**INTRODUCTION**

Culture-bound syndromes have been defined by Littlewood and Lipsedge as ‘episodic and dramatic reactions specific to a particular community.’ Yap coined the term Culture-Bound Syndrome (CBS) in 1969, described a rare and exotic group of disorders that cause little damage to humanity; however, they may be unpredictable and chaotic behaviour. Dhat syndrome term coined by N N Wig in 1960 and is considered as a culture-bound syndrome. Dhat syndrome is more prevalent in the Indian subcontinent. This syndrome includes various somatic, psychological symptoms such as fatigue, weakness, decreased appetite, decreased physical strength, forgetfulness, poor concentration, guilt and other vague somatic symptoms. It is usually associated with anxious or dysphoric mood with or without sexual dysfunction.

The word dhat is derived from the Sanskrit word dhatu meaning ‘metal’ ‘elixir’. Since Vedic Indian system of Medicine as well as various religion Hinduism, Muslim, Christian, Buddhism, valued, emphasized and promoted the conservation of semen and these belief maintained by traditional healers who deals with such issues. Due to widely prevalent belief misattribute physiological changes such as turbidity of urine and tiredness as the passage of semen and amplification of somatic symptoms under stressful condition. This semen loss disorder not limited to India but also seen in Western European culture since ancient time. In work of Aristotle (384-322 BC) and Galen semen is given importance.
as ‘soul substance’ and mentioned physical and psychological effect due to semen loss.6 Dhat syndrome-like disorders are described in other countries- Prameha in Sri Lanka, Jiryan in South-East Asia and Shen-k’uei in China.7 Grover et al. showed common situations where patients experience the passage of dhat- night emission, passing stool, urination, in sexual excitement and while watching reading pornography. Passage of dhat in this specific guilt-ridden situation may give rise to this syndrome.8 In a study by Prakash et al. Most common associated symptoms in dhat syndrome were Sense of being unhealthy (99%), worry (99%), and feeling that there will be no improvement despite treatment (97%), tension (97%), tiredness (95%), fatigue (95%), weakness (95%), and anxiety (95%). Among sexual complaints, most common were the loss of masculinity (83%), erectile dysfunction (54%), and premature ejaculation (53%).9

In India traditional healers highly publicize themselves as ‘experts in sexology’ and propagate sexual myths.10 Fear of semen loss and its cure is propagated by advertisement on the wall, television, roadside hoarding, newspaper and by Vaid and Hakim in the most parts of north India.1 Quacks besides giving their ‘formulas’ advise patients to take ghee (purified butter), milk, protein-iron rich food, vitamin injections, and getting married marriage as treatments.11,12 Various studies found depression as the comorbid illness with prevalence rate varied between 40-66 % and anxiety disorder in 21-38% cases.3,9,13 Somatoform and hypochondriacal disorder in 32 to 40% of cases with dhat syndrome.3,9,13 Psychosexual disorder as comorbid with dhat syndrome- premature ejaculation in 22-44% and erectile dysfunction, impotence in 22-62%.3,9 Other disorders like stress reaction, phobias, obsessive ruminations, depressive psychosis, body dysmorphic symptoms, and delusional disorders are also seen.3,9,13

**MATERIALS AND METHODS**

This prospective study was conducted at tertiary care hospital Psychiatry outpatient dept. in western India from July 2010 to August 2011. All consecutive patients who presented with the chief complaints of loss of semen through urine, night emission, overindulge sexual activity and masturbation were included in study and diagnosis of Dhat syndrome was considered, based on the International Classification of Diseases (ICD)-10 clinical criteria.14

Institutional Ethical Committee approved the study. Those who given written informed consent were included in the study. Those who were younger than 18 years of age and who did not give informed consent were excluded. Those patients whose history and mental status examination suggested Psychosis, Mental retardation, and any organic illness were also excluded. Semi-structured performa was used to document their socio-demographic characteristics. The Patient Health Questionnaire (PHQ-9) the 9-item depression screen in Hindi and Gujarati were applied15. Major depression was diagnosed if 5 or more of the 9 depressive symptom criteria were present at least “more than half the days” in the past 2 weeks, and one of the symptoms is depressed mood or lack of interest must be there. One of the 9 symptom criteria “thoughts that you would be better off dead or of hurting yourself in some way” counts if present at all, regardless of duration.

All patients were interviewed for about forty five minutes about their, beliefs about dhat, their sexual experiences, and sexual functioning. Patients were asked to rate their sexual satisfaction on scale of 1 to 10 (1= least sexual satisfaction and 10= full sexual satisfaction) before and after the onset of their illness. Patients were also interviewed about their treatment seeking, and explanations from whom they consulted. They were also asked about their opinion on 5 point Likert scale (strongly agree , Agree, Not Certain, Disagree and Strongly Disagree), if passing of dhat could cause the following: weakness, body ache, backache, headache, anxiety, low mood, lack of concentration, difficulty in doing work, weight loss, early ejaculation, poor erection.

**Statistical analysis**

The data was tabulated, Microsoft excel and Statistical Package for Social Science (SPSS 10) was used for further analysis. Thematic analysis was done for beliefs about that and the past consultant explanation of dhat.

**RESULTS**

**Demographic characteristics**

Patient age ranged from 18 to 64 with mean age 29.38(sd 9.6) years.57 were married, 41 were single and 2 were divorced, 77 were Hindus while others followed Islam or Sikhism. Sixty-three had migrated from neighbouring states Rajasthan, Uttar Pradesh, and Madhya Pradesh. Fifty-eight had a rural background, 56 were skilled workers the rest were unskilled workers.

Fifty-nine had completed secondary school education, 37 had primary education and 4 had no formal education, 85% had a monthly income below Rupees 5000/- suggesting the low socio-economic status

**Chief complaints on presentation**

Most of the patients had a chief complaint of weakness (97%), body ache (46%), anxiety (29%), poor erection (28%), early ejaculation (18%), low mood and lack of interest (27%), weight loss (25%), the small size of penis (20%).

**Depression in Dhat Syndrome**
Depression was present in 38% of cases, severe depression in 36% and moderate depression in 2%. As shown in Table 1, PHQ (Patient Health Questionnaire) scale total of score 0-not at all, 1-several days, 2-More than half of the days, 3-Nearly every day, Sum of 1,2,3. 1 to 4 indicates minimal depression, the score between 5 to 9 indicate Mild depression, 10 to 14 indicate Moderate depression and 15 to 27 indicate moderately severe and severe depression. In this study, 38% of cases having a score between 15 to 27 and 2% of cases have a score between 10 to 14.

At individual item in PHQ 9 symptoms present over more than half of days (1) Little interest present in 41% cases (2) Feeling down, depressed 39% case. (3)Trouble falling or staying asleep 38% (4) Feeling tired or having little energy 52% (5) Poor appetite 39% (6) Feeling bad about yourself 38% (7) Trouble concentrating things 39% (8) Moving or speaking slowly 38% (9) Better to dead off 36% cases over past two weeks.

**Table 1: Patient Health Questionnaire Responses of Dhat Syndrome Patients (N=100)**

| Item                                    | Not at all (0) | Several Days (1) | More than half (2) days | Nearly every day (3) | Percentage (2+3) |
|-----------------------------------------|----------------|------------------|-------------------------|----------------------|------------------|
| Little interest                         | 13             | 46               | 9                       | 32                   | 41%              |
| Feeling down, depressed                 | 52             | 9                | 17                      | 22                   | 39%              |
| Trouble falling or staying asleep        | 40             | 22               | 18                      | 20                   | 38%              |
| Feeling tired or having little energy    | 2              | 46               | 20                      | 32                   | 52%              |
| Poor appetite                           | 31             | 30               | 17                      | 22                   | 39%              |
| Feeling bad about yourself              | 54             | 8                | 21                      | 17                   | 38%              |
| Trouble concentrating things            | 34             | 27               | 21                      | 18                   | 39%              |
| Moving or speaking slowly               | 61             | 1                | 23                      | 15                   | 38%              |
| Better to dead off                      | 61             | 3                | 29                      | 7                    | 36%              |

**Note:** Not at all-0, Several days-1, More than half of days-2, Nearly every days-3

**Sexual Functioning in Dhat Syndrome**

As shown in Table 2 patient rating of sexual satisfaction declined after the onset of dhat syndrome. All 100 patients 25% rated 7, 47% rated 8, 26% rated 9 before the onset of dhat syndrome and all 100 patients 38% rated 1, 45% rated 2, 16% rated 3 after the onset of dhat syndrome.

**Table 2: Rating of sexual satisfaction by patients (N=100)**

| Sexual Functioning Rating | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---------------------------|---|---|---|---|---|---|---|---|---|----|
| Before                    | 0 | 0 | 0 | 0 | 0 | 0 | 25| 47| 26 | 02 |
| After                     | 38| 45| 16| 01| 0 | 0 | 0 | 0 | 0 | 0  |

Before the onset of dhat syndrome, all the patients rated their sexual satisfaction from 7 to 10, while the same after the illness was from 1 to 4. Eighteen patients had premature ejaculation, 28 had erectile dysfunction and 20 had small penis size as associated features.

**Patient Beliefs about dhat**

Most of the patients with dhat syndrome believed dhat as a vital fluid(40%), source of power and energy(33%), produced from a large quantity of blood(41%) and requires nutritious food for the production of semen (27%). As shown in Table 3, Passage of dhat can cause Weakness 99%, Bodyache 94% cases, Headache 42%, Backache 66%, Anxiety 89%, Lack of Concentration 44%, Poor memory 68%, Small size of Penis 62%, Poor erection 33%, Early ejaculation 50%, Infertility 53%
Table 3: Patient’s opinion about the consequences of the passage of dhat (N=100)

| Symptoms            | Strongly Agree | Agree | Neutral | Disagree | Strongly disagree | Percentage |
|---------------------|----------------|-------|---------|----------|-------------------|------------|
| Weakness            | 97             | 2     | 0       | 1        | 0                 | 99%        |
| Bodyache            | 69             | 25    | 1       | 5        | 0                 | 94%        |
| Headache            | 3              | 39    | 35      | 15       | 8                 | 42%        |
| Backache            | 35             | 31    | 15      | 19       | 0                 | 66%        |
| Anxiety             | 68             | 21    | 5       | 6        | 0                 | 89%        |
| Lack of concentration | 33            | 11    | 31      | 17       | 8                 | 44%        |
| Poor Memory         | 35             | 33    | 17      | 12       | 3                 | 68%        |
| Small size of penis | 37             | 25    | 26      | 12       | 0                 | 62%        |
| Poor erection       | 28             | 5     | 38      | 29       | 0                 | 33%        |
| Early ejaculation   | 18             | 32    | 40      | 10       | 0                 | 50%        |
| Infertility         | 38             | 15    | 25      | 16       | 0                 | 53%        |

**Attribution to sexual experiences**

Sexual history revealed Premarital sex in 48% cases including 26% in unmarried and 22% in married patients, masturbation (46%), unprotected sex(15%), extramarital sex(13%), multiple sex partners(2%) and homosexual activity (1%). Dhat syndrome patients attribute their illness to masturbation (30%), premarital sex(20%), unprotected sex(15%) and extramarital sex (7%). It is interesting to note that all patients with unprotected sex, multiple sex partners and homosexual activity attribute dhat syndrome to those experiences.

**Treatment seeking for dhat syndrome**

Most of the patients were advised to seek treatment by friends (42%), relatives(30%) or wife(12%) while 16 % of patients themselves sought help on their own. Treatment was sought from sex quack (51%), general practitioner or physician(30%), dermatologist and venereologist (15%). Only 4 patients had the first consultation with a psychiatrist.

The patients were offered following explanations for dhat: excess masturbation (26%), weakness of nerves of the penis (15%), no explanation(19%), exposure (3%), weakness of mind(2%) weakness of body, constipation, lifting heavy-weight, pressure on nerves of the penis, lack of blood in the body, lack of calcium, melting of bone, infection, incurable illness(1% each)

**DISCUSSION**

In this study about Dhat syndrome, age of patients ranged from 18 to 64 years with mean age 29.4 (SD 9.6), most belonged to lower socioeconomic status, had a monthly income below 5000 and were mostly educated up to secondary school, 57 were married and 43 were single, a majority had a rural background. Among 100 patients 70% cases age were equal to or above 30 years. This indicates young patients were more vulnerable to dhat syndrome as shown in several studies. They had a lower education level and belongs to low to medium socioeconomic level. However recent multicentric study shows a majority of patients belonged to middle socioeconomic status and this syndrome seen in patients with all educational levels. Dhat syndrome is commonly seen in unmarried or recently married. In our study, more patients were married than single (57 vs 43). As seen in the study by Sawant and Nath, misconceptions about semen, masturbation, circumcision, and vasectomy widely prevalent in both unmarried and married those who patients living in a city away from their wives in village. In our study 63 out of 100 patients were migrant from North Indian states and 77 were Hindu by religion. It indicates that dhat syndrome may be more prevalent in North India. In a multicentric study in India by Grover et al. of 780 dhat syndrome patients 51% cases were from the north and central India and 69% cases were Hindu by religion. However, the prevalence of Dhat syndrome is not restricted to Hindus but is spread over among all communities of the Indian subcontinent. It has been seen among Sikhs in Punjab, Buddhists in Sri Lanka and Muslims in Pakistan.

In this study, depression was comorbid with dhat syndrome in 38%, severe in 36 % and moderate depression in 2%. Similar findings found in various studies. In the study by Sawant and Nath found 39.4% of cases having severe depression and 15.1% cases having extreme depression on Beck Depression Inventory. Several studies have found comorbid depression from 39.5% to 66.6% of patients with dhat syndrome. In the multicentric study of comorbiditity with dhat syndrome by Grover et al. found 38.5% cases of depressive/anxiety disorder including 22.6 % cases of both comorbid sexual dysfunction and depressive/anxiety disorder.

In-Patient Health Questionnaire 9 (PHQ 9) following symptoms more than half of the days were present over
past two-week little interest (41%), feeling down (39%), trouble falling asleep (38%), feeling tired (52%), poor appetite (39%), feeling bad about self (38%), trouble in concentrating (39%), moving or speaking slowly (38%), better
to dead off (36%). This severity of depression may be due to
patients included in study attending to the tertiary care
centre and another confirmatory test for depression not
applied this is the limitation of our study. So it is necessary to
evaluate depression while dealing with this syndrome. Also
multicentric study reported little interest (63.7%), feeling
down (62.4%), trouble falling sleep (50.8%), feeling
tired (67.9%), poor appetite (47.8), feeling bad about self
(50.4%), trouble in concentrating (49.1%), psychological
agitation or retardation (29.9%), thought better to dead off
(29.9%). 8

Effect on sexuality due to the passage of dhat, we found a
marked decline in sexual functioning after the onset of dhat
syndrome. This is similar to multicentric study. 8 This may
influence of Ayurvedic medicine that believes that loss of se-
men in any form leads to decrease in physical and mental
energy as one drop of semen is made up of 100 drops of blood
and one drop of blood made from various minerals and nutri-
tious food that ingested by male and it takes a long period to
regenerate.22 Behere and Natraj (1984) in their series found
26% of dhat syndrome patients had impotence and 22% pre-
mature ejaculation. Bhatia and Malik (1991) reported an
association of Dhat syndrome with impotence and premature
ejaculation in 8.3% and 14.6% respectively. Chadda and
Ahuja (1990) reported that 42.3% of dhat syndrome patients
had premature ejaculation and 36.5% of patients had erectile
dysfunction.

The beliefs shared by patients in this study are similarly Pun-
dhier et al. 24 In Bhatia Malik study, perceived consequences
mentioned were inability to get a male child, malformed
fetus, impotency and shrinkage of the penis. 11 Also in the
multicentric study, perceived consequences of passing dhat
found early ejaculation, poor erection, reduction in the
size of penis reported by 66.4%, 62.2% and 50.8% cases
receptively.8 Patients were also inquired about certain spe-
cific sexual behaviours and perceived role in dhat syndrome.
Though India is a conservative society where sex is never
mentioned and is considered a taboo. We found 48% cases
of both single and married, the experience of pre-marital sex,
15% had unprotected sex, 13% had extramarital sex, 2% had
multiple sexual partners, 1% had homosexual activity, and
46% had the experience of masturbation. Its seems that these
figures underreported considering lower social desirability
due to social taboos regarding these behaviours, more so in
case of masturbation. According to patients, these experi-
ences were responsible for the present condition, 30% pa-
tients attributed it to masturbation, 20% to premarital sex,
15% to unprotected sex. 7% blamed to extramarital and 1%
to homosexual activity.

All the patients (15%) who had unprotected sex considered
it as a causative factor for dhat syndrome. It indicates more
guilt and fear of HIV infection associated with unprotected
sex. Further studies are needed to evaluate fear and belief
about unprotected sex concerning dhat syndrome. Chadda
and Ahuja (1990) mentioned that 24(46.1%) out of 52 pa-
tients consider masturbation, 11(21.1%) pre or extramarital
relation and 3(5.8%) homosexual complex to causative fac-
tor. Bhatia and Malik (1991) mentioned that 45.1% of their
patients blamed to masturbation and excessive sex 11. Also
in study Grover et.al. (2016) 55.1 % cases reported mas-
turbation, 24.5% to excessive sexual intercourse, 22.7% to
premarital sexual intercourse as a causative factor for dhat
syndrome.8 It indicates guilt feeling about sexual excite-
ment, masturbation and premarital and extramarital sex. In
the treatment of dhat syndrome, these need to be addressed.

In our study, most patients were advised by friends and
relatives to seek help. Sumathipala and Mumford also men-
tioned that patients with dhat syndrome acquired knowledge
regarding illness from friends, relative, quack, and general
practitioner, roadside advertisements1220. As most people do
not get sex education from parents, schools or college, they
are vulnerable to seek false knowledge from peer groups,
roadside hoardings and a quack. This emphasizes the need
for scientific sexuality education in schools, colleges, and
communities at large.

Before coming to a psychiatrist, the majority had consulted
a quack, general practitioner or a physician (Ayurvedic,
Unani, Homeopath, or allopathy doctors, and dermatology-
venereologists). Only 4 patients had consulted psychiatrist
directly. The explanations given by earlier consultants were
similar to Pundhir et al. 24 Nashi Khan in one of the largest
studies on dhat syndrome reported that 73% of cases visited
an hakim and homoeopath health professional. Alternative
medicine people advertise this syndrome as a major health
concern. They spread the idea that semen is a very valuable
body fluid and its loss leads to many physical and mental
problems, especially premature ejaculation and impotence.25
Patients attending psychiatry outpatient department were in-
cluded in this study so the results cannot be generalized to
the community or other settings. There would be biases like
interview bias, recall bias, nonresponsive selection. Case-
control studies are needed to clarify if the opinions about
the causes and consequences of dhat syndrome are limited
to dhat syndrome patients or reflect opinions of the general
population.

CONCLUSION

Depression is frequently associated with dhat syndrome and
decline in sexual satisfaction. Misbelief regarding cau-
sation and consequences of dhat syndrome was observed.
So effective psycho-education strategies to counter myths and health professional education about sexuality are urgently needed.

ACKNOWLEDGEMENT

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript.

Conflict of interest: Nil

Financial support: Nil

REFERENCES

1. Lipsedge M, Littlewood R. Transcultural psychiatry. In: Granville-Grosman, editor. Recent advances in clinical psychiatry. 3rd ed. Edinburgh: Churchill Livingstone; 1985.

2. Wig NN. Problems of mental health in India. J Clin Social Psychol (India) 1960;17:48-53.

3. Prakash O. Lessons for postgraduate trainees about Dhat syndrome. Indian J Psychiatry 2007;49(3):208–210.

4. Prakash O, Kar SK, Sathyamevaraya Rao TS. Indian story on semen loss and related Dhat syndrome. Indian J Psychiatry 2014;56(4):377–82

5. Ranjith G, Mohan R. Dhat syndrome as a functional somatic syndrome: Developing a socio somatic model. Psychiatry 2006;69(2):142–150.

6. Jadhav S. Dhat syndrome: A re-evaluation. Psychiatry 2004;3(8):14-16.

7. Mehta V, De A, Balachandran C. Dhat syndrome: A reappraisal. Indian J Dermatol. 2009;54(1):89–90.

8. Grover S, Avasthi A, Gupta S, Dan A, Neogi R, Behere PB, et al. Phenomenology and beliefs of patients with Dhat syndrome: A nationwide multicentric study. Int J Soc Psychiatry 2016; 62(1):57-66

9. Prakash S, Sharan P, Sood M. A study of the phenomenology of Dhat syndrome in men in a general medical setting. Indian J Psychiatry 2016; 58(2):129-141.

10. Paris A. Dhat syndrome: A review. Transcult Psychiatr Rev 1992;29:109-118.

11. Bhatia MS, Malik SC. Dhat syndrome: A useful diagnostic entity in Indian culture. Br J Psychiatry 1991;159(5):691-695.

12. Sumathipala A, Siribaddana SH, Bhugra D. Culture-bound syndromes: The story of Dhat syndrome. Br J Psychiatry 2004;184:200–209.

13. Deb KS, Balhara YS. Dhat syndrome: A review of the world literature. Ind J Psychol Med 2013;35(4):326-331.

14. World Health Organization. International Statistical Classification of Diseases and Related Health Problems.10th rev. Geneva: World Health Organization: 1992.

15. Kochhar PH, Rajadhyaksha SS, Suvarna VR. Translation and Validation of brief patient health questionnaire against DSMIV as a tool to diagnose the major depressive disorder in Indian patients. J Postgrad Med 2007;53(2):102-107.

16. Behere PB, Natraj GS. Dhat syndrome: The phenomenology of a culture-bound sex neurosis of the orient. Indian J Psychiatry 1984;26(1):76-78.

17. Bhatia M, Bohra N, Malik S. “Dhat” syndrome-a useful clinical entity. Indian J Dermatology. 1989;34:32-41.

18. Nakra BR, Wig NN, Varma VK. A study of male potency disorders. Indian J Psychiatry 1977;19:13-18.

19. Sawant NS, Nath A. Cultural misconceptions and associated depression in Dhat syndrome. Sri Lankan J Psychiatry 2012 :3(1): 17-20.

20. Mumford DB. The ‘Dhat syndrome’: A culturally determined symptom of depression? Acta Psychiatr Scand 1996;94(3):163-167.

21. Dhikav V, Aggarwal N, Gupta S, Jadhavi R, Singh K. Depression in Dhat syndrome. J Sex Med 2008;5(4):841–844.

22. Grover S, Avasthi A, Gupta S, Dan A, Neogi R, Behere PB, et.al Comorbidity in Patients with Dhat Syndrome: A Nationwide Multicentric Study. J Sex Med 2015;12(6):1398-1401.

23. Money J, Prakasam K, Joshi V. Semen conservation doctrine from ancient ayurvedic to modern sexological theory. Am J Psychiatry. 1991;45(1):9–14

24. Pandhir A, Srivastava RK, Sharma S, Singh P, Joshi HS, Aggarwal V, et al. Dhat Syndrome Assessment Using Mixed Methodology. Asian J Psychiatry 2015;16(2):157-167.

25. Khan N. Dhat syndrome in relation to demographic characteristics. Indian J Psychiatry 2005;47(1):54-57.