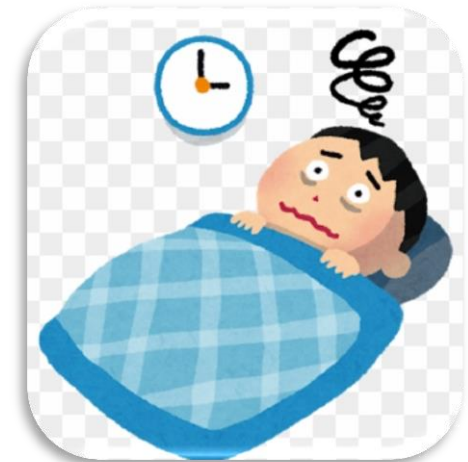




Sleep disorder and health



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Content :Sleep and health

- **History**
- **Definition**
- **Physiology**
- **The circadian rhythm**
- **Sleep disorder**
- **Epidemiology**
- **Factor affecting prevalence**
- **Sleep and health**

سُورَةُ الْفُرْقَانِ

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَهُوَ الَّذِي جَعَلَ لَكُمُ اللَّيْلَ لِبَاسًا وَالنَّوْمَ سُبَاتًا وَجَعَلَ
النَّهَارَ نُشُورًا ﴿٤٧﴾

سُورَةُ النَّازِعَاتِ

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

أَلَمْ يَرَوْا أَنَّا جَعَلْنَا اللَّيْلَ لَيْسًا كُنُوفِهِ وَالنَّهَارَ مُبْصِرًا إِنَّ
فِي ذَلِكَ لَآيَاتٍ لِقَوْمٍ يُؤْمِنُونَ ﴿٤٦﴾

سُورَةُ النَّازِعَاتِ

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

اللَّهُ يَتَوَفَّى الْأَنْفُسَ حِينَ مَوْتِهَا وَالَّتِي لَمْ تَمُتْ فِي
مَنَامِهَا فَيُمْسِكُ الَّتِي قَضَىٰ عَلَيْهَا الْمَوْتَ وَيُرْسِلُ
الْأُخْرَىٰ إِلَىٰ أَجَلٍ مُّسَمًّى إِنَّ فِي ذَلِكَ لَآيَاتٍ لِّقَوْمٍ
يَتَفَكَّرُونَ ﴿٥٣﴾

سُورَةُ الْأَعْقَابِ

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

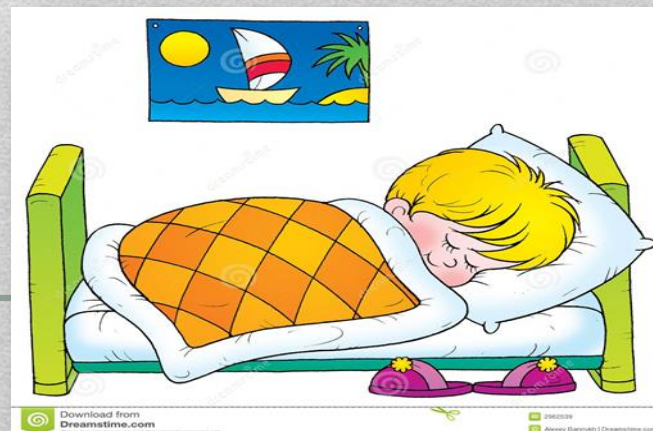
وَهُوَ الَّذِي يَتَوَفَّاكُم بِاللَّيْلِ وَيَعْلَمُ مَا جَرَحْتُم بِالنَّهَارِ ثُمَّ
يَبْعَثُكُمْ فِيهِ لِيُقْضَىٰ أَجَلٌ مُّسَمًّى ثُمَّ إِلَيْهِ مَرْجِعُكُمْ ثُمَّ
يُنَبِّئُكُمْ بِمَا كُنتُمْ تَعْمَلُونَ ﴿٥٥﴾

Sleep

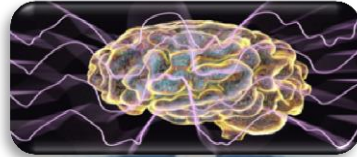
Sleep is a physiological behavior that is common in all animal species. It forms around one third of a human life.

It is not known clearly the exact functions of sleep but it seems to be essential for survival as prolonged sleep deprivation leads to severe physical impairment followed by cognitive loss and eventually death.

It is a reversible state of unconsciousness in which there are reduced metabolism and motor activity



Sleep physiology



20%

75%

REM
Sleep

NREM
sleep
Stage 1

NREM
Stage 3
and 4 SWS

NREM
sleep
Stage 2

- Rapid eye movement
- Vivid dream
- Increase brain activity
- Increase heart rate
- Increase respiratory rate
- Active inhibition of voluntary muscle

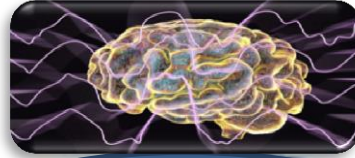
- Transition stage
- Light sleep
- Reduced brain wave activity
- Slow eye movement
- Muscle relaxation

during
REM it is
believed
dreaming
occurs

- Rapid eye movement
- Vivid dreaming
- Increase brain activity
- Increase heart rate
- Increase respiratory rate
- Active inhibition of voluntary muscles

- Decrease body temperature
- Muscle relatively tense
- Reduced heart rate
- Sleep spindles on EEG
- K complexes on EEG

Sleep physiology



20%

- Rapid eye movement
- Vivid dream
- Increase brain activity
- Increase heart rate
- Increase respiratory rate
- Active inhibition of voluntary muscle

during REM it is believed dreaming occurs

growth hormone secretion is the highest during sleep which importantly aids in neural and peripheral cellular restoration

75%

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- Light sleep
- Reduced brain wave activity
- Slow eye movement
- Muscle relaxation

- Rapid eye movement
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Sleep duration

Age



babies spend more than half of their time sleeping 16 and 18 hours each day because this is a period of substantial growths



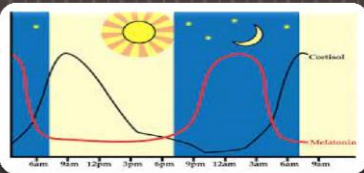
sleep allows the brain to develop that facilitates thinking and learning as well as the formation of behavior.



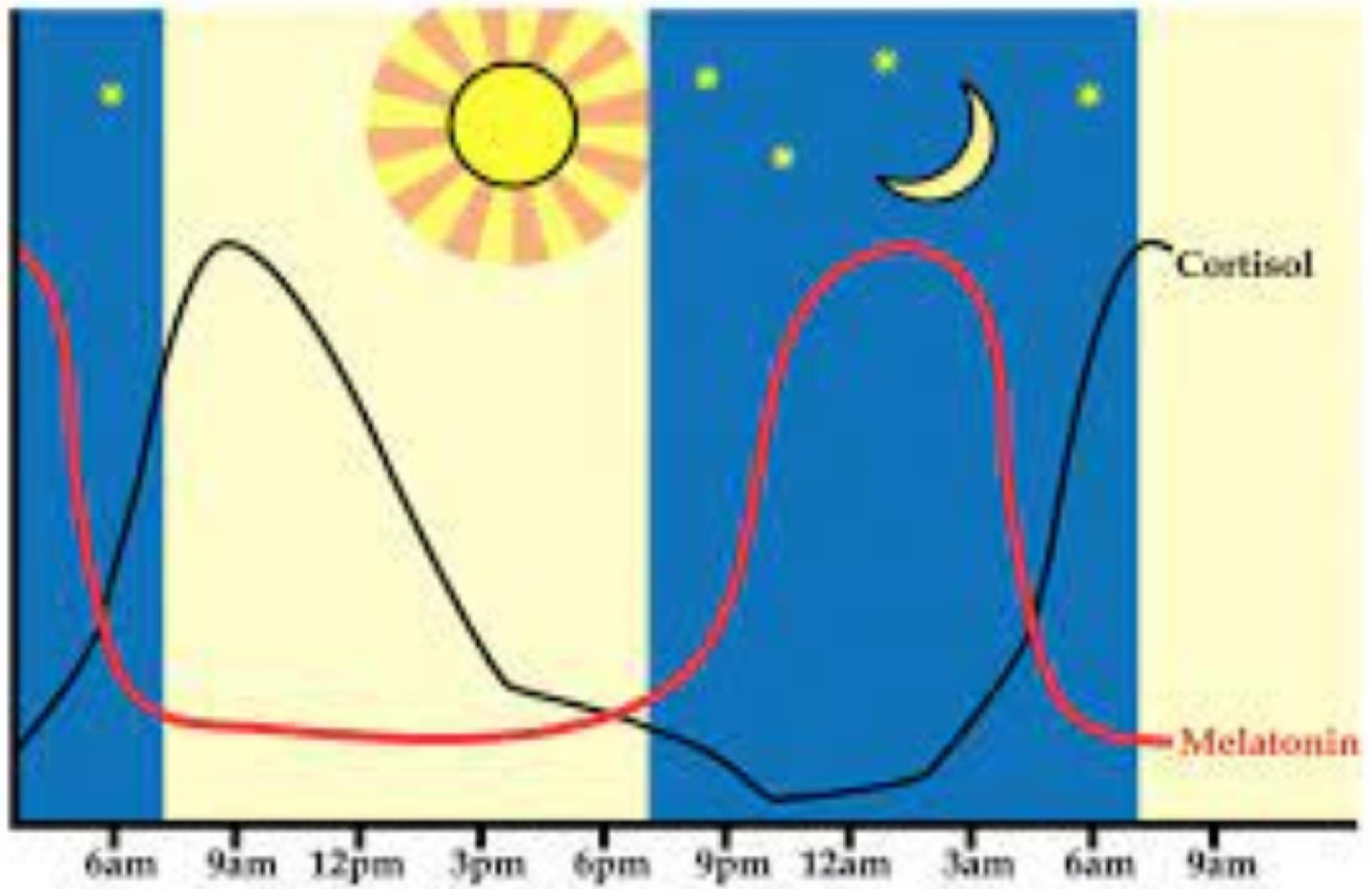
newborn sleep onset occurs through REM, not NREM. These differences in sleep and sleep stages occur as circadian rhythms have not fully been determined.



Circadian rhythms begin to develop around two to three months of age, the progression of nocturnal sleeping begins.



Three months of age is when the cycling of melatonin and cortisol in a circadian rhythm occurs and when sleep onset begins with NREM.





In school age children with age (6-12 years) should sleep for a total of 9-12 hours every day.

The National sleep foundation recommends that healthy adults of any gender get between seven and nine hours of sleep.



The circadian rhythm



For many thousands of years, the sun was our only source of light, and human behavior followed a natural day-night cycle.

Electric lighting disrupted our behavioral dependence on the day-night cycles of the sun, and facilitated alterations in our circadian sleep-wake cycles.



The circadian rhythm

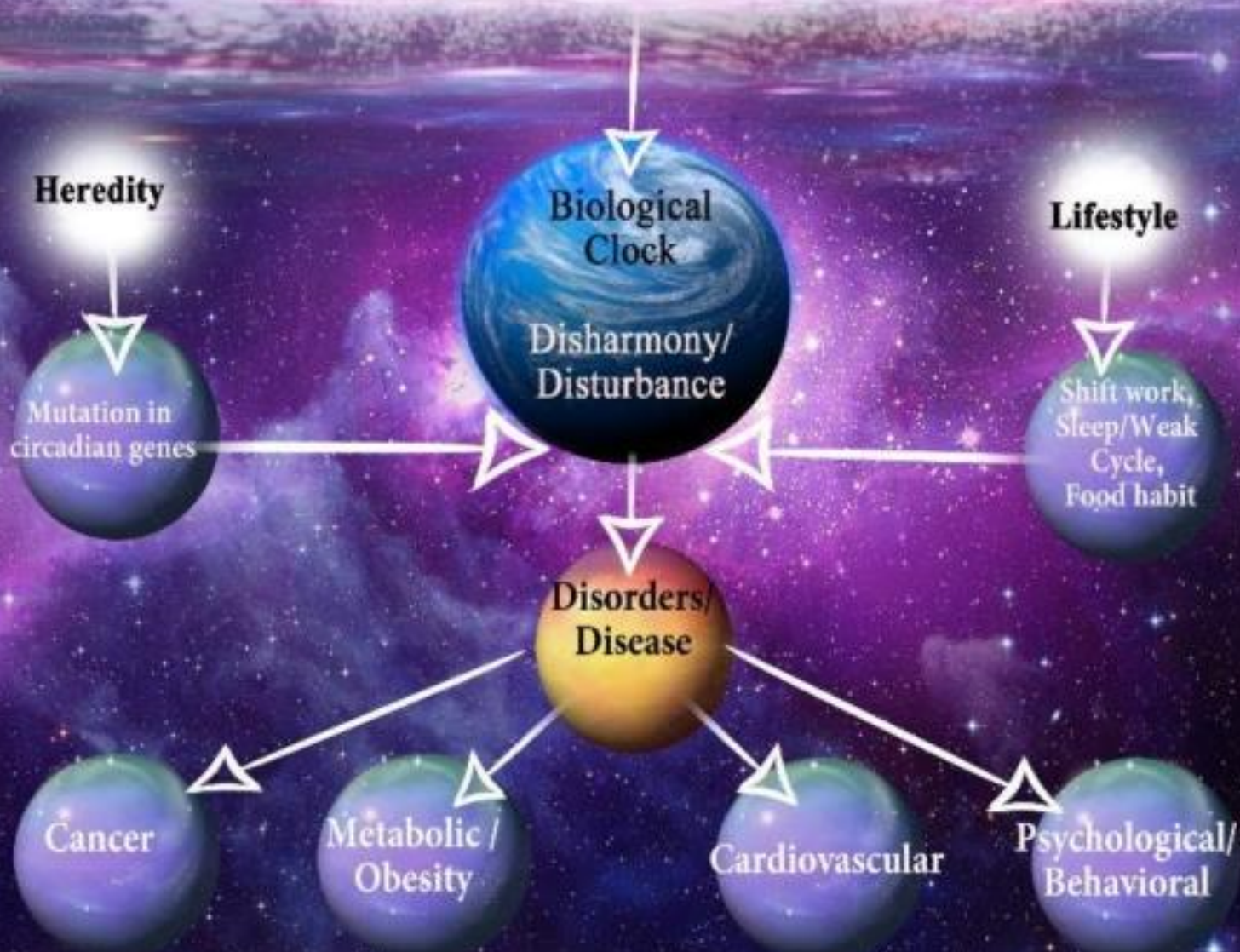
circadian rhythm is a biological process that display an endogenous oscillation of about 24 hours, It adjusted to the local environment commonly day light affected by factors related to the environmental (light, night and day duration, seasons) and lifestyles.



the central role of circadian rhythms plays in coordinating organism's life with earth's day, controlling everything from the metabolism to the sleep time.

circadian (from Latin circa, meaning "around", and dies, meaning "day") rhythm

Seasons / Magnetic Waves / Cosmos Spin/ Ecosystem / High Altitude / Light

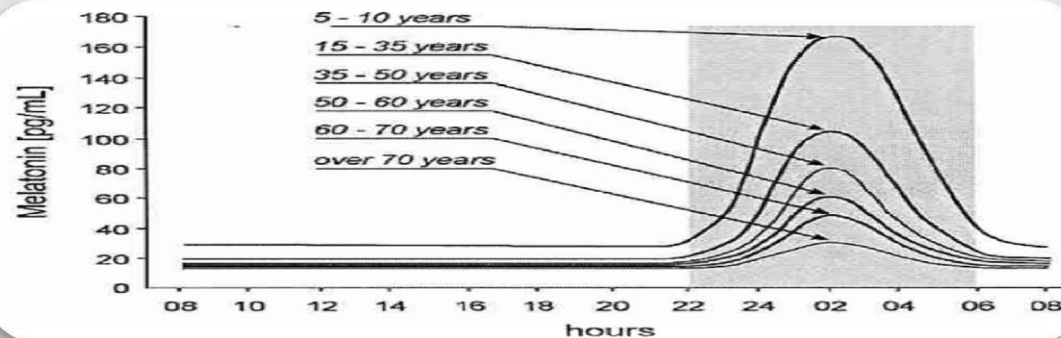


Moreover, one of the processes regulated by the circadian clock is the cell cycle. Therefore, cancerous cells which undergo abnormal cell division are due to disruption of circadian rhythms.

Recent research has begun to identify the physiologic consequences of unnatural light exposure and subsequently altered circadian rhythms.

the molecular basis of circadian rhythms established connection between disrupted circadian rhythms and clinical disease.

Use daylight as therapy to restore disrupted circadian rhythms and improve clinical outcomes



Sleep disorders

Sleep disorders are a group of conditions that affect the ability to sleep well on a regular basis.

Whether they are caused by a health problem or by too much stress it disturb normal sleep patterns.

Inadequate or non-restorative sleep can interfere with normal physical, mental, social, and emotional function.

Sleep disorders can affect overall health, safety, and quality of life .



sleep disorders

primary

secondary.

**result from
endogenous
disturbances**

**medical and psychiatric
conditions such as
depression and stroke .**

**When a person suffers from difficulty falling asleep
and/or staying asleep, it is referred to as primary
insomnia.**



Primary sleep disorders

Parasomnias

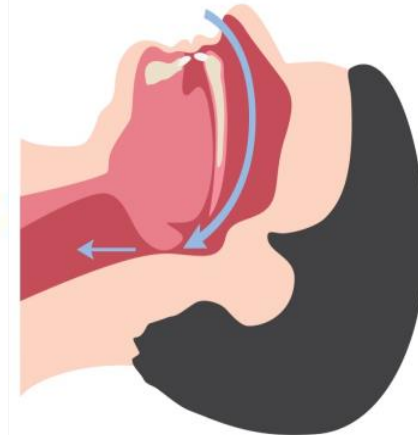
unusual experiences or behaviors during sleep

Dyssomnias

abnormalities in the amount, quality, or timing of sleep

**Sleep terror disorder, sleepwalking (occurring during stage 3 sleep)
nightmare disorder (during REM sleep)**

Primary insomnia and hypersomnia, narcolepsy, breathing-related sleep disorder (sleep apnea), circadian rhythm sleep disorder





Prevalence of sleep disorders

Dohuk,
prevalence of
sleep disorders
is about
(28.57%).

Al kufa
prevalence of
poor sleep
quality was
58.89%



Factor affecting the prevalence

Gender

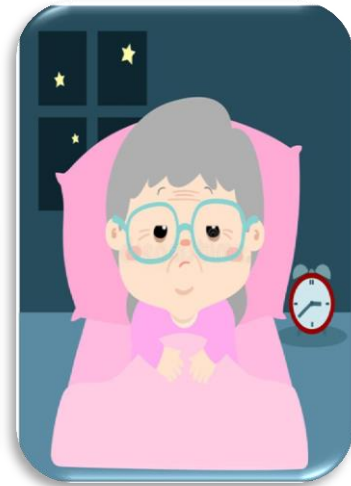
women get more total sleep each day than men when counting nightly sleep and daytime naps.
At the same time, women experience lower sleep quality

Some researchers believe that many women have increased sleep quantity as an attempt to compensate for reduced sleep quality



Age

Aging contributes progressively to lower sleep quality in men and women studies found that older men have higher rates of cardiovascular disease and chronic lung problems both of which can negatively affect sleep



Social relationships

has an effect on sleep quality, integration with social s is associated with getting an adequate amount of sleep better self-reported sleep quality, particularly for women



Parents' relationship

parents' relationship quality may impact their children's sleep. adolescents who obtained adequate amounts of sleep had higher levels of perceived closeness to their mothers, fathers, and viewed their family as more connected compared to short sleepers





Sleep and health

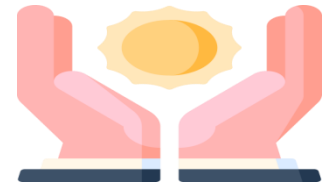


Sleep and its impact on health has been increasingly explored over the past few decades.

Sleep loss have been associated with impaired quality of life and a variety of health problems that have an association with dental diseases.

March 18, 2022
Friday

March 17, 2023
Friday



Sleep and its effect on immunity

Immunity can be divided into adaptive and innate immunity, both of which are regulated by circadian rhythms as well as by sleep

The distribution of immune cells is circadian related



Sleep and its effect on metabolic activity

Metabolism in general is associated with oxidative stress due to the release of free radicals

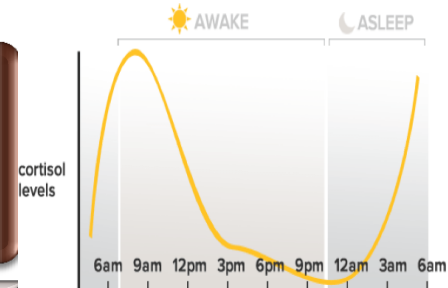
During non-REM sleep, metabolic rate and brain temperature are lowered to deal with damages that may have occurred during time of wakefulness

glucose metabolism have been demonstrated lowered in pre diabetes and diabetes in those with insufficient or disturbed sleep.



Sleep and glucose metabolism are closely related to each other.

Inadequate sleep duration together with irregular sleep (e.g. during shift work)

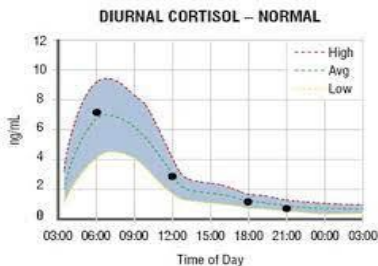


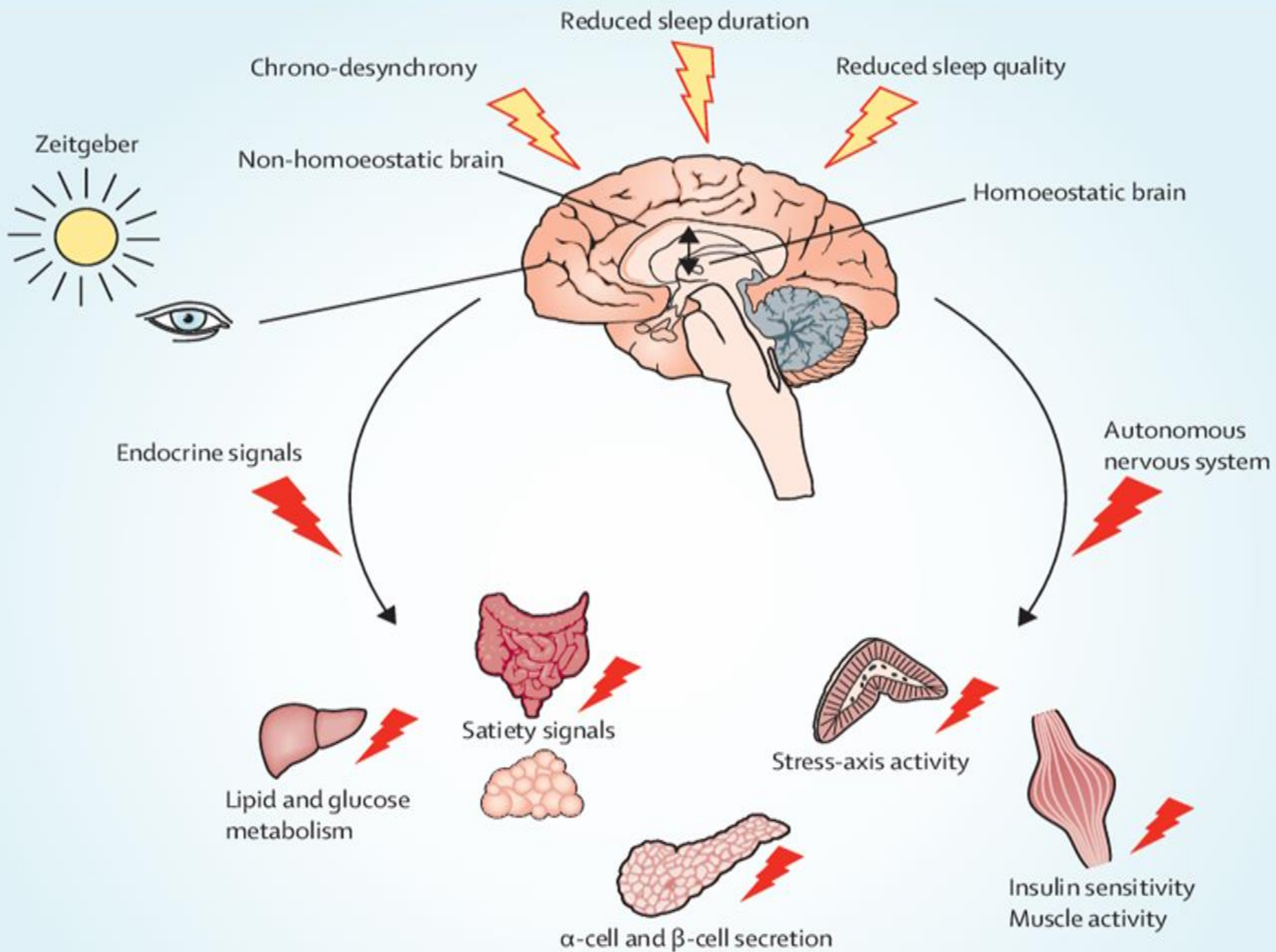
lead to increased circulating cortisol
(a stress hormone)

which results in gluconeogenesis (production of
glucose from non-carbohydrate sources)

which in turn affects glucose regulation: an increase in evening
cortisol levels and nighttime growth hormone concentration,
which induces a rapid decrease in muscular glucose uptake
(anti-insulin like effect)

Both these factors can also result in reduced
insulin sensitivity due to spikes in blood glucose
levels.

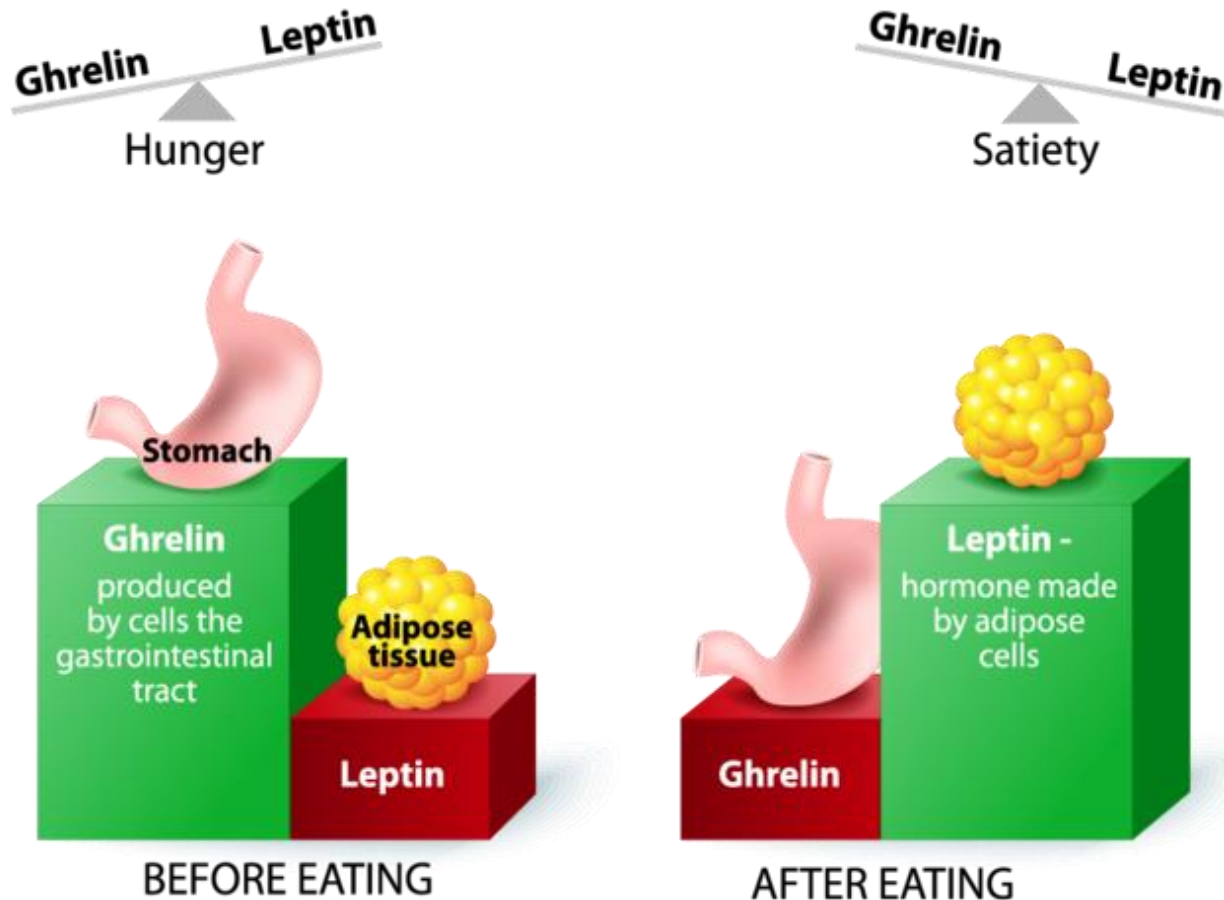


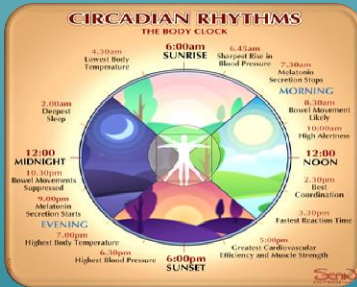


Sleep and its effect on appetite

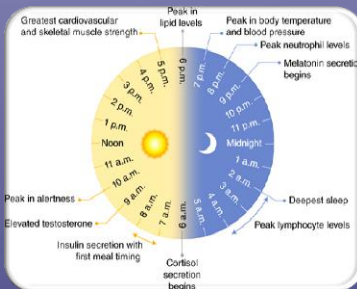
Sleep duration affects the response of hormones associated with appetite Leptin (subsides hunger) and Ghrelin (stimulates hunger).

LEPTIN & GHRELIN

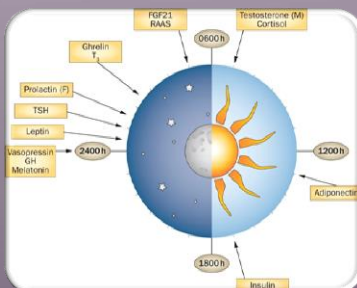




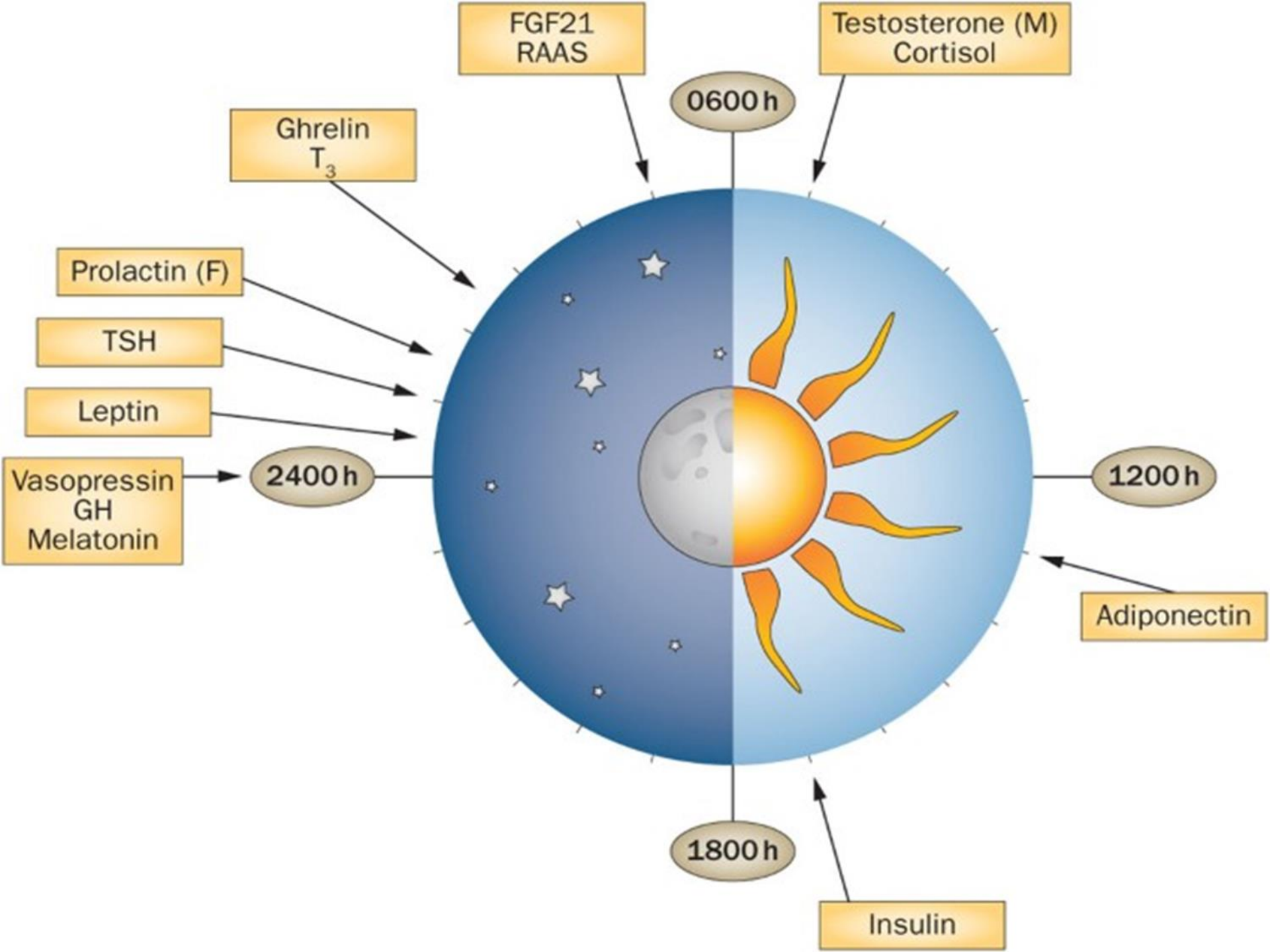
In human studies, a marked rise in leptin and ghrelin are noted during sleep, though the levels of ghrelin tend to fall during latter part of night despite maintenance of fasting conditions .



It is believed that leptin levels stay elevated due to melatonin-influenced insulin triggered leptin production .

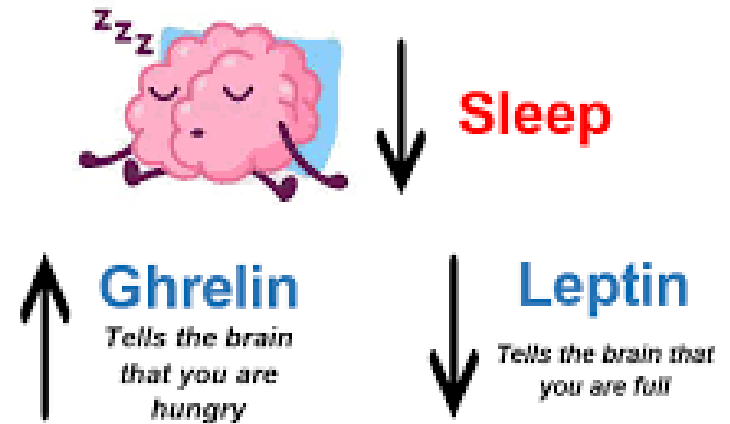


This suggests the effects of the rising ghrelin levels during the early part of night might be blunted by leptin, preventing arousal during sleep due to hunger



Acute sleep deprivation of single night in young healthy men increases ghrelin levels but not leptin levels.

Sleep deprivation may also affect the circadian profile of leptin
sleep deprivation lowered leptin levels compared to sleep extension



Further analysis of appetite rating revealed that subjects tended to show more preference to high carbohydrate foods and the craving for salty food increased.

This suggests that sleep deprivation may affect eating behavior favoring non homeostatic food intake

(food intake driven by emotional/psychological need rather than caloric need of the body).



Conclusion and Recommendation

Go to bed and get up at the same time every day, including weekends. Being consistent reinforces your body's sleep-wake cycle as Sleep loss have been associated with impaired quality of life and a variety of health problems that have an association with oral diseases



شكرا لاصغائكم

في امان الله و حفظه و رعايته

