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General

Dhat Syndrome: Epidemiology, Risk Factors, Comorbidities, Diagnosis, Treatment, and Management

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Dhat syndrome is a culture-bound psychiatric syndrome most commonly found in the Indian subcontinent. It has been characterized as the experiential fear of losing semen through ejaculation, nocturnal emission, or other means. While Dhat syndrome is common in the Indian subcontinent, given the lack of representativeness, generalizability, and closer connection to Ayurvedic system, there have been limited studies or recognition of symptoms among healthcare providers around the world. In this review, we describe Dhat syndrome, its epidemiology, risk factors, comorbidities, diagnosis, treatment, and its management. For patients with Dhat syndrome, it becomes important to appreciate how generalized depression and anxiety may persist alongside the disorder and those symptoms can be common and non-specific. Related to its strong cultural connection with South Asia such as the belief on Dhat's role in health and vitality influence, it also becomes important to recognize that the syndrome can be found in other populations and the importance of cultural humility and nonconfrontational approach for patient care. In summary, this review provides an informative understanding of Dhat syndrome for non-Indian clinicians who may not be prepared for a patient encounter with vague somatic symptoms in the context of semen loss. Treatment for Dhat syndrome is the same as treatments for major depressive disorder.

INTRODUCTION

Dhat syndrome has previously been characterized as a psychiatric condition involving fear of losing semen through ejaculation, nocturnal emission, or other means.[1,2] Most common on the Indian subcontinent,[3,4] the DSM-V characterizes Dhat syndrome as a culture-bound syndrome, meaning that its presentation is tightly bound to a specific culture.[5]

Many people in India believe that *Dhat* is a bodily humor that begins as food and is progressively converted into blood, bone marrow, and semen.[6] Therefore, loss of semen is viewed as loss of dhat, which can be seen as loss of vitality. Anxiety surrounding this loss is what leads to Dhat syndrome.[7] Additionally, perceived loss of Dhat is associated with depressive symptoms such as depressed mood and fatigue. Major depression is a common diagnosis among Dhat syndrome patients.[8] As a result, it is proposed that Dhat syndrome is a culture-bound manifestation of depression.

In the present investigation, we hope to provide information to clinicians outside of India about how to care for patients with Dhat syndrome. Although Dhat syndrome is most prevalent in India, clinicians elsewhere are still likely to encounter immigrants from India, so it is vital for them to have a basic understanding of the cultural significance of these symptoms.[9,10]

EPIDEMIOLOGY

In one analysis of culture-bound syndromes, Dhat syndrome represented 76.7% of patients with culture-bound syndromes, making it the most prevalent known culture-

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bound syndrome.[9] In a prospective study of 144 male participants with psychosexual disorders, 64.6% of them were diagnosed with Dhat syndrome.[10] It is most commonly diagnosed on the Indian subcontinent.[3,4] One systematic literature review found that the mean age of patients with Dhat syndrome was 26 years of age.[2] These patients are typically male as the syndrome is characterized by fear of semen loss, but female Dhat syndrome also exists.[11] Nashi Khan approached 70 health professionals in various outpatient clinics to gather records from the next month from all patients.[11] Demographic data were collected on a total of 1777 male patients ranging from 12-65 years.[11] The majority of patients with Dhat syndrome were found to be of lower socioeconomic status, had completed less education than their peers, and were single.[11] Demographic data taken from first time patients referred to a psychosexual clinic in India were consistent with these traits, and also found 68.1% to be followers of Hinduism, and 63.8% to be from rural locations.[12]

It should be noted, that Dhat syndrome exists outside of the Indian subcontinent as well. In one study conducted by a urological service in Spain from 2006-2007, a total of 32 patients were found to have symptoms consistent with Dhat syndrome.[13] All of those patients were South Asian immigrants and authors note a need for rapid identification to improve quality of care (including reduction of unnecessary testing) for patients with this syndrome, especially considering lack of knowledge in Spanish providers and increasing numbers of immigrants.[13] A case study of a Muslim patient in Oman argued that aspects of Muslim culture similar to Indian culture condemning activities that lead to the release of semen may contribute to Dhat syndrome.[14] Therefore, Dhat syndrome may be a reaction to these elements within any culture rather than being a culture-bound syndrome.[14] Interestingly, 47 white patients in the United Kingdom were found to experience similar symptomology by a psychiatrist of South Asian descent.[15] While a provider less familiar with the syndrome may have labeled it as a specific type of anxiety or phobia, the patients she examined were overwhelmingly single and isolated, a characteristic shared with their counterparts in India.

RISK FACTORS

Dhat syndrome is most commonly reported in young males of low or medium socioeconomic status who are unmarried or recently married, come from rural backgrounds, and have a conservative attitude towards sex.[10] In a survey conducted at Patiala, 48% of rural participants viewed masturbation and/or excessive sex as harmful and leading to mental illness while 23% of college graduates held the same viewpoint.[16] However, there are also studies that suggest the occurrence of Dhat syndrome is not associated with educational status.[17] The difference in the occurrence of Dhat syndrome among various groups may be due to differences in knowledge between individuals from different social groups. Patients commonly acquire knowledge about dhat and the consequences of its loss from friends, relatives, colleagues, roadside advertisements, and magazines.[17] A study done by Malhotra and Wig reports that respondents belonging to a higher social class discussed sex freely and were less fearful of health consequences from semen loss compared to lower social classes.[18] The respondents from lower social classes considered sex a taboo topic, so they were less informed about normal sexual processes and were more likely to perceive nocturnal emission as abnormal. Studies have shown that the prevalence of Dhat syndrome is irrespective to the educational status or religion of the patient.[19]

Behere and Natraj interviewed 50 patients who complained of dhat discharge to understand their attitudes towards causative factors of their symptoms. 26 (52%) of patients reported masturbation as the cause, while 8 (16%) reported the cause as pre-marital sexual relations and 7 (14%) reported extra-marital sexual relations.[20] Another study conducted by Grover, et al. reported that most patients believed the passage of dhat was a consequence of weakness in sexual ability. Other commonly stated reasons included excessive sexual intercourse, sexual intercourse with a woman during menstruation, and homosexual relationships.[21]

COMORBIDITIES

Few researchers have tried to find the relationship between Dhat syndrome and currently established psychiatric diagnoses. Some argue that it is a case of cross-cultural misunderstanding while others define it as a functional somatic syndrome. A study done by Perme, et al. studied 29 patients with Dhat syndrome by administering a series of tests including a somatization screening index (SSI), screening version of illness behavior questionnaire (SIBQ), and somatosensory amplification scale (SAS). They then used the results from these tests to calculate a hospital anxiety and depression scale (HADS) score for each patient. The results show that patients with Dhat syndrome have a much higher depression score, but no difference in anxiety score.[22] Based on these results, they postulated that Dhat syndrome is strongly related to the DSM diagnosis of depression.

Depression is the most commonly reported co-morbidity with Dhat syndrome, with prevalence between 40-66%. Anxiety disorders are also found in 21-38% of patients. Somatoform and hypochondriacal disorders are reported in up to 40% of patients. A study done by Dhikav, et al. examined 30 patients at a tertiary care hospital and found that ten patients (33.3%) had premature ejaculation, and two patients (6.6%) reported erectile dysfunction.[23] Other less common comorbidities include phobia, stress reaction, obsessive disorders, body dysmorphic disorders, and delusional disorders.[19]

Since Dhat syndrome is characterized by excessive worry over semen loss, it is thought that this distress can precipitate into a more serious psychiatric illness. Patients with schizophrenia often present with prodromal symptoms of subthreshold positive, negative, affective, or cognitive symptoms before the onset of fully evolved psychotic symptoms.[24] A case report written by Kar, et al. documents a 23-year-old schizophrenic patient who was initially diag-

nosed with Dhat syndrome at age 15. During this time, he was preoccupied with thoughts of semen loss and started becoming withdrawn. Six months following his initial complaints, he developed suspiciousness. Years later, he was missing from his home for a month and found in a disheveled state with self-inflicted neck lacerations in response to commanding hallucinations.[24] The stress from semen loss in Dhat syndrome is likely to produce epigenetic changes while disrupting the hypothalamic-pituitary-adrenal axis.[24] This can play a pivotal role in the transformation of prodromal phase to schizophrenia.

CLINICAL PRESENTATION

According to the Ayurvedic system, health is related to the balance between seven dhatus or essential components of the body. Of these 7 components, semen is perfect substance and is a source of physical and mental power.[19] When the 7 dhatus are imbalanced, it can cause a wide range of physical disorders. Studies show that patients feel significant guilt associated with erotic thoughts and masturbation because semen is seen as the "vital elixir of life," so losing it will drain the body of all its energy. It is believed that 40 drops of butter produce 1 drop of blood, and 40 drops of blood produce 1 drop of semen, so losing semen leads to physical and mental weakness.[16] Patients with Dhat syndrome fear that semen loss will irreversibly harm the body, causing inability to produce male offspring, premature death of offspring, malformed fetus, anemia, leprosy, tuberculosis, permanent impotency, and shrinking size of penis.[10] This fear is similar to the castration complex, but it's not a fear of attack by another person. Rather, it's a desire to retain a loved object because semen is inherently tied with the ego in Indian culture. The role of semen means its loss is like losing any other valued possession and should theoretically produce grief and clinical depression.

Grover, et al. recruited 780 male patients age 16+ across India and assessed them using a Dhat syndrome questionnaire. While patients differ in their definition of what constitutes dhat (semen, urine, discharge, etc), they shared the common belief that passing dhat caused them significant stress and contributed to other somatic symptoms. More than 33% of patients were passing dhat 2-3 times per week, and another 38.2% of patients were passing dhat at least once daily. About 60% were passing a spoonful or more each time they passed dhat. The most reported consistency was a "thin, milk-like" secretion (40.3%), followed by "watery" (39.1%) and a "thick, oil-like" secretion (20.6%). In regard to color, 40% of patients reported a "milk-like" color, 33% reported "watery," and 20% reported a "pus-like" color.[21] When asked about the situations where they passed dhat, the most commonly reported situation was "night falls" (60.1%), while passing stools (59.5%), while passing urine (56.5%), during sexual excitement (55.8%), and while reading/watching pornography (50.4%). These are not isolated incidents; over 90% of patients reported more than one situation in which they passed dhat.[21]

Patients with Dhat syndrome are preoccupied with excessive loss of semen by nocturnal emissions, which leads to severe anxiety, hypochondriasis, lack of concentration, bodily weakness, and sexual impotency.[20] Patients typically present with a combination of vague somatic symptoms, anxiety symptoms, depressive symptoms, and sexual problems. However, it is not known if some of these symptoms could be due to other co-morbid disorders such as depression, anxiety, STDs, or UTIs.[17] A summary of most common reported symptoms is described here (Table 1).[19]

A study done by Singh examined 50 patients whose primary complaint was Dhat syndrome. Among these patients, somatic symptoms were most commonly reported. 73.8% of patients reported feeling fatigue, muscular aches and pains, and feelings of weakness. 68.8% complained of tension headaches, 62.5% reported depressed mood, and 51.6% reported anxiety. 11 of the 50 patients also complained of impotence and premature ejaculation.[16] The mean duration of illness is 5.04 (SD – 4.2) years.[25]

DIAGNOSIS

The 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) describes the criteria for Dhat syndrome as experiencing and interpreting passage of whitish discharge in urine as semen loss, undue concern about the debilitating effects of passage of semen, and anxiety/somatic complaints related to the fear of semen loss.[21]

Despite the ICD-10 description of Dhat syndrome, it is difficult to definitively diagnose Dhat syndrome because there does not appear to be a clear and common definition. Many patients report passage of dhat in situations outside of the ICD-10 description, and they report the same syndromal description. All definitions of Dhat syndrome center around the patient's preoccupation with losing dhat from the body, which they believe will harm their physical, mental, and sexual well-being. However, the definition of "dhat" itself remains widely variable. Dhat is commonly perceived as involuntary passage of semen corresponding most closely to urethral discharge, but the composition is variable.[17] Some studies define dhat specifically as semen while others more broadly define it as any whitish discharge.[16] Furthermore, patients differ in their opinions on what they believe dhat to be. Some believe it to be a mixture of semen and phosphate while others believe it to be pus, urine, or sugar.[10] Opinions also differ in regards to dhat's mode of passage. The most commonly reported mode is dhat mixed with urine. However, patients have also reported loss of dhat during defecation, nocturnal emission, and masturbation.[19] Some have even reported passing semen through saliva and sweat.[26]

Prakash, et al. conducted a study to examine the attitudes of various healthcare professionals surrounding Dhat syndrome. They found all allopathic mental health professionals agreed that Dhat syndrome was of "non-organic" origin and was characterized by symptoms associated with the perceived loss of dhat. Other allopathic medical specialists agreed that the illness is of "non-organic" origin; however, argued organic causes must first be ruled out since patients commonly presented with vague complaints. Tra-

Somatic complaints	Anxiety complaints	Depressive complaints	Sexual complaints
Multiple body ache	Anxiety	Weakness	Distortion of shape of penis
Burning micturition	Dryness of mouth/throat	Guilt	Genital itching
Increased frequency of micturition	Palpitation	Lethargy	Genital boils and ulcers
Difficulty in micturition	Tachycardia	Loss of appetite	Fear of sexual activity
Hollowing of eyes	Increased muscle tension	Disturbed sleep	Loss of libido
Loss of control over body	Fear of losing vital component of the body	Loss of interest	Erectile dysfunction
Loss of control over mind		Loss of attention/concentration	Premature ejaculation
Vertigo		Loss of memory	Impotence
Swelling of the body		Weight loss	
Abdominal distention		Suicidal ideation	
Belching		Feeling of shame	
Gas formation			
Epigastric pain			
Lumbar pain			
Involuntary passage of stool during micturition			

Table 1. Summary of complaints seen in Dhat syndrome.

ditional medicine and Ayurvedic practitioners believe it to be a physical illness while homeopathic practitioners considered it to be of multifactorial origin with psychological issues playing a major role.[17]

Since Dhat syndrome has not been clearly defined, there are still many questions left to be answered regarding its diagnosis. There is no clarity as to whether it is a single entity or covers a series of sub-syndromes, whether it is a cultural form of a western psychiatric disorder, or whether it should be considered a disorder rather than an idiom of distress.[17] Conflicting explanations about the illness can lead to problems in management, which is why it is increasingly important to share knowledge and create awareness among both traditional and allopathic providers.

FEMALE DHAT SYNDROME

Female Dhat syndrome is a phenomenon that has many core similarities, but also notable differences compared to traditional male Dhat syndrome. The mean age of onset is higher than that of males (36.1 years vs 24 years).[27,28] The reasons for female Dhat syndrome also differ from males. Mehra, et al. studied 69 females who had nonpathological vaginal discharge consistent with female Dhat syndrome. These women usually did not have evidence of infection, and the quantity of discharge was similar to normal physiologic conditions. The most common reason reported for their discharge was consumption of warm foods and drinks (75.8%), followed by eating unbalance/inappropriate food (73.5%).[27] In other cases, patients attributed their vaginal discharge to stress and emotional factors, infection, and the effect of warm weather leading to excess heat in the body.[27] These responses may have an underlying cultural explanation rooted in traditional Indian Aryuvedic medicine. According to ancient Aryuvedic textbooks, people should avoid "heaty" foods such as ghee, eggs, or meat because they produce excess humoral heat. Like their male counterparts, females with Dhat syndrome associated passage of dhat with somatic symptoms. Women have also attributed somatic concerns and weakness to wetness during sexual intercourse, which is equivalent to male Dhat syndrome. Most patients thought their vaginal discharge was responsible for bodily weakness (87%), backache (71%), and stomachache (66.7%).[27] They also reported other somatic symptoms such as dizziness and headache. This is because a significant proportion of females believe they're losing a vital fluid of the body. They label the generalized secretion as "safedpaani," which they consider to be a vital fluid equivalent to dhat in males.

Although there have been studies focused on female Dhat syndrome, there still remains much to be understood about the condition. Most studies using specific criteria for female Dhat syndrome have been conducted in tertiary care hospitals, so very limited information is available for rural families.[27] Similar to male Dhat syndrome, the criteria for female Dhat syndrome remains somewhat ambiguous, especially because nonpathological vaginal discharge has been referred to as a medium of communication about sexuality, social distress, or psychological problems.[27] Regardless of whether males or females experience Dhat syndrome, there is deep cultural meaning behind the condition that needs to be understood in order to effectively manage it.

MANAGEMENT

Lack of knowledge has been cited as both a potential factor contributing to Dhat syndrome and a barrier to timely diagnosis and treatment.[11,14] According to data collected by Grover, et al., the mean duration of symptoms experienced by patients with Dhat syndrome before making contact with their psychosexual clinic was 6.78 years and the mean number of agencies contacted was 2.85.[12] They found that patients preferred to seek help first from indigenous practitioners, most prominently those of the Ayurvedic tradition. The authors postulate that lack of knowledge, difficulty of access, and stigma were the most common barriers to seeking help, along with beliefs that cures do not exist or the symptoms were not serious enough to address.[12] After indigenous practitioners, patients preferred help from

relatives and friends, allopathic physicians, and traditional faith healers or drug stores, in that order. The only factor that predicted faster contact with the psychosexual clinic was lack of comorbid sexual dysfunction.[12]

In response to this dearth of knowledge and latency to proper treatment, Grover, et al. developed a questionnaire as a diagnostic tool.[29] It includes elements of the PHQ-9 and PHQ-15 to help providers distinguish comorbid mood disorders, as well as measures designed to evaluate the patient's conceptions behind their condition. It is based on extensive literature review, translated between English and Hindi, and found valid according to eight subject experts.[29] Standardizing measures such as these is an important first step to reduce time to diagnosis and begin treatment.

Dhat syndrome has significant overlap with depressive disorders, including weakness, fatigue, palpitations, and sleeplessness.[28] Accordingly, the treatments for Dhat syndrome are the same as the treatments for major depressive disorder. One study assigned four treatments: an anxiolytic, an antidepressant, counseling, and a placebo pill.[28] The groups receiving pharmacological intervention saw the greatest reduction in symptoms; however, the data may be skewed as the largest number of participants who dropped out did so from the psychotherapy group.[28]

Grover, et al. examined factors that lead to dropping out of treatments.[30] He found that those with poor sexual knowledge and negative attitude toward sexuality were more likely to drop out. Those who completed their full course of treatment were more likely to have sought out the clinic on their own and had not been referred.[30] Among the group of those who dropped out after one clinic visit, the reasons for dropping out ranged from not immediately being prescribed medication to not believing it was a psychiatric illness.[30] Among those who dropped out after several visits, the reasons were more commonly a frustration with a lack of symptom reduction.[30] These findings emphasize the importance of early education, including expectation management and thorough explanation of the purpose of different treatment options.

One literature review conducted in 2015 proposes an integrated approach to address these needs. They identify a three-pronged approach. The first group needed is psychiatry and psychology, as they would manage the treatment. The second group is other medical disciplines (such as general medicine, dermatology, and urology) who are often approached by patients with Dhat syndrome before they have sought psychiatric help. These other specialties need education on the syndrome as well, so they know where to refer patients. The last group is alternative medicine practitioners and traditional healers. Working with this group will help combat social stigma surrounding Dhat syndrome as well as help providers understand how to approach patient education in a culturally sensitive way.[31]

A cognitive behavioral therapy course was developed in 2012 that included modules on topics and skills such as basic sex education, cognitive restructuring, relaxation training, imaginal desensitization, and masturbatory training.[32] Clinically significant reduction in symptoms was recognized; however, this study was limited to 5 patients and needs further testing to determine the validity and reliability of the course.[32]

CONCLUSION

While there remains much to be uncovered regarding the origin, diagnosis, and treatment of Dhat syndrome, it is important to first understand the cultural significance of the illness. Our cultural perspective shapes our understanding of mental illness. For patients with Dhat syndrome, their cultural beliefs on dhat's role in health and vitality influences how they perceive semen loss. Many patients will report somatic symptoms such as fatigue, lack of physical strength, and loss of appetite, usually accompanied by an anxious and depressive mental state. These symptoms are common and non-specific, which is why it is important to account for the possibility of Dhat syndrome when confronted with a patient experiencing vague somatic symptoms in the context of semen loss.

Even though Dhat syndrome is more commonly found in patients from the Indian subcontinent, it is also important to realize that Dhat syndrome can be found in other populations. Regardless of the patient's country of origin, it's important to take a culturally informed, nonconfrontational approach to treatment.

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