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Sexual Dysfunctions in Women with Posttraumatic Stress Disorder – a Review Article

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Keywords
Sexual Dysfunctions · Posttraumatic stress disorder · Sexual violence · Sexual child abuse

Summary
Sexual dysfunctions, clinical as well as subclinical, and other sexual complaints that accompany aversive emotions, cognitions, and sexual risk behavior are very common among women after experiences of sexual violence and are underestimated as a problem. Anyway, among victims of other kinds of traumatic experiences, a high prevalence of sexual distress is found as well. Explanatory approaches concentrate on learning theory as well as the phenomenology of Posttraumatic Stress Disorder (PTSD) itself. Sexuality is an important source of vitality, and the maintenance of sexual dysfunctions can be accompanied by a risk of impairments in quality of life and self-esteem as well as relationship problems. Aside clinical practice, there is also a lack of knowledge in clinical science regarding the association between sexual dysfunctions and traumatic experiences, especially sexual ones. In this article, the phenomenology and diagnostic instruments of female sexual dysfunctions are presented, and consequences of sexual violence on sexuality, also in the context of PTSD, are further explained. Suggestions are being made on how to include suitable interventions into therapy.

Schlüsselwörter
Sexuelle Dysfunktionen · Posttraumatische Belastungsstörung · Sexuelle Gewalt · Sexueller Kindesmissbrauch

Zusammenfassung
Sexuelle Dysfunktionen, sowohl klinischer als auch subklinischer Art, sowie andere sexuelle Beschwerden, die mit aversiven Emotionen, Kognitionen und sexuellem Risikoverhalten einhergehen, treten bei Frauen nach sexuellem Missbrauch sehr häufig auf und sind ein stark unterschätztes Problem. Aber auch bei Opfern anderer Arten von Traumatisierung ergeben sich hohe Prävalenzen sexueller Beschwerden. Dies lässt sich lerntheoretisch sowie anhand der Phänomenologie der Posttraumatischen Belastungsstörung (PTBS) an sich erklären. Sexualität ist eine wichtige Quelle von Lebensfreude, und das Fortbestehen sexueller Dysfunktionen kann mit dem Risiko von Einbußen in Lebensqualität und Selbstwertgefühl sowie von partnerschaftlichen Problemen einhergehen. Neben der klinischen Praxis besteht auch in der klinischen Forschung nach wie vor nur ein unzureichendes Wissen bezüglich des Zusammenhangs zwischen sexuellen Dysfunktionen und traumatischen Erfahrungen, vor allem sexueller Art. Im folgenden Artikel werden die Phänomenologie und Diagnostik weiblicher sexueller Dysfunktionen vorgestellt und Folgen von sexueller Gewalterfahrung auf die Sexualität, auch im Kontext einer PTBS, näher erläutert. Zudem werden Vorschläge zur Integration entsprechender Behandlungsbausteine in die Therapie gemacht.

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Introduction

A majority of studies indicate that women who have experienced childhood sexual abuse (i.e., sexual violence before the age of 18) develop sexual dysfunctions [e.g., Stephenson et al., 2014]. However, women who have experienced sexual violence as adults, also tend to suffer from sexual dysfunctions [van Berlo and Ensink, 2000]. Basically, sexual dysfunctions can be understood as complaints or impairments concerning the sexual response cycle [Kaplan, 1974] in the areas desire, arousal, and orgasm. In addition to that, when it comes to females, pain in the genital area and the pelvis (dyspareunia), and the immediate cramping or tension of the pelvic floor and the vaginal muscle (vaginismus) are also considered. Sexual dysfunctions appear quite often in the general population of women and men [Hoyer, 2013], yet prevalence rates are fluctuating depending on the kind of assessment, e.g., depending on the assessment instrument used [Hayes et al., 2008b] and the underlying diagnostic criteria (e.g., if clinically relevant psychological strain is assessed as required criteria or not [Reinecke et al., 2006]). According to Lewis et al. [2010], who examined an aggregation of 18 international epidemiological studies, prevalence rates of sexual dysfunctions are approximately 40–45% in the female population and 20–30% in the male one. Yet, prevalence rates increase with age.

According to some studies prevalence rates of difficulties in arousal, desire and orgasm in women, who have experienced sexual violence as adults, are up to 59% [e.g., Berlo and Ensik, 2000]. In fact, they are estimated even higher in women who have experienced childhood sexual abuse [e.g., Leonard and Follette, 2002]. Yet, according to Bartoi and Kinder [1998], prevalence rates of sexual dysfunctions in women do not depend on the age when sexual violence took place. The allover detected high prevalence rates do not suggest that these dysfunctions are retractable to the experience of sexual violence. On the one hand, statements on sexual violence are collected in retrospective exclusively; thus, so-called 'false memories' might also play a role [Stoffels and Ernst , 2002]. On the other hand, there is a multitude of other risk factors, apart from sexual violence, that can also contribute to the development of sexual dysfunctions. Among them are psychological disorders, especially depression, with prevalence rates of sexual dysfunctions of approximately 50% [Kennedy and Rizvi, 2009], sociocultural factors, as lack of attention after sexual violence or 'victim-blaming' [Ulman, 2010], and factors based on the relationship with the partner [Hayes et al., 2008a].

While research agrees upon an increased rate of sexual dysfunctions in women who have experienced sexual violence or childhood sexual abuse, the relation between sexual dysfunctions and posttraumatic stress disorder (PTSD) has been investigated rarely. According to ICD-10 (ICD = International Classification of Diseases), PTSD is defined as a reaction to an event of exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone. This is succeeded by intrusive memories or reliving the strain by different internal and external triggers (nightmares, flash backs) as well as by avoidance of resembling or associated circumstances. Furthermore, there is an inability to recall single aspects of the event or there are persisted symptoms of increased sensitivity or arousal [World Health Organization (WHO), 1992]. Criteria according to DMS-5 (DSM = Diagnostic and Statistical Manual of Mental Disorders) will be listed in the context of sexual dysfunctions later on. The so-far presented studies on sexual dysfunctions in women who have either experienced sexual violence or childhood sexual abuse did not distinguish between individuals suffering from PTSD and those who did not [O'Driscoll and Flanagan, 2016]. Yet, single studies suggest a relation between the diagnosis of PTSD and sexual dysfunctions [Letourneau et al., 1996; Haase et al., 2009]. It has been demonstrated that sexual dysfunctions do not only appear in PTSD after sexual trauma but also in victims of other kinds of trauma [e.g., Letourneau et al., 1996].

Phenomenology and Diagnosis of Sexual Dysfunctions

The extent to which sexual symptoms can cause impairment may vary considerably from few situational symptoms to impairments with severe psychological strain [Beier et al., 2000]. In the subsequent text, the nomenclature will be standardized. 'Sexual dysfunctions' or 'sexual malfunction' describe the diagnosed disorders according to DSM-5 [American Psychiatric Association (APA), 2013] or ICD-10 [WHO, 1992]. 'Sexual complaints' denote subclinical forms or additional complaints not covered by the hitherto existing diagnoses, as sexual risk behavior.

Sexual dysfunctions are defined as 'impairment in sexual behavior, experience, and physical reactions restraining or even preventing both partners from having a satisfying sexual interaction. Though, difficulties can neither be explained by an organic cause nor by a fixation on unusual sexual aims or objects (paraphilias)' [translated from Kockott and Fahrner, 2000, p 2]. Complaints can justify the independent diagnosis of sexual dysfunctions or they can be thoroughly explained by another disorder (especially depression [Michael and O'Keane, 2000]) or by the taking of psychiatric medication and their adverse effects [Baldwin et al., 2015]. In addition to that, sexual dysfunctions might be of somatic cause or might be maintained by them, e.g., as a consequence of surgery [Raina et al., 2007] which has to be considered in the diagnosing process.

The category F52 in the ICD-10 lists 'sexual dysfunctions not caused by organic disorder or disease'. However, there are gender-specific and non-gender-specific disorders. Descriptions and classifications differ considerably in certain points between ICD-10, DSM-IV, and DSM-5 [e.g., Ehret and Berking, 2013]. Basically, DSM-5 considers clinical experiences during the course of female sexual arousal by not only considering arousal of genital or non-genital reactions but also considering psychological reactions (experiencing sexual desire).

Apart from the characteristic of the sexual pathology (Criterion A), DMS-5 also asks for a timeframe of 6 months (Criterion B),

Table 1. Diagnosis of sexual dysfunctions in women according to ICD-10, DSM-IV, and DSM-5

	ICD 10	DSM-IV	DSM-5
Sexual desire and arousal	F52.0 Lack or loss of sexual desire; F52.2 Failure of genital response	302.71 hypoactive sexual desire disorder 302.72 female sexual interest/ arousal disorder	302.72 female sexual interest/ arousal disorder
Sexual aversion	F52.1 sexual aversion and lack of sexual enjoyment .10 sexual aversion; .11 lack of sexual enjoyment	302.79 sexual aversion disorder	
Orgasm	F52.3 Orgasmic dysfunction	302.73 female orgasmic disorder	302.73 female orgasmic disorder
Pain	F52.5 non-organic vaginismus; F52.6 non-organic dyspareunia	306.51 Vaginismus 302.76 Dyspareunia	302.76 genito-pelvic pain/ penetration disorder
Other diagnoses	F52.7 excessive sexual drive F52.8 other sexual dysfunctions, not caused by organic disorder or desease; F52.9 unspecified sexual dysfunction, not caused by organic disorder or desease	sexual dysfunctions due to substance or medication	sexual dysfunctions due to substance or medication; 302.79 other specified sexual dysfunction; 302.70 unspecified sexual dysfunction

ICD = International Classification of Diseases; DSM = Diagnostic and Statistical Manual of Mental Disorders.

psychological strain clearly communicated by the patient (Criterion C), as well as the exclusion of alternative explanations for pathology (Criterion D). This often impedes the diagnosing process, as human sexuality can be impaired by a multitude of influences. Those are, apart from a normal decrease in sexual activity and desire during the course of longer lasting relationships, as for instance by increasing age, also stressful periods of life (e.g., parenthood of younger children, critical life events). Furthermore, the influence of different medication, such as Selective Serotonin Reuptake Inhibitors (SSRI) and Selective Serotonin Noradrenalin Reuptake Inhibitors (SSNRI) on sexual functioning has been proven [Baldwin et al., 2015]. Additionally, different psychological disorders are also influencing factors when it comes to sexual well-being. However, in this regard, especially depressive disorders need to be mentioned [Michael and O'Keane, 2000]. Table 1 displays diagnoses of sexual dysfunctions according to ICD-10, DSM-IV, and DSM-5.

Case study 1:

A 24-year-old patient suffering from PTSD reports acute pain in her vagina and the pelvic floor, which she suffers from since having been raped at the age of 13. Pain would occur as soon as anything should be inserted into her vagina (e.g., at the gynecologists or the use of tampons). Sometimes she can feel this pain even when only thinking of it. The gynecologist could not find any organic cause for the pain. At the moment, she is not in a relationship, the last one got into pieces 2 years ago. During the past year she has not had any sexual intercourse as she was afraid of pain in the genital area. Lastly, she interrupted an attempt of sexual intercourse 13 months ago, because pain had become insufferable to her. She is feeling lonely, but she does not want to commit to any kind of relationship, since she would be probably asked for sex then. She suffers strongly from it because she believes that she can never have a family of her own und therefore she will never be able to live a fulfilled life, which makes her very sad.

Publications on prevalence rates of sexual dysfunctions or empirical studies often employ synonymous terms when it comes to complaints or they are differentiated barely. For a long time there have not been any or only insufficiently validated diagnostic assessment instruments, which might also account for the high fluctuations with respect to prevalence rates [Hayes et al., 2008b]. An overview of prevalence rates of sexual dysfunctions in women, where psychological strain was also assessed next to pathology, is depicted in table 2. Yet, information given varies with age group.

Despite of high prevalence rates, sexual complaints or dysfunctions are still barely considered in counseling [Hoyer, 2013]. This has different underlying causes, as reservations by the therapist to address a subject being afflicted with shame, or unclear field of responsibility. Also, sexual dysfunctions are often regarded as a secondary problem and thus not considered in treatment [Hoyer, 2013].

Subsequently, some assessment instruments shall be introduced. Clinical studies very often employ the 'Female Sexual Distress Index' (FSFI). It is a self-reporting inventory assessing sexual complaints in the areas 'desire', 'arousal', 'lubrication', 'orgasm', 'satisfaction', and 'pain'. The inventory can be understood as screening instrument. However, the FSFI does neither assess psychological strain nor alternative explanations to the complaints (e.g., taking medication). Furthermore, it only refers to a timeframe of 4 weeks and therefore cannot be used as a reliable diagnostic instrument.

The 'Kurzfragebogen zu sexuellen Funktionsstörungen' (Short Questionnaire on Sexual Dysfunctions) [Hoyer and Jahnke, 2014]

Table 2. Prevalence rates of sexual dysfunctions in women

Sexual dysfunction	Prevalence rates in the context of gynecologists' office hours (N = 4,097)*	Prevalence rates within the American population (N ≈ 28,000)**
Sexual desire disorder	9.3–15.03%	7.4–12.3%
Erectile dysfunction	0.6%	3.3–7.5%
Orgasmic dysfunction	0.6%	3.4–5.8%
Vaginism/Vaginismus	1%	–
Dyspareunia	20%	–

* Friedrich and Ahrendt [2015].
** Shifren et al. [2008].

assesses disorders in terms of sexual dysfunctions in women and men, by briefly testing diagnostic criteria, thereby also considering psychological strain. Alternative explanations for sexual complaints, as taking medication, diseases, or other causes according to Criterion D in DSM-5, are not assessed. It is a short and therefore well-suited screening instrument for clinical practice assessing sexual complaints or dysfunctions, which have to be further explored during the further process in order to validate the diagnosis.

The only diagnostic interview for assessing sexual dysfunctions in German-speaking countries is the 'Strukturierte Interview zu sexuellen Funktionsstörungen' (Structured clinical interview for sexual dysfunctions; SISEX) [Hoyer et al., 2014]. There exists a research version, which has been developed in the course of a larger randomized and controlled treatment study for the treatment of PTSD especially for PTSD patients [Bornefeld-Ettmann and Hoyer, 2014]. The SISEX assesses the areas 'female sexual interest/arousal disorder', 'female orgasmic disorders', as well as the 'genito-pelvic pain/penetration disorder' according to DSM-5. The SISEX enables the assessment and diagnosis of sexual complaints by third-party assessment, by not only assessing whether symptoms are present, but also by assessing criteria B and C (timeframe and psychological strain). Furthermore, alternative explanations for the pathology, as well as possible triggering factors, are assessed. Eventually, a subtype (generalized vs. acquired) as well as severity can be determined.

Effects of Sexual Violence on Sexuality

Detrimental effects of sexual childhood sexual abuse on psychological well-being in adulthood have been demonstrated by several empirical studies [Maniglio, 2009]. However, effects on sexuality also have been investigated multiple times [e.g., Stephenson et al., 2014]. Studies on the effects of sexual violence in adulthood and their impact on sexuality are scarce. In Bartoi and Kinder [1998], frequencies of sexual dysfunctions did not differ depending on age when sexual violence was experienced. Chapman [1989] also demonstrated an accumulation of sexual dysfunctions in women who had been raped as adults. It could be concluded that the existence of sexual dysfunctions is independent from age when sexual violence was experienced. Yet, more detailed research is still owing, e.g., on how the effects of chronic versus singular experience of sexual violence differ from one another or which sexual functions are actually affected.

Pathology of women, who have experienced sexual violence, can be very complex. Apart from sexual dysfunctions, sexual complaints, referring to cognitive, emotional, and behavioral processes, as the avoidance of sexuality due to feared intrusive symptoms or sexual risk behavior as self-punishment or stress reduction, may also occur. A multitude of studies has demonstrated an accumulation of sexual risk behavior, such as promiscuous behavior, start of sexual activity with a young age, and unprotected intercourse in women after childhood sexual abuse [Senn et al., 2008]. However, other research [e.g., Büttner et al., 2014] suggests that there might be pronounced avoidance behavior with respect to sexuality in PTSD patients. Thus, there is no consistent picture. It is possible that sexual risk behavior might correlate with Borderline Personality Accentuation or Disorder, which often exists in complexly traumatized women. A comorbidity of both disorders is frequent and often entails increased symptom severity [Scheiderer et al., 2015].

It is important to also consider subclinical sexual complaints or sexual complaints caused by another disorder in treatment, since complaints can occur quite heterogeneously [Hofmann, 2015]. They can lead to impairments in well-being, cause strain [Stephenson and Meston, 2015], and be relevant for the maintenance of PTSD. An example that can be reported on this behalf are negative self-evaluations connected with sexuality [e.g., Meston et al., 2006]. Studies have shown that women who have experienced sexual violence consider themselves less romantic and passionate [Meston et al., 2006]. Furthermore, these women display lower self-esteem with respect to their sexuality [Shapiro and Schwarz, 1997] than women without such experiences. According to van Bruggen et al. [2006], this partially might have an impact on experiencing sexual violence again later in life (revictimization). Due to their negative self-evaluation when it comes to their own sexuality, it is possible that affected women do not dare to set limits in sexual situations or accept rude behavior of a partner, since they believe they do not deserve it any better. These factors are speculative, but they appear feasible explaining high rates of revictimization [Messmann and Long, 1996].

Secondary problems apart from sexual dysfunctions could be continuing problems in romantic relationships, an unfulfilled desire to have children, reduced perceived control with respect to the own body, and allover a reduced quality of life [Beier et al., 2000].

Case study 2:

A patient with PTSD after sexual abuse introduces herself asking for an outpatient trauma therapy. Being asked why she wants to address her symptomatology at this very moment, she reports that she has been living in a generally happy relationship for about a year. However, since having been sexually abused at the age of 12, she is extremely afraid of sexuality and therefore has not been able to sleep with her boyfriend yet. He has set her an ultimatum according to which he will leave her unless she gets her problem under control.

Although the frequency of sexual symptoms in women, who have experienced sexual violence, is well-known, theoretical explanatory models on the relation between sexual violence and sexual dysfunctions are still lacking [Leonard and Follette, 2002]. Two approaches shall be introduced in the following sections.

In their contextual behavioral model Polusny and Follette [1995] describe the importance of avoidance based on experience, so-called 'experiential avoidance'. 'Experiential avoidance' is described as a process of unwillingness to experience painful thoughts, feelings, and memories that are associated with sexual violence or other traumatic experiences [Hayes et al., 1996]. Avoidance of such inner processes follows the two-factor learning theory [Mowrer, 1960], which assumes that fear is classically conditioned at first and avoidance is then maintained by operant conditioning. Accordingly, having experienced sexual violence leads to fear reactions, which eventually leads to avoidance, in future sexual situations as conditioned stimuli. Furthermore, fear reactions lead to psychophysiological alterations, which negatively impact sexual functioning [Yehunda et al., 2015].

Case study 3:

A patient with PTSD after sexual abuse reports frequently changing her sexual partners. This appears contradictory as she also reports a lack of sexual desire and difficulties to become aroused. Concerning the question why she agrees so fast to engage in sexual contact, she answers that she does so in order to avoid possible conflicts with a man who is sexually interested in her. If she gives her consent to sex as fast as possible, the fear of a potential threat declines, which could come up if she turned the man down.

A second theory is the emotion theory, which postulates that early experiences of sexual abuse impair emotional development, probably leading to maladaptive coping strategies [Leonard and Follette, 2002; cited from Greenberg et al., 2002]. The emotion theory claims that emotional pain can be triggered by a trauma, such as sexual violence, and can operate adaptively by communicating the affected person that a bad event has happened, which should be avoided in the future. Chronically avoiding emotional pain is maladaptive and can cause the loss of primary emotions, which could explain the inability of some victims of sexual abuse to experience sexual desire for their partner or intimacy [Leonard and Follette, 2002]. Extremely negative and traumatic experiences can result in the development of maladaptive emotional schemas, which contain complex cognitive, affective, motivational, and behavioral components [Greenberg et al., 2002]. These schemas can be activated in later relationships, eventually causing negative expectations as well as patterns of physiological arousal, which are connected to the experience of sexual violence [Leonard and Follette, 2002]. Accordingly, the approach appears feasible, explaining that victims of sexual violence experience sexual complaints and dysfunctions since maladaptive schemas and connected feelings of threat and fear are activated by intimate physical contact. Thus, risky and contradictory-appearing sexual behavior, e.g., promiscuous behavior, can be explained by this theory. Due to feelings of threat activated by schemas, different kinds of behavior are demonstrated, which should attenuate the threat, e.g., the fast consent to engage in sexual contact. This is supported by findings from Lacelle et al. [2012], which show that more serious kinds of childhood sexual abuse (with attempted or executed penetration) are more likely to lead to sexual risk behavior later in life.

Case study 4:

A patient with PTSD after sexual abuse reports multiple experiences of revictimization. She has been sexually abused by her uncle as a child; later on the same happed with different partners; however, recently she has been raped by an acquaintance. She reports that she actually feels very uncomfortable around men and therefore in the past she has drunken a lot of alcohol in order to calm her fear. Subsequently, she is in a better mood and receives more positive feedback by others. It pleases her, then, if men tell her that she is pretty and give her attention. She has the impression that something could be wrong with her since men have sexually exploited her so often.

Sexual Dysfunctions and PTSD

Following both depicted explanatory models on the relationship between the experience of sexual violence and sexual dysfunctions, it appears comprehensible that first of all the kind of sexual violence is responsible for the development of sexual dysfunctions, independent of the development of PTSD. However, there are numerous studies proving an accumulation of sexual dysfunctions in PTSD patients. This accounts for female and male patients as well as for different kinds of experienced trauma [e.g., Yehuda et al., 2015]. It is possible that the results are confounded since victims of childhood sexual abuse and sexual violence in adulthood very often develop PTSD [Elklit and Christiansen, 2010], which has not been assessed by various studies. Maybe the existence of PTSD in the actual sense of a moderating effect is crucial for the development of sexual dysfunctions [Letourneau et al., 1996], perhaps by PTSD-specific symptoms as cognitive bias and hyperarousal.

Yet, findings presented by Arbanas [2010] disagree. He found the same amount of sexual dysfunctions in non-sexually traumatized men, who developed PTSD, in contrast to non-sexually traumatized men, who did not develop PTSD. Accordingly, the existence of PTSD is not crucial for the existence of sexual dysfunctions. However, since the study only investigated men, it remains unclear

whether the findings can be transferred to women. In a population-based study in Australia [Najman et al., 2005], male victims of childhood sexual abuse suffered less often from sexual dysfunctions than female victims. Thus, it appears as if childhood sexual abuse has less an effect on sexual functioning in men than in women. It should be considered that PTSD can lead to impairments in sexual functioning independent of the kind of trauma. Thus, reported differences in gender could also be explained by the generally higher prevalence rate of PTSD in women in comparison to men [Kessler et al., 2005]. Still, further research has to be conducted.

So far, only very few studies have systematically investigated the relationship between sexual dysfunctions and the kind of trauma in PTSD patients. An exception is one cross-sectional study, which investigated 483 PTSD patients (25.5% male, 74.5% female) with respect to somatoform disorders [Tagay et al., 2004]. In matters of the impact of the kind of trauma, the study demonstrated that PTSD patients with interpersonal trauma (sexual or physical violence) reported sexual complaints (pain during intercourse, sexual indifference, as well as unpleasant feelings in or near the genital area) significantly more often than PTSD patients who had experienced other trauma such as natural disasters, illness, or accidents. Furthermore, women complained more often about sexual discomfort than men.

Due to the lack of studies proving a relationship between the kind of index trauma (event perceived as most traumatic) in PTSD patients and the occurrence of sexual dysfunctions, Haase et al. [2009] investigated a sample of 89 PTSD patients. The study demonstrated that 63.3% of PTSD patients with non-sexual trauma and 85% of sexually traumatized PTSD patients suffered from sexual dysfunctions in at least one of four assessed areas of sexual functioning (desire, arousal, orgasm, and lubrication). Considering comorbid depressive disorders, PTSD patients with sexual index trauma had a 3.8-fold increased risk for developing sexual dysfunctions in comparison to PTSD patients with a non-sexual index trauma [Haase et al., 2009]. In summary, this study presents evidence on a high prevalence of impairments in sexual functioning in PTSD patients with different index traumas, as well as on an increased likelihood of sexual dysfunctions in sexual in comparison to non-sexual index traumas in PTSD patients.

Since, due to the aforementioned reasons, models based on learning theory do not offer a satisfying explanation for the accumulation of sexual dysfunctions in non-sexually traumatized patients, it is possible that the pathology of PTSD itself is related to the development of sexual dysfunctions in PTSD patients. Yet, this appears to be specifically relevant for criteria C, D, and E as feasible influencing factors when it comes to the sexual functioning in non-sexual traumas. O'Driscoll and Flanagan [2016] have investigated the DSM-5 criteria on PTSD pertaining to influencing factors of sexual dysfunctions and complaints. Subsequently, their listing will be expanded:

According to criterion A, confrontation with a traumatic event must have taken place. Experiencing sexual violence relatively often (e.g., in 45% subsequent to rape) leads to the development of PTSD [Elklit and Christiansen, 2010]. The development of PTSD subsequent to a personal threat due to war scenes (50–60% of cases), traffic accidents (3–11%), and natural disasters (5%) is also very common [Maercker and Michael, 2009]. According to Sarwer and Durlak [1996], the kind of sexual violence is an important predictor for sexual dysfunctions in women later on. However, the most important parameters are the use of physical violence as well as whether penetration happened. Little is known about the direct effects of other kinds of traumas on sexual functioning, independent of the diagnosis of PTSD.

Criterion B encompasses intrusive symptoms. According to characteristics of the trauma memory [Foa and Kozak, 1986], sexual situations could lead to intrusive symptoms, evoking aversive emotions and bodily sensations, which eventually impair sexual functioning [Barlow, 1986]. From the perspective of learning theory, it appears logical that, in case of sexual trauma, sexual situations can lead to intrusions itself, thusly sexuality being more avoided than in other kinds of trauma, thereby increasing the risk for developing sexual dysfunctions. This corresponds with findings presented by Büttner et al. [2014] showing that women who have experienced sexual violence are much more likely to suffer from 'hyposexual disorders' (operationalized as aversion against touch and avoidance of sexuality) than non-sexually traumatized victims. However, negative effects on sexuality of intrusive symptoms subsequent to other kinds of trauma also appear feasible, e.g., fear of specific body parts being touched after physical violence or intrusively induced pain subsequent to a traumatic traffic accident or war experience [Tran et al., 2015]. Moreover, strong emotional reactions can cause dissociative conditions [Schauer and Elbert, 2010] maintaining the fear of sexuality, also because no correcting experience can be made or no discrimination from the traumatic situation can take place [van Berlo and Ensink, 2000; Hansen et al., 2012]. There are even results showing that women, who had been exposed to continuous childhood sexual abuse, develop cortical alterations in the representation of genital-somatosensoric fields. Those initially attenuate the sensory processing of the abuse; yet, in the process they result in the development of sexual dysfunctions in adulthood due to the decreased representation of genital-somatosensoric fields [Heim et al., 2013].

Criterion C assesses avoidance behavior associated with trauma and internal or external triggers. It is possible that sexuality itself operates as an external trigger and therefore is avoided (see above 'experiential avoidance' [Hayes et al., 1996]). Also, it cannot be ruled out that internal triggers in sexual situations are avoided since symptoms leading to arousal (heavy breathing, increased heartbeat) are generally perceived aversive [Yehuda et al., 2015; Letourneau et al., 1996]. Emotional numbing does not only occur after sexual trauma, but also after other kinds of traumas and can have negative effects on sexual functioning since pleasant experiences are not perceived, i.a., feelings of closeness and love towards the partner [Yehunda et al., 2015]. The avoiding of emotions further explains the frequent occurrence of sexual risk behavior, as substance abuse for numbing oneself or promiscuity in order to avoid intimacy [e.g., Houck et al., 2010; Senn et al., 2008].

Criterion D describes an alteration of cognitions and mood. It appears feasible that subsequent to trauma – of sexual origin as well as other kinds of traumas (physical violence, imprisonment, torture) – negative assumptions on sexuality will be developed (so-called stuck points [Resick and Schnicke, 1993]), which are associated with aversive emotions. These negative assumptions can affect the own person ('I am no worth being treated affectionately'; 'I must not trust anyone, I must stay in control, always') and can negatively affect the sexual self-concept. The interaction of sexual violence, sexual dysfunctions, and a negative sexual self-concept was demonstrated by some studies [e.g., Meston et al., 2006]. In addition to that, general assumptions on sexuality may develop (e.g., 'Sex is disgusting and always violent'), which in return can have direct implications for sexual functioning. Potentially, this is also the case after other kinds of trauma and resulting PTSD, e.g., continuous self-devaluation ('The accident was my fault, I do not deserve any good') or biased assumptions on other people ('Whenever I show weakness, I will be exploited') can develop, which can affect sexual functioning indirectly.

Apart from cognitive alterations, some women, who have experienced sexual violence, report a continuous feeling of being contaminated associated with having disgust for the own body and feelings of shame [Jung et al., 2011]. It appears feasible that this can also lead to avoiding sexuality since the own body is perceived unsavory and sexuality is perceived unpleasant which in return favors the development of sexual dysfunctions.

Criterion E describes alterations in arousal and reactiveness, as concentration problems, tension, and irritability. In case of increased inner tension, biological processes that are important to sexual functions are impaired, e.g., optimal activation of the sympathetic nervous system, which can lead to dysfunctions [Yehuda et al., 2015]. Furthermore, psychological strains in general go along with an increased somatic tension, in return increasing the likelihood of genital pain [Payne et al., 2005]. This can further amplify negative assumptions on sexuality and avoidance behavior.

Treatment of Sexual Dysfunctions in the Context of PTSD Treatment

Studies concerned with the treatment of sexual dysfunctions in the context of a PTSD treatment or concerned with sexual symptoms in this context are very scarce [O'Driscoll and Flanagan, 2016]. A study of the behavioral therapeutic outpatient clinic of the Technical University of Dresden investigated whether sexual dysfunctions as secondary diagnosis to another Axis-I diagnosis (e.g., depression, anxiety disorders) go into remission due to treatment of the primary diagnosis, even if they are not directly addressed in the context of psychotherapy [Hoyer et al., 2009]. This appears feasible on a theoretical ground since different disorders contain risk factors and pathological processes similar to sexual dysfunctions [Barlow, 1986]. On the other hand, studies have demonstrated that sexual dysfunctions appear independent from other Axis-I diagnoses [Nicolosi et al., 2004].

The investigation of Hoyer et al., [2009] on 451 patients with different Axis-I disorders could initially demonstrate that 60% of the patients reported sexual dysfunctions secondary to their primary diagnosis. Sexual dysfunctions where most likely to be still existent by the end of the therapy (48.8%) in patients where behavioral therapy did not work as treatment of the primary diagnosis. However, sexual dysfunctions were also still present in patients where therapy lead to remission or was at least partially successful (27.1% and 31.2%, respectively) [Hoyer et al., 2009]. This indicates that sexual dysfunctions go into remission in some but not all cases of treatment of another Axis-I diagnosis. Yet, the question remains unanswered how remission data are in the context of PTSD in a specific trauma-focused psychotherapy.

A meta-analysis by O'Driscoll and Flanagan [2016] analyzed sexual dysfunctions and their response to trauma-specific treatment. It was shown that the assessment of sexual complaints in the context of studies on psychotherapy of PTSD is very scarce. Therefore, only 5 studies could be analyzed. Analysis of the data displayed that the dysfunctions did not improve in the course of a trauma-specific treatment if sexual dysfunctions were not directly addressed. Furthermore, the sexual dysfunctions were not diagnosed by a common diagnostic system in any of the studies.

O'Driscoll and Flanagan [2016] propose 4 central elements for interventions in sexual dysfunctions in the context of PTSD treatment: 1) psychoeducation: therewith, patients should learn to comprehend biological connections between PTSD and sexual functioning, emotions should be normalized and motivation for treatment enhanced by an openly addressing the topic. 2) Relaxation training: thereby, anticipatory anxiety should be decreased and the likelihood of sexual dysfunctions should be reduced by calming down the activity of the amygdala. 3) Sensate Focus [according to Masters and Johnson, 1970]: Sensate Focus describes a treatment of sexual dysfunctions in 5 stages, which is conducted as couple. Through Sensate Focus, intimacy towards the partner should be established slowly and fear should be reduced. Through a slow approach, initially focusing on touch and sparing intercourse, a feeling of trust is elevated. There is a so-called 'vetorule' allowing the interruption of any kind of behavior. Thus, avoidance behavior should be reduced and the persons concerned should slowly be exposed to frightening stimuli; thereby, a habituation should take place. In this context, strategies on cognitive restructuring concerning negative assumptions towards sexuality can be employed [O'Driscoll and Flanagan, 2016]. 4) Exposition: since exposition toward frightening situations has been regarded effective in PTSD treatment [Powers et al., 2010] and is the general state of the art in anxiety disorders [Craske, 2015], this could also apply to reducing fear of sexuality; however, there are no findings at hand so far.

It is also possible to apply other strategies from the spectrum of PTSD interventions, as cognitive techniques from the Cognitive Processing Therapy [Resick and Schnicke, 1993]. These appear helpful since dysfunctional assumptions on sexuality and the own sexual self can be addressed in particular [Müller-Engelmann et al., 2016]. In addition to that, interventions on conveying self-help are also possible, e.g., by web-based counselling [Casper et al., 2013].

Therapy studies on different kinds of treatment specifically integrating treatment of sexual dysfunctions within the treatment of PTSD are still lacking and would be useful in order to come to conclusions. Furthermore, it would be important to further investigate the effectiveness of single interventions in the context of therapy studies.

All in all, it can be concluded that sexual dysfunctions definitely should be addresses by therapists, not only in patients with PTSD subsequent to sexual trauma but also in patients with different kinds auf trauma. Subsequently, it should be decided for each case whether direct treatment of clinical or subclinical sexual complaints is indicated. It is conceivable that the listed steps are added upon the second third of therapy, i.e., after the trauma treatment itself (exposition or other interventions). Some therapeutic approaches include interventions after the exposition part, whose main focus lies on 'regaining life' (e.g., DBT-PTSD [Bohus et al., 2013]) – there, treatment of sexual dysfunctions would apply. It is especially important to take the patients' problems seriously and to encourage them to report them openly. Psychoeducation and especially naming the frequency of the problem represents an important and relieving factor. It is important to communicate that patients are not alone suffering from sexual complaints, but that it is a frequent problem, which can be treated. In some cases, including the partner might also be appropriate, e.g., in order to discuss and plan exercises from Sensate Focus. It cannot be expected that patients address their sexual complaints themselves; therefore, considering complaints, e.g., already at the beginning of therapy in the context of diagnostics or during the further process, is very important. On part of the therapist, a preferably relaxed and casual composure is necessary in order to demonstrate: 'This is a subject you can talk about with me, without being ashamed and wishing to sink into the ground. I take you and your problems seriously.' It should be considered that many patients will be very uncomfortable with the subject of sexuality and will be relieved if the therapist is open about it. This review article explicitly deals with sexual dysfunctions in female PTSD patients. However, different research has shown that sexual dysfunctions, e.g., erectile dysfunctions in men, are a common problem subsequent to different kinds of trauma [Tran et al., 2015; Büttner et al., 2014; Yehuda et al, 2015]. This has especially been asserted for non-sexual trauma, and studies on sexual dysfunctions in war veterans can be found [Tran et al., 2015; Arbanas, 2010]. All in all, these studies portray a comparable picture as to female dysfunctions in the context of PTSD, whereupon men tended to display 'hypersexual disorders' (risky sexuality, obsessive sexuality) more often than women [Büttner et al., 2014]. As in female PTSD patients, so far, there are barely any suggestions or manuals on how to treat sexual complaints in PTSD. Overall, there are only very few studies at hand investigating sexual dysfunctions in men and women with regard to PTSD or the kind of traumatic experience. Therefore, the area of sexual dysfunctions in PTSD remains a subject with many open questions, but also with potentially exciting research questions.

Disclosure Statement

The authors declare that there is no conflict of interest regarding this article.

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