THE IMPACT OF SLEEP HOURS ON PEOPLE'S PRODUCTIVITY

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Abstract: *For how many hours should you sleep so that you can stay healthy? What has the Eastern mind done so that it can increase the quality of sleep and health during the day? Does it ever occur that if we are not sleeping for 8-9 hours, then our quality of sleep will be bad? The recent past has seen a ghastly increase in the number of people suffering from insomnia. The National Sleep Foundation and the World Health Organization (WHO) inform us of these figures: 35-40% of all individuals worldwide suffer from insomnia. Insomnia increases the risk of getting heart disease, high blood pressure, and diabetes by 30-50%. Sleep deprivation and abnormal sleep patterns are direct causes of insomnia. By reading numerous articles and research about the sleep of Eastern minds, it was found that their lives were interesting, and it became certain that sleep was the secret of success for them. Minds like Abu Ali Ibn Sina, Abu Rayhan Beruni, and Bukhari emphasized that one can improve the quality of sleep and make it worthwhile without sleeping for 8-9 hours. While experimenting on 10 volunteer students for five days, an expected improvement was seen compared to the quality of sleep between the first and fifth days. It is believed that, if this study is applied to everyone, it could help alleviate this widespread issue, even if only to a small extent. The given topic was chosen because sleep deprivation is a major challenge for almost every student during preparation time for university exams and continues to be an issue in their student life as well. Moreover, this problem affects many workers, students, and teachers today.*

Key words: *Insomnia, heart disease, hypertension, sleep deprivation, depression, obesity, stroke, nap*

INTRODUCTION

Sleep is one of the core biological processes with a humongous task to accomplish regarding general well-being and health. How sleep affects human productivity is enormous, and there have been a number of studies that have set a precedent for how the quality of sleep earned contributes a significant factor towards what is accomplished in a day's work. Productivity and sleep are directly interlinked in the attempt to improve the quality of work and productivity.

Sadly, most people are victims of poor-quality sleep, which also translates to low productivity during the day. It is just because one sleeps fewer hours as one is spending more time awake, engaged in other activities instead of sleeping when it is most convenient for quality sleep.

For example, people waste valuable time viewing unnecessary games or watching short videos (reels) on social media when they could be sleeping well.

A study has concluded the ideal sleeping hours as between 9:30 PM and 10:30 PM. The continuity of sleep is interrupted by reasons that can do so much harm to health and

memory: less concentration and memory – psychological processes become weaker, and studying becomes a problem.

Stress and anxiety at the mental level – High levels of cortisol make human beings depressed and anxious. Adverse impact on physical health – Increased risk of heart disease, diabetes, and weakened immunity. Endocrine imbalance – Hunger and satiety hormones get deranged, and it leads to inappropriate feeding.

Accumulated memory – The brain fails to process information optimally, and it gets overwhelmed to learn new information. Good sleeping postures at the correct time can prevent these diseases and improve the quality of life. In the current era, everybody sleeps badly, i.e., low daytime efficacy.

They are just replacing other work with sleeping at the optimal sleeping time. For example, people are wasting this precious time to a large extent watching short clips on social media or playing futile games, and thus end up losing the best sleeping hours. In a study, it has been determined that the ideal time to sleep is 9:30 PM to 10:30 PM. Secondly, the research also showed that the quality of good sleep habit is required in order to improve the quality of sleep.

Good sleep results from good sleep habits, waking up more refreshed, and having greater efficacy during the day. During a five-day trial, a sleeping routine template was made in interacting with ten subjects, where it was provided to improve the quality of sleep. Therefore, when observed, the volunteers slept better, were more active during the day, and changed from weakness and fatigue to very high levels of energy.

To look at the study time and work schedule of most individuals, not being in harmony with regular sleeping habits, they reduced the sleeping hours, and researched how sleeping quality can be maintained without reducing the sleeping hours significantly.

Throughout the research, it was learned how sleep is divided into five segments, and a study on why each segment is important. The quality of sleep was quantified through different sleep regimes: 3 hours, 4:30 hours, 6 hours, and 7:30 hours. The results showed that with 4:30 hours of sleep, one can achieve the level of productivity required.

On one side, this kind of schedule can be beneficial not only for employees but also for students who need a productive sleeping schedule and to finish their work. The importance of human life while sleeping was highlighted by Abu Ali Ibn Sina through the following lines,

"By giving rest, sleep brings stillness, The strength of the soul and senses finds relief."

Here, in this context, he used the phrase of strength of mind and senses by sleeping.

The analysis shows that one of the most asked questions to famous people concerns their sleep patterns.

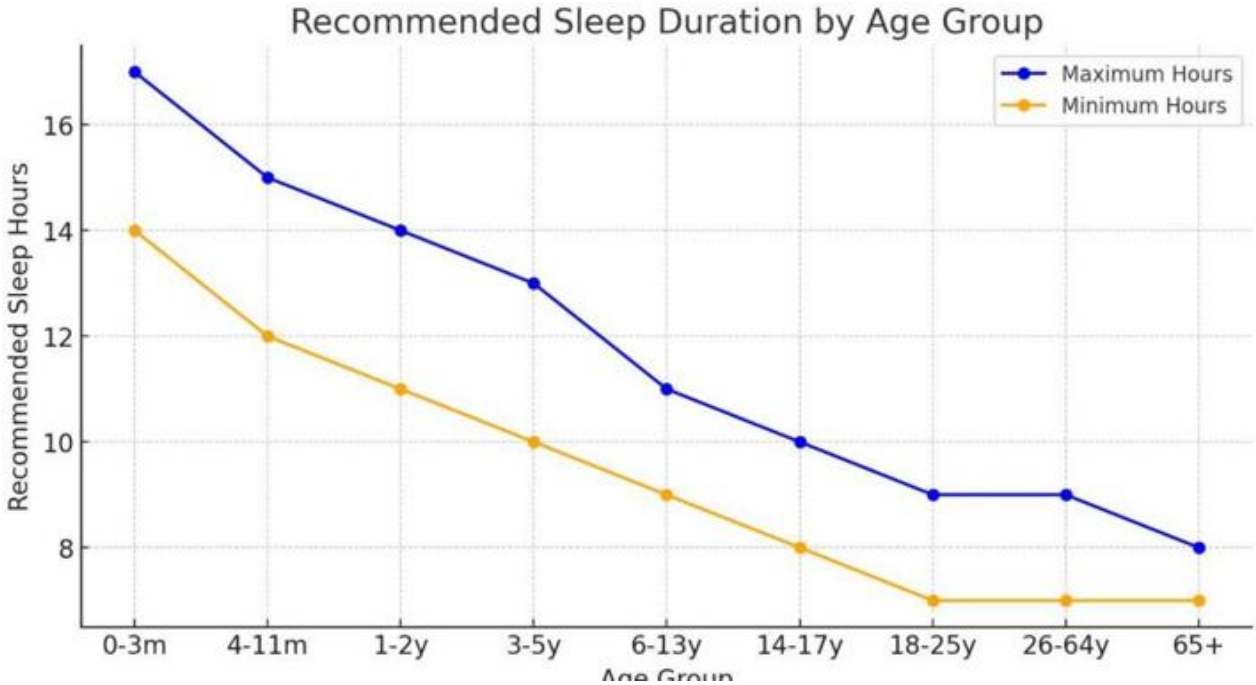
The most common query we often see is: “How many hours do you sleep?” Other common follow-up questions include, “What is the optimal number of hours to sleep?", “What is the ideal sleep duration?” A large number of people do not seem to mind repeated questioning. The main reason for this phenomenon is the belief that the only aspect that matters when it comes to sleep is the number of hours.

This is only partially correct. From the analysis, it seems that many articles and books tend to classify the length of sleep a person gets into different age groups. For instance, the National Sleep Foundation (NSF) observes that the need for sleep varies with one's age as indicated below:

Newborn (0-3 months): 14-17 Hours
Infants (4-11 Months): 12-15 Hours
Toddlers (1-2 years old): 11–14 hours
Preschoolers (3-5 Years): 10–13 hours
School-Age Children (6-13 years): 9-11 years
Teenagers (14-17 years old): 8–10 hours
Young Adults (18-25 Years): 7-9 hours
Teenagers (26-64 Years): 7-9 Hours
Elder (above 65 years): 7-8 hours

But the sleep quality is just as vital as the sleep quantity. All the sleep cycles, deep sleeping, and REM sleeping, all play their role in how a person feels refreshed.

Professionals such as Dr. Matthew Walker have emphasized the use of consistent sleeping hours, no blue light in the evening, and a comfortable sleeping environment for good sleep quality.



The given line graph is a plot of sleeping time as a function of National Sleep Foundation sleep requirements by age categories. The x-axis is marked with age categories from infant (0-3 years old) through older adult (65+ years old). The y- axis is marked with sleep requirements in units of hours.

Two lines are plotted:

The recommended sleep (orange line) The highest sleep advice (blue line) Sleep Stages and Why They Matter

Sleep is divided into a cycle of alternating stages that are crucial for body and mind upkeep. The following is a more in-depth division into sleep activities as well as sleep cycles.

1. Non-REM sleep (NREM) - Stage transition to deep sleep

Non-REM sleep consists of three stages, where the body is relaxed and also rejuvenated.

Stage 1 (Light sleep, "Micro sleep" - 1-5 minutes)

This is the onset of sleep. Muscle relaxation, heart rate reduction, and reduction of breathing. Dreaming is not typical at this point. If you are woken at this time, you will be awake and alert.

Stage 2 (Light sleep - 10-25 minutes)

Body temperature drops, reduced heart rate, and slow breathing. The brain starts to process information and create short-term memories. Around 50% total time is spent in this stage.

Stage 3 (20-40 minutes, Deep sleep)

Fixes body tissue, immune system is activated. The brain releases slow waves (delta waves). This stage has to be repeated to store energy, resulting in insomnia. Waking you at this stage makes you groggy and disoriented.

2. REM (Dream Stage - Rapid Eye Movement)

Around 20-25% of total sleeping time at this stage. The brain is greatly stimulated with increased heartbeat in tandem with breathing. Most dreams occur in REM sleep. REM sleep is critical to memory, control of emotion, and fantasy. Lack of REM sleep causes forgetfulness and mood change.

How the Sleep Cycle Works

One sleep cycle lasts about 90-110 minutes. One has 4-6 sleep cycles throughout the night.

Deep sleep is normal in the early evening, while REM sleep is normal in the second half.

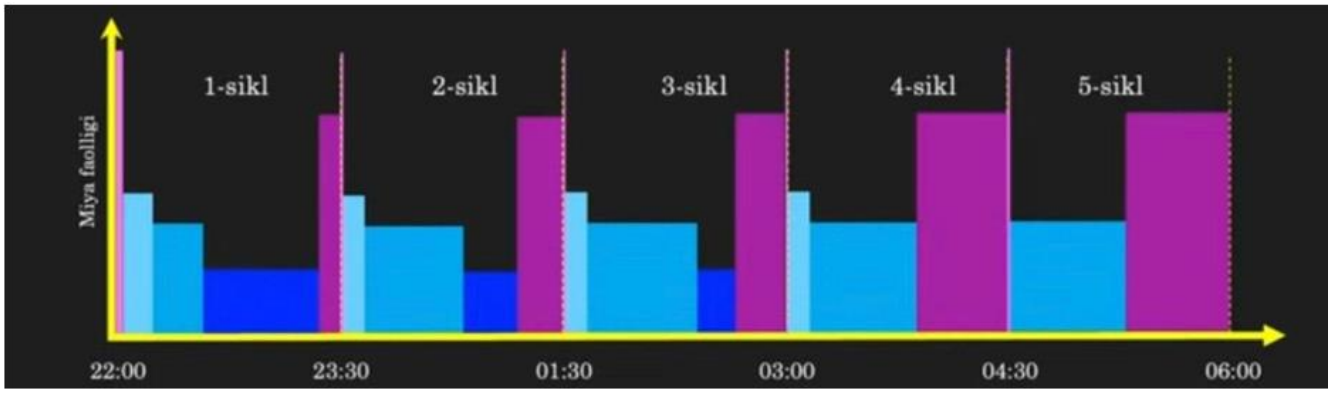
Top Quality Sleep Tips

✓ Have normal sleep cycle (same rise time and bedtime each day).

✓ Limit use of bed screen (light from the screen inhibits release of melatonin).

✓ Keep the room temperature comfortable (18-22°C ideal).

✓ Avoid a full meal at night since it is a sleep inhibitor.



The picture shows five sleep cycles that each take about 90 minutes. The picture represents sleeping tendencies and brain waves. Below is the description of every cycle:

1st Cycle (22:00 - 23:30)

 Begin: Just slept.

 Deep Sleep (blue, bottom part): This is the prevalent stage during the first cycle, where the body may heal and repair.

 REM Sleep (pink, top part): Little or none.

 Brain Activity: Low, since the body is still in deep sleep.

2nd Cycle (23:30 - 01:00)

 Deep sleep is still there, but slightly less.

 REM sleep begins to appear, but is short.

 Brain activity is high since the REM cycle begins.

 Memories and emotions are consolidated.

3rd Cycle (01:00 - 02:30)

 Deep sleep weakens, i.e., physical body restoration happens at a slow pace.

 REM sleep is more profound, and dreaming is sure to happen.

 Brain activity is more intense, with memories more consolidated and ongoing cognitive processing.

4th Cycle (02:30 - 04:00)

 Little deep sleep remaining.

 REM sleep greatly increased, with stronger and longer dreams.

 Brain activity is reaching higher levels.

 Approaching wakefulness.

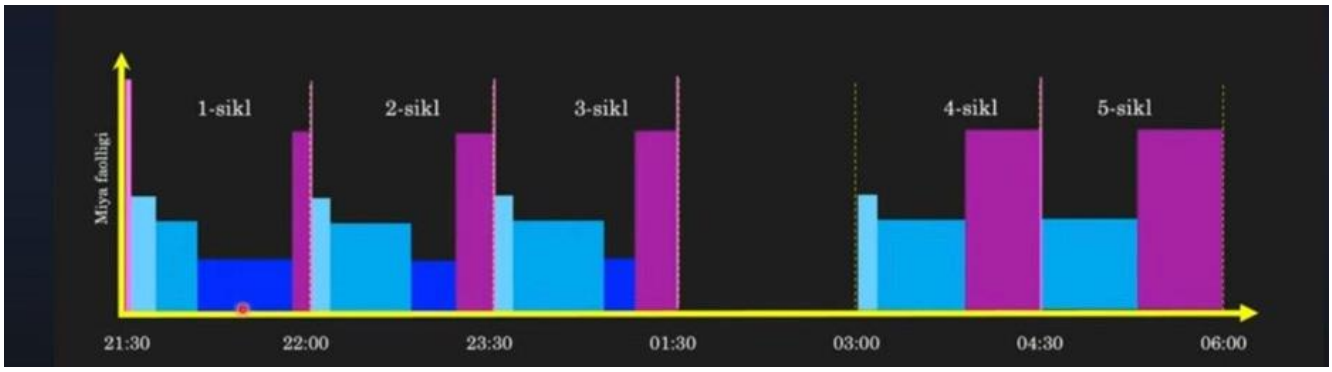
5th Cycle (04:00 - 06:00)

 Little or no deep sleep.

 REM sleep at a high level.

 Brain activity is very high and easier to wake.

Closer to waking up – waking up here makes you feel refreshed. Early cycles are dominated by deep sleep, which the body needs to recover. Later cycles are made up of more REM sleep, which the body needs to consolidate memory and process emotions. Arousal during REM sleep is linked with feeling more alert, while arousal during deep sleep is linked with feeling sleepy and sluggish.



The image depicts five sleeping cycles, each about 90 minutes. The chart is a sleep stage and brain activity graph. This is what every cycle does:

1st Cycle (22:00 - 23:30)

 Beginning: Just about falling asleep.

 Deep Sleep (blue, bottom): Controls the first cycle, when the body recovers and rests.

 REM Sleep (pink, top): Little or none.

 Brain Activity: Low, as the body is resting deeply. 2nd Cycle (23:30 - 01:00)

 Deep sleep continues, but is reduced.

 REM sleep begins to appear, but only for a short while.

 Brain activity is increased as the REM stage has begun.

 Memories and feelings are consolidated. 3rd Cycle (01:00 - 02:30)

 Deep sleep is reduced, so physical repair of the body slows.

 REM sleep is longer, so more chances of dreaming.

 Brain activity is increased, as memories are consolidated further and thinking goes on.

4th Cycle (02:30 - 04:00)

 There is only minimal deep sleep remaining.

 REM sleep is significantly increased, which increases the intensity and duration of dreams.

 Brain activity is at high levels.

 On the point of waking up.

5th Cycle (04:00 - 06:00)

 There is virtually no deep sleep.

 REM sleep reaches its peak.

Brain activity is high, so it's not hard to wake up. On the brink of waking up – waking at this stage leaves you refreshed. Earlier cycles consist mainly of deep sleep, which is essential for the recovery of the body.

Subsequent cycles consist mainly of REM sleep, which is important for memory integration and emotional regulation. Waking during REM sleep leaves you refreshed, but waking up during deep sleep leaves you sleepy and disoriented.

Yes! The following is the information on biphasic sleep, with each term followed by page numbers and references.

Biphasic Sleep

Biphasic sleep is also known as a practice that separates the sleep of a person into two segments. The practice has existed in the past and continues to exist in some cultures in current times [1,p.12]. For example, in Medieval Europe, individuals were accustomed to a biphasic sleep pattern split into two segments called "first sleep" and "second sleep" [2,p.45].

Modern Research

Current studies have been on the benefits of power naps and their effects on mental functions [3,p.77]. For instance, short sleeping periods activate mental processes like memory, concentration, and even creativity. [4,p.63].

Famous Individuals

Several famous individuals have been reported to practice biphasic sleeping. For instance, British Prime Minister Winston Churchill is reported to have slept at night for about five hours and took a two-hour afternoon nap.[5,p.102].

Short Daytime Naps

Second, the brief day napping lasting 20-30 minutes in duration has also been found to reduce drowsiness and enhance watchfulness[6,p.88]. Since daytime napping in excess is disproportionately negative, this still needs careful monitoring in moderation [7,p.110].

They would need to schedule their program and life accordingly before they go ahead with trying the biphasic sleeping. If the method works well for them, then it could end up being beneficial to their health as well as productivity.

Experiment Conducted on Students

Based on findings, a sleep schedule with 10 volunteer students was conducted, and monitored for five days.

Day 1: It was allowed to sleep as they did before during the daytime, and all the volunteers slept normally. The result showed that 90% of them experienced poor quality sleep despite sleeping for more than 7-8 hours.

Volunteers 6, 7, 8, 9, and 10 opted for short sleep, sleeping 5-7 hours in an irregular sleep pattern. As their sleep pattern was irregular, their quality of sleep was very low, and they normally had a very high level of fatigue. It can be said that their main goal in participating in this experiment was to reduce their sleep duration while improving its quality.

From the second day, a sleep schedule was created for them based on the information that was gathered during the research process. They started following this schedule, and as a result, their sleep quality improved significantly.

It is essential to point out how critical deep sleep is and write down its benefits for all the research volunteers. We tend to think that it will be better for us to work late or replace studying with sleeping, but actually, sleep is what our bodies require.

The Role of Deep Sleep in the Body

In deep sleep, the body is somatically quiet, but the brain is still active. The brain and heart, while sleeping, particularly during deep sleep, slow down their activity and allow

other organs to rest. Other than during deep sleep, stages like light sleep (Non-REM) and REM sleep, the heart, eyes, and brain become active. Despite this, the body remains paralyzed.

People would quite often ask: Why is our body paralyzed? It is because when we are sleeping, we attempt to move, but our body does not allow us to. If, for instance, you dreamed of fighting with someone and, when you are sleeping, your body has shifted, this may be a sign of a disorder in sleep. If it is occurring quite frequently, it would be advisable to consult a professional in the department.

Why Do People Move During Sleep?

One of the most intriguing questions in the research was: Why do people change positions while sleeping, rolling onto their sides and back again? To find out why, we have turned to Ibn Sina's (Avicenna's) "The Canon of Medicine", where the following explanation was discovered:

Ibn Sina believes that turning in sleep is a natural and essential process. He goes on:

"If the body remains in one position for too long during sleep, blood accumulates in one area, which can weaken that organ or muscle. That is why a person instinctively shifts from one side to another. This movement is essential for maintaining good health and improving blood circulation." (Ibn Sina, The Canon of Medicine, Book 1, Chapter 3 – Sleep and Wakefulness)

This confirms that body movement during sleep is a natural process and beneficial for the body.

The Therapeutic Power of Deep Sleep

Through deep sleep, the brain sends signals to inner organs, clearing their issues and promoting healing. In most cases, the immune system fights illnesses while sleeping. For instance, increased body heat (fever) during sleep is the body's natural response to illness.

As we can see, profound sleep naturally diagnoses problems in the body and assists in recuperation. In an effort to improve the quality of sleep, Ibn Sina outlined foods and fruits that facilitate or disturb sleep in his famous book, The Canon of Medicine.

Ibn Sina on Sleep and Its Effects on Human Health

Ibn Sina (Avicenna) was very descriptive regarding sleep and its impact on human health in his famous medical encyclopedia, "Al-Qanun fi't-Tibb" (The Canon of Medicine). What follows are his own observations on the causes of sleep, wholesome and unwholesome foods, and advice on how to enjoy quality sleep.

Ibn Sina on Sleep

“Sleep and wakefulness are tied to the changes in body temperature. Body temperature goes down during sleep so that the body can concentrate more on internal functions. Wakefulness, however, is for external functions.”

(Ibn Sina, "Al-Qanun fi't-Tibb", Book 1, Chapter 3 – Sleep and Wakefulness)

This verse emphasizes that sleep is required for the body's internal healing processes, and wakefulness is required for communication with the external world.

Foods That Induce Sleep

Ibn Sina prescribed the following foods for healthy and deep sleep:

1. Milk and Honey

"A mix of honey and milk soothes the heart and induces good sleep." (Al-Qanun fi't-Tibb, Book 1, Chapter 3)

2. Almond and Almond Oil

"Almond oil calms the nerves and promotes deeper sleeping." (Al-Qanun fi't-Tibb, Book 2, Chapter 6 – Effects of Foods)

3. Lavender and Mint Tea

"Mint and lavender infusions act on the brain and nervous system by calming it, promoting sleep."

(Al-Qanun fi't-Tibb, Book 3, Chapter 2 – Nervous Disorders)

4. Whole Wheat Bread and Natural Grains

"Natural grains and whole wheat foods energize without encumbering the body, with the added effect of enhancing sleeping quality when taken before sleep."

(Al-Qanun fi't-Tibb, Book 2, Chapter 8 – Properties of Foods)

5. Figs and Dates

"Dates and figs are a natural source of sugar, soothing the body and silencing the nervous system."

(Al-Qanun fi't-Tibb, Book 2, Chapter 5 – Fruits' Benefits)

Harmful Foods for Sleep

Ibn Sina cautioned that some foods interfere with the quality of sleep:

1. Coffee and Strong Tea

"Coffee and tea in excessive amounts activate the brain, postpone sleep, and reduce its quality."

(Al-Qanun fi't-Tibb, Book 3, Chapter 1 – Disorders of the Nervous System)

2. Fried and Fatty Foods

"Fatty and fried foods overwhelm the digestive system and make it hard to fall asleep."

(Al-Qanun fi't-Tibb, Book 2, Chapter 10 – Process of digestion)

3. Spicy and Salty Foods

Spicy and salty foods excite the body and irritate the nervous system, and therefore, the quality of sleep obtained is inferior.

(Al-Qanun fi't-Tibb, Book 2, Chapter 7 – Effects of Spices)

4. Alcoholic drinks

Alcohol interferes with sleep and compromises the body.

(Al-Qanun fi't-Tibb, Book 3, Chapter 4 – Effects of Beverages)

5. Excessive Meat Consumption

"Heavy, meaty dinners in the night tire the body and decrease the quality of sleep." (Al-Qanun fi't-Tibb, Book 2, Chapter 9 – Meat Products)

Ibn Sina's Sleep Recommendations

Ibn Sina gave practical tips for enhancing the quality of sleep:

Sleeping in a peaceful and airy place

"Fresh air and a quiet environment calm the body and enhance the quality of sleep."

(Al-Qanun fi't-Tibb, Book 1, Chapter 3 – Sleep and Wakefulness)

Preventing Overthinking and Stress at Bedtime

"Too much thinking during the night tires out the nervous system and causes sleep disturbances."

(Al-Qanun fi't-Tibb, Book 3, Chapter 2 – Nervous Disorders)

Keeping a Consistent Sleep Schedule

Going to bed and getting up at the same hour daily regulates the body rhythm and is salutary. (Al-Qanun fi't-Tibb, Book 1, Chapter 3 – Sleep and Vigilance) Ibn Sina also emphasized a good diet, quiet surroundings, and a sound sleeping routine for good health. Ibn Sina also considered sleep a healer and asserted that the body is healed and renewed during sound, deep sleep.

The detrimental effects that artificial light has on our sleep

Night, especially night light, is detrimental to human health and sleep. Below is scientific evidence and citations that prove how night light affects the quality of sleep:

1. Artificial Light and Sleep Disorders

Blue light emitted by night light exposure diminishes the level of production by the hormone that is responsible for the sleep cycle, melatonin. Lower melatonin decreases the quality and results in difficulty sleeping. "Effects of Light on Human Circadian Rhythms, Sleep, and Mood"[12]

2. Electronic Devices and Sleep Quality

Light from electronics is non-promoting for sleep. These devices, if utilized before evening, delay the timing of falling asleep and reduce subsequent phases of deep sleep. "Evening light from light-emitting eReaders disrupts sleep, circadian phase, and morning alertness"[13]

3. Health Hazards from Artificial Light

Recurrent evening light exposure by artificial light is linked with insomnia, obesity, diabetes, and cardiovascular disease. It is especially so for night shift work. "Light at night and health: The hazards of circadian disruption"? [14]

The location of Human light blocks the production of melatonin, and the quality of sleep is worse. Electronic devices delay the sleeping time and interfere with deep sleep. Health impacts are cardiovascular disease risk, obesity, and diabetes. Tip: To achieve quality sleep, do not use your screen at least one hour before your sleeping time and blackout your bedroom as much as possible.

Conclusion

Sleep is one aspect that plays a vital role in human wellbeing, emotional balance, and mental efficiency. In this work, the impact of sleeping quality on productivity was examined, the views of the early philosophers were studied, and an experiment with 10 students was conducted to test the impact of sleeping habits.

The research identifies the quality of sleep, and not the sleeping duration, to be the more prominent factor, and by maintaining a disciplined pattern, a congenial environment, and appropriate habits, one can achieve excessive sleep enhancement.

Experimental Results

The experiment was performed on 10 voluntary students for five consecutive days. They were kept under surveillance during sleep. In the initial phase, the students slept according to their normal sleeping schedule, and certain problems were recorded:

Poor sleep quality: 90% reported feeling sleepy and tired even after 7-8 hours of sleep.

Sleeping issue – The majority of the students were not able to sleep on time due to prolonged use of the phone before bedtime.

Fatigue – They experienced reduced concentration, daytime somnolence, and overall tiredness.

In stage two, the normal pattern for sleeping was established with:

Decrease the use of the screen at night (shutting off phones and computers 30-60 minutes before bed).

✓ Developing the habit of good sleep (sleeping and waking up at regular times)

✓ Forming healthy sleeping habits (relaxation, reading, and hot drinks).

✓ Awakening in harmony with natural sleep cycles (waking every 90 minutes). Five days afterward, the outcome was much more optimistic:

100% of the students reported feeling more alert and energized.

Their concentration was better, and so were their memories, allowing them to perform and learn more effectively.

Sleep and waking were uncomplicated, and the students generally woke feeling rested in the morning.

Once more, this quiz reaffirmed that the quality of sleep can be greatly enhanced by the implementation of proper habits and routines that translate into productivity and overall quality of life.

Recommendations

For better sleep quality, develop the following habits: Maintain the normal sleep schedule – Sleeping and waking at the same hour every day regulates the body's biological clock. Decrease evening screen time – Avoid the use of phones, computers, or televisions 30-60 minutes before bedtime to allow the release of the hormone melatonin.

Improve the sleeping environment - Maintain the room dark, cooler (18-22°C), and quiet to induce sleep. Eat balanced food. Do not consume heavy food, alcohol, and caffeine at night, but eat almonds, milk, and tea to bring about sound sleep.

Use short naps to maximum advantage – A 20–30-minute afternoon nap can be an energy booster without interfering with night sleep. Split sleep cycles intelligently – Sleeping for 4.5, 6, or 7.5 hours (90-minute multiples) keeps the person feeling fresh. Final Thoughts: This research confirms that the development of sleep habits can go a long way towards productivity, health, and the quality of life.

Sleep is not a pause period but an automatic process for brain function, immunity, and emotional stability. This research confirmed the reality that with quality sleep, people are more energetic, focused, and happy. Thus, sleep should be the cornerstone for achievement and bliss, not the obstacle.

Research for the future can be focused on creating customized sleep plans for professions and lives. If the suggestions of this research are adopted, human productivity and health can be greatly enhanced.

REFERENCES:

1. Kleitman, N. (1939). *Sleep and Wakefulness*. University of Chicago Press,p. 12.

2. Walker, M. (2017). *Why We Sleep: Unlocking the Power of Sleep and Dreams*. Scribner, p. 45.

3. Hayashi, M., & Kanda, H. (2018). "The Effects of Short Naps on Cognitive Performance". *Natural Science*, p. 77.

4. Alfons, T. (2016). "Polyphasic Sleep: The Key to Power Napping". *Sleep Science Journal*, p. 63.

5. National Sleep Foundation. www.sleepfoundation.org (https://www.sleepfoundation.org/), p. 102.

6. Walker, M. (2017). *Why We Sleep: Unlocking the Power of Sleep and Dreams*. Scribner, p. 88.

7. Kleitman, N. (1939). *Sleep and Wakefulness*. University of Chicago Press,

p. 110.

8. National Sleep Foundation. Stages of sleep and why they matter. Retrieved from www.sleepfoundation.org.

9. Walker, M. (2017). Why We Sleep: The new science of sleep and dreams. 10.Harvard Medical School Division of Sleep Medicine.

11 Ibn Sina, The Canon of Medicine, Book 1, Chapter 3 – Sleep and Wakefulness

12https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2717723/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2717723/

13.https://www.pnas.org/content/112/4/1232](https://www.pnas.org/content/112 /4/1232

14https://academic.oup.com/aje/article/173/8/831/174110](https://academic.oup. com/aje/article/173/8/831/174110