

# SLEEP MEDICINE AND IT'S CORRELATION TO ISLAMIC TEACHING

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## Author's Note

This is the first article in the series of papers on 'Science behind Islamic teachings and practices.' The purpose of these papers is to give readers a key insight on science and Islamic teachings and to establish any correlation between the two. These papers will also help readers to understand why Islamic teachings emphasize on certain way of living and the impact that has on human body, mind, and psyche.

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## Abstract

This article provides an overview of Sleep medicine and its correlation to the Islamic Teaching. We discuss the anatomy of Sleep, its cycles and how sleep deprivation affects human psyche. The intention is to provide the readers with key insights into human science and the correlation between Islamic teachings and the medical advice / sleep medicine.

*Keywords* – Sleep medicine, Circadian rhythm, Islamic Teaching, Human psyche, Neuroticism, Quran, Hadith

'Sleep medicine' is comparatively a new field of medicine which only started developing in the late 1950s. Until then, sleep was considered as a dormant part of our existence. However, scientists now believe that sleep is probably the most important part of our lives because it helps our brain get rid of toxins it accumulates throughout the day which is essential for its survival. A study conducted in 2013 '*Sleep drives metabolite clearance from the adult brain*' shows that sleep helps remove neurotoxic waste from the central nervous system. Several studies have also shown that our brain is extremely active during sleep, releasing chemicals and hormones that effect our body physiologically and psychologically.

## Sleep – definition, types (cycles) and anatomy

### (i) Sleep

Sleep has a profound effect on our physical and mental well-being. Certain physiological

processes are at work during sleep. For example, growth in children, digestion of food, cell repair etc., are boosted during sleep. *Brain pathways involved in learning and memory also increase*, according to the National Institutes of Health (NIH) U.S.A.

A research paper '*Sleep: not such a waste*' published in 2013 by Leonie Walberg, suggests that sleep acts as 'housekeeping' for the brain.

### (ii) Types of Sleep (Sleep cycles)

There are two main types of sleep cycles:

- a) Rapid eye movement sleep (REM sleep or REMS) - A phase of sleep, characterized by random rapid movement of the eyes under closed eyelids, accompanied by low muscle tone, shallow breathing and vivid dreams.
- b) Non-REM sleep (which has three different stages) - A comparatively light form of sleep accompanied by slowing down of the heart rate, eye muscles and breathing. The muscles also begin to relax. This generally lasts up to ten minutes.

During sleep, the brain cycles through a series of REM and non-REM sleep in a sequence. Each cycle is linked to specific activity in the brain. In a typical night, a person can easily go through all the stages of sleep several times, with longer and deeper REM cycles early in the morning.

### (iii) Anatomy of Sleep

Sleep is a complex phenomenon. Several structures and internal biological mechanisms work together to help us to sleep.

(a) Brain structures involved in the sleep cycle:

1. Hypothalamus – is located deep inside the brain and consists of clusters of thousands of cells called ‘Suprachiasmatic nucleus’ (SCN) that receive information about light exposure directly from the optic nerve (eye) signaling the internal (body) clock that it is time to be awake.
2. Brain stem – located at the base of the brain. The brain stem produces a chemical ‘GABA’ that reduces arousal activity in the hypothalamus and the brain stem thus, helping in the transition between sleep and wake. This brain stem also sends signals to relax muscles (body and limbs).
3. Thalamus – located directly in the center of the brain above the Hypothalamus, relays information from the senses to the cerebral cortex. It is active during REM sleep and sends images, sounds etc. to the Cortex that fill up our dreams.
4. Cerebral Cortex – is the covering of the brain that interprets and processes information from short- to long-term memory. It receives information from the Thalamus that helps make our dreams vivid and seem real.
5. The pineal gland - located between the two hemispheres of the brain increases production of melatonin (that helps in sleep) upon receiving signals from the SCN.
6. The basal forebrain – located near the front and bottom of the brain, also promotes sleep and wakefulness.
7. Midbrain – part of the midbrain responsible for releasing a chemical ‘adenosine’ that supports our sleep. It acts as an arousal system.

(b) Internal body mechanisms involved in the sleep cycle:

Two internal biological mechanisms – circadian rhythm and homeostasis – work together in conjugation with the brain when we are awake and sleep.

1. Circadian rhythms – also called ‘Body clock’ is controlled by the ‘Suprachiasmatic Nucleus (SCN).’ It is responsible for releasing hormones and chemicals that control and promote variety of physiological and psychological functions in our body such as body temperature, metabolism, etc. Light directly affects this rhythm.
2. Sleep-wake homeostasis - keeps track of our need for sleep. The homeostatic sleep drive keeps a check on the body by reminding it to sleep after a certain time and determines and regulates the sleep intensity.

## Sleep deprivation and how it affects Human physiology and psyche

### (i) Sleep deprivation

Sleepfoundation.org, U.S.A suggests that *sleep allows our body and mind to recharge, leaving us feeling refreshed and alert when we wake up.*

Sleep deprivation is ‘not getting enough sleep’. This could include both quality and quantity of sleep.

### (ii) How does Sleep deprivation affect Human physiology and psyche?

Insufficient sleep harmfully affects our brain and body functions. A study ‘*Effect of REM sleep deprivation on the antioxidant status in the brain of Wistar rats*’ in 2012 suggested that sleep deprivation could lead to behavioural and performance alteration in experimental rats and humans alike.

Research published in the *Proceedings of the National Academy of Sciences in 2018* suggested that losing just one night’s sleep increased the risk of Alzheimer’s disease in adults.

Another recent study published in the *Frontiers of Psychiatry in 2018* shows that extreme sleep deprivation can cause psychotic symptoms, paranoia, hallucinations and delusions. People suffering with ‘Manic depression’ may suffer episodes of mania (agitation and hyperactivity) if

their sleep is disturbed. In some types of epilepsy sleep deprivation is known to trigger seizures.

Sleeping problems may arise from changes in the sections of the brain and neurotransmitters that control sleep, or side effects from the drugs used to control symptoms of other disorders.

Sleeping problems occur in almost all people with depression, schizophrenia, and mental health disorders.

Research published in 2012 on *Big five Personality traits and positive mental health and psychopathy* shows correlation between character/personality traits and mental health and sleep disorders.

### (iii) Human Psyche and Character traits

Human psyche is the center of all emotions, thoughts and behavior in a person. The psyche controls his/her response to his/her environment. As humans our behavior, thoughts and actions, are the consequences of our psyche.

The character traits give us an insight on human psyche and identifies that individuals are susceptible to mental health disorders which are directly associated with lack of sleep. A lot of research is currently taking place to help identify risks mitigation techniques associated with sleep and mental health disorders. A focused approach at character traits might hold the key.

In psychological trait theory, the Big Five personality traits, also known as the five-factor model (FFM) and the OCEAN model, is a suggested grouping for personality traits developed from the 1980s onwards.

The five broad personality traits described by this theory are - agreeableness, conscientiousness, extraversion, openness and neuroticism.

The five-factor model helps people to understand themselves better, put names to characteristics and explore relationships between personalities and other life indicators. One of which is their susceptibility to Mental Health and Sleep disorders.

A brief description of the character traits is given below.

(a) Agreeableness (includes Compassion and Politeness)

Agreeable people are optimistic and value getting along with others. They are kind, considerate and trustworthy. They are mostly generous, trusting, helpful and freely accommodate their interests with others.

Disagreeable people place their self-interest above getting along with other people. They are mostly concerned about their own well-being and are less helpful to others. They are unfriendly, suspicious, and having very few friends.

(b) Conscientiousness (includes Industriousness and Orderliness)

Conscientious people establish order in their lives. They give importance to planning, standards and processes. They are hardworking persistent and value efficient. They are usually focused and inflexible.

People low in conscientiousness are generally flexible and show spontaneity, but can also appear as disorganized, future-oriented and unreliable.

People very high in conscientiousness will find it extremely challenging if things don't go according to their set schedule and are prone to anxiety and sleepless nights.

(c) Extraversion (includes - Enthusiasm and Assertiveness)

Extraverts have high engagement with the external world. They are enthusiastic, action-oriented, full of energy and enjoy social interaction with people.

Introverts, on the other hand, are comparatively quiet, less enthusiastic with low energy levels. They appear less involved with the outside world. They are neither shy, depressed, unfriendly or anti-social, rather reserved in social situations.

(d) Openness to Experience (This includes - Openness and Intellect)

People high in openness are creative, and intelligent. They are open and willing to try new things. They are unpredictable and risk takers because of their unconventional beliefs.

On the other hand, people low in openness are characterized as pragmatic and analytical. They seek perseverance and sometimes can be perceived as rigid and stubborn.

(e) Neuroticism (includes - Withdrawal and Volatility)

People high in Neuroticism are likely to suffer with clinical depression because of their lack of satisfaction with their achievements or life. They are generally more negative to life events than others and have a worse psychological well-being.

People low in neuroticism are less easily upset and depressed. They are generally emotionally stable and calm. They have very less persistent negative feelings and are quite tolerant of stress and failures.

Sleep disorders are quite common in people who are high in Neuroticism because of their susceptibility to Mental health issues.

### Islamic Teachings:

Sleep has been mentioned in the Quran and Ahadith.

(i) 'And it is He, Who has made the night a garment for you, and sleep a rest. And He has made the day a time of rising to life and going about (for daily livelihood).' (25:47)

(ii) And among His signs is your (ability to) sleep by night and during the day for seeking His bounties. These are signs for people who listen. (30:23)

(iii) And made you sleep for rest and made the night as a cover (to relax) and made the day (to work) for livelihood. (78: 9 -11)

(iv) Abdullah bin Amr bin Al-As (رضي الله تعالى عنه) reported that Allah's Apostle (صلى الله عليه و آله وسلم) told him, 'the most beloved prayer to Allah (عَزَّ وَجَلَّ) is that of Dawood (عليه السلام) (David). He used to sleep for half of the night and then pray for one

third of the night and again sleep for its sixth part. (Bukhari)

### Correlation between Islamic teachings and Sleep Medicine:

Seven most prescribed sleeping habits correlate with Islamic teachings, as described below.

- (i) Regular sleeping schedule
- (ii) Meditation
- (iii) Afternoon Nap
- (iv) Exercise
- (v) Quiet, dark and calm environment
- (vi) Sleeping position
- (vii) Consistency

#### (i) Regular sleeping schedule

Medical advice:

According to the National Institutes of Health USA, the '*key to a healthy us is by getting a good night sleep that can be achieved by aligning our body clock and sleeping habits*'.

Sleep experts from *Sleepfoundation.org U.S.A* in their latest article 2020 advise *that the best way to set your body clock is to set regular sleeping schedule. And the easiest way to do that is to get up at more or less the same time each day including weekends and holidays consistently. A fixed wake time helps to build a strong desire for sleep throughout wakefulness and aligns the body clock to a healthy routine and thus, maintaining a good functioning sleep schedule.*

Another study '*Relearn faster and retain longer: along with practice, sleep makes perfect*' published by the SAGE Journals suggests that consistent practice (education or motor skills) and regular sleep improves long-term retention of information.

Islamic Teaching:

The Fajr Salah (morning prayer) has been prescribed to all Muslims and made mandatory from the age of 12 years. The time allocated for this Salah is limited (until sunrise) thereby making them habituated to get up early in the morning daily. This invariably promotes and regularises a good sleeping schedule. There are references to this aspect in the Quran and Ahadith.

(i) They (pious people) used to sleep but little in the night praying at dawn for Allah's forgiveness. (51:17-18)

(ii) Bilal (رضي الله تعالى عنه) narrated that the Apostle of Allah (صلى الله عليه وآله وسلم) said, 'Do not say Tathwib (Salah is better than sleep) – for any prayer except Fajr (morning prayer). (Tirmidhi)

(iii) It was narrated by Abu Hurairah (رضي الله تعالى عنه) that the Apostle of Allah (صلى الله عليه وآله وسلم) said, 'Indeed for (the time of) Salah (there is a) beginning and an end. The beginning of the time for Fajr is when Fajr begins, and its end is when the sun rises.' (Tirmidhi)

(iv) Rafi 'bin Khadij (رضي الله تعالى عنه) reported the Apostle of Allah (صلى الله عليه وآله وسلم) as saying, Offer Fajr prayer at dawn, for it is most productive of rewards to you. (Abu Dawood)

(v) Al-Ashath (رضي الله تعالى عنه) narrated that the Prophet (صلى الله عليه وآله وسلم) used to get up for the prayer on hearing the crowing of a cock (Cockerel). (Bukhari)

It is important to note here that historically crowing of the cockerel was considered a wake-up call or an alarm for daybreak.

## (ii) Meditation:

Medical advice:

Meditation is a relaxation technique that can quiet the mind and body while enhancing inner peace.

According *Harvard Medical School* an article published in 2014 showed that Meditation may ease anxiety and mental stress. In another publication '*Effect of dynamic meditation on Mental health*' in 2015 it was shown that meditation improved Mental health.

*Dr. Herbert Benson*, Director emeritus of the Harvard-affiliated Benson-Henry Institute for Mind Body Medicine suggested that *Meditation practices influence brain functions, induce various intrinsic neural plasticity events, modulate autonomic, metabolic, endocrine, and immune functions and thus mediate global regulatory changes in various behavioural states including sleep.*

Meditating before sleep can improve the quality of sleep by establishing body and mind harmony and creating a sense of calm.

Islamic Teaching:

A study in '*Effect of Muslim prayer (Salah) on an Electroencephalography and Its Relationship with Autonomic Nervous System Activity*' in 2014 concluded that during Salah, parasympathetic activity (involuntary nervous system that serves to slow the heart rate, increase intestinal and glandular activity, and relax the sphincter muscles) increased and sympathetic activity (activity of nervous system that takes over where an immediate and effective response is required) decreased. Suggesting that regular Salah practices may help promote relaxation, minimize anxiety, and reduce cardiovascular risk.

Another study in 2016 '*Effects of Muslims praying (Salah) on EEG gamma activity*' concluded that Salah is a 'Focus Attention Meditation practice'

Islam encourages the practice of focussed meditation at regular intervals throughout the day. It is important to note here that there are five obligatory Salah (Islamic prayer) for Muslims:

- (a) Fajr – morning Salah. It is performed between the break of dawn and sunrise
- (b) Zuhr – midday Salah. It is performed at noon.
- (c) Asr – late afternoon Salah. It is performed late in the afternoon.
- (d) Maghrib – evening Salah. It is performed after sunset
- (e) Isha – night Salah. It is performed after Maghrib ends until midnight.

It was narrated by Abu Hurairah (رضي الله تعالى عنه) that the Apostle of Allah (صلى الله عليه وآله وسلم) said, 'Indeed for (the time of) Salah (there is a) beginning and an end. The beginning of the time for the Zuhr prayer is when the sun passes the zenith, and the end of its time is when the time for Asr enters. The beginning of the time for the Asr [prayer] is when its time enters, and the end of its time is when the sun yellows (turns pale). The beginning of the time of Maghrib is when the sun as set, and the end of its time is when the twilight

has vanished (i.e., the horizon is invisible because of darkness). The beginning of the time for Isha, the later one, is when the horizon has vanished, and the end of its time is when the night is at its half. The beginning of the time for Fajr is when Fajr begins, and its end is when the sun rises. (Tirmidhi).

### (iii) Afternoon Nap:

Medical Advice:

A journal published in *ScienceDirect 'Daytime naps improve procedural motor memory' in 2006* suggested that a short afternoon nap increased procedural memory considerably. Procedural memory is also called 'unconscious, long term memory' that helps execute cognitive and motor skills in individuals. Sleep experts in the study '*Wake deterioration and sleep restoration of human learning' in 2011* suggested that daytime naps can improve alertness, human learning and reduce stress.

Islamic Teaching:

A short nap in the afternoon is a deeply embedded Islamic practice. It is considered as 'Sunnah' (practices of Prophet Muhammad ﷺ). There are many references to this aspect in the Hadith literature.

(i) Anas bin Malik (رضي الله تعالى عنه) narrated that they used to offer Jumua Salah (Friday noon prayer) early and then have an afternoon nap. (Bukhari)

(ii) Sahl (رضي الله تعالى عنه) narrated that they never had an afternoon nap nor meals except after offering the Jumua prayer (Friday noon prayer) (Bukhari)

(iii) Sahl (رضي الله تعالى عنه) narrated that they used to offer Jumua prayer (Friday noon prayer) with the Prophet (صلى الله عليه وآله وسلم) and then take the afternoon nap. (Bukhari)

### (iv) Exercise

Medical advice:

Exercise is great for body and mind and can also help in getting a good night's sleep. An average of twenty minutes of active yoga can help elevate our heart rate by starting biological processes in

the brain and body that contribute to better sleep quality. The Medical Director of Johns Hopkins Centre for Sleep at Howard County General Hospital state that 'based on available studies, there is ample evidence that exercise does, in fact, help you fall asleep more quickly and improves sleep quality.'

Islamic Teaching:

The obligatory prayers in Islam are performed with specific actions - standing, bowing, sitting and prostration (sajdah). These actions during Salah exercises most of the body muscles and joints such as limbs, back and the perineum.

In a recent publication in the Internet Journal of Rheumatology and Clinical Immunology by the P.G department of Medicine, India - '*The prevalence of cervical spondylosis in Muslim community with special reference to Namaaz (Salah) in Agra (India)*' suggested that Salah could benefit improving the overall health and wellbeing of patient with cervical spondylosis.

A study '*The Islamic prayer (Salah/Namaaz) and yoga togetherness in mental health*' published in the *Indian journal of Psychiatry in 2013* suggested that 'Salah' is the *cure to mental distress and illustrates a positive outcome in individuals exhibiting pathological symptoms such as tension, anxiety, and depression*. The study also showed that during 'Sajdah' (prostration) *dissipation of the electromagnetic energy accumulated from the atmosphere takes place by the grounding effect at regular intervals resulting in a calming feeling*. In one day, a Muslim will prostrate at least thirty-four times.

Another recent pilot study done in 2019 '*The effect of Prostration (Sajdah) on the prefrontal brain activity*' showed that 'Sajdah' (prostration) greatly improved brain activity.

It is in Hadith, Imran bin Hussain (رضي الله تعالى عنه) narrated that he asked the Apostle of Allah (عَزَّ وَجَلَّ) about the Salah for a man who is sitting. He said, 'Whoever performs Salah while standing then that is more virtuous. And whoever performs Salah while sitting, then he gets half the rewards of the one standing, and whoever performs Salah while lying down, then he gets half the rewards of the one sitting.' (Tirmidhi)

Ummul Momineen Hafsa (رضى الله تعالى عنها) narrated that she did not see the Apostle of Allah (صلى الله عليه وآله وسلم) praying voluntary prayers sitting until the year before he died. (Tirmidhi)

#### (v) Quiet, dark and calm environment

Medical advice:

A dark room is essential for a good night's sleep. The absence of light signals the body that it is time to rest increasing the production of 'melatonin' that starts the sleeping process.

A quiet and calm environment helps the brain to calm down and ease into sleep. People are advised to practice pre-bedtime routines such as meditation, reading (light), bath etc to get into a calm state of mind that promotes sleep.

Stressful discussions or activities cause the brain to release 'cortisol' which increases alertness in the body. This is not conducive for sleep.

Islamic Teaching:

Prophet Muhammed (صلى الله عليه وآله وسلم) discouraged and disliked Muslims to engage in talks and discussions after 'Isha Salah' (night prayer). Muslims are encouraged to delay 'Isha Salah' (night prayer) until bedtime and sleep soon after. There are references to this aspect in many Ahadith.

(i) It was narrated that Abu Barzah Al-Aslami (رضى الله تعالى عنه) that the Apostle of Allah (صلى الله عليه وآله وسلم), used to like to delay the 'Isha', and he disliked sleeping before it, and engaging in conversation after it. (Ibn Majah)

(ii) It was narrated that 'Abdullah bin Mas'ud (رضى الله تعالى عنه) said that the Apostle of Allah (صلى الله عليه وآله وسلم) rebuked us for staying up (talking) after the 'Isha'. (Ibn Majah)

(iii) Abu Barza (رضى الله تعالى عنه) narrated that Apostle of Allah (صلى الله عليه وآله وسلم) disliked sleeping before Isha prayer and talk after it. (Bukhari)

#### (vi) Sleeping position:

Sleeping position is very important in ensuring good quality sleep. Sleeping the wrong way can

cause aggravated neck and back pain. It can also obstruct the airways to our lungs causing sleep apnoea. Of all the sleeping positions, lateral sleeping (side sleeping) is the most common. It is also considered best for people to sleep on their sides.

Medical Advice:

A recent study in rats '*The effect of body posture on brain glymphatic transport*' it has been identified that right lateral sleeping position (side-sleeping) may cause toxins to filter out of our brain more quickly.

People suffering with snoring and sleep apnoea also find it better to sleep on their sides.

In another study published in the *Journal of the American college of Cardiology 'Avoidance of the left lateral decubitus position during sleep in patients with heart failure: relationship to cardiac size and function'* it was identified that patients suffering with heart conditions find it better to sleep on the right lateral position to avoid discomfort and further damage to the heart.

Islamic Teaching:

Islam encourages people to sleep on their right side. It is 'Sunnah', the practice of Prophet Muhammed (صلى الله عليه وآله وسلم) to sleep on our right side.

(i) Al-Bara 'bin Azib (رضى الله تعالى عنه) narrated that when the Apostle of Allah (صلى الله عليه وآله وسلم) went to bed, he used to sleep on his right side. (Bukhari)

(ii) Al-Bara 'bin Azib (رضى الله تعالى عنه) narrated that the Apostle of Allah (صلى الله عليه وآله وسلم) said to him 'when you go to bed, lie down on the right side' (Muslim)

#### (vii) Consistency:

Medical advice:

Our body adjusts to a schedule remarkably soon. A research article '*Consistent-sufficient sleep predicts improvements in self-regulatory performance and psychological strain*' suggests that people who slept on specific time consistently experienced an increase in self-regulatory performance and a decrease in stress.

Consistency in sleeping patterns aligns the 'body clock' to a good sleeping regime. This helps the circadian rhythm and other physiological and psychological to function in sync.

Islamic Teaching:

Islam is one of the most consistent religions in the world. It is extremely structured and organised. The consistency to perform the obligatory Salah five times a day is only of the principles that attests to this fact. There are references to this aspect in the Quran and Ahadith.

(i) 'And establish Salah' (29:45)

(ii) 'And establish Salah and pay Zakat.' (2:43)

The above commandments in the Quran are to establish Salah. There is a difference between performing Salah and establishing Salah. The establishment of salah means to perform the prayers, 5 times a day, at their scheduled time.

(iii) Masruq narrated that he asked Ummul Momineen Aisha (رضي الله تعالى عنها) which deed was most loved by the Prophet (صلى الله عليه وآله وسلم)? She said, 'a deed done continuously.' (Bukhari)

(iv) Ummul Momineen Aisha (رضي الله تعالى عنها) narrated that the Apostle of Allah (صلى الله عليه وآله وسلم) said, 'The most beloved of deeds to Allah (عَزَّ وَجَلَّ) are those that are continuous, even if they are few' (part of Hadith) (An-Nasai)

## Conclusion

It has been scientifically proven that Islamic teaching produces positive changes in the brain function and human well-being that promotes relaxation and minimises anxiety and depression in people who regularly practice it.

The five-time obligatory prayer has multiple benefits on human body, mind and psyche. It schedules sleeping routine, practices meditation, automates exercise, encourages afternoon naps and establishes consistency that formulate a prescription for healthy sleeping habits. It is therefore established that there is a direct correlation between Islamic Teaching and Sleep medicine.

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