



A COMPREHENSIVE REVIEW OF BEKHWABI (INSOMNIA)

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ABSTRACT

Insomnia is the most common condition among the sleep disorders. Insomnia refers to the difficulty in initiation, maintenance, duration or quality of sleep. The initial references of insomnia date back to the ancient Greeks. The causes of insomnia include use of excessive alcohol at night and other depressant, poor sleep habits, dietary habit, medical condition like arthritis, asthma, sleep apnoea etc. In Unani

system of medicine the main cause of *Bekhwabi* (insomnia) is *Yubūsat* (dryness) of brain. Although the pathophysiology of primary insomnia remains an enigma, numerous treatments both pharmacological and behavioural have been developed and found to be efficacious in controlled studies. In the classical Unani literature, ancient Unani physicians have also described a comprehensive view of the management for insomnia. This review study is carried out with the aim to give a comprehensive description of insomnia both in modern and Unani medicine.

KEYWORDS: *Bekhwabi, Insomnia, Unani Medicine, Sleep Disorders.*

INSOMNIA

The term insomnia arisen in 1623, it was anglicised as insomnia from Latin word *insomniac* means want to sleep composed of 'in' (= not) and 'somnus' (= sleep).^[1] Insomnia is a widespread health complaint, and the most common of all sleep disorders.^[2] It is generally explained by a decrease in duration, quality or efficiency of sleep.^[3] Insomnia refers to the difficulty in initiation, maintenance, duration or quality of sleep. People may experience poor concentration, lower productivity and poorer work quality as a result of insomnia.^[4]

An insomnia disorder is defined as a subjective report of difficulty with sleep initiation, duration, consolidation, or quality that occurs despite adequate opportunity for sleep, and that results in some form of daytime impairment.^[5]

National Institute of Health Consensus, defined insomnia as difficulty in initiating or maintaining sleep, early morning awakening with an inability to fall back asleep and feeling not rested during daytime after a common period of sleep or non-restorative sleep in the presence of adequate circumstances for sleep.^[3] Medical practitioners describe insomnia as the habitual inability to fall asleep or remain asleep when one wishes or needs to do so.^[6]

***Bekhwābī* (Insomnia)**

According to the classical Unani literature most of the eminent Unani physicians and scholars describe and have their own opinions regarding *Bekhwābī*.

According to *Ibn Sīnā*, excess of awakening is known as *Bekhwābī*.^[7] *Sharaf al-Dīn Ismā'īl ibn Ḥusayn Jurjānī* described *Bekhwābī* as sleeplessness and excessive awakening.^[8]

According to *Akbar Arzānī*, *Bekhwābī* is excess of sleeplessness or prolonged awakening.^[9]

Ḥakīm A'zam Khān described *Bekhwābī* as excessive awakening, it is due to simple *Ḥarārat* (hotness) and *Yubūsat* (dryness) in brain and also due to *Ṣafrā'* (bile), *Sawdā'* (black bile) and *Fāsīd Balgham* (morbid phlegm).^[10]

Ḥakīm Ajmal Khān described *Bekhwābī* as decrease in *Rutūbat* and increase in *Yubūsat* of nerves.^[11] *Muḥammad Ḥasan Qarshī* described *Bekhwābī* that in this condition patient hardly gets asleep and occasionally may get deprived of sleep.^[12] *Ḥakīm Ghulām Jīlānī* says that the *Bekhwābī* is characterised by disturbed sleep in which patient remains awake.^[13]

TYPES OF INSOMNIA

Classical literatures not describe the types of insomnia; however, it has been mentioned in modern books.

There are two types of insomnia

- 1. Primary insomnia**, it is sleeplessness that cannot be attributed to an existing medical, psychiatric or environmental cause, such as drug abuse or medications.
- 2. Secondary insomnia**, it is occur when symptoms of insomnia arise from a primary

medical illness, mental disorders or other sleep disorders. It may also arise from the use, abuse or exposure to certain substances.

The International Classification of Sleep Disorders documents the following types of insomnia.

Adjustment insomnia

This is also called acute insomnia or short-term insomnia. It is usually caused by a source of stress and tends to last for only a few days or weeks. Epidemiologic studies indicate that the one-year prevalence of adjustment insomnia among adults is likely to be in the range of 15-20%. Adjustment insomnia can occur at any age, although establishing a relationship between a particular stress and sleep disturbance may be difficult in infants. Adjustment insomnia is more common in women than men and in older adults than younger adults and children.

Behavioural insomnia of childhood

Two primary types of insomnia affect children. Sleep-onset association type occurs when a child associates falling asleep with an action (being held or rocked), object (bottle) or setting (parents' bed), he/she is unable to fall asleep if separated from that association. Limit-setting type occurs when a child stalls and refuses to go to sleep in the absence of strictly enforced bedtime limits. Approximately 10-30% of children are affected by this condition.

Idiopathic insomnia

An insomnia that begins in childhood and is lifelong, it cannot be explained by other causes. Information suggests that this condition is present in approximately 0.7% of adolescents and 1% of very young adults.

Inadequate sleep hygiene

This form of insomnia is caused by bad sleep habits that keep you awake or bring disorder to your sleep schedule. This condition is present in 1-2% of adolescents and young adults. This condition affects 5-10% of sleep-clinic populations.

Insomnia due to drug or substance, medical conditions, or mental disorder

Symptoms of insomnia often result from one of these causes. Insomnia is associated more often with a psychiatric disorder, such as depression, than with any other medical conditions. Surveys suggest approximately 3% of the population has insomnia symptoms that are caused by a medical or psychiatric condition. Among adolescents and young adults, the prevalence

of this form of insomnia is slightly lower, only 2% of the general population is affected by this type of insomnia. Approximately 3.5% of all sleep-centre patients are affected by this condition.

Paradoxical insomnia

A complaint of severe insomnia occurs even though there is no objective evidence of a sleep disturbance. The prevalence in the general population is not known. Among clinical populations, this condition is typically found in less than 5% of patients with insomnia. It is thought to be most common in young and middle-aged adults.

Psycho-physiological insomnia

A complaint of insomnia occurs along with an excessive amount of anxiety and worry regarding sleep and sleeplessness. This condition is found in 1-2% of the general population and 12-15% of all patients seen at sleep centres. It is more frequent in women than in men. It rarely occurs in young children but is more common in adolescents and all adult age groups.^[14,15]

EPIDEMIOLOGICAL ASPECT OF INSOMNIA

Socio-demographic Determinants

Most epidemiological studies indicate that women, the elderly and people with coexisting health problems are more likely to suffer from insomnia.^[16]

Gender

All of the available epidemiological studies that compare the prevalence of insomnia between the genders report a higher prevalence in women. The female to male ratio is roughly 1.5:1.¹⁶

Age

There are evidences from some studies that demonstrated the increase in the prevalence of insomnia with the advancement in age.^[16]

Ethno-cultural Factors

Few studies that have looked at the impact of ethno-cultural variables on insomnia have shown that, among the elderly, European Americans more frequently complained of insomnia than African Americans and had a greater reliance on sleep medications.^[17,18]

Occupation

Several studies have demonstrated that rotating daytime shift workers report sleep onset insomnia more frequently than the fixed daytime schedule workers (20.1% vs. 12.0%),^[19] with the complaints of insomnia increasing in proportion to the number of shifts worked. Insomnia and other sleep complaints are significantly more common in three-shift workers than in two-shift workers.^[20]

Other Factors

Occupation, socioeconomic status, marital status, mental and physical health also impact the prevalence of insomnia. Few studies have reported a direct relationship between unemployed status, lower socioeconomic status, lower educational level and increased prevalence of insomnia. Higher prevalence of complaints of insomnia has also been reported among single, widowed or divorced adults as compared with ones who were in a marital relationship. Poor physical health is also associated with a higher prevalence of insomnia.^[16,21,22,23,24]

Epidemiology of Hypnotic Use

The use of hypnotics increases with age, particularly among middle aged and elderly women.^[25] Sleeping pill use varies with occupation. According to one study, the rate of frequent or habitual hypnotic use among male gardeners, female social office workers and male construction workers was higher than the rate in other surveyed occupations.^[26] Alcohol is the most commonly used hypnotic among insomniacs (roughly 15% have reported using alcohol for insomnia).^[27]

General prevalence of insomnia

Mellinger, *et al* presented data from one of the first attempts to quantify the prevalence of the disorder. Their 1979 US survey, utilizing a nationally representative sample of 3,161 people whose ages ranged from 18 to 79 year, found that insomnia affected 35% of the general adult population in 1 year; about half of these people experienced the problem as severe.^[28] In year 2000 a study conducted by Leger and colleagues, in France, noted that the prevalence of frequent insomnia was 29% in a representative sample of the population that included 12,778 individuals.^[29] According to a survey in Japan, conducted in a group of 6,277 patients from the OPDs of 11 hospitals, revealed a prevalence of 20.3% with 11.7% of the people suffering from insomnia for over a month.^[30] Another study in Austria in a sample of 1,000 revealed a prevalence of 26% with 21% of them being severe and chronic with duration of 1 year or more.^[31] In a representative sample of the South Korean general population composed of

3,719 non-institutionalized individuals aged 15 years or older, the prevalence of insomnia symptoms occurring at least three nights per week was reported to be 17%.^[32] A multinational study in Europe, in a representative sample of 1,125 adolescents aged 15-18 years, from four countries (France, Great Britain, Germany and Italy) reported insomnia symptoms in approximately 25% and DSM-IV insomnia disorder in approximately 4%.^[33]

There are few studies from India which looked at the prevalence of Insomnia among different segments of the population. Panda, *et al* studied the prevalence of sleep related disorders among healthy population from South Indian states. Among 1050 apparently healthy attendants, relatives of patients, attending a tertiary care hospital, in a population of 35.1±8.7 years of age group, insomnia was reported in 18.6% of the patients with 18% for initiation of sleep, 18% for maintenance and 7.9% with early morning awakening. Suri, *et al* have undertaken several questionnaire based studies in Delhi among different age groups of 2,475 adult subjects with 30-60 years age group, it was found that 28.1% of the subjects reported to have complaints suggestive of disorders of initiation and maintenance of sleep. In another study by the same authors among 1,240 elderly subjects, the prevalence of insomnia was 59% again mainly of sleep initiation and maintenance.^[34]

Economic Impact of Insomnia

Insomnia costs the American Public \$92.5 to \$107.5 billion annually, in both direct and indirect expenses, due to medical procedures and medications, accidents and reduced productivity associated with absenteeism and decreased work efficiency. Insomnia sufferers place a significant burden on both the health care system and their employers. Weissman, *et al* noted that insomnia sufferers were more prone to access medical and psychiatric care providers during a 1-year follow-up period. In 1995, Walsh and Engelhard reported a total direct cost of \$13.9 billion in the USA.^[35]

CAUSES OF INSOMNIA

There are many causes that predispose, precipitate and perpetuate factors insomnia.

These causes can be divided roughly into behavioural, psychological, social, biological, and medical causes etc.

1) Behavioural Causes

- Use of caffeine, nicotine or other stimulants
- Use of alcohol, other depressants or sedatives, which can relax but lead to shallow sleep

that starts and stops

- Dietary habits i.e. missing breakfast, eating spicy foods especially at night before sleeping
- Lack of exercise
- Irregular sleep-wake patterns resulting from shift work
- Poor sleep habits, including going to bed at different times or in a noisy environment, or eating or working in bed before sleeping
- Changes in sleep patterns because of different work hours or travel
- Excessive napping in the afternoon or evening

2) Psychological Causes

- Stress
- Depression
- Anxiety
- Other mental problems

3) Social Causes

- Family disputes
- Divorce
- Loss of job
- Financial problem

4) Biological Causes

- Age (insomnia occurs more frequently in those over age 60 years)
- Gender (more common in female gender)
- Ethnicity

5) Medical Causes

- Sleep apnoea
- Hyperthyroidism
- Restless leg syndrome
- Arthritis
- Asthma
- COPD
- Heart failure
- Parkinson's disease.^[36,37,38,39]

According to Unani literature, there are so many causes of *Bekhwābī* as under

- Old age^[7,8,40,41]
- Unreasonable involvement in worldly affair (e.g., overwhelming study, especially if the temperament of brain is acutely inclined towards such activity)^[9]
- Eating extremely small quantity of food or using light diet causes *Yabūsat* of brain which manifest as insomnia^[9]
- Sometimes overeating causes heaviness of stomach, distressing enough to evaporate sleep from eyes, patient finds himself turning in the bed without sign of sleep^[42]
- Brightness of an area^[42]
- To cogitate deeply about something^[9]
- Fear^[9,42]
- Excitement^[9,42]
- Anxiety^[42]
- *Būriqiyyat-i-Ruṭūbāt*^[42]
- *Imtilā'-i-Akhlāṭ, Sū'-i-Mizāj Yābis Sāda, Sū'-i-Mizāj Ḥārr Yābis Sāda*^[9]
- *Sū'-i-Mizāj Yābis Sawdāwī or Waram-i- Sawdā' or Sartān*^[9,42]
- *Sū'-i-Mizāj Ḥārr Yābis Ṣafrāwī of Dimāgh, Ruṭūbāt Shor: Shor Ruṭūbāt* in brain may cause insomnia.^[9,12]
- *Bukhār, Dard, Nafkh*, indigestion^[9,42]
- *Yabūsat Sāda*^[43]
- *Ḥararat wa Yabūsat Sāda*^[43]
- *Ghalba Ṣafrā' wa Sawdā'*^[43]
- *Amrāḍ-i-Dil wa Dimāgh, Ḥaml, Yaraqān, Niqris, Faqr al-Dam, Kathrat-i- Istifrāgh, Qabz*^[9,12,42]

DIAGNOSIS OF INSOMNIA

General Diagnostic criteria for insomnia (ICSD-2, 2005)

- A. A complaint of difficulty in initiating sleep, difficulty in maintaining sleep or waking up too early or sleep that is chronically non-restorative or poor in quality.
- B. The above sleep difficulty occurs despite adequate opportunity and circumstances for sleep.
- C. At least one of the following forms of daytime impairment related to the night-time sleep difficulty is reported by the patient.

- Fatigue or malaise
- Attention, concentration or memory impairment
- Social or vocational dysfunction or poor school performance
- Mood disturbance or irritability
- Daytime sleepiness
- Motivation, energy or initiative reduction
- Proneness for errors / accidents at work or while driving
- Tension, headaches or gastrointestinal symptoms in response to sleep loss
- Concerns or worries about sleep

DSM-IV-TR diagnostic criteria for primary insomnia (APA, 2000)

- a) The predominant complaint is difficulty in initiating or in maintaining sleep or non-restorative sleep for at least 1 month.
- b) The sleep disturbance (or associated daytime fatigue) causes clinically significant distress.
- c) The sleep disturbance does not occur exclusively during the course of narcolepsy, breathing-related sleep disorder circadian rhythm sleep disorder or parasomnia.
- d) The disturbance does not occur exclusively during the course of another mental disorder (e.g., major depressive disorder, generalized anxiety disorder, a delirium).
- e) The disturbance is not due to the direct physiological effects of a substance.^[44,45]

Diagnosis of *Bekhwābī* according to Classical Unani Literature

To establish diagnosis of *Bekhwābī*, patient is interrogated about dryness, discharge from nose, dryness of tongue and heaviness in head or light headache. If the tongue is dry and taste sensations are not impaired along without any symptoms and sign of *Ḥarārat* and *Burūdat* in brain, then the cause of *Bekhwābī* is *Yubūsat Sāda*. If there is heaviness in head and dryness along with sign and symptom of dominance of *Sawdā'*, then the cause of *Bekhwābī* will be *Yubūsat Sawdāwī*. If there is dryness and heaviness associated with *Nāriyyat-i-Rūḥ* along with other predominant symptoms of *Ṣafrā'*, the cause of *Bekhwābī* is *Ṣafrāwī Ḥarārat* and *Yubūsat*.^[7,10,46,47]

COMPLICATIONS OF INSOMNIA

Sleep is essential to over all physical health and emotional well being. Insomnia can cause complications that range from slight annoyances to severe debilitations.

1) Psychological complications

- Acute insomnia may lead to generalized and sleep-related worry, lower performance, slowed reaction time
- Long-lasting insomnia may even lead to more severe consequences, such as mistimed naps, loss of track of time, delirium, mental block, cognitive impairments, increase in accidents and casualties, short term memory and other memory problems.
- From several longitudinal studies it is evident that insomnia may associated with risk of depression and anxiety disorder

2) Cardiovascular complications

- Elevation of heart rate
- Risk of heart disease
- High blood pressure

3) Other complications may include

- Risk of diabetes and pre-diabetic syndromes
- Overweight or obesity
- Poor immune system function
- Gastrointestinal distress
- Chronic arthritis and chronic headaches.^[3,48,49,50,51]

According to classical Unani literature, most of the eminent Unani physicians described various complications of insomnia.

Buqrāt says that *Bekhwābī* causes *Ikhtilāṭ-i-'Aql* (disorientation) and *Tashannuj* (spasm) in patients, while *Jālīnūs* mentioned that a care taker of a garden who had been awoken for several nights, developed disorientation and mania.^[52]

According to *Rāzī*, moderate sleep produces *Dam Mahmūd* (good quality of blood), excessive sleep decreases the production of *Akhlāṭ* and inadequate sleep yields *Akhlāṭ Ṣafrāwī*, and fatigue increases *Hiddat-i-Ṣafrā'* and thus *Sawdā' Khāliṣ* is produced. Severe sleeplessness prevents *Nudj* of foods and drink due to increased *Taḥallul* and yields dryness in the body.^[53] Inadequate sleeping causes *Haijānī Kayfiyyat* (a state of restlessness), increased production of bile and body become weak.^[54]

Alī ibn Abbās Al-Majūsī says that decreased sleep results in *Ḍu'f-i-Nafs* and *Ḍu'f-i-Ṭabī'at*, increases *Harārat and Yubūsāt* (hotness, dryness) in the body, affects the built and complexion of the individuals, it causes dark circles around the eyes.^[42] It also impairs *Mizāj*

of brain, produces *Yubūsat* and thus brain becomes weak leading disrupted senses.^[55]

Abul Walīd ibn Rushd delineates that sleep promotes digestion and increases *Ruṭūbāt-i-Badan*, whereas wakefulness enhances the processes of *Istifrāgh* and *Ḥarārat Gharīziyya*. That's why, excessive sleeplessness results in dryness of the body and decreases *Ḥarārat Gharīziyya* and increases *Ḥarārat 'Arḍiyya*. Whenever sleep is curtailed to less than required duration, *Af 'āl Nafsāniyya* become weak, dryness overcomes in brain and body. If sleeplessness is excessive, it resolves *Ruḥ*, weakens *Quwā Nafsāniyya* (psychic faculties), impairs digestion, produces dryness in *Mizāj* of brain, spoils complexion, deteriorates body and creates doubts and confusions.^[56]

Excessive wakefulness causes dryness in *Mizāj*, deranges brain functions, complexion turns yellow, causes *Amrāḍ Hādda* and dissolves *Quwā* (faculties),^[57,58] and eventually, *Akhlāṭ* become *Mirārī* due to inadequate sleep.^[41] Insomnia deviates *Mizāj* of brain, the patient becomes skewed, lazy and inactive; his senses, movements and thinking get impaired^[8] and increased *Tahlīl* of *Rūḥ* and *Ḥarārat Gharīziyya*, impair *Haḍm* leading to decreased *Rūḥ*.^[59]

MANAGEMENT OF INSOMNIA

Conventional treatment for insomnia can be broadly divided into pharmacological treatment and psychological treatment.

Pharmacological Treatment of Insomnia

Historically, first barbiturates and then benzodiazepines were indicated as sedative-hypnotics. While both classes have demonstrated efficacy for insomnia, barbiturates were shown to have unacceptable levels of tolerance and dose escalation, abuse potential, lethal dose threshold, and alterations to SWS and/or REM sleep. Similar attributions were made for the benzodiazepines, albeit with far less evidence. More recently the benzodiazepine receptor agonists (BZRAs) class of compounds was developed and garnered widespread acceptance as the standard of practice.^[50,60] This was primarily due to the fact that they did not possess the negative attributes of the other sedative-hypnotic classes, though concerns about tolerance and dose escalation remain to a lesser extent.

All of these agents (zolpidem, zolpiclone, zaleplon, and eszopiclone) bind at benzodiazepine receptor sites, do so more selectively than other exogenous ligands, and inhibit cortical neurotransmission. Ramelteon is a more recent non-BZRA sedative-hypnotic; it is a

melatonin receptor agonist, has no tolerance or dose escalation features, and an even more benign side effect profile than the BZRAs.^[50,60]

Notwithstanding the availability and efficacy of these newer hypnotics, the off-label use of sedating antidepressants and anti-psychotics for the treatment of insomnia is an extremely common practice. This can be attributed to several reasons including the abundant data on the long-term safety of particularly the sedating antidepressants (compared to minimal long term safety and efficacy data of BZRAs), their lack of scheduling, the cost of BZRAs, and the belief that insomnia is a symptom of depression. This practice is based on little efficacy data of these agents with respect to insomnia.

Ramelteon and the BZRAs (after consideration of CBT-I) are considered the accepted front line treatment for chronic insomnia.^[50,60] As described above, selection of the appropriate hypnotic is best tailored to the individual presentation.

Psychological and Behavioural Management of Insomnia

Many behavioural and psychological interventions have been shown effective in the treatment of chronic insomnia. Several meta-analyses and reviews have demonstrated that psychological treatments for insomnia could benefit approximately 70%–80% of patients with the condition.^[61-65] The 2005 State-of-the-Science Conference of the National Institutes of Health has also recognized the effectiveness of psychological and behavioural therapies to treat chronic insomnia in adults.^[66] These treatment techniques are usually combined into cognitive behavioural therapy for insomnia (CBTI). CBTI is a multicomponent intervention that is usually conducted in groups with a structured program or administered individually with selected techniques tailored to the individual. The course of treatment usually consist of 4 to 8 weekly or biweekly treatment sessions with the maintenance of a sleep log between sessions, although 2-session CBTI was also reported effective in primary care settings in one study.^[67] CBTI consists of educational, cognitive and behavioural components. The educational component aims to enhance understanding of the basic mechanisms of sleep regulation, etiological factors of insomnia, and good sleep hygiene. The behavioural component includes relaxation techniques that can reduce tension and anxiety and other techniques that enhance sleep quality by adjusting the sleep schedule.

Stimulus control therapy: Stimulus control therapy is considered to be the first line behavioural treatment for chronic primary insomnia and therefore should be prioritized

accordingly.^[50,68] Stimulus control instructions limit the amount of time patients spend awake in bed or the bedroom and are designed to decondition pre-sleep arousal. Typical instructions include: (i) keep a fixed wake time 7 days/wk, irrespective of how much sleep you get during the night; (ii) avoid any behaviour in the bed or bedroom other than sleep or sexual activity; (iii) sleep only in the bedroom; (iv) leave the bedroom when awake for approximately 10 to 15 min; and (v) return to bed only when sleepy. The combination of these instructions re-establishes the bed and bedroom as strong cues for sleep and entrains the circadian sleep-wake cycle to the desired phase.

Sleep restriction: Sleep restriction therapy (SRT) requires patients to limit the amount of time they spend in bed to an amount equal to their average total sleep time. Sleep restriction is contraindicated in patients with histories of bipolar disorder, seizures, or untreated hypersomnolence as it may aggravate these conditions.^[50]

Sleep hygiene: This requires that the clinician and patient review a set of instructions which are geared toward helping the patient maintain good sleep habits such as keeping an environment and routine conducive to sleep, maintaining a regular bed and wake time, and avoiding tobacco, alcohol, large meals and vigorous exercise for several hours prior to bed. It should be noted that sleep hygiene instructions are not helpful when provided as a monotherapy.^[50,69] Simply providing patients with a “handout” is likely to lead to noncompliance, a loss of confidence in the provider, and a sense that there may be nothing other than these ‘sleep tips’ to help with insomnia.

Cognitive therapy: Several forms of cognitive therapy for insomnia have been developed and often overlap. Some have a more didactic focus^[50,70], others use paradoxical intention, cognitive restructuring and focus on safety behaviours and attentional biases.^[50]

While the approaches differ in procedure, all are based on the observation that patients with insomnia have negative thoughts and beliefs about their condition and its consequences. Helping patients to challenge the veracity and usefulness of these beliefs is the basis of cognitive therapy and is thought to decrease the anxiety and arousal associated with insomnia.

Relaxation training: A variety of relaxation techniques are available and any of these may be used as part of the CBT-I package. These include progressive muscle relaxation,

diaphragmatic breathing, biofeedback, and more formal meditative techniques. The optimal relaxation method for insomnia may be the technique which is the most acceptable to and/or easiest to learn for the patient. Some techniques may be contraindicated by medical conditions (*e.g.* progressive muscle relaxation might not be an ideal choice for patients with certain neuromuscular disorders) or psychiatric disorders (techniques states are often difficult to tolerate by patients with untreated PTSD as these can precipitate re-experiencing symptoms).^[50]

Phototherapy: Bright light has antidepressant and sleep promoting effects and may be useful for patients who have pronounced shifts in their circadian rhythms. If the patient's insomnia has a phase delay component (*i.e.*, the patient prefers to go to bed late and wake up late), waking early by alarm and exposure to morning bright light is indicated. If the patient's insomnia has a phase advance component (*i.e.* the patient prefers to go to bed early and wakes up early), exposure to evening bright light is indicated. There are unwanted side effects of phototherapy including insomnia, hypomania, agitation, visual blurring, eye strain and headaches. Patients with or at risk for eye-related problems, such as patients with diabetes, should consult an eye care specialist prior to initiating light therapy. Bright light can also trigger mania in patients not previously diagnosed with bipolar mood disorder and is contraindicated in anyone known to have a bipolar disorder.^[50]

Standard delivery of CBT-I and recent alternatives

CBT-I is typically structured to allow for weekly sessions over 6-8 wk. Detailed treatment manuals exist for this duration of treatment^[50,71,72] and much of the efficacy data are based on studies of this length. A 6-8 session structure allows the patient and clinician to monitor progress, maintain compliance, and arrive at treatment end with what is usually an acceptable level of total sleep time.

In the clinical setting, the number of sessions can be altered based on treatment progress, the patient's ability to self-administer (and monitor) the interventions. There is preliminary evidence that brief behavioural therapy for insomnia delivered in 3-4 sessions has good efficacy.^[50,73]

CBT-I is indicated for chronic insomnia and in acute insomnia where pharmacotherapy is contraindicated. It can be employed with both primary insomnia and insomnia co-morbid with some medical or psychiatric condition.^[50,74]

Prescription Drugs Used Without FDA Approval for Insomnia

Antidepressants: Over the past 20 years, there has been a significant change in the use of prescription medications to treat chronic insomnia, with a decrease in the use of benzodiazepine receptor agonists and a substantial increase in the use of antidepressants. Based on recent surveys, the antidepressant trazodone is now the most commonly prescribed medication for the treatment of insomnia in the United States. In short-term use, trazodone is sedating and improves several sleep parameters. These initial effects are known to last for up to 2 weeks. Importantly, there are no studies of long-term use of trazodone for treatment of chronic insomnia. Another antidepressant, doxepin, has been found to have beneficial effects on sleep for up to 4 weeks for individuals with insomnia. Data on other antidepressants (e.g., amitriptyline and mirtazepine) in individuals with chronic insomnia are lacking. All antidepressants have potentially significant adverse effects, raising concerns about the risk–benefit ratio. There is a need to establish dose-response relationships for all of these agents and communicate them to prescribers.

Other Prescription Medications: A number of other sedating medications have been used in the treatment of insomnia. These include barbiturates (e.g., phenobarbital) and antipsychotics (e.g. quetiapine and olanzapine). Studies demonstrating the usefulness of these medications for either short- or long-term management of insomnia are lacking. Furthermore, all of these agents have significant risks. Thus, their use in the treatment of chronic insomnia cannot be recommended.^[66]

Nonprescription Medications (Over-the-Counter)

Over-the-counter sleep aids are becoming popular as an alternative to prescription hypnotics. Surveys of young adults indicate approximately 10 percent used non-prescription medications in the past year to improve sleep.^[9] Patients report self-medicating with herbs, hormones, and amino acids in an effort to improve sleep and avoid the unacceptable side-effects of prescription medications.^[2]

Antihistamines (H1 receptor antagonists such as diphenhydramine)

Antihistamines are the most commonly used OTC treatments for chronic insomnia, but there is no systematic evidence for efficacy and there are significant concerns about risks of these medications. Adverse effects include residual daytime sedation, diminished cognitive function, and delirium, the latter being of particular concern in the elderly. Other adverse

effects include dry mouth, blurred vision, urinary retention, constipation, and risk of increased intraocular pressure in individuals with narrow angle glaucoma.^[66]

Alcohol

Many insomniacs take an alcoholic drink before bedtime in order to reduce sleep latency. While alcohol does reduce sleep latency, drinking large amounts has been shown to result in poorer quality of sleep and awakening during the night. It is not known whether any impairment of sleep quality occurs when small amounts are used at bedtime. The risk of excess alcohol consumption in persons with alcohol problems makes this an inappropriate treatment for them.^[66]

Melatonin: Melatonin is a natural hormone produced by the pineal gland that plays a role in the control of circadian rhythms. Because melatonin is not regulated by the FDA, preparations containing it vary in strength, making comparisons across studies difficult. Although melatonin appears to be effective for the treatment of circadian rhythm disorders (e.g., jet-lag), little evidence exists for efficacy in the treatment of insomnia or its appropriate dosage. In short term use, melatonin is thought to be safe, but there is no information about the safety of long-term use.^[66]

L-tryptophan: L-tryptophan is an endogenous amino acid that has been used as a hypnotic. Systematic evidence supporting its use in the treatment of insomnia is extremely limited and based on studies with small numbers of subjects. Concerns are also raised about its possible toxic effects, particularly when used in combination with certain psychiatric medications.^[66]

Medicinal Herbs

Valerian (Valeriana officinalis)

In 1996, valerian was one of the 25 best-selling herbs in the United States. The use of the rhizome and roots of *V. officinalis* as an anxiolytic and sleep aid dates back 1,000 years. The U.S. Food and Drug Administration (FDA) rates valerian as a GRAS (generally recognized as safe) herb.^[2] It is listed in the European Pharmacopea, and is widely used as a hypnotic and daytime sedative.^[2,75] Valerian contains valepotriates, valerenic acid, and unidentified aqueous constituents that contribute to the sedative properties of valerian.^[75] Valerian has been shown to have sleep inducing, anxiolytic, and tranquilizing effects in *in vivo* animal studies and clinical trials. In general, clinical studies with valerian extracts show the mild hypnotic effect of valerian decreases sleep latency and improve sleep quality.

Ginseng

Ginseng root has been used for over 2,000 years for its health-promoting properties.^[2] In recent years, it has consistently been one of the top ten selling herbs in the United States.^[2,76] Results of several studies indicate the effect of ginseng may be, at least in part, related to maintaining normal sleep and wakefulness.

Of the several species of ginseng, *Panax ginseng* (Korean or Asian ginseng), *Panax quinquefolius* (American ginseng), and *Panax vietnamensis* (Vietnamese ginseng) are reported to have sleep-modulating effects. Constituents of most ginseng species include ginsenosides, polysaccharides, peptides, polyacetylenic alcohols, and fatty acids.^[2]

Ginseng has an inhibitory effect on the CNS and may modulate neurotransmission. Rhee et al reported a *Panax ginseng* extract decreased the amount of wakefulness during a 12-hour light period and increased the amount of slow wave sleep.^[2,77] Ginseng is known as an “adaptogen,” capable of normalizing physiological disturbances. For example, Lee et al reported a *Panax ginseng* extract normalized the disturbances in sleep-waking states caused by food deprivation in rats.^[2,78]

There are few reports of severe side-effects secondary to ginseng, despite the fact that over six million people ingest it regularly in the United States.^[2,79] The most common reported side effects are nervousness and excitation, but these diminish with continued use or dosage reduction.^[2,79] On the basis of its long-term usage and the relative infrequency of reported significant side-effects, it is safe to conclude that ginseng is usually not associated with serious adverse reactions.^[2,80] The recommended daily dosage is 1-2 gm of the crude root, or 200-600 mg of extracts.^[2,81] As the possibility of hormone-like or hormone inducing effects cannot be ruled out, some authors suggest limiting treatment to three months.^[2,81]

Kava Kava (Piper methysticum)

Kava kava is a large shrub cultivated in the Pacific islands. Therapeutically, the rhizome of this herb is used to treat anxiety, stress, and restlessness,^[2,82] often the underlying causes of insomnia. The CNS activity of kava kava is due to a group of resinous compounds known as kava lactones or kava pyrones.^[2,83] Sedative, anticonvulsive, antispasmodic, and central muscular relaxant effects are attributed to kava.^[2,84] Studies in animals show kava kava extracts and kava lactones induce sleep and muscle relaxation.^[2,83] While the underlying mechanism is not entirely clear, it is possible that kava kava acts on GABA and

benzodiazepine binding sites in the brain.^[2,85] Several relatively short-term clinical studies provide favorable evidence that kava kava is effective in treating anxiety and insomnia.^[2,86] As a sleep-aid, 180-210 mg of kava lactones daily are recommended.^[2,83] It is important to note that ethanol and other CNS depressants can potentiate the effects of kava.^[2,82]

Passion flower (Passiflora incarnata)

The herb consists of the dried flowering and fruiting top of a perennial climbing vine (family Passifloraceae). While studies proving its effectiveness are lacking, it is usually used for insomnia.^{2,87} Active components of passion flower may be harmala-type indole alkaloids, maltol and ethyl-maltol, and flavonoids.^[2,82] When administered intraperitoneally to rats, passion flower extract significantly prolonged sleeping time.^[2] The principal flavonoid, chrysin, was demonstrated to have benzodiazepine receptor activity.^[2,84]

The usual daily dose is 4-8 g taken as a tea.^[2,83] Since harmala compounds are uterine stimulants, passion flower extract is not recommended for pregnant women. Side-effects have not been reported.

Hops (Humulus lupulus)

The dried strobile of *Humulus lupulus* is a popular sleep aid. Hops has been used for centuries in the treatment of intestinal ailments, with more recent use as a sedative-hypnotic. Active ingredients in hops include a volatile oil, valerianic acid, estrogenic substances, tannins, and flavonoids.^[2,82] The sedative effects of hops have been demonstrated to induce sleep. The use of hops for insomnia as an infusion in tea was reported to have a calming effect within 20-40 minutes of ingestion.^[2] A recommended dose is 0.5 g of the dried herb, or its equivalent in extract-based products, taken one to several times daily.^[2,81] Side-effects are uncommon, and large doses have been ingested safely. It is not recommended for pregnant women or women with estrogen-dependent breast cancer.^[2]

Management of Bekhwābī (Insomnia) in Unani System of Medicine

In Unani System of Medicine, ancient Unani physicians have described a well organized line of treatment in the management of diseases. According to them the fundamental principle in the treatment of diseases is correction of sue *Mizāj* and to restore the balance of humors in the body. The overall management of *Bekhwābī* can be elaborated under the following headings as prescribed by Unani physicians.^[9,10,46,88,89,90,43,52,7,91,12]

- *Izalaē Sabab* (removal of cause)

- *Taadeel e Mizāj* (correction of *Yubūsāt e dimagh*)

Izala e Sabab

According to classical Unani literature, first and foremost thing in the management of *Bekhwābī* is the removal of predisposing, precipitating, perpetuating factors of the disease such as excessive physical exertion, alcoholism, smoking, intense light, noise etc.

For this purpose, following measures should be adopted

- Maintenance of adequate sleeping atmosphere^[46]
- The room should be airy dark and fragrant^[46]
- Correction of liver and spleen disorder^[11]
- Avoiding of –
 - ✖ Consumption of alcohol, tea, coffee, smoking etc especially at bed time¹³,
 - ✖ Heavy and strenuous work^[46]
 - ✖ Prolong stay in hot climate^[46,90]
 - ✖ Excessive mental work^[90]
 - ✖ Flatulent and hot substances^[11,90]
 - ✖ All those items that are *Muallid e Safra, Sawdā and Balgham e Shor*^[10,46]
 - ✖ Looking towards bright light^[7,46].

Correction of *Yubūsāt e dimagh* through

- *Ilaj Bil Ghiza* (Dietotherapy)
- *Ilaj bit Tadbeer* (Regimental therapy)
- *Ilaj bil Dawa* (Pharmacotherapy)

Yubūsāt e Dimagh is considered as the basic cause of *Bekhwābī* which results due to *Sue MizāJ Yabis Saada, Sue MizāJ Haar Yabis Saada, Sue MizāJ Haar Yabis Safrawi, Sue MizāJ Yabis SawdāWi*.^[7,9,10,43,46,52,90,91]

In *Sue MizāJ Yabis*, there is excessive *Ḥarārat* and *Yubūsāt* in the body especially in the brain, so to modulate the excessive *Ḥarārat wa Yubūsāt e Dimagh*, certain *tadabeer* are applied to bring back the *Burudat wa Ruṭūbāt*. Apart from *Tadabeer*, drug possessing contrary effect on *Ḥarārat wa Yubūsāt* such as *Musakkinat e Ḥarārat wa Murattibat* are also used.

Generally, drug possessing *Murattib wa Mubarrid* properties are topically used in the form of *Roghaniyat*, and *Zimadaat, Nutulaat* over the scalp, temporal region, palm and soles. Some

oils are also instilled into nose and ears to produce *Ruṭūbāt* which in turn neutralizes the effect of *Yubūsat* (responsible for *Bekhwābī*).^[7,10,11,43,46,89,90]

In *Sue MizāJ Maddi* (*Safrawi, Sawdāwi*), restoration and normalization of humors can be done through *Tanqiya* (*Nuzj wa Istifrāgh*) followed *Tadeel Mizāj* with their respective drugs. *Tadeel Mizāj* helps in restoration and normalization of physiological functions after eliminating the *Akhlat e Raddiya* responsible for the disease of the brain. in this phase of the treatment the altered temperament is brought back to normal along with *Muqawwiyyat e Dimagh* drugs by using either alone or with *Tadabeer*.^[7,10,46,88]

Ilaj bil Ghiza

Every *Mizāj* has its favourable food, which is very proximal to its own, similarly contrary diet/food is harmful for *Mizāj*. Unani physicians prescribed *Murattib* and *Baarid* (emollient and cold) diets in the management of *Bekhwābī*. *Yubūsat* alone or/and *Ḥarārat* along with *Yubūsat* are commonly held responsible for *Bekhwābī*. Therefore following diets usually advised for insomniacs.^[7,9,12,43,46,89,91]

- ✓ Lamb meat, pumpkin, spinach with *Sheera Khashkhash* (syrup of poppy seed) and *Sheera Kahu*^[46]
- ✓ Goat milk and *pheerni of mash* (black gram)^[46]
- ✓ Light and easily digestible foods such as khichdi, yakhni, saagu daana, hareerah.^[90]
- ✓ Khas (lettuce), khashkhash, meat of birds and lamb are the diets having moderate temperament and produces good chyme.^[91]
- ✓ Cold diets such as pulse of moong, jau muqashshar, green leafy vegetables like spinach, bathua, lettuce, neelofer, bottle guard, khurfa, sadabahar, juice of cucumber and pumpkin effectively remove *Ḥarārat* and *Yubūsat*^[46]
- ✓ Recipe of kahu leaves^[43]
- ✓ Spiced lettuce curry^[7]
- ✓ Azam khan advised maa ush shaeer (barley water) prepared with kaddu (bottle guard), goat or sheep meat added with emollient vegetables like kahu, khurfa.^[46]
- ✓ Soya recipe (dill) is very useful for inducing sleep.^[46]

Ilaj bit Tadbeer

According to Ajmal Khan, *Tarteeb e Dimagh* (moisturing of brain) by *Nutul, Saoot, Tadheen*, and *Hamman* is very effective in various types of *Bekhwābī*.^[90]

Following regimes help in removing heat and dryness from the brain and body and thereby induce sleep

Tadheen (Annonation): Applying oil over the part of the body is termed as *Tadheen*. Anonation of *roghan e kaddu*, *khashkhash*, *roghan e laboob sabaa*, *roghan e kahu* over the scalp recommended for removing *Bekhwābī*.^[8,46]

Hammam: *Moatadil hammam* is useful in *Bekhwābī*,^[7] particularly after digestion.^[46] *Razi* recommends sweet and luke warm water for insomniacs.^[91] *Murattib hammam* is also very effective for removal of dryness of brain.^[46]

Nutool (irrigation): A watery preparation like decoction, infusion, oil or solution, either hot or cold in state is poured from particular height over the affected part of the body to cure disease called *Nutool*. *Nutoolat e Murattiba* prepared with banafsha, neelofer, gul e surkh, tukhm e kahu, kishneez sabz, post (bark), aabe shibbat sabz (anethum sowa) and tukhm e khashkhash and shaer are very effective. Above mentioned drugs including tukhm e khatmi and khubazi can also be used in nutool.^[7,46]

Su'oot: oily or water preparations of drugs dropped in nose is known as *Su'oot*. *Roghaniyat* of gul, kaddu, badam, neelofer, banafsha either single or in combination is used for inducing sleep.^[46]

Tila (liniments): Diluted oily or watery preparation used topically on a particular part of the body is called *Tila*. *Qurs e Musallas* with aab e kishneez sabz over forehead, kaahu, yabrooj (belladonna), bazrulbanj (henbane), afyoon (opium) each in equal quantity boiled along with khashkhash and apply as tila on forehead. Tila of *Qurs e Anzaroot* is highly effective method of *Tabreed e Dimagh*.^[46]

Zimad (paste): It is a semisolid preparation applied externally. Applying paste of ushna (stone flower), leaves of hemp and goat milk over soles or sandal safaid with aab e kishneez sabz or aab e koknar remove excessive heat and induce sleep.^[46]

Lakhlakha (inhalation): it is an aromatic base preparation made up of watery or solid drugs kept in a wide mouth container allow to inhale through nose called *Lakhlakha*. *Lakhalkha* of aab e barg kaahu sabz, sheera tukhm e khashkhash and roghane neelofer is beneficial in *Bekhwābī*.^[43,46]

Shamoom: the drug which is sniffed and its volatile constituents reaches to nose is called *Shamoom*. Afyoon, yabrooj, lettuce, barley flour are commonly used in *Bekhwābī* as *Shamoom*.^[52] *Qutoor/Taqteer*: pouring drop by drop watery or oily medicine into nose or ear is called *Taqteer*. Instill roghane neelofer into ear or sheera khashkhash prepared in cow's milk into nose.

Nashooq: in this drug is sniffed into nose. It may be watery preparation or in powdered form. Using oil in which shibbat is boiled, as *Nashooq*.^[52] *Dalk* (massage): *Dalk* with roghane qinab or kaddu or banafsha or baadam over soles,^[46] or roghane neelofer over legs induces sleep.^[7] Massage of head with roghane kaddu, roghane kaahu and roghane khashkhash (each in equal amount) at night induces sleep.^[92]

Riyazat (exercise): it also sometimes helpful in inducing sleep. It should be light not vigorous.⁴⁶

Ila bit Dawa (Pharmacological Therapy)

- Jauz maasal (thorn apple) in small dose induces moderate sleep^[46]
- Sharbat e khashkhash^[43, 46]
- Khameera khashkhash with sheera tukhme kaahu (remove dryness of brain and induce sleep)^[43]
- Barley water with sharbate khashkhash is very good for *Tabreed e Dimagh*^[46]
- Qurs e musallas with arq e sheer (whey)^[43]
- Roghane kaddu and roghane laboob e sabaa (externally) are effective in *Bekhwābī*^[10,11,92]
- Maajun munawwim, qurs e munawwim baarid, khameera e khashkhash, safoof e dawa e *Bekhwābī*, sharbat e banfsha, khashkhash and kaahu are also found to be effective in *Bekhwābī*.^[7,10,13,43,46,92]

Some Guidelines for better sleep which often prevent from Insomnia

- Plenty of sleep in old age and exercises such as walking and horse riding is recommended by *Ibn Sīnā* to prevent insomnia.^[30,31]
- Rise at a regular time in the morning even after bad nights. This may strengthen the circadian rhythmicity of sleep and wakefulness, and lead to a more regular time of sleep onset.
- Sleep adequately but not excessively. Excessively long times in bed may lead to

fragmented and shallow sleep.

- Take regular exercise during the day. Regular exercise encourages sound sleep, but occasional bouts of exercise do not.
- Keep a comfortably cool room. A hot room disturbs sleep, though a cold room does not help to deepen sleep.
- Do not go to bed hungry. A light bedtime snack, e.g. a warm milk drink, helps many people to sleep soundly.
- Ensure a quiet bedroom. Occasional loud noises disturb sleep even if the subject has no recollection of waking. Soundproofed windows may be helpful.
- Avoid caffeine, coffee and tea; lighten sleep, even in people who claim to be unaffected.
- Avoid too much alcohol. Alcohol helps people to fall asleep, but the ensuing sleep is fragmented.
- Do not try too hard. If sleep does not come easily get up and do something for an hour.
- Use sleeping pills only exceptionally. The occasional use of hypnotics is justified to overcome an acute problem, but continued use should be avoided.^[85]

CONCLUSION

Bekhwābī (insomnia) is the most common sleep disorder that impairs the individual functioning and diminishes the quality of life, as it is associated with increased morbidity and mortality. and ultimately imposes sever burden on society. It is costly and can cause significant morbidity if not addressed appropriately. Although its exact aetiology remains an enigma, but some modifiable and non modifiable risk factors are found to be the reason for the development of the disease upto some extent. Many treatments are available in both modern and Unani system of medicine and found to be efficacious in different controlled studies, but the best treatment is prevention.

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