalence [73], is often mentioned in the context of the neurological basis for hypersexuality not for the disease itself, but for the treatment with dopamine-agonist that may have higher rates of impulse control disorders, including binge eating disorder, compulsive shopping and hypersexuality [73]: a recent systematic review has established the overall prevalence at 7.4% among such patients [74]. Several risk factors have been identified, such as male gender, young age, and presence of psychiatric comorbidities.

Dopamine-agonists are also commonly used in the endocrinological setting as a first-line treatment for prolactin-secreting adenomas (prolactinomas), although at a much lower dosage [75]. Even at such dosages, however, impulse control disorders may appear: while their prevalence is debated due to different measurement tools, impulse control disorders are significantly more common in prolactinoma/hyperprolactinemia patients treated with dopamine agonists than healthy controls [76].

Clinical implications #7: Impulse control disorders may develop in patients with different neurological conditions. Investigating hypersexuality, as well as other forms of compulsive behaviors, should therefore be suggested in these patients. In these patients, neuroendocrine functioning and dysregulation should be investigated. Treatment with dopamine agonists, while generally safe, has been rarely but consistently associated with impulsive control disorders, including hypersexuality; clinicians prescribing this treatment should be well aware of the potential risks for their patients.

Psychometry and psychodiagnosis of hypersexuality: Psychometric and psycho-diagnostic assessment of hypersexuality is difficult and should consider the differential diagnosis perspective together with an accurate evaluation of several comorbidity factors, such as personality functioning. For these complex reasons, two fundamental steps into the diagnostic process with tests should be considered, i.e. (i) use of psychometric tools to screen the hypersexuality and related factors, and (ii) use of the psycho-diagnostic tests to evaluate also the personality.

Among the psychometric tools for the assessment of hypersexuality, the Hypersexual Disorder Screening Inventory (HDSI), based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) Work Group on Sexual and Gender Identity Disorders, has been used [22, 38]. HDSI is composed of seven items along a five-point Likert scale, according to the proposed criteria for the classification of hypersexuality [22]. This scientifically successful tool can be considered both a self-report and an administered tool.

Another test based on DSM-5 proposal criteria for the hypersexual disorder is the Hypersexual Behavior Inventory (HBI) firstly validated in an outpatient sample of men [39]. The HBI is a self-report test composed of 19 items with a five-point Likert scale [39]. It is to be noted that the test fails, unfortunately, to explore the domain of pleasure and orgasm, which is to be considered a major clue of hypersexuality. Successively, another important study investigated and demonstrated the applicability of HBI among non-clinical subjects and into the general population, revealing excellent psychometric proprieties in large non-pathological samples [40].

Recently developed, the Compulsive Sexual Behavior Disorder Scale (CSBD-19) is a psychometric tool based on the ICD-11 criteria. It is composed of 19 items with a four-point Likert scale. CSBD-19 assesses five domains related to hypersexuality: control, salience, relapse, dissatisfaction, negative consequences. This tool also provides a cut-off point of 50, to establish the problematic condition related to hypersexual behavior [41].

Other psychometric tools to assess hypersexuality are the Sexual Compulsivity Scale (SCS) [42] and the Sexual Addiction Screening Test (SAST) [43]. The first one was specifically ideated and validated to detect sexual risk behaviors, related to sexual compulsivity. SCS is composed of 10 items. Conversely, SAST and SAST-R are composed of 25 and 45 items, respectively [44]. The revised version of SAST was ideated to evaluate sexual addiction also among homosexuals and it comprises four factors: preoccupation, loss of control, relationship disturbance, and affect disturbance. These above-mentioned tests are exhaustively described in a review specifically focused on hypersexual

conceptualization and evaluation. However, although the assessment of hypersexual behavior is considered beyond the dysregulated sexual behavior or compulsivity, it is always necessary to take into consideration the comorbidity factors and the personality structure. In other words, hypersexual phenomenology could be a symptom of a more severe psychopathological condition or a consequence of a major mental disorder. In these cases, it is suitable to represent hypersexuality as comorbidity or a reactive symptom. For this purpose, it would be advisable to insert into the diagnostic process other tools evaluating the mental health and personality as one of the following well-know tools: Minnesota Multiphasic Personality Inventory (MMPI-2), [83], Structured Clinical Interview for DSM-5 (SCID-5), [84], Shedler-Westen Assessment Procedure (SWAP-200), [85] or Structured Interview of Personality Organization (STIPO), [86]. However, taking into consideration specific clinical cases, tests assessing intelligence quotient (IQ) and cognitive skills can also be administered.

Based on correlative literature, we believe that emotional dysregulation, trauma, impulsivity, depression, sexual dysfunctions, paraphilic disorders, and overall personality should be carefully and, when possible, psychometrically evaluated by clinicians in patients with hypersexuality. Being a complex symptom, hypersexuality merits, in fact, a complex diagnostic workup.

CONCLUSION

We have been described here the main characteristics associated with hypersexuality, highlighting the clinical implications for each discussed topic. Based on the literature evidence, we support the idea of hypersexuality as an expression of another psychopathological condition. A hypersexual symptom is a multi-facets psychological and behavioral problem affecting the individual, relational, and social health. In its assessment and treatment, several aspects must be considered, as the presence of comorbidity factors, the organic etiologies, and its impact on relational functioning.

Clinicians and researchers should take into consideration all the bio-psycho-social aspects, in the light of the new systems sexology [87] related to hypersexuality.

REFERENCES

1. Levi G, Cohen C, Kaliche S, Sharaabi S, Cohen K, Tzur-Bitan D, et al., Sexual addiction, compulsivity, and impulsivity among a predominantly female sample of adults who use the internet for sex. J Behav Addict. 2020; 9: 83-92.
2. Engel J, Kessler A, Veit M, Sinke C, Heitland I, Kneer J, et al. Hypersexual behavior in a large online sample: Individual characteristics and signs of coercive sexual behavior. J Behav Addict. 2019; 8: 213-222.
3. Fuss J, Briken P, Stein DJ, Lochner C. Compulsive sexual behavior disorder in obsessive-compulsive disorder: Prevalence and associated comorbidity. J Behav Addict. 2019; 8: 242-248.
4. Kafka MP. What happened to hypersexual disorder? Arch Sex Behav. 2014; 43: 1259-1261.
5. Kraus SW, Krueger RB, Briken P, First MB, Stein DJ, Kaplan MS, et al. Compulsive sexual behaviour disorder in the ICD-11. World Psychiatry. 2018; 17: 109-110.
6. Odlaug BL, Lust K, Schreiber LR, Christenson G, Derbyshire K, Harvanko A, et al. Compulsive sexual behavior in young adults. Ann Clin Psychiatry. 2013; 25: 193-200.
7. Kuzma JM, DW Black. Epidemiology, prevalence, and natural history of compulsive sexual behavior. Psychiatr Clin North Am. 2008; 31: 603-611.
8. Cantor JM, Klein C, Lykins A, Rullo JE, Thaler L, Walling BR. A treatment-oriented typology of self-identified hypersexuality referrals. Arch Sex Behav. 2013; 42: 883-893.
9. Prause N, Janssen E, Georgiadis J, Finn P, Pfaus J. Data do not support sex as addictive. Lancet Psychiatry. 2017; 4: 899.
10. Winters J. Hypersexual disorder: a more cautious approach. Arch Sex Behav. 2010; 39: 594-596.
11. Kendler KS. The clinical features of mania and their representation in modern diagnostic criteria. Psychol Med. 2017; 47: 1013-1029.
12. Kopeykina I, Kim HJ, Khatun T, Boland J, Haeri S, Cohen LJ, et al. Hypersexuality and couple relationships in bipolar disorder: A review. J Affect Disord. 2016; 195: 1-14.
13. Wéry A, Vogelaere K, Challet-Bouju G, Poudat FX, Caillon J, Lever D, et al. Characteristics of self-identified sexual addicts in a behavioral addiction outpatient clinic. J Behav Addict. 2016; 5: 623-630.
14. Meade CS, Graff FS, Griffin ML, Weiss RD. HIV risk behavior among patients with co-occurring bipolar and substance use disorders: associations with mania and drug abuse. Drug Alcohol Depend. 2008; 92: 296-300.
15. Grant JE, Atmaca M, Fineberg NA, Fontenelle LF, Matsunaga H, Janardhan Reddy YC, et al. Impulse control disorders and "behavioural addictions" in the ICD-11. World Psychiatry. 2014; 13: 125-127.
16. Smith PH, Potenza MN, Mazure CM, McKee SA, Park CL, Hoff RA. Compulsive sexual behavior among male military veterans: prevalence and associated clinical factors. J Behav Addict. 2014; 3: 214-222.
17. Larsen SE. Hypersexual Behavior as a Symptom of PTSD: Using Cognitive Processing Therapy in a Veteran with Military Sexual Trauma-Related PTSD. Archives of Sexual Behavior. 2019; 48: 987-993.
18. Turban J, Shirk SD, Potenza MN, Hoff RA, Kraus SW. Posting Sexually Explicit Images or Videos of Oneself Online Is Associated With Impulsivity and Hypersexuality but Not Measures of Psychopathology in a Sample of US Veterans. J Sex Med. 2020; 17: 163-167.
19. Fontanesi L, Marchetti D, Limoncin E, Limoncin E, Nimbi FM, Mollaioli D, et al. Hypersexuality and Trauma: a mediation and moderation model from psychopathology to problematic sexual behavior. J Affect Disord. 2021; 281: 631-637.
20. Ciocca G, Solano C, D'Antuono L, Longo L, Limoncin E, Bianciardi E, et al. Hypersexuality: the controversial mismatch of the psychiatric diagnosis. J Psychopathol. 2018; 24: 187-191.
21. Weiss NH, Walsh K, DiLillo DD, Messman-Moore TL, Gratz KL. A Longitudinal Examination of Posttraumatic Stress Disorder Symptoms and Risky Sexual Behavior: Evaluating Emotion Dysregulation Dimensions as Mediators. Arch Sex Behav. 2019; 48: 975-986.
22. Petri-Kelvasa M, Schulte-Herbrüggen O. Disinhibited Exposing Behavior, Hypersexuality, and Erectile Dysfunction as a Consequence of Posttraumatic Stress in a 42-Year-Old Male Patient. Arch Sex Behav. 2017; 46: 2197-2205.

23. Bőthe B, Tóth-Király I, Potenza MN, Griffiths MD, Orosz G, Demetrovics Z. Revisiting the Role of Impulsivity and Compulsivity in Problematic Sexual Behaviors. J Sex Res. 2019; 56: 166-179.

24. Reid RC, Carpenter BN, Hook JN, Garos S, Manning JC, Gilliland R, et al. Report of findings in a DSM-5 field trial for hypersexual disorder. J Sex Med, 2012; 9: 2868-2677.

25. Lew-Starowicz M, Lewczuk K, Nowakowska I, Kraus S, Gola M. Compulsive Sexual Behavior and Dysregulation of Emotion. Sex Med Rev. 2020; 8: 191-205.

26. Bijlenga D, Vroege JA, Stammen AJM, Breuk M, Boonstra AM, van der Rhee K, et al. Prevalence of sexual dysfunctions and other sexual disorders in adults with attention-deficit/hyperactivity disorder compared to the general population. Atten Defic Hyperact Disord. 2018; 10: 87-96.

27. Kim MK, Kim JS, Park HI, Choi SW, Oh WJ, Seok JH. Early life stress, resilience and emotional dysregulation in major depressive disorder with comorbid borderline personality disorder. J Affect Disord. 2018; 236: 113-119.

28. Sloan E, Hall K, Moulding R, Bryce S, Mildred H, Mildred H. Emotion regulation as a transdiagnostic treatment construct across anxiety, depression, substance, eating and borderline personality disorders: A systematic review. Clin Psychol Rev. 2017; 57: 141-163.

29. Walton MT, Cantor JM, Bhullar N, Lykins AD. Hypersexuality: A Critical Review and Introduction to the “Sexhavior Cycle”. Arch Sex Behav. 2017; 46: 2231-2251.

30. Bancroft J, Vukadinovic Z. Sexual addiction, sexual compulsivity, sexual impulsivity, or what? Toward a theoretical model. J Sex Res. 2004; 41: 225-234.

31. Efrati Y, Gola M. The Effect of Early Life Trauma on Compulsive Sexual Behavior among Members of a 12-Step Group. J Sex Med. 2019; 16: 803-811.

32. Gilliland R, Blue Star J, Hansen B, Carpenter B. Relationship Attachment Styles in a Sample of Hypersexual Patients. J Sex Marital Ther. 2015; 41: 581-92.

33. Liese BS, Kim HS, Hodgins DC. Insecure attachment and addiction: Testing the mediating role of emotion dysregulation in four potentially addictive behaviors. Addict Behav. 2020; 107: 106432.

34. Grady MD, Yoder J, Brown A, Childhood Maltreatment Experiences, Attachment, Sexual Offending: Testing a Theory. J Interpers Violence. 2018; 36: NP6183-NP6217

35. Modugula H, Kumar A. Risk Analysis of Lurasidone in Patients with Schizophrenia and Bipolar Depression. CNS Neurol Disord Drug Targets. 2020; 19: 109-114.

36. Ciocca G, Usall J, Dolz M, Limoncin E, Gravina GL, Carosa E, et al. Sexual dysfunctions in people with first-episode psychosis assessed according to a gender perspective. Riv Psichiatr. 2015; 50: 239-244.

37. Sepede G, Brunetti M, Di Giannantonio M. Comorbid Premenstrual Dysphoric Disorder in Women with Bipolar Disorder: Management Challenges. Neuropsychiatr Dis Treat. 2020; 16: 415-426.

38. Dhuffar MK, Griffiths MD. Understanding the role of shame and its consequences in female hypersexual behaviours: a pilot study. J Behav Addict. 2014; 3: 231-237.

39. Starks TJ, Grov C, Parsons JT. Sexual compulsivity and interpersonal functioning: sexual relationship quality and sexual health in gay relationships. Health Psychol. 201; 32: 1047-1056.

40. Kafka MP. Hypersexual disorder: a proposed diagnosis for DSM-V. Arch Sex Behav. 2010; 39: 377-400.

41. Reid RC, Garos S, Carpenter BN. Reliability, validity, and psychometric development of the Hypersexual Behavior Inventory in an outpatient sample of men. Sexual Addiction Compulsivity. 2011; 18: 30-51.

42. Bothe B, Kovács M, Tóth-Király I, Reid RC, Griffiths MD, Orosz G, et al. The Psychometric Properties of the Hypersexual Behavior Inventory Using a Large-Scale Nonclinical Sample. J Sex Res. 2019; 56: 180-190.

43. Bőthe B, Potenza MN, Griffiths MD, Kraus SW, Klein V, Fuss J, et al. The development of the Compulsive Sexual Behavior Disorder Scale (CSBD-19): An ICD-11 based screening measure across three languages. J Behav Addict. 2020; 9: 247-258.

44. Kalichman SC, Johnson JR, Rompa D, Adair V, Multhauf K, Kelly JA. Sexual Sensation Seeking: Scale Development and Predicting AIDS-Risk Behavior Among Homosexually Active Men. J Pers Assess. 1994; 62: 385-397.

45. Carnes P. Contrary to love: Helping the sexual addict. 1989, Minneapolis, Minnesota: CompCare Publishers.

46. Nelson KG, Oehlert ME. Psychometric Exploration of the Sexual Addiction Screening Test in Veterans. Sex Addi Compulsivi. 2008; 15: 39-58.

47. Castellini G, Rellini AH, Appignanesi C, Pinucci I, Fattorini M, Grano E, et al. Deviance or Normalcy? The Relationship Among Paraphilic Thoughts and Behaviors, Hypersexuality, and Psychopathology in a Sample of University Students. J Sex Med. 2018; 15: 1322-1335.

48. Kingston DA, Graham FJ, Knight RA. Relations Between Self-Reported Adverse Events in Childhood and Hypersexuality in Adult Male Sexual Offenders. Arch Sex Behav. 2017; 46: 707-720.

49. Castellini G, Lelli L, Ricca V, Maggi M. Sexuality in eating disorders patients: etiological factors, sexual dysfunction and identity issues. A systematic review. Horm Mol Biol Clin Investig. 2016; 25: 71-90.

50. Gilliland R, Blue Star J, Hansen B, Carpenter B. Relationship Attachment Styles in a Sample of Hypersexual Patients. J Sex Marital Ther. 2015; 41: 581-592.

51. Liese BS, Kim HS, Hodgins DC. Insecure attachment and addiction: Testing the mediating role of emotion dysregulation in four potentially addictive behaviors. Addict Behav. 2020; 107: 106432.

52. Grady MD, Yoder J, Brown A. Childhood Maltreatment Experiences, Attachment, Sexual Offending: Testing a Theory. J Interpers Violence. 2021; 36: NP6183-NP6217.

53. Dumontaud M, Korchia T, Khouani J, Lancon C, Auquier P, Boyer L, et al. Sexual dysfunctions in schizophrenia: Beyond antipsychotics. A systematic review. Prog Neuropsychopharmacol Biol Psychiatry. 2020; 98: 109804.

54. Montejo AL, Montejo L, Navarro-Cremades F. Sexual side-effects of antidepressant and antipsychotic drugs. Curr Opin Psychiatry. 2015; 28: 418-423.

55. Nunes LV, Moreira HC, Razzouk D, Nunes SO, Mari Jde J. Strategies for the treatment of antipsychotic-induced sexual dysfunction and/or hyperprolactinemia among patients of the schizophrenia spectrum: a review. J Sex Marital Ther. 2012; 38: 281-301.

56. Montejo AL, Montejo L, Baldwin DS. The impact of severe mental disorders and psychotropic medications on sexual health and its implications for clinical management. World Psychiatry. 2018; 17: 3-11.

57. Modugula H, Kumar A. Risk Analysis of Lurasidone in Patients with Schizophrenia and Bipolar Depression. CNS Neurol Disord Drug Targets. 2020; 19: 109-114.

58. Ciocca G, Usall J, Dolz M, Limoncin E, Gravina GL, Carosa E, et al. Sexual dysfunctions in people with first-episode psychosis assessed according to a gender perspective. Riv Psichiatr. 2015; 50: 239-244.

59. De Hert M, Detraux J, Peuskens J. Second-generation and newly approved antipsychotics, serum prolactin levels and sexual dysfunctions: a critical literature review. Expert Opin Drug Saf. 2014; 13: 605-624.

60. Monteleone P, Amore M, Cabassi A, Clerici M, Fagiolini A, Girardi P, et al. Attitudes of Italian Psychiatrists Toward the Evaluation of Physical Comorbidities and Sexual Dysfunction in Patients With Schizophrenia. Implications for Clinical Practice. Front Psychiatry. 2019; 10: 842.

61. Fisher AD, Castellini G, Casale H, Fanni E, Bandini E, Campone B, et al. Hypersexuality, Paraphilic Behaviors, and Gender Dysphoria in Individuals with Klinefelter's Syndrome. J Sex Med. 2015; 12: 2413-2424.

62. Prause N, Pfaus J. Viewing Sexual Stimuli Associated with Greater Sexual Responsiveness, Not Erectile Dysfunction. Sex Med. 2015; 3: 90-98.

63. Sepede G, Brunetti M, Di Giannantonio M. Comorbid Premenstrual Dysphoric Disorder in Women with Bipolar Disorder: Management Challenges. Neuropsychiatr Dis Treat. 2020; 16: 415-426.

64. Carta MG, Massidda D, Moro MF, Aguglia E, Balestrieri M, Caraci F, et al. Comparing factor structure of the Mood Disorder Questionnaire (MDQ): In Italy sexual behavior is euphoric but in Asia mysterious and forbidden. J Affect Disord. 2014; 155: 96-103.

65. Starks TJ, Grov C, Parsons JT. Sexual compulsivity and interpersonal functioning: sexual relationship quality and sexual health in gay relationships. Health Psychol. 2013; 32: 1047-1056.

66. Janssen E, Prause N, Swinburne Romine R, Raymond N, MacDonald A 3rd, Coleman E, et al. Sexual Responsivity and the Effects of Negative Mood on Sexual Arousal in Hypersexual Men Who Have Sex With Men (MSM). J Sex Med. 2020; 17: 1751-1760.

67. Béreau M. Hypersexuality in Neurological Disorders: From Disinhibition to Impulsivity. Front Neurol Neurosci. 2018; 41: 71-76.

68. Kühn S, Gallinat J. Neurobiological Basis of Hypersexuality. Int Rev Neurobiol. 2016; 129: 67-83.

69. Huws R, Shubsachs AP, Taylor PJ. Hypersexuality, fetishism and multiple sclerosis. Br J Psychiatry, 199; 158: 280-281.

70. Cipriani G, Ulivi M, Danti S, Lucetti C, Nuti A. Sexual disinhibition and dementia. Psychogeriatrics. 2016; 16: 145-153.

71. Voon V, Mole TB, Banca P, Porter L, Morris L, Mitchell S, et al. Neural correlates of sexual cue reactivity in individuals with and without compulsive sexual behaviours. PLoS One. 2014; 9: e102419.

72. Jordan K, Fromberger P, Stolpmann G, Müller JL. The role of testosterone in sexuality and paraphilia--a neurobiological approach. Part I: testosterone and sexuality. J Sex Med. 2011; 8: 2993-3007.

73. Chatzittofis A, Boström AE, Öberg KG, Flanagan JN, Schiöth HB, Arver S, et al. Normal Testosterone but Higher Luteinizing Hormone Plasma Levels in Men With Hypersexual Disorder. Sex Med. 2020; 8: 243-250.

74. Luef GJ. Epilepsy and sexuality. Seizure, 2008; 17: 127-130.

75. Latella D, Maggio MG, Maresca G, Saporoso AF, Le Cause M, Manuli A, et al. Impulse control disorders in Parkinson's disease: A systematic review on risk factors and pathophysiology. J Neurol Sci. 2019; 398: 101-106.

76. Shivanee Nakum S, Cavanna AE. The prevalence and clinical characteristics of hypersexuality in patients with Parkinson's disease following dopaminergic therapy: A systematic literature review. Parkinsonism Relat Disord. 2016; 25: 10-16.

77. Bancos I, Nippoldt TB, Erickson D. Hypersexuality in men with prolactinomas treated with dopamine agonists. Endocrine. 2017; 56: 456-457.

78. De Sousa SMC, Baranoff J, Rushworth RL, Butler J, Sorbello J, Vorster J, et al. Impulse Control Disorders in Dopamine Agonist-Treated Hyperprolactinemia: Prevalence and Risk Factors. J Clin Endocrinol Metab. 2020; 105: dgz076.

79. Reid RC, Carpenter BN, Hook JN, Garos S, Manning JC, Manning JC, et al. Report of findings in a DSM-5 field trial for hypersexual disorder. J Sex Med. 2012; 9: 2868-77.

80. Reid RC, Garos S, Carpenter BN. Reliability, validity, and psychometric development of the Hypersexual Behavior Inventory in an outpatient sample of men. Sexual Addiction & Compulsivity. 2011; 18: 30–51.

81. Bothe B, Kovács M, Tóth-Király I, Reid RC, Griffiths MD, Orosz G, et al. The Psychometric Properties of the Hypersexual Behavior Inventory Using a Large-Scale Nonclinical Sample. J Sex Res. 2019; 56: 180-190.

82. Bőthe B, Potenza MN, Griffiths MD, Kraus SW, Klein V, Fuss J, et al. The development of the Compulsive Sexual Behavior Disorder Scale (CSBD-19): An ICD-11 based screening measure across three languages. J Behav Addict. 2020; 9: 247-258.

83. Kalichman SC, Johnson JR, Rompa D, Adair V, Multhauf K, Kelly JA. Sexual Sensation Seeking: Scale Development and Predicting AIDS-Risk Behavior Among Homosexually Active Men. J Personality Assessment. 1994; 62: 385-397.

84. Nelson KG, Oehlert ME. Psychometric Exploration of the Sexual Addiction Screening Test in Veterans. Sexual Addiction Compulsivity. 2008; 15: 39-58.

85. Hathaway SR, McKinley JC. Minnesota Multiphasic Personality Inventory; manual (Revised). Psychological Corporation. 1951

86. First MB, Williams JBW, Karg RS, Spitzer RL. User's guide for the SCID-5-CV Structured Clinical Interview for DSM-5® disorders: Clinical version. American Psychiatric Publishing, Inc.2016.

87. Shedler J, Westen D. The Shedler-Westen Assessment Procedure (SWAP): making personality diagnosis clinically meaningful. J Pers Assess. 2007; 89: 41-55.

88. Stern BL, Caligor E, Clarkin JF, Critchfield KL, Horz S, MacCornack V, et al. Structured Interview of Personality Organization (STIPO): preliminary psychometrics in a clinical sample. J Pers Assess. 2010; 92: 35-44.

89. Jannini EA. SM = SM: The Interface of Systems Medicine and Sexual Medicine for Facing Non-Communicable Diseases in a Gender-Dependent Manner. Sex Med Rev. 2017; 5: 349-364.