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**NEXT STEP LIVING LONGER BOOKS**

# How much sleep do we really need to Stay healthy !!!



Author:

(Prof.)Dr.S. Om Goel, MD/DM (USA)

From family of doctors

from AIIMS, MAMC & Delhi University

MD medicine, USA

DM/Fellowship, USA

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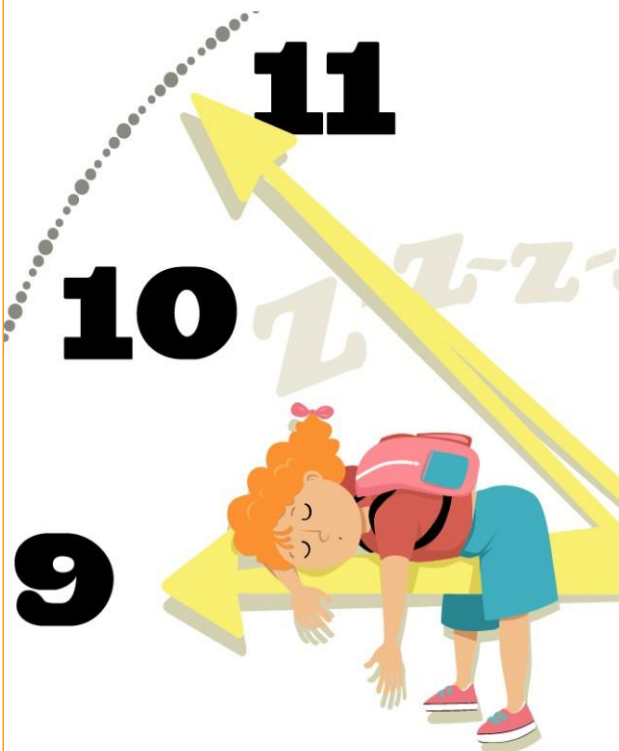
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# Chapter 1

## Sleep is a biological necessity

### Importance of Sufficient Sleep

***"The bottom line is that sleep is a biological necessity."***

We all need sleep to survive in this global environment. In this day-to-day life and a 24-hour access to work, to cell phones, TV, and travel, things could easily interfere with our sleeping pattern keeping us from being our best selves.

For our body to function well, it is very important for us to get proper sleep.

When we sleep:

- Our heart gets the much needed rest.
- Our growth of hormones which is very important produced.
- We feel fully rejuvenated
- Our brain feels active and consolidate our memories

*"While training to become doctors, it was hard for all of us. Throughout our training period, we used to work all day long, even at nights and only took rest in the afternoon. We did everything we could to catch up on our lost sleep."*

*"As a newlywed doctor couple while doing our medical training together, rather than spending time with each other during our training time in the US, we prioritized catching up on sleep."*

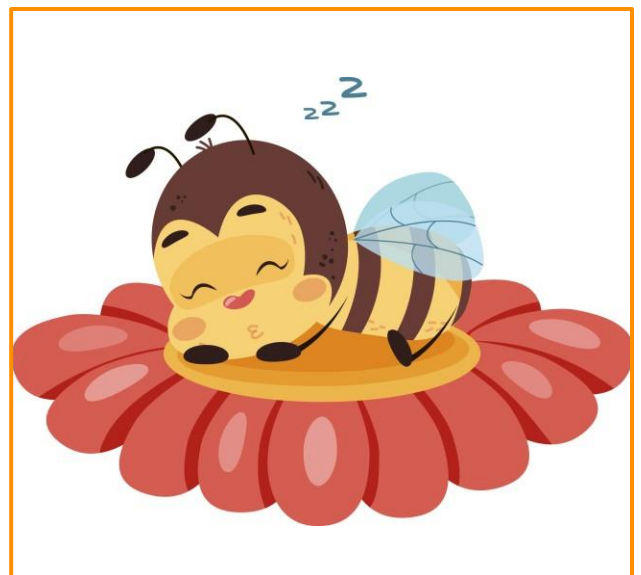


Chap1Fig1

### Sleeping Pattern

So, how does our body accommodate sleeping patterns?

There are two ways our body adapts and gets used to the sleeping patterns.

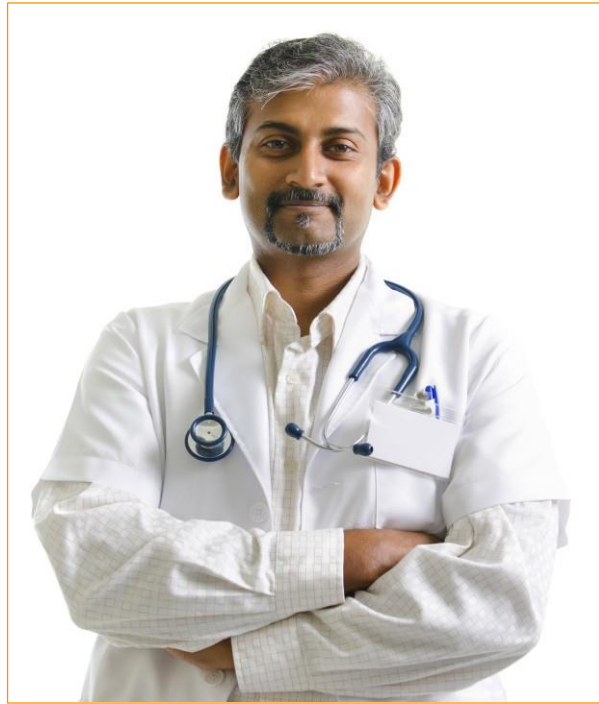


Chap1Fig2

## One is **Circadian Rhythm**.

The circadian rhythm helps us with awakening from sleep and bringing our body temperature, metabolism, and release of hormones back to normal. Our circadian rhythm also controls our timing of sleep and makes us feel sleepy almost at the same time at night. We also wake up in the morning without any alarm, which is a result of our biological clock.

It is roughly based on the length of the day which is 24 hours.



Chap1Fig3

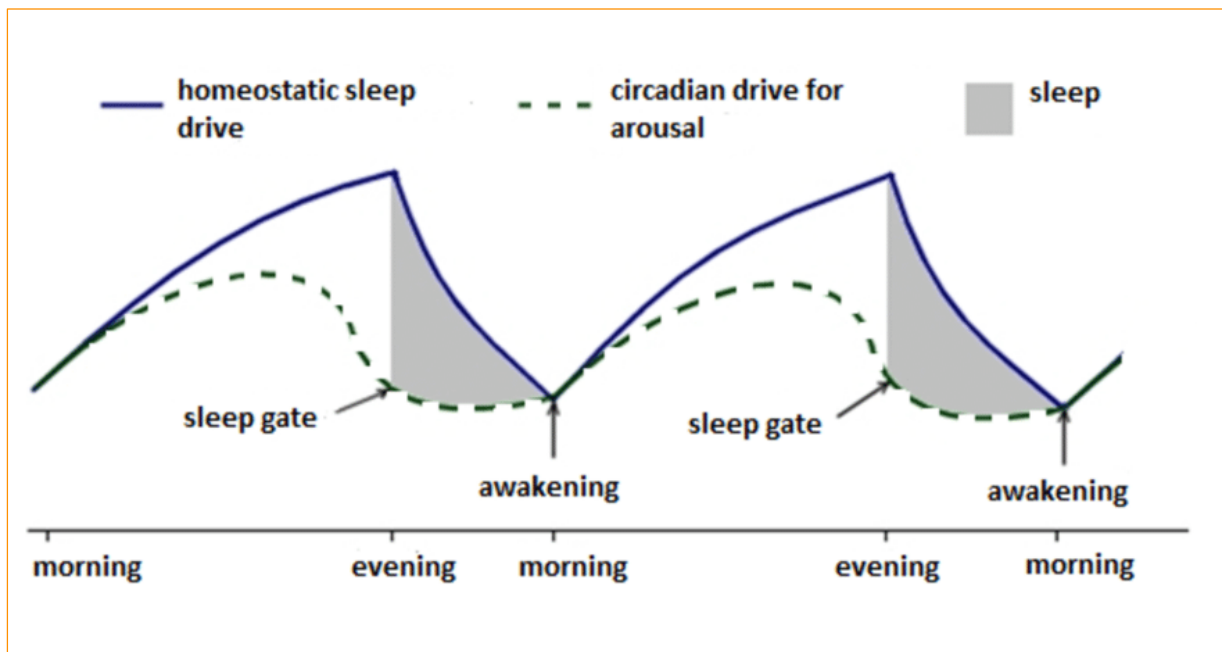
Our body develops circadian rhythm. It takes its hint from the environment, the light, and the temperature. Honestly, even if we move to a different part of the world, circadian rhythm continues to function in the same manner which could cause jet lag at times.

Our body still follows that circadian rhythm which we have become used to, regardless of what part of the world we are in.

## Second is **Homeostatic sleep drive**

There is a second mechanism in which our body maintains a sleep wakefulness cycle and tells us that we really need to sleep.

There is a sleep drive which tells the body to sleep after a certain time. This basic drive gets stronger every hour. If we stay awake for long hours, we really need to take a long and deep sleep to make sure the body gets its much reserved break.



Chap1Fig4

The homeostatic sleep drive is mostly affected by the exposure to the light. There are cells in the retina of our eyes that pass the light and tell our brain that it is day or night. According to that, there is adjustment of the sleep-wake cycle.

That is why when there is a light on we have a hard time falling asleep and if there is a light around us we have a hard time going back to sleep as well.



# Chapter 2

## How much sleep do we really need?

*"I have met several young people who are very proud of sleeping only for 4 hours, but they are not realizing how detrimental that is for their long-term health. You may not see the effect the next month, a year later or maybe even 4 years or 5 years, but, **one thing is I mean there are tons of facts to sleep well and to sleep adequately really, really must for our long healthy life span**"*



Chap2Fig1

We can tell you from all the analysis and recommendation of the top national sleep foundations that a minimum of 9 hours sleep is required from a younger age up to the age of 40.

We have to understand when a child is born, it sleeps literally all day long, almost 24 hours and its need for sleep becomes less as it grows in age.

- We recommend continuing to sleep for 9 hours till we get to almost age 60, then we can cut the duration down by an hour or two.
- Babies should sleep for 12-15 hours a day until they turn a year old.
- The same should be followed for children who are 2 and above. It is suggested that the duration should be about 10 to 13 hours.
- School age is when a child is 6-13 years old and requires at least 11 hours of sleep daily.



Chap2Fig2

- For teenagers among the age group of 14-17, it is recommended to sleep for at least 9-10 hours.
- For almost up to 30 years of age, we recommend about 9 hours of sleep.
- As we get older, we can get away with just 7-8 hours of sleep.
- Women, during the first 3 months of pregnancy, need more hours of sleep than usual.

We should understand that even when 6 hours of sleep seems like it's working well for us, it does not mean that we are getting enough sleep or the amount of sleep that the body requires

Sleep is really needed for both body and brain development, though you have to understand the medical fact that our brain development is not complete until the age of 25.

All medical research has proved it beyond doubt that our brain keeps making new connections, keeps developing, and keeps becoming better until the age of 25.

So now you can understand the value of sleeping 9 hours at least until 25 and continue to sleep for enough hours till the age of 60.

Please do not consider sleeping a waste of time as it is a biological necessity. It is just like any other need in our lives like social interaction, love, affection, etc.



Chap2Fig2

# Chapter 3

## Sleep is not exactly a simple process, we go through NREM, REM sleep cycle

### Non-Rapid Eye Movement

#### Stage-1:

As we go to bed and lie down, we start relaxing and initially, we have non-rapid eye movement in sleep stage 1 and then we start becoming drowsy. During this time, we are usually in light sleep, however, our heart, breathing, and eye movement slow down.

We start relaxing and our muscles too.

If we compare the brain waves with the time while we are awake, the activity of our brain slows down as well.

#### Stage 2

Stage 2 non-rapid eye movement sleep is very important. This is the duration that covers most of our sleep time.

Stage 2 of non-rapid eye movement sleep is just a continuation of stage 1. We further enter into a deeper sleep; our heart rate and breathing start to slow down and our muscles start relaxing even more.

As we start going to a deeper sleep, our body is less active, metabolically. Our body temperature starts dropping down and our eye movements completely stop. Our eye movement stops, that is why we call it a non-rapid eye movement sleep.

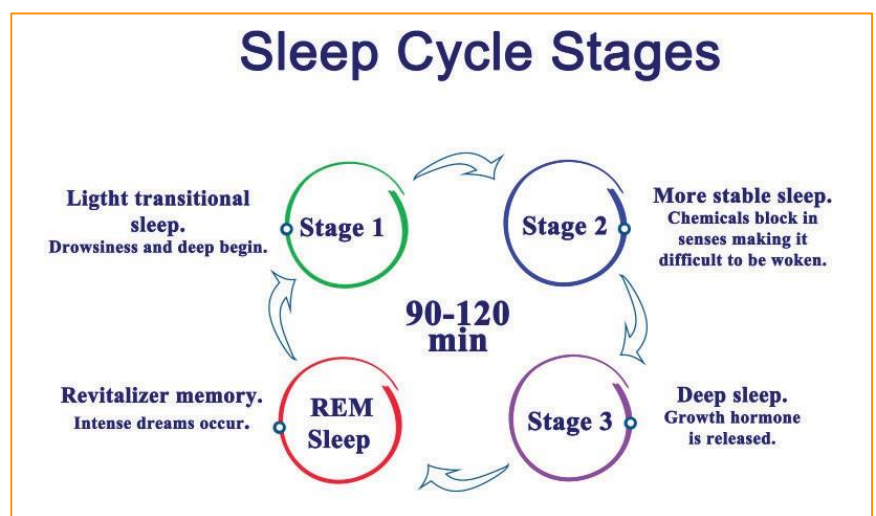
Once again, our brain wave activity as compared to wakefulness further slows down.

#### Stage 3

This is the period of really deep sleep.

We really need deep sleep to feel refreshed and recharged when we wake up in the morning.

This sleep happens for a longer period in the first half of the night.



Chap3Fig1





Chap3Fig2

In a very simple way, from stage 1 to 3, we start relaxing more, our eyes stop moving, our muscles start relaxing, our breathing starts slowing down, our heart rate starts slowing down, our body's metabolic rate goes down, our temperature drops, and we go deeper into sleep.

Stage 3 is the most deep sleep stage.

### when do we get rapid eye movement sleep?

It starts after 1.5 hours after falling asleep.

When we are sleeping, our eyes and eyelids are closed. In rapid eye movement, our eyes start moving rapidly from one side to other side and our brain waves also show activity more close to like what we see while we are awake, however, in non-rapid eye movement sleep, our breathing becomes faster. Our heart rate and the blood pressure increase almost to the level when we are fully awake.

That is a very important point that one has to understand that dreaming occurs during the rapid eye movement sleep and, believe it or not, our arm and leg muscles become temporarily paralyzed and we may be doing all kinds of things during our dreaming but this paralysis of the arms and leg muscles prevent us from acting out our dreams.

As we grow older, we spend less of our time in the rapid eye movement sleep.



Chap3Fig3

# Chapter 4

## What happens while we are sleeping?

### Dreaming

Let's talk about dreaming, why we all dream?

#### Why do we dream?

We all dream. We almost spend 2 hours dreaming, however, we may not remember what we have been dreaming about. We do believe that dreaming may help us to process our emotions.

Whatever happens during the day invades our thoughts during the sleep, especially if we have a stressful day. If our day was full of anxiety, we may have frightening dreams. Dreams occur most vividly in rapid eye movement sleep. People may be dreaming in colors or they may have a dream in black and white as well.



Chap4Fig1

As already mentioned in the non-rapid movement stage 1 & 2, our breathing really goes down to its lowest when we enter stage 3. Our muscles are really relaxed in this duration and we may have a hard time waking up a person in this stage. Once again, our brain waves compared to wakefulness become even slower.

# Chapter 5

## What does Lack of sleep do to us?

When we are unable to fall asleep, the condition is what we call insomnia.

Yes, it is a very common problem for almost all of us, where we struggle to fall and stay asleep or we wake up too early struggling to go back to sleep. As a result, we feel extremely tired upon waking up.

One has to understand that insomnia also affects our:

- Energy
- Mood
- Health
- Work performance
- Quality of life

The lack of sleep leads to:

- Irritation
- Depression
- Anxiety

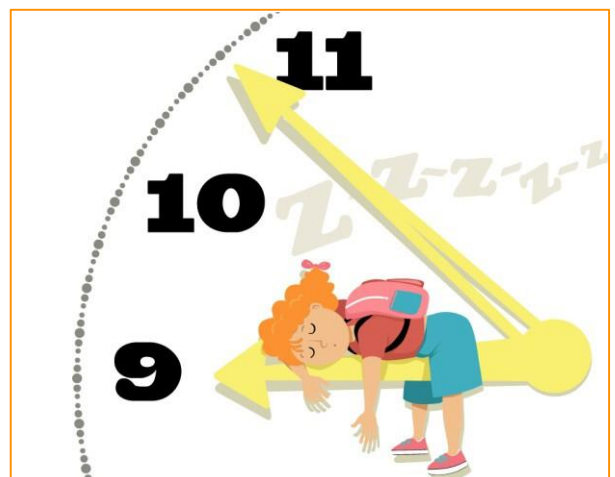
Lack of sleep can affect our lives in many more ways that you may not even realize that it is because of lack of sleep:



Chap5Fig1

### Daily Routine life

- Our attention span becomes shorter and we have a hard time focusing. There would be incidents where we may not even remember what happened
- If we do not sleep enough, our reflexes do get affected and our reaction time really slows down leaving us prone to accidents. People cannot keep their eyes focused and cannot even remember if they are driving. For example, even if they have driven a few miles, they might not remember doing that
- We are not able to focus and enjoy our work, as a result of which, our performance goes down
- Students cannot concentrate or focus on their studies



Chap5Fig2

## Health effects:

- It is a well-known medical fact that lack of sleep leads to obesity  
*If we sleep less, we end up eating more and then we gain weight*
- It leads to diabetes
- It causes high blood pressure
- It could decrease our immunity
- Worsens already existing pain

*There is no conflict about these medical facts in the medical community.*

## Behavioral changes:

- Lack of sleep also interferes with our pattern of learning and recalling the information
- A tired body and a tired mind could lead to very poor adjustment skills
- Not getting enough sleep could affect our memory
- Could lead to depression

## Memories and Sleep

It is very well known fact that consolidation of memories occurs during our sleep, and there are three phases of memories:

- Acquisition
- Consolidation
- Recall



Chap5Fig3

**Acquisition** When we are acquiring, learning or experiencing something new.

**Consolidation** could be defined as memories becoming stable in our brain.

**Recall** is when we can recall the memories in the future. Something we learn and something we try to remember in our future that happens when we are awake

### What research says about Sleep and which one is medically proven?

- There have been several researches done and all lead to one conclusion that lack of sleep is worse than being drunk
- There was a test done in which people who did not sleep well did worse than the people who were under the influence of alcohol
- This medical research should be an eye opener for all of us. It does not mean that we should drink and drive, but the important thing is that we should be well slept and obviously we should not be under the influence of alcohol to be safe on the road for our safety as well as the safety of everyone on the road.



## What affects our sleep?



Chap5Fig4

### Stress & Anxiety:

Stress and anxiety could keep us awake and make it hard for us to sleep. Issues mentioned below could be the core reason behind our anxiety.

- Work
- School
- Health
- Money
- Family



Chap5Fig5

### Emotional challenges:

**Divorce** – It is a very big emotional challenge and causes a huge stress in life that takes a long time to get over.

**Trauma** - When we experience some kind of trauma or threat in our life, it can lead to posttraumatic stress that makes it difficult for us to sleep

*"One time it was too cold and I could not fall sleep. Also there was an incident, when it was hot in the room and the air conditioner didn't function properly. It was very hot and there was no fan either."*



Chap5Fig6



*"I remember this other incident, where for about 2 weeks I had to work in Noida. I had this beautiful, brand new ground floor apartment and I was excited to live there, however, I found out that I just made the biggest mistake of my life. Soon I realized that there were no curtains on the windows allowing the light to come in. There were mosquitoes everywhere on the ground floor, and I did not have a so-called all light or what we used to chase the mosquitoes away. All night long, I was at war literally with the mosquitoes. I was trying to cover myself from top to bottom with the bed sheets. I should have known better."*

**The environment-** Sometimes we may not be able to sleep if the environment is not good.

**Couple's issues-** Another issue that has been observed is that couples mostly end up taking their issues to their bedrooms. It may lead to arguments or a fight with your spouse, we would suggest resolving all the crisis and issues before entering your bedroom and call it a night. Bedroom conversation should be pleasant, relaxing, and enjoyable.



Chap5Fig7

## **Alcohol:**

Alcohol, yes it relaxes us but the thing is that alcohol does interrupt the deeper sleep and it ends up making us awake in the middle of the night.

## **Depression**

At times, we find ourselves waking up early in the morning which sometimes could be a sign of depression.

## **Caffeine stimulators and Nicotine stimulators:**

Even Coca Cola, Pepsi and all other carbonated beverages have caffeine in them which is a CNS stimulant. While alcohol certainly relaxes you by helping with the sleep issues, it also interrupts the deeper stages of the sleep cycle that may end up keeping us awake in the middle of the night.



Chap5Fig8

## **Menopause (Women approaching her wonder years):**

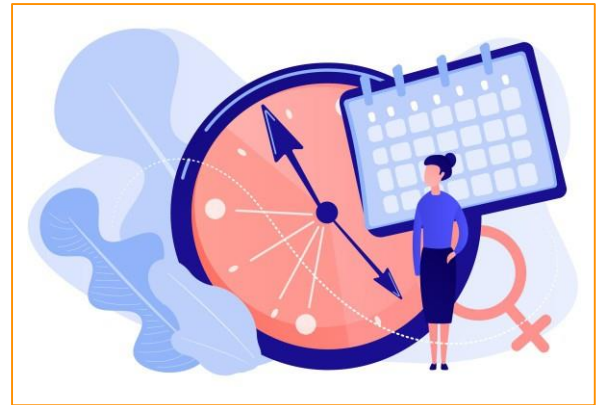
Women, towards the end of their reproductive cycle go through menopause where hormonal imbalance could lead to night sweats, hot flashes, and difficulty in sleeping.

### **Health issues:**

We may not be able to sleep well is when we are going through a health issue and we should seek professional medical guidance

- Asthma
- Depression
- Arthritis
- Cancer
- If we experience heartburn, higher amount of a hypothyroidism causing hormone in our body

"If insomnia persists for a longer time and is really affecting our life, lifestyle, and our health, we should definitely consult a doctor."



Chap5Fig9



Chap5Fig10

# Chapter 6

## Common Symptoms of lack of sleep

*"One of the families that came to India found it difficult to sleep at all because of the dogs barking all night."*

*"Once, I too experienced the same thing. I was trying to sleep one night in a hotel; however, the noise outside the hotel was so loud that I struggled hard to fall asleep."*

***"We could easily detect if we are suffering from lack of sleep"***

Some of the common symptoms of lack of sleep are:

- Feeling sleepy during the day
- Feeling tired
- Feeling irritated
- Unable to concentrate
- Cannot remember the things

### **We need to understand our sleeping pattern**

We can track our sleeping pattern by:

- Maintaining a sleep diary
- Maintaining our sleep history
- Keeping a track of how we feel during the day
- Keeping a track of the quantity of sleep we are getting
- Keeping a track of the quality of our sleep



Chap6Fig1



Chap6Fig2

# Chapter 7

## What should we doing to get the good night sleep? Good Sleeping Habits

*"Two powerful weapons in the fight against insomnia are comfortable sleep environment and the relaxing bedtime routine. Both can make a big difference in improving the quality of our sleep."*

*"My wife cannot sleep if she experiences noise around her. Even the night-light bothers her, and I have a habit of having a light on late at night. Even the munching sound could wake her up. Not only that, she likes the room cooler, while I do not enjoy that temperature. She feels hot and keeps the temperature very low. While that is comfortable for her, it doesn't suit me well. I finally seem to have finally adjusted to that. One of us had to make the adjustments and now I wear a sweater while I sleep and carry an extra blanket. I go to another room and I usually have my laptop or cell phone on. I use the headphones just to listen to a history program with a soothing voice. I listen to some audible books that really relax me and help me go to sleep."*

*"Long time ago, I used to listen to NPR programs at night as they are relaxing most of the time and helped me go to sleep. Even my children recommended to their mom that Dad is listening to NPR which means he is going to go to sleep soon."*

- We may have a very busy life but we still need to keep up with the 9 hours' sleep until the age of 30 and even after that pretty much up to the age of 60, a minimum 8 hours. After that, we can try 7 to 8 hours
- We definitely should try to do our best to follow the same routine every day. It works magically for the body
- Our body knows we have to use our sleeping room or our bedroom just for the sleep purpose. We have to do everything to make it all comfortable for our sleep. We have to keep it quiet, dark, and at perfect temperature to be comfortable
- We should only use our bedroom for the purpose of sleeping. We may also use it for a quiet reading session
- Try avoiding TV or cell phones; their bright screens stimulate our eyes and brain
- We should avoid large meals, coffee, and even alcohol
- It is always a good idea to take a hot bath before going to sleep as it is very relaxing
- We should exercise everyday but not right before going to sleep, however, 4-5 hours before bed time would work



Chap7Fig1



- If we have to take a nap, we should probably not take it for more than 30 minutes to an hour
- Finally, we would advise everybody to see a doctor in case insomnia doesn't get cured even after following these suggestions
- To fall asleep, we have to sleep at a regular (fixed) time every day
- We should avoid taking long naps during the day time
- Avoiding drinking tea or coffee just before going to sleep
- Trying not to play a very exciting video game or not be watching a very exciting action movie that could keep us awake
- We should make our environment very comfortable
- Temperature wise also, the room and the bed should be very comfortable. The temperature should not be too high or too low and if there is a requirement of a fan, it should be there
- We should always use our bed only for sleeping and not for other activities

"People have a very bad habit of working and eating in their bedroom. They have a habit of watching TV in their bedroom which should totally be avoided.



Chap7Fig2

- We may use some kind of soothing sound to relax ourselves before going to sleep. Like some people using the sound of rain to relax them. We all can and should figure out what relaxes us to use it to our advantage
- We should not have TV in the bedroom as the bright lights of the TV screen could keep us awake
- We should definitely do something about our mobile phones
- Even the computers' and laptops' bright screens can keep us awake



- We need darkness for our sleep and these lights can affect us badly
- Everybody says we should not have a heavy meal just before going to sleep. The reason is that with a full stomach, it is difficult and uncomfortable to lie down. It can lead to heartburn that can keep us awake. It takes a minimum of 2 hours for the food to digest, so ideally, we should eat food 2 or 3 hours before going to sleep. However, if we are really hungry, we can take a very light snack.
- There are few drugs which can keep us awake, for example, the Amphetamines. Sometimes, students do use these pills to stay awake whole night
- We should avoid caffeine; too much caffeine could keep us awake



Chap7Fig3

# Chapter 8

## When should we consult a doctor?



Chap8Fig1

*“Having lack of sleep often starts out innocently enough stress or trouble at home or work interferes with sleep for a few nights. As if this isn't bad enough, the habits that we form at this time like looking at the clock, lying in bed wide awake, and worrying about not getting any sleep, could worsen the situation.”*

If we are unable to sleep for a long time which continues up to about 3 months or more, then:

- We should consult a doctor.
- Get checked if we are depressed
- Getting us diagnosed if we are suffering from anxiety issues
- Pain could also sometimes be the cause of us not getting enough sleep
- We should also check if something is bothering us or if we are stressed all the time and cannot seem to get away from it. Counseling with the psychologist can really help in this

Usually, when you are unable to sleep for over a day or two, things will get back to normal soon as we go back to our routine. However, it can become a long term issue, if we are constantly unable to sleep for several nights in a week. Usually, doctors will consider the situation as chronic insomnia if it has been going over for more than 3 months.

# Chapter 9

## Aging and Sleep

After we cross the age of 60, we develop more and more health issues which make it difficult to get a restful sleep. Some common reasons are as follows: -

**Environment:** Young people actually sleep well but as they get older, they become very sensitive to the environment around them. Older people could get away with 7 hours of sleep, but they still need to sleep well.

**Arthritis:** When we grow older, we have arthritis and also develop back pain. Due to this we sometimes may feel depressed that could probably interfere with our sleep.

**Diuretics:** Another issue is that we need to go to the bathroom at night- time. When we are older, usually we are on some or the other kinds of medicines. In case we take diuretics, we should avoid taking them late in the evening or at night to avoid running to the bathroom every now and then.

**Prostate/Bladder Issue:** If we have a large prostate or some bladder issue, we may have to go to the bathroom a lot which disturbs our sleep.



Chap9Fig1

# Chapter 10

## Travelling and Jet Lag

*"This story is about jet lag. I always try to take Ambien for 3 days before I leave India for the US and the other way around. It was a nightmare for me. I need to tell you all that most of the flights always leave late at night from the US. So, one eats your dinner and goes to sleep. Believe it or not, when you wake up you eat breakfast as if it is a morning time in the US. But when you land, it is dark again in India and then again, we have to go to sleep. Even though we didn't sleep on the plane, we still feel wide awake because of the so-called morning for us. Our body tells us after a while that it is morning time"*



Chap10Fig1

Travelling to different parts of the world or keeping up with the changing shifts at work, sometimes working in the mornings and sometimes late at night, could make it difficult to get a restful sleep.

Obviously, everybody is familiar with jetlag. Between the US and India, there is a 12-hour time difference. It takes some time to adjust to that.



Chap10Fig2