# A Study on Sleep Apnea, Effects of Sleep and Quality of Life among Adults

**Submitted by**

**Hema. D R**

**(21PCP006)**

**Supervised By**

**Mrs. S. Akila**

**A Thesis Submitted To**


**Avinashilingam Institute for Home Science and Higher Education for Women**

**School of Allied and Healthcare Sciences**

**In Partial Fulfilment of the Requirement for the Degree of**

**Master of Science in Clinical Psychology**

**(2021-2023)**

**May 2023**

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**Signature of the Head of the Department** **Signature of the Guide**

# CERTIFICATE

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This is to certify that the project work entitled "**A Study on Sleep Apnea, Effects Of Sleep And Quality Of Life Among Adults"**, submitted to the Department of Clinical psychology, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, in partial fulfillment for the degree of Master of Science in Clinical Psychology, is the record of the original project work done by **Hema. D R (21PCP006)** during the period of her study, under my supervision and guidance.

**Signature of the Guide**

**Signature of the Head of the Department**

**Submitted for the viva voice examination held on _____**

**Internal Examiner** **External Examiner**

# DECLARATION

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I hereby declare that this project work titled **"A Study on Sleep Apnea, Effects of Sleep and Quality of Life among Adults"** submitted to the Department of Clinical Psychology, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, in partial fulfillment of the requirement for the award of the **Degree of Master of Science in Clinical Psychology** is the bonafide record of original project work done by **Hema. D R (21PCP006)** during the period of her study under the supervision and guidance of **Mrs. S. Akila**, Department of Clinical Psychology.

Place: Coimbatore

Date:

Signature of the Candidate

**Hema. D R**

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# ABSTRACT

## Abstract

Adults with Sleep Apnea face several difficulties in sleep, quality of life that can be crucial to people's health and life. The aim of the study was to find the relationship between Sleep Apnea, Effect of Sleep and Quality of Life among Adults. The data was collected from 60 adults between the age group of 18 – 30 years by Random Sampling Method in Tamil Nadu. The Stop Bang Sleep Apnea questionnaire, WHO Quality of Life Brief, Pittsburgh Sleep Quality Index were used. The data was analysed statistically using the SPSS software version 29.0.0.0. The results indicated that there were significant relationship between sleep apnea, effect of sleep and quality of life among adults, sleep apnea and effects of sleep are positively correlated, quality of life negativity correlated with sleep apnea and effects of sleep. Least amount of participants have less chances to meet the sleep apnea which indicates the majority of them have good sleep which will lead the good quality of life .There was partially gender difference on sleep apnea, effect of sleep and quality of life among adults.



Keywords: sleep apnea, effect of sleep, quality of life, adults

# INTRODUCTION

# Chapter I

## Introduction

The Quality of Life must be improved and enhanced for each individual. It is reflected in the satisfaction of the individual and the sense of happiness and the desire for life. As one can determine what brings people happiness and contentment in life based on their psychological, emotional, social, religious, cultural, and civilizational beliefs as well as their economic and financial circumstances, it follows that the quality of their lives should also include the capacity to heal and rebuild themselves.

Quality of life is the interaction between the conditions of life and personal values and personal satisfaction with life, as is the individual's perception of his status in life in the context of his culture and community and concerns about mental health and personal beliefs (World Health Organization, 1995).

Quality of life is all about maintaining good physical and mental health. Physical and mental health both depend on getting enough sleep. The entire life cycle would be wrecked if sleep spread.

Sleep is a normal, reversible, recurrent state of reduced responsiveness to external stimulation accompanied by complex and predictable changes in physiology. These changes include coordinated, spontaneous, internally generated brain activity and fluctuations in hormone levels and relaxation of musculature (Rosalind D. Cartwright, Thien Thanh Dang-Vu, David Foulkes, 2023).

Sleep apnea is a common disorder characterized by repetitive episodes of nocturnal breathing cessation due to upper airway collapse. Obstructive Sleep Apnea causes severe symptoms, such as excessive daytime somnolence, and is associated with a significant cardiovascular morbidity and mortality. Different treatment options are now available for an

effective management of this disease. After more than three decades from its first use, continuous positive airway pressure (CPAP) is still recognized as the gold standard treatment. (Lucia Spicuzza, Daniela Caruso, and Giuseppe Di Maria, 2015).

### *Definition of Sleep*

Sleep is an active state of unconsciousness produced by the body where the brain is in a relative state of rest and is reactive primarily to internal stimulus. The exact purpose of sleep has not been fully elucidated (Brinkman JE, Reddy V, Sharma s, 2022).

In sleep conditions, the most common sleep disorder in adults is sleep apnea. Because of the sleep apnea individual will have quick-tempered, moody, depressed, motor vehicle and workplace accidents.

### *Two Types of Sleep*

Over the course of a period of sleep, NREM and REM sleep alternate cyclically. The function of alternations between these two types of sleep is not yet understood, but irregular cycling and/or absent sleep stages are associated with sleep disorders (Zepelin et al., 2005). For example, instead of entering sleep through NREM, as is typical, individuals with narcolepsy enter sleep directly into REM sleep (Carskadon and Rechtschaffen, 2005).

### NREM and REM - Sleep Cycles

A sleep episode begins with a short period of NREM stage 1 progressing through stage 2, followed by stages 3 and 4 and finally to REM. However, individuals do not remain in REM sleep the remainder of the night but, rather, cycle between stages of NREM and REM throughout the night NREM sleep constitutes about 75 to 80 percent of total time spent in sleep, and REM sleep constitutes the remaining 20 to 25 percent. The average length of the first

NREM-REM sleep cycle is 70 to 100 minutes. The second, and later, cycles are longer lasting approximately 90 to 120 minutes (Carskadon and Dement, 2005). In normal adults, REM sleep increases as the night progresses and is longest in the last one-third of the sleep episode. As the sleep episode progresses, stage 2 begins to account for the majority of NREM sleep, and stages 3 and 4 may sometimes altogether disappear.

### *Four Stages of NREM Sleep*

The four stages of NREM sleep are each associated with distinct brain activity and physiology. Other instruments are used to track characteristic changes in eye movement and muscle tone.

#### Stage 1 Sleep

NREM stage 1 sleep serves a transitional role in sleep-stage cycling. Aside from newborns and those with narcolepsy and other specific neurological disorders, the average individual's sleep episode begins in NREM stage 1. This stage usually lasts 1 to 7 minutes in the initial cycle, constituting 2 to 5 percent of total sleep, and is easily interrupted by a disruptive noise. Brain activity on the EEG in stage 1 transitions from wakefulness (marked by rhythmic alpha waves) to low-voltage, mixed-frequency waves. Alpha waves are associated with a wakeful relaxation state and are characterized by a frequency of 8 to 13 cycles per second (Carskadon and Dement, 2005).

#### Stage 2 Sleep

Stage 2 sleep lasts approximately 10 to 25 minutes in the initial cycle and lengthens with each successive cycle, eventually constituting between 45 to 55 percent of the total sleep episode. An individual in stage 2 sleep requires more intense stimuli than in stage 1 to awaken.

Brain activity on an EEG shows relatively low-voltage, mixed-frequency activity characterized by the presence of sleep spindles and K-complexes. It is hypothesized that sleep spindles are important for memory consolidation. Individuals who learn a new task have a significantly higher density of sleep spindles than those in a control group (Gais et al., 2002).

**Stages 3 and 4, Slow-Wave Sleep**

Sleep stages 3 and 4 are collectively referred to as slow-wave sleep (SWS), most of which occurs during the first third of the night. Each has distinguishing characteristics. Stage 3 lasts only a few minutes and constitutes about 3 to 8 percent of sleep. The EEG shows increased high-voltage, slow-wave activity.

The last NREM stage is stage 4, which lasts approximately 20 to 40 minutes in the first cycle and makes up about 10 to 15 percent of sleep. The arousal threshold is highest for all NREM stages in stage 4. This stage is characterized by increased amounts of high-voltage, slow-wave activity on the EEG (Carskadon and Dement, 2005).

**REM - Sleep**

REM sleep is defined by the presence of desynchronized (low-voltage, mixed-frequency) brain wave activity, muscle atonia, and bursts of rapid eye movements (Carskadon and Dement, 2005). “Sawtooth” wave forms, theta activity (3 to 7 counts per second), and slow alpha activity also characterize REM sleep. During the initial cycle, the REM period may last only 1 to 5 minutes; however, it becomes progressively prolonged as the sleep episode progresses (Carskadon and Dement, 2005). There are numerous physiological differences between NREM and REM sleep dreaming is most often associated with REM sleep. Loss of muscle tone and reflexes likely serves an important function because it prevents an individual from “acting out” their dreams or nightmares while sleeping (Bader et al., 2003). Approximately 80 percent of vivid dream recall results after arousal from this stage of sleep

(Dement and Kleitman, 1957b). REM sleep may also be important for memory consolidation (Crick and Mitchison, 1983; Smith and Lapp, 1991).

***Six Types Sleep Disorder***

1. **Lack Of Sleep**

Insomnia sufferers have a hard time falling or staying asleep and often feel drowsy. Among the most common conditions, about 33% to 50% of adults have some insomnia symptoms, according to the American Academy of Sleep Medicine.

Insomnia often spikes during stress but can become chronic if symptoms last for three months or longer. Poor sleep habits, environmental changes, medications and co-occurring medical conditions such as asthma or sleep apnea can all aggravate the problem.

The leading treatment is cognitive behavioral therapy for insomnia, which coaches a patient on sleep cycles and personal sleep barriers. Providers may also prescribe supplementary medications.

2. **Snoring And Sleep Apnea**

Snoring is frustrating—but it can also be dangerous. More than 20 million Americans have sleep apnea. The frequent choking and breathing interruptions at least 5 times an hour affect sleep quality and oxygen levels. Without treatment, it’s tied to high blood pressure, heart disease and stroke.

The gold standard of care, continuous positive airway pressure therapy, or CPAP, facilitates airflow. Other options move the lower jaw and tongue forward (with a mandibular advancement device and nerve stimulator) to prevent airway collapse. Patients might also benefit from surgery on excess nose and throat tissue that interferes with breathing.

### 3. Circadian Rhythm Disorders

"Lark" and "night owl" tendencies are biologically wired—caused by advanced (early riser) or delayed (late sleeper) sleep-wake phase disorders. Both run on an internal clock (circadian rhythm) different from the outside day-night cycle.While many people make this quirk work, it becomes problematic when it affects functioning during the time you want to be awake, Dr. Rojanapairat explains.

Traveling across two or more time zones (jet lag) or working overnight (shift work disorder) can also throw off rhythms.A body clock that's out of balance with your schedule may trigger insomnia or repeated waking at times that don't allow a full seven to eight hours of sleep, leading to sleepiness and focus and mood problems.

Treatment is aimed at creating brain cues for rest and wakefulness: a tiny (.5 milligram) dose of melatonin and bright light exposure. Use lights and healthy sleep hygiene—a consistent routine and avoiding electronics before bed—to help shift your cycle and reinforce your preferred schedule.

### 4. Movement Disorders

Restless leg syndrome in the legs and feet makes sitting still at night feel almost impossible. Certain health conditions and medications—including kidney disease, iron deficiency, neuropathy, pregnancy, anxiety and antidepressants—can bring on these uncomfortable or painful urges, which happen to about 7% to 10% of people.

Doctors may cut out contributing drugs and supplement iron, if needed. They may also prescribe symptomatic relief through medication, foot wraps and other aids.

5. **Parasomnias**

These uncontrollable sleep episodes include sleepwalking, sleep talking, hallucinations, sleep paralysis and night terrors the person doesn't remember afterward. Some parasomnias such as nightmares can be set off by post-traumatic stress or sleep deprivation. Since they're more common in kids, many people outgrow them, Dr. Rojanapairat says, but providers often try to reduce the risk of injury and resolve any triggers.

6. **Too Much Sleep**

Unlike most other sleep disorders, people with hypersomnia often oversleep (over 10 hours a night)—but still feel groggy no matter how early they go to bed. They might have sleep attacks or hallucinations.

Narcolepsy, a nervous system disorder caused by a lack of orexin brain chemicals, has an added symptom: sudden-onset muscle weakness (cataplexy) that gets worse with strong emotions. Sleep deprivation mimics some of these, Dr. Rojanapairat cautions—but gets better with rest. Providers will conduct a nap study and treat hypersomnia with a mixture of sleep hygiene, napping, driving safety and stimulant medications.

Don't suffer needlessly trying to shake off fatigue on your own. Worrying about sleep or trying to self-medicate often backfires. If you're having ongoing concerns, your primary care doctor can refer you to a sleep specialist, or you can self-refer for a full assessment (Victoria Pelham 2022).

In the sleep conditions, the sleep apnea is a common sleep disorder in adults. Which is majorly affects the individuals sleep and health.

***Definition of Sleep Apnea***

Sleep apnea is a disorder in which a person frequently stops breathing during his or her sleep. It results from an obstruction of the upper airway during sleep that occurs because of inadequate motor tone of the tongue and/or airway dilator muscles (John G. Park, MD, Kannan Ramar, MD, and Eric J. Olson, MD. 2011)

Sleep apnea will have repeated episodes of airway obstruction during sleep causing snoring, snorting/gasping or breathing pauses. This interrupted sleep causes daytime sleepiness and fatigue. Sleep apnea is diagnosed with a clinical sleep study (According to American psychiatric Association)

Having frequent pauses in breathing while you sleep is a common symptom of sleep apnea. This could result in your body getting less oxygen.

***Types of Sleep Apnea***

**Obstructive Sleep Apnea Code G47. 33**

The most common form of sleep apnea Obstructive Sleep Apnea. It occurs when there is a functional obstruction in the mouth and throat. For example, when the tongue falls against the soft palate during sleep, and the soft palate and uvula then fall against the throat, it makes breathing more difficult, or even impossible in some cases. Sleep Apnea can lead to snoring as the tongue and soft palate rattle. It can also cause a person to wake up feeling as though they cannot breathe. With Obstructive Sleep Apnea, the lungs work normally, and the body still tries to breathe, but it is not possible to get enough air in through the upper airway. Obstructive Sleep Apnea becomes more common Trusted Source with age and is more prevalent in males, people with excess body weight, pregnant people, and people who sleep on their back.

Some symptoms include:

- Waking during sleep or feeling very tired when awake
- Waking from sleep feeling panicked
- Snoring or gasping for air during sleep
- Frequent headaches
- Awaking with a dry mouth
- Feeling confused or unable to concentrate at work or school

**Central Sleep Apnea**

Central sleep apnea also inhibits breathing at night, but it does not occur due to upper airway obstruction. Instead, the cause is neurological. Unlike with OSA, the body does not try to breathe in central sleep apnea, so there is no snoring. Instead, because the brain and nervous system do not consistently send a signal to breathe, the person stops breathing.

- Some people have no symptoms, but others may notice:
- Insomnia
- Waking up short of breath or feeling panicking
- Daytime sleepiness or trouble concentrating
- Some potential causes include: drugs, especially sedating drugs such as opiates
- Sleeping at high altitudes
- Congestive heart failure

However, central sleep apnea can sometimes be idiopathic, which means that doctors cannot identify an underlying disease.

Sometimes central sleep apnea occurs in a pattern called Cheyne-Stokes breathing Trusted Source, a kind of breathing that causes a person to alternate between hyperventilating and not breathing at all. This type of central sleep apnea can occur with congestive heart failure.

**Complex Sleep Apnea Syndrome**

Having one type of sleep apnea does not necessarily mean that a person cannot have another. Complex sleep apnea syndrome is a type of sleep apnea that combines Trusted Source OSA and central sleep apnea. Sometimes, complex sleep apnea syndrome is obvious in an initial sleep study. Other times, it becomes apparent after the apnea does not resolve with a typical CPAP machine or other traditional OSA treatments.

The symptoms are similar to those of OSA and include:

- Brief waking's from sleep
- Daytime fatigue
- Confusion on getting up
- Headaches or dry mouth
- Insomnia or poor quality sleep

A 2006 retrospective review of 223 people with sleep apnea symptoms found that 15% had complex sleep apnea syndrome, 84% had OSA, and just 0.4% had central sleep apnea (Janet Hilbert, ZawnVillines, 2021)

Complex sleep apnea may be captured with ICD10 code G47. 39 (other sleep apnea) as this code includes individuals with mixed (both obstructive and central) sleep apnea symptoms.

Nasal CPAP is highly effective in controlling symptoms, improving quality of life and reducing the clinical sequelae of sleep apnea. Other positive airway pressure modalities are available for patients intolerant to CPAP or requiring high levels of positive pressure.

Mandibular advancement devices, particularly if custom made, are effective in mild to moderate sleep apnea and provide a viable alternative for patients intolerant to CPAP therapy. The role of surgery remains controversial.

Uvulopalatopharyngoplasty is a well-established procedure and can be considered when treatment with CPAP has failed, whereas maxillar-mandibular surgery can be suggested to patients with a craniofacial malformation. A number of minimally invasive procedures to treat snoring are currently under evaluation. Weight loss improves symptoms and morbidity in all patients with obesity and bariatric surgery is an option in severe obesity. A multidisciplinary approach is necessary for an accurate management of the disease (Lucia Spicuzza, Daniela Caruso, and Giuseppe Di Maria, 2015).

***Epidemiology***

Obstructive sleep apnea the most common sleep-related breathing disorder. Obstructive sleep apnea is most common among older males, but it can also affect females and children. The incidence rises following menopause such that rates are similar in postmenopausal individuals.

The prevalence of Overlap Syndrome on Sleep Apnea in the study population was found to be 41.3%. Excessive daytime sleepiness was found to be higher in overlap group patients ($P = 0.033$), the difference was statistically significant. The mean age ($59.9 \pm 9.6$ years) was found to be high in the Overlap Syndrome group compared to those without the same. The mean forced expiratory volume in 1 s (FEV1), forced vital capacity (FVC), and FEV1/FVC (pre- and postbronchodilator) spirometry parameters were found to be lower in patients with Overlap Syndrome. The study on Prevalence of overlap syndrome in patients with obstructive sleep apnea in a quaternary care center of Kerala showed that the prevalence of overlap syndrome in the present study was 41.3%. Excessive daytime sleepiness and age >60 years

were risk factors for OS in a patient with OSA. OS patients had lower pulmonary function values (Sreeraj Nair et al, 2022).

Globally, obstructive sleep apnea is on the rise and there is a steady increase in the number of people in India as well who are suffering from this sleep disorder. A study conducted in 2015 by a consumer products firm had revealed that nearly 93% Indians are sleep-deprived. The prevalence of obstructive sleep apnea has been observed to be higher in the western region as compared to the other parts of the country.

When it comes to rural versus urban divide, similar risk factors are present. However, according to a study, the prevalence of OSA by AHI criteria in rural India is 3.73%. In absolute numbers, this amounts to 36.34 million individuals suffering from OSA.

Indian men are at a greater risk, usually men are twice as prone to Obstructive Sleep Apnea than women. According to a research paper, OSA, in Indian population cross sectional studies conducted across various sub-populations reported a prevalence of 13.7% among adults and 7.5% among urban middle-age Indian (ResMed, 2020)

***Prevalence in India***

A study on "obstructive Sleep Apnea Hypopnea Syndrome – Indian scenario"—states that in Indian studies, obstructive sleep apnea varied from 4.4% to 13.7%. The gender-wise figures are between 4.4 % and 19.7% for Indian males and in females it was between 2.5% to 7.4 (Prasad, 2020)

Spreading across all age groups, Age is also one of the factors that impacts the prevalence of OSA, with people between the ages of 18 and 60 more at risk. According to estimates, the probability of obstructive sleep apnea increases with age from 2% at age 30 for females to 28% at 60 years. For males, the figures rises from 4% at age 30 to 67% at 60 years of age. That said, obstructive sleep apnea is on the rise among school children too. A study

titled ‘Prevalence and complications of OSA: A study among school children of India’, studied the prevalence and risk factors among children between ages 5 and 10 years. The study reveals that obstructive sleep apnea is increasingly affecting Indian children, particularly those who have working mothers, or have a history of sleep talking ad bruxism. The study establishes that obstructive sleep apnea is a cause of poor academic performance and leads to children becoming overweight (ResMed, 2020).

***Etiology***

The combination of genetic, environmental, and dietary factors may play a role in the development of sleep apnea. The risk of sleep apnea may be higher in people with a family history of the condition.

- To some degree, other health conditions can affect the severity of sleep apnea. It is common for people with severe sleep apnea to have one or more associated disorders, such as heart disease or high blood pressure.
- Men are more likely than women to have obstructive sleep apnea.
- Weight is also a frequent cause of sleep apnea.
- Certain medications, including some heart drugs and some antidepressants, can also make you more likely to have obstructive sleep apnea. Opioid use can also trigger central sleep apnea.(American Sleep Apnea Association)

**Common symptoms**

- Experiencing repeated episodes of breathing problems during sleep. This can include difficulty breathing, pauses in your breathing, and snoring.
- Finding it difficult to stay asleep or wake up feeling refreshed after a night of sleep.
- Experiencing daytime fatigue, excessive daytime sleepiness or drowsiness despite not being sleepy at night.

- Having a partner or doctor noticing that you have a lot of interruptions in your breathing during the night.
- Having any of the other risk factors for heart disease, such as high blood pressure, obesity, or diabetes.(American Sleep Apnea Association)

***Pediatric Obstructive Sleep Apnea***

Pediatric obstructive sleep apnea is a sleep disorder in which your child's breathing is partially or completely blocked during sleep. It can happen several times a night. The condition occurs when the upper airway narrows or is blocked during sleep (SandhyaPruthi, 2023).

There are differences between pediatric obstructive sleep apnea and adult sleep apnea. While adults usually have daytime sleepiness, children are more likely to have behavioral problems. The cause in adults is often obesity, while in children it's often larger than usual adenoids and tonsils. The adenoids are two small pads of tissue found in the back of the nose. The tonsils are two oval-shaped pads in the back of the mouth.

Symptoms of Pediatric obstructive sleep apnea:

- Snoring.
- Pauses in breathing.
- Restless sleep.
- Snorting, coughing or choking.
- Mouth breathing.
- Nighttime sweating.
- Bed-wetting.
- Sleep terrors.
- Infants and young children with obstructive sleep apnea don't always snore. They might just have disturbed sleep.

During the day, children with sleep apnea might:

- Perform poorly in school.
- Have trouble paying attention.
- Have learning problems.
- Have behavioral problems.
- Have poor weight gain.
- Be hyperactive.

### *Etiology of Pediatric Obstructive Sleep Apnea*

Obesity plays a role in the disorder in some children, obstructive sleep apnea is more commonly related to enlarged tonsils and adenoids. Other underlying factors may include being born with a birth defect related to the shape of the face or head. They also may include neuromuscular disorders that affect the way muscles function because of problems with the nerves and muscles in the body (Sandhya Pruthi, 2023).

### *History of sleep apnea*

Sleep apnea was first mentioned in medical literature in 1965, although the condition was recognized long before the medical causes were known. These first reports of the condition in a medical context described individuals with severe cases of sleep apnea resulting in severely decreased blood oxygen levels, increased carbon dioxide production and congestive heart failure.

Prior to that time, an early 20th century physician coined the term Pickwickian syndrome, probably a reference to a description by Charles Dickens, in his novel The Pickwick Papers, which accurately describes symptoms associated with sleep apnea.

In 1981, a non-surgical treatment was developed for sleep apnea in the first CPAP, or continuous positive airway pressure device. By the late 1980s, the formerly bulky and noisy devices were replaced by quieter, streamlined designs.

The resulting availability of an effective treatment was the catalyst for a push by the medical community to raise awareness about sleep-disordered breathing and identify those who could benefit from treatment. Specialized sleep clinics common today cropped up as public awareness of the condition and other sleep disorders rose. A study conducted in 1993 found that nearly one in fifteen Americans are affected by at least moderate sleep apnea.

Today obstructive sleep apnea is a serious but highly treatable condition that is well understood with a broad support network existing for individuals with the disorder. Talk to a doctor about the various treatment plans and ways to alleviate the symptoms associated with sleep apnea (Rich Hirschinger, 2023).

### *The Nature of Sleep*

Sleep usually requires the presence of relaxed skeletal muscles and the absence of the overt goal-directed behaviour of which the waking organism is capable. The characteristic posture associated with sleep in humans and in many but not all other animals is that of horizontal repose. The relaxation of the skeletal muscles in that posture and its implication of a more-passive role toward the environment are symptomatic of sleep. Instances of activities such as sleepwalking raise interesting questions about whether the brain is capable of simultaneously being partly asleep and partly awake. In an extreme form of that principle,

marine mammals appear to sleep with half the brain remaining responsive, possibly to maintain activities that allow them to surface for air.

Indicative of the decreased sensitivity of the human sleeper to the external environment are the typical closed eyelids (or the functional blindness associated with sleep while the eyes are open) and the presleep activities that include seeking surroundings characterized by reduced or monotonous levels of sensory stimulation.

Three additional criteria

- Reversibility
- Recurrence
- Spontaneity distinguish sleep from other states. For example, compared with hibernation or coma, sleep is more easily reversible. Although the occurrence of sleep is not perfectly regular under all conditions, it is at least partially predictable from a knowledge of the duration of prior sleep periods and of the intervals between periods of sleep, and, although the onset of sleep may be facilitated by a variety of environmental or chemical means, sleep states are not thought of as being absolutely dependent upon such manipulations (Rosalind D. Cartwright, Thien Thanh Dang-Vu, David Foulkes – Mar 17, 2023).

***Physiology of Sleep***

Generally, changes are well tolerated in healthy individuals, but they may compromise the sometimes fragile balance of individuals with vulnerable systems, such as those with cardiovascular diseases (Parker and Dunbar, 2005).

- **Cardiovascular.** Changes in blood pressure and heart rate occur during sleep and are primarily determined by autonomic nervous system activity. For instance, brief increases in blood pressure and heart rate occur with K-complexes, arousals, and large

body movements (Lugaresi et al., 1978; Catcheside et al., 2002; Blasi et al., 2003; Tank et al., 2003). Further, there is an increased risk of myocardial infarction in the morning due to the sharp increases in heart rate and blood pressure that accompany awakening (Floras et al., 1978; Mulcahy et al., 1993).

- **Sympathetic-nerve Activity.** Sympathetic-nerve activity decreases as NREM sleep deepens; however, there is a burst of sympathetic-nerve activity during NREM sleep due to the brief increase in blood pressure and heart rate that follows K-complexes. Compared to wakefulness, there is a rise in activity during REM sleep (Somers et al., 1993).
- **Respiratory.** Ventilation and respiratory flow change during sleep and become increasingly faster and more erratic, specifically during REM sleep (Krieger, 2000; Simon et al., 2002). Ventilation data during REM sleep are somewhat unclear, but they suggest that hypoventilation (deficient ventilation of the lungs that results in reduction in the oxygen content or increase in the carbon dioxide content of the blood or both) occurs in a similar way as during NREM sleep (NLM, 2006).

Several factors contribute to hypoventilation during NREM, and possibly REM, sleep such as reduced pharyngeal muscle tone (Krieger, 2000; Simon et al., 2002). Further, during REM sleep, there is reduced rib cage movement and increased upper airway resistance due to the loss of tone in the intercostals and upper airway muscles (Parker and Dunbar, 2005). More generally, ventilation and respiratory flow show less effective adaptive responses during sleep. The cough reflex, which normally reacts to irritants in the airway, is suppressed during REM and NREM sleep.

The hypoxic ventilatory response is also lower in NREM sleep than during wakefulness and decreases further during REM sleep. Similarly, the arousal response

to respiratory resistance (for example, resistance in breathing in or out) is lowest in stage 3 and stage 4 sleep (Douglas, 2005).

- **Cerebral Blood Flow.** NREM sleep is associated with significant reductions in blood flow and metabolism, while total blood flow and metabolism in REM sleep is comparable to wakefulness (Madsen et al., 1991b). However, metabolism and blood flow increase in certain brain regions during REM sleep, compared to wakefulness, such as the limbic system (which is involved with emotions), and visual association areas (Madsen et al., 1991a).
- **Renal.** There is a decreased excretion of sodium, potassium, chloride, and calcium during sleep that allows for more concentrated and reduced urine flow. The changes that occur during sleep in renal function are complex and include changes in renal blood flow, glomerular filtration, hormone secretion, and sympathetic neural stimulation (Cianci et al., 1991; Van Cauter, 2000; Buxton et al., 2002).
- **Endocrine.** Endocrine functions such as growth hormone, thyroid hormone, and melatonin secretion are influenced by sleep. Growth hormone secretion typically takes place during the first few hours after sleep onset and generally occurs during SWS, while thyroid hormone secretion takes place in the late evening. Melatonin, which induces sleepiness, likely by reducing an alerting effect from the suprachiasmatic nucleus, is influenced by the light-dark cycle and is suppressed by light (Parker and Dunbar, 2005).

Sleep has been connected to conditions such as bipolar disorder, anxiety, and depression among others and is closely related to mental and emotional health. When emotional and mental health are in harmony, life quality will improve. Living standards will rise as a result of the balanced components of a high quality of life.

**Components of Quality of life**

- Physical functioning,
- Psychological status,
- Social functioning,
- Disease- or treatment-related symptoms

***Quality of Life Dimensions***

Through the various definitions of this concept can distinguish three dimensions of quality of life, we mention in the following:

- **Quality of life objective:** This category includes the social aspects of the lives of individuals and provided by the material requirements of the community.
- **Quality of life itself:** It means the extent of personal satisfaction with life and the individual's sense of the quality of life.
- **The quality of emotional life:** It represents the ideal to meet the needs of the individual, and the ability to live in a spiritual and psychological consensus with himself and with his community (Abdul Muti, 2005.)

Schallock (2004) has eight dimensions of quality of life:

- **The emotional quality of life:** includes a sense of security, spiritual aspects, happiness, self-concept, satisfaction or conviction.
- **Relations between people:** include intimate friendship, emotional aspects, family relations, interaction and social support.
- **Physical quality of life:** includes the physical situation and factors of social security, working conditions, property and social and economic status.
- **Personal upgrading:** includes the level of education, personal skills, and level of achievement.

- **Physical quality of life**: includes health status, nutrition, motor activity, health care, health insurance, free time, and daily activities.
- **Self-determinants:** independence, ability to choose, self-direction, goals and values.
- **Social interaction:** includes social acceptance, social status, characteristics of the practical environment, integration and social participation, volunteer activity.
- **Rights:** include privacy, the right to vote and vote, the performance of duties and the right to property (Khaddam Al-Mashkaba, 2015)

From the above, it can be said that most human beings living a normal human life have a personal image of the quality of life, in which the human dimensions of the quality of life, as already mentioned, are indeed integrated. They build on their personal vision of the quality of their lives that they want to live from studying and examining the reality and thus determining their goals and expectations within the framework or context with the diligence as much as possible to improve it and enrich its bids through real concrete actions or actions and so they accept reality and do not give back to them and do not succumb to it and live in his captivity at the same time but live with him positively (Schallock, 2004).

## *THEORIES*

### Theory of Quality of Life

According to Abraham Maslow, 1962, a theory of quality of life, which still is considered a consistent theory of quality of life. Maslow based his theory for development

towards happiness and true being on the concept of human needs. He described his approach as an existentialistic psychology of self-actualization, based on personal growth.

When we take more responsibility for our own life, we take more of the good qualities that we have into use, and we become more free, powerful, happy, and healthy. It seems that Maslow's concept of self-actualization can play an important role in modern medicine. As most chronic diseases often do not disappear in spite of the best biomedical treatments, it might be that the real change our patients have for betterment is understanding and living the noble path of personal development. The hidden potential for improving life really lies in helping the patient to acknowledge that his or her lust for life, his or her needs, and his or her wish to contribute, is really deep down in human existence one and the same. But you will only find this hidden meaning of life if you scrutinize your own life and existence closely enough, to come to know your innermost self (Søren Ventegodt et al. 2003.)

***The School of Psychoanalysis (Freud 1856- 1939)***

Freud believes that the quality of life is a sense of pleasure and happiness and relief of pain and a fundamental goal of human behaviour, and also means satisfying instincts as the principle of pleasure is the dominant principle of the operations of the psychological system, Freud believed that the instinct of life or the principle of pleasure is a motive for the permanence of life and satisfaction, The first childhood in her painful and good life is important in establishing an independent life. (Mahfouz, 2006, pp. 125-180).

***The Integrative Theory of the Quality of Life***

**Well Being.** The most natural aspect of the subjective quality of life is well being. The quality of life is seen here in terms of an assessment of one's own quality of life. When we meet other people, we always say, "How are you? Or "How's life?" We are thus asking that person to give us an evaluation of their quality of life. Such questions do not require a lengthy

explanation of matters of life, merely a spontaneous assessment of life in general. If, however, we are asked how content we are with life or how happy we are, these questions are assessed differently to such a question as "How are things?" Such questions are much more complex. In other words, satisfaction with life and happiness are deeper dimensions that are not as straightforward as well being. The question about well - being is followed by an explanation: if we are told that things are not going well, what was just said may typically be extended, as follows: "Things are not going too well at work (home);" "My health is not what it used to be." This means that well - being is closely linked to how things function in an objective world and with the external factors of life. When we speak about feeling good, we do not generally embark on a lengthy discussion of the meaning of life and the deep, existential issues and aspirations we all harbor.

Well-being is thus something else and more superficial than meaning in life, fulfillment of needs, and self-realization. Most people tell a lot of people that they feel good, yet only to a very few do people dare open up and take stock of the meaning of our lives. We have a surface we open up to everybody and a hidden depth to which very few people have access, often not even our conscious selves. The spontaneous self-experienced quality of life might seem such a natural thing that it may be the reason why it has not given cause to serious investigation, let alone reflection.

**Satisfaction with Life.** When people are asked whether they are satisfied with life, they often say that something or other is amiss. People are usually less satisfied with life than their state of well-being would indicate. People tend to feel good, but are not very satisfied, just satisfied. In retrospect, there is always something to be dissatisfied or disgruntled about. Being satisfied means feeling that life is the way it should be. When one's expectations, needs, and desires in life are being met by the surrounding world, one is satisfied.

Satisfaction is a mental state: a cognitive entity. This symmetry and concord can come about in two ways: either we try to change the external world so that it matches our dreams or we give up our dreams because they are unrealistic, and adapt them to the world as it is, thus creating concord between the external world and our dreams. Both approaches generate the same satisfaction. However, these two strategies of life generate entirely different lives: one life meets with one's dreams and the other life is lived in resignation; but both lives will be satisfactory. Thus, satisfaction does not necessarily involve realizing life potential, fulfillment of needs, or the ability to function well in life objectively. A person who has lived a difficult life, such as prostitution, chronic illness, or poverty, always seems to be satisfied with his or her life because of gradual adaptation through resignation. One can be satisfied with life yet feel bad inside. The process of adapting to one's environment may lead to an individual letting him- or herself down by compromising the deep dreams of a good life. The person may not be unhappy with life but deep down considers it meaningless. Satisfaction with life is thus not the same as experiencing meaning in life. It is very common to be satisfied yet not happy.

There are classical types of satisfaction theories. One of these is called preference theory. It is typically formulated in such a way that a good life lies in seeing one's wishes come true. "Seeing" because it is not enough that one's wishes be fulfilled. One has to experience that they actually are. This theory leaves the individual free to make his or her choice. One may, for instance, choose to collect stamps or good friends. The quality of life is based on whether one gets what one wants. In relation to this, the World Health Organization (WHO) has defined health broadly as a state of complete physical, mental, and social well-being. By stressing well-being, that is, the experience of feeling good, the WHO is in accordance with the other theories in these groups.

The theory does not distinguish between constructive and (for example, self-) destructive needs. For example, the wish to die or to hurt or harm others increases the quality

of life when it is realized. Preference theories are a subgroup to the gap theories, which are found in a multitude of forms. Some include time, others the realization of life potential here and now in time and space, etc. They aim to find harmony in what you want life to be and how you think it is. The smaller the gap between them, the greater one's satisfaction, and hence, according to certain theories, the greater the quality of life. The majority of quality-of-life theories focus on satisfaction. The concept is fairly easy to deal with and, as a cognitive concept, lends itself well to intellectual thought and rumination. Researchers and philosophers prefer it to more emotionally and intuitively attained concepts. The problem of using (life) satisfaction as the only measure of the quality of life is that a good life is more than merely being satisfied: happiness, meaning in life, fulfilling one's needs.

**Happiness.** Most people use this word with caution, because it has special significance. They use it with respect. Being happy is not just being cheerful and content. It is a special feeling that is precious and very desirable, but hard to attain. Happiness is something deep in the individual that involves a special balance or symmetry. Happiness is an intoxication, a rare sweetness of life, when tiny bubbles sparkle. It is best described in metaphors, preferably by poets.

Happiness is closely associated with the body, but is not limited to it. It comprises an individual's whole existence and is signified by a certain intensity of an experience, which is also the case with unhappiness. The intensity of the experience is a dimension that does not separate happiness from more superficial aspects of the quality of life such as being satisfied with life and well -being. Many people link the concept of happiness with human nature: happiness comes to people who live in extraordinary harmony with his or her nature. Nevertheless, not many people believe that happiness is achieved by merely adapting to one's culture and related factors. In other words, happiness requires individuals not to resign too much but fight for what, deep down, is important to them. Typically, happiness is associated

with nonrational dimensions, such as love, close ties with nature, etc., but not with money, state of health, and other objective factors. Happiness is found in classical philosophy and religious concepts, and it has inspired humanity broadly.

**Meaning in Life.** Meaning in life is a very important concept and is seldom used. We only speak of the meaning of life with our most intimate friends and relatives, if at all. People who seek meaning in life are often catapulted into a confusing situation, where the value of all aspects of life is viewed quite differently. Are relations with my friends or partner as meaningful as they ought to be? Am I doing the right thing in life? Have I got the right job? Am I using my talents in the right way? Are my beliefs in life really correct? A search for meaning in life involves an acceptance of the meaninglessness and meaningfulness of life and an obligation towards oneself to make amends for what is meaningless.

In this way, the question of meaning in life becomes deeply personal, and very few people attempt to answer it because, by doing so, we risk our security in everyday life. The problem of having a meaning in life is that it can be lost. One way of expressing it is that we become lost in ourselves; we do not live in accordance with our deepest self. Deep down, life feels empty. Perhaps we do not want to get up in the morning. Or we may contemplate suicide. Meaninglessness seems to be a frequent reason why about 1,400 people commit suicide in Denmark per year. The meaning of life is the theme of classical religion, and the world religions can be seen as theories on the meaning of life. For instance, the classical goal of Hinduism is to attain the experience of unity with the world, ta tvamasi – (you are it) and the highest meaning in life.

In Buddhism, the highest goal is emptiness or nirvana, which centers on being at one with the deepest meaning in the world. Many Native American tribes see it as their ultimate goal to find their own wholeness. In Christianity, the message of the love of God leads to the

central meaning in life. The depths of our being, the distance between the surface and the deeper layers, leaves ample room for what we term life lies. They hide the depth of our existence. In our culture we collectively have one set of life lies that make meaning in life in its deepest sense a taboo. A theory for the meaning of life is the life mission theory. (Søren Ventegodt1, Joav Merrick, and Niels Jørgen Andersen, 2003.

**Theories of sleep**

Two kinds of approaches dominate theories about the functional purpose of sleep. One begins with the measurable physiology of sleep and attempts to relate those findings to certain functions, known or hypothetical. For example, after the discovery of REM sleep was reported in the 1950s, many hypothesized that the function of REM sleep was to replay and reexperience daytime thinking. That was extended to the theory that REM sleep is important for strengthening memories. Later the slow brain waves of NREM sleep gained popularity among scientists who were attempting to demonstrate that sleep physiology plays a role in memory or other alterations in brain function.

Other sleep theories take behavioral consequences of sleep and attempt to find physiological measures to substantiate sleep as the driver of that behaviour. For example, it is known that with less sleep people are more tired and that tiredness can build up over successive nights of inadequate sleep. Thus, sleep plays a critical role in alertness. With that as a starting point, sleep researchers have identified two major factors that appear to drive this function: the circadian pacemaker, lodged deep in the brain in an area of the hypothalamus called the suprachiasmatic nucleus; and the homeostatic regulator, possibly driven by the buildup of certain molecules, such as adenosine, that break down products of cellular metabolism in the brain (interestingly, caffeine blocks the binding of adenosine to receptors on neurons, thereby inhibiting adenosine’s sleep signal).

To describe sleep's purpose as preventing sleepiness is the equivalent of saying that food's purpose is to prevent hunger. It is known that food consists of many molecules and substances that drive myriad essential bodily functions and that hunger and satiation are means for the brain to direct behaviour toward eating or not eating. Perhaps sleepiness acts in the same way: a mechanism to lead animals toward a behaviour that achieves sleep, which in turn provides a host of physiological functions. A broad theory of sleep is necessarily incomplete until scientists gain a full understanding of the functions that sleep plays in all aspects of physiology. Thus, scientists have been reluctant to assign any single purpose to sleep, and in fact many researchers maintain that it is likely more accurate to describe sleep as serving multiple purposes. For example, sleep may facilitate memory formation, boost alertness and attention, stabilize mood, reduce strain on joints and muscles, enhance the immune system, and signal changes in hormone release.

**Neural Theories.** Among neural theories of sleep, there are certain issues that each must face. Is the sleep-wakefulness alternation to be considered a property of individual neurons, making unnecessary the postulation of specific regulative centres, or is it to be assumed that there are some aggregations of neurons that play a dominant role in sleep induction and maintenance? The Russian physiologist Ivan Petrovich Pavlov adopted the former position, proposing that sleep is the result of irradiating inhibition among cortical and subcortical neurons (nerve cells in the outer brain layer and in the brain layers beneath the cortex). Microelectrode studies, on the other hand, have revealed high rates of discharge during sleep from many neurons in the motor and visual areas of the cortex, and it thus seems that, as compared with wakefulness, sleep must consist of a different organization of cortical activity rather than a general overall decline.

Another issue has been whether there is a waking centre, fluctuations in whose level of functioning are responsible for various degrees of wakefulness and sleep, or whether the

induction of sleep requires another centre that is actively antagonistic to the waking centre. Early speculation favoured the passive view of sleep. A cerveauisolé preparation, an animal in which a surgical incision high in the midbrain has separated the cerebral hemispheres from sensory input, demonstrated chronic somnolence. It has been reasoned that a similar cutting off of sensory input, functional rather than structural, must characterize natural states of sleep. Other supporting observations for the stimulus-deficiency theory of sleep included presleep rituals such as turning out the lights, regulation of stimulus input, and the facilitation of sleep induction by muscular relaxation. With the discovery of the ascending reticular activating system (ARAS; a network of nerves in the brainstem), it was found that it is not the sensory nerves themselves that maintain cortical arousal but rather the ARAS, which projects impulses diffusely to the cortex from the brainstem. Presumably, sleep would result from interference with the active functioning of the ARAS. Injuries to the ARAS were in fact found to produce sleep. Sleep thus seemed passive, in the sense that it was the absence of something (ARAS support of sensory impulses) characteristic of wakefulness.

Theory has tended to depart from that belief and to move toward conceiving of sleep as an actively produced state. Several kinds of observation have been primarily responsible for the shift. First, earlier studies showing that sleep can be induced directly by electrical stimulation of certain areas in the hypothalamus have been confirmed and extended to other areas in the brain. Second, the discovery of REM sleep has been even more significant in leading theorists to consider the possibility of actively produced sleep. REM sleep, by its very active nature, defies description as a passive state. REM sleep can be eliminated in experimental animals by the surgical destruction of a group of nerve cells in the pons, the active function of which appears to be necessary for REM sleep. Thus, it is difficult to imagine that the various manifestations of REM sleep reflect merely the deactivation of wakefulness mechanisms. Furthermore, sleep is a dynamic process that fluctuates between different states,

viewed broadly as stages of REM and NREM and now known to be much more diverse within a particular stage.

**Functional Theories.** Functional theories stress the recuperative and adaptive value of sleep. Sleep arises most unequivocally in animals that maintain a constant body temperature and that can be active at a wide range of environmental temperatures. In such forms, increased metabolic requirements may find partial compensation in periodic decreases in body temperature and metabolic rate (i.e., during NREM sleep). Thus, the parallel evolution of temperature regulation and NREM sleep has suggested to some authorities that NREM sleep may best be viewed as a regulatory mechanism conserving energy expenditure in species whose metabolic requirements are otherwise high. As a solution to the problem of susceptibility to predation that comes with the torpor of sleep, it has been suggested that the periodic reactivation of the organism during sleep better prepares it for a fight-or-flight response and that the possibility of enhanced processing of significant environmental stimuli during REM sleep may even reduce the need for sudden confrontation with danger.

Other functional theorists agree that NREM sleep may be a state of "bodily repair" while suggesting that REM sleep is one of "brain repair" or restitution, a period, for example, of increased cerebral protein synthesis or of "reprogramming" the brain so that information achieved in wakeful functioning is most efficiently assimilated. In their specification of functions and provision of evidence for such functions, such theories are necessarily vague and incomplete. The function of stage 2 NREM sleep is still unclear, for example. Such sleep is present in only rudimentary form in sub primate species yet consumes approximately half of human sleep time. Comparative, physiological, and experimental evidence is unavailable to suggest why so much human sleep is spent in that stage. In fact, poor sleepers whose laboratory sleep records show high proportions of stage 2 and little or no REM sleep often report feeling that they have not slept at all.

Another theory is that of adaptive inactivity. This theory considers that sleep serves a universal function, one in which an animal's ecological niche shapes its sleep behaviour. For example, carnivores whose prey is nocturnal tend to be most active at night. Thus, the carnivore sleeps during the day, when hunting is inefficient, and thereby conserves energy for hunting at night. Furthermore, an animal's predators' being active during the day but not at night encourages the animal's daytime inactivity and hence daytime sleep. For humans the bulk of activity occurs during the day, leaving night time as a period for inactivity. In addition, light and dark cycles, which influence circadian rhythm, serve to encourage night time inactivity and sleep.

Different theories regarding the function of sleep are not necessarily mutually exclusive. For instance, it is likely that there was evolutionary pressure for rest, enabling the body to conserve energy; sleep served as the extreme form of rest. It is also possible, given that the brain and body would be asleep for extended periods of time, that a highly evolved set of physiological processes recharged by sleep would be highly advantageous. For humans, with their complex brains, the need for the brain to synthesize and strengthen information learned during waking hours would yield a very efficient system: acquire information during the day, strengthen it during sleep, and use that newly formed memory in future waking experiences. In fact, experiments have pointed to sleep as playing an essential role in the modification of memories, particularly in making them stronger (i.e., more resistant to forgetting) (David Foulkes, Thien Thanh Dang-Vu, Jeffrey M. Ellenbogen, 2023).

### *Sleep Patterns Change in Adults*

#### Adults

Sleep architecture continues to change with age across adulthood. Two major attributes of age-related sleep changes are earlier wake time and reduced sleep consolidation (Dijk et al.,

2000). A hallmark change with age is a tendency toward earlier bedtimes and wake times. Older adults (approximately ages 65 to 75) typically awaken 1.33 hours earlier, and go to bed 1.07 hours earlier, than younger adults (approximately ages 20 to 30) (Duffy et al., 1998). There are no conclusive studies that demonstrate why older adults experience earlier wake times, despite decreased sleep efficiency, but one hypothesis may be an advanced circadian pacemaker that accompanies age (Dijk et al., 2000). It is unclear if this is due to older adults experiencing an increased sensitivity to light (Dijk et al., 2000; Ancoli-Israel, 2005). Nonetheless, the consequences of an advanced circadian rhythm are a 1-hour advance in body temperature increase in the early morning and misaligned melatonin and cortisol secretion rhythms with the circadian clock (Dijk et al., 2000).

Younger adults may experience brief awakenings, but they are usually minor and occur close to an REM sleep transition; thus, sleep remains relatively consolidated. Arousal occurring mostly from REM sleep in young adults suggests that there is a protective mechanism to keep from awakening during NREM sleep; however, this protective effect appears to also decline with age (Dijk, 1998). As an individual ages (between the ages of 20 to 60), SWS declines at a rate of about 2 percent per decade (Figure 2-6) (Dijk et al., 1989; Astrom and Trojaborg, 1992; Landolt et al., 1996; Ancoli-Israel, 2005). Because arousal thresholds are typically highest during SWS, and because SWS declines with age, older adults experience more frequent awakenings during a sleep episode. Another important variable may be an age-related reduction both in homeostatic sleep pressure and circadian pacemaker effectiveness during the night (Dijk et al., 2000).

**Gender Differences**

Although there have been few systematic studies, there appear to be gender-based differences in sleep and circadian rhythms. Available evidence is strongest in adults; however,

gender differences have also been observed in infancy (Bach et al., 2000; Moss and Robson, 1970; Hoppenbrouwers et al., 1989), childhood (Meijer et al., 2000; Sadeh et al., 2000; Acebo et al., 1996), and adolescence (Giannotti et al., 2002; Laberge et al., 2001). In adults, men spend greater time in stage 1 sleep (Bixler et al., 1984) and experience more awakenings (Kobayashi et al., 1998). Although women maintain SWS longer than men, they complain more often of difficulty falling asleep and midsleep awakenings. In contrast, men are more likely to complain of daytime sleepiness (Ancoli-Israel, 2000).

In women, the menstrual cycle may influence sleep-wake activity; however, methodological challenges have limited the number of conclusive findings (Metcalf, 1983; Leibenluft et al., 1994). There have been a number of studies that suggest that women's sleep patterns are greatly affected during pregnancy and the postpartum period (Karacan et al., 1968; Hertz et al., 1992; Lee and Zaffke, 1999; Driver and Shapiro, 1992). For example, women often experience considerable daytime sleepiness during pregnancy and during the first few postpartum months, and as will be discussed in greater detail in Chapter 3, they are also at a higher risk of developing restless legs syndrome (Goodman et al., 1998; Lee et al., 2001).

### *Effects of Sleep*

It affects our cardiovascular health, immunological system, appetite, breathing, blood pressure, and hormones that control development and stress.

- **Cardiovascular Disease.** Studies have found strong associations between sleep deficiency and cardiovascular problems Including high blood pressure, coronary heart disease, heart attack, and stroke.
- **Diabetes.** Insufficient sleep appears to affect the body's ability to regulate blood sugar, increasing the risk of metabolic conditions like diabetes.

- **Obesity.** Research has found that people tend to consume more calories and carbohydrates. When they do not get enough sleep, which is just one of several ways that poor sleep may be tied to obesity and problems maintaining a healthy weight.
- **Immunodeficiency.** Sleep deficiency has been linked to worsened immune function, including a poorer response to vaccines. Hormonal abnormalities: Sleep helps the body properly produce and regulate levels of various hormones, potentially increasing susceptibility to hormonal problems in people with sleep deprivation.
- **Pain.** Sleep-deprived people are at a higher risk of developing pain or perceived worsening of existing pain. Pain may cause further sleep interruptions, creating a negative cycle of worsening pain and sleep.
- **Mental Health Disorders.** Sleep and mental health are closely intertwined, and poor sleep has strong associations with conditions like depression, anxiety, and bipolar disorder. (Eric Suni,Alex Dimitriu,2023)

Almost all of our body's tissues are impacted lack of sleep.

## The Purpose of the Study

The field of sleep apnea received much attention in the medical and scientific community and in recent decades, lots of importance has been given in the research aspects in this field. A number of studies are being done in this field in 2023. People's quality of life and ability to sleep are both impacted by sleep apnea. Obstructive sleep apnea has little impact on quality of life in the elderly (Martínez-García, Soler-Cataluña, Román-Sánchez, González, Amorós, Montserrat, 2009). A similar research has been done on "Sleep and quality of life in sleep apnea". (Amy Atkeson, Robert Basner, 2008). In current study, the three variables are (quality of life, effects of sleep, sleep apnea) correlated. As a result, the study's goal is to

investigate the connection between adults' quality of life, effects of sleep and sleep apnea. The participants in this study will get the benefit of learning more about sleep apnea and health.

# REVIEW OF LITERATURE

# Chapter II

## Review of Literature

The people with sleep apnea disorders will experience poor sleep, disturbances during sleep such as breathing issues and loud snores, which will reduce the quality of their sleep. The quality of living will be impacted by the irregular sleep. A study on Insomnia, Daytime Sleepiness, and Quality of Life among 20,139 College Students in 60 Countries around the World—A 2016–2021 by Babicki, Piotrowski and Mastalerz-Migas (2023). Current study evaluating sleep apnea, the effects of sleep, and quality of life. With the use of this study, the quality of a person's life and sleep can be assessed.

### Studies on Sleep Apnea

A study conducted on Obstructive Sleep Apnea and Risk of Miscarriage by Larson, Bazalakova, Godecker, Cooney, DelBeccaro, Aagaard and Antony (2023). The study was measured by Epworth Sleepiness Scale and Berlin Questionnaire. Study discovered that gravidae with high Epworth Sleepiness Scale and Berlin Questionnaire ratings were more likely to miscarry than those with high scores on just one questionnaire or neither. After adjusting for confounding factors, Study found that screening positive on the Epworth Sleepiness Scale and Berlin Questionnaire, as well as snoring and hypertension, were statistically substantially related with miscarriage. Just not napping was linked to miscarriage after controlling for confounding factors. Given the tiny sample size, more research on this subject is necessary.

A study conducted to evaluate the prevalence of mental illness in obstructive sleep apnea (OSA) and to examine whether patients with obstructive sleep apnea require screening for mental illness by Shoib, Ullah, Nagendrappa, Taseer, Berardis, Singh and Asghar (2022).

The Mini-International Neuropsychiatric Interview (MINI plus) scale, the General Health Questionnaire – 28 (GHQ – 28), Hamilton Depression Rating Scale (HAM-D), and Hamilton Anxiety Rating Scale (HAM-A) were used to patients. Descriptive statistics and correlations were used for data analysis. The samples were taken from 182 patients OSA. The result showed the increased prevalence of anxiety and depression in patients with OSA.

A study conducted on the Prevalence and impact of obstructive sleep apnea in type 2 diabetes mellitus: A descriptive cross-sectional study by Saxena, Singh and Singh (2022). A cross-sectional observational study was applied on 80 patients at a tertiary care hospital. 30 out of 80 patients with diabetes had a high-risk. Study measured by Berlin questionnaire. Study found the Indian patients with diabetes have a high prevalence of OSA, regardless of obesity.

A study on urban population in south India to assess the Screening of obstructive sleep apnea by Rajeswari, Jagannath by (2020). The aim was to evaluate the self-administered questionnaire for assessing obstructive sleep apnea (OSA).The qualitative analysis compared and validated the Berlin (BQ), STOP-BANG (SBQ) and OSA50 questionnaires for sleep apnea assessment. 190 urban people are participated. The result showed, the male, young age adults, smoking person and long working hour's participants seem to be high prevalence of OSA.

Soontomrungsun, Khamsai, Sawunyavisuth, Limpawattana, Chindaprasirt, Senthong and Sawanyawisuh (2020) conducted a study on Obstructive sleep apnea in patients with diabetes less than 40 years of age. The study was conducted in January 2008 and December 2019. Atrial fibrillation (AF), body mass index (BMI), and glomerular filtration rate were the three independent predictors for DM in the young (GFR) used for measurement. When DM and OSA were present, the presence of AF absolutely predicted the condition over 40 years. The younger diabetes mellitus group had 56 patients, whereas the older diabetes mellitus group included 137 patients. Study found the Young DM patients with OSA had more severe OSA, were more obese, had better renal function, and had fewer AF than the older ones.

A study on the Prevalence of cognitive impairment in patients with obstructive sleep apnea done by Tamilarasan, Mohan, Ramanjaneya, Sadana, Malapaka, Annapandian and Kumar (2019). 47 controls without OSA and 47 polysomnography (PSG) verified OSA patients were compared. The NIMHANS validated neurocognitive battery was used to compare. Study found the Neuro-cognitive impairment is more commonly seen in patients with OSA, especially severe OSA.

Goyal, Pakhare, Bhatt, Choudhary and Patil (2018) were conducted a study on the Association of pediatric obstructive sleep apnea with poor academic. This school-based cross-sectional study was conducted from July 2015 to November 2015. Sleep-related breathing disorder (SRBD) scale was used in this study. The prevalence of OSA in school children aged 5–10 years and its associate with academic performance. 1346 students were completed and analysed. The result showed the Students with positive SRBD were more prone to nocturnal enuresis and poor academic performance in all subjects.

Dubey, Bajaj, Mishra, Singh, Gupta, Kant and Dixit (2017) were conducted a study on Obstructive sleep apnea risk for driving license applicants in India. Study measured by STOP-Bang (Snoring, Tired or sleepy, Observed apnea, high blood Pressure, Body mass index, Age, Neck, Gender) Questionnaires scoring risk assessment tool. 542 male DL recipients at 2 Regional Transport Office (RTO) centers in Lucknow were participated .In total 23% (N= 125) of participants were found with the risk of OSA. Study found a high number of male driving license applicants were observed with the risk of OSA.

A study on Relationships between body mass index and depressive symptoms in patients with obstructive sleep apnea done by Shoib, Malik and Masoodi (2017). 95 women and 87 men (total 182) diagnosed with OSA were reviewed for the presence of depressive symptoms and degree of sleepiness. Epworth Sleepiness Scale (ESS), Hamilton Depression

Rating Scale (HAM-D), Mini-International Neuropsychiatric Interview Scale were used. Depressive symptoms are more common and more severe in women with OSA than in men. There is definite relationship between BMI and depressive symptoms in patients with OSA. The result showed there was no causal relationship between OSA and depressive symptoms in the population studied.

A study conducted on Prevalence of sleep disorders among college students by Jain and Verma (2016). The present study was conducted on 1,524 college students. It included first year students, juniors and seniors. The survey used, the SLEEP-50 has been validated for college students. It consists of 50 items that tap a variety of sleep characteristics. Out of 1524 students examined, 381 found to have sleep disorder. Study found that college students are at risk for sleep disorders or poor sleep hygiene, and that sleep may impact academic success. Students should be taught to reduce stress level in their life which may improve their academic performance.

**Studies on Effects of Sleep**

A study on the Insomnia and sleep quality among older people residing in old age homes at Andhra Pradesh by Jesudoss, Lazarus and Wahid (2023). The study was a cross-sectional descriptive design. The convenience sampling technique was used to recruit participants. Measured by the Athens Insomnia Scale (AIS) and the Pittsburgh Sleep Quality Index (PSQ). Participants were 100 older adults. The result showed that there was a strong positive correlation between sleep patterns and sleep quality. Most of the elderly participants struggled to sleep effectively and had serious issues with their sleep patterns. Sleeping pills and poor sleep hygiene were substantially associated. The degree of sleep pattern impairment was found to be correlated with poor sleep quality. Future studies should examine suitable senior therapies that incorporate yoga and fitness in addition to activities that foster social connection.

A study conducted on medical students to assess the Internet addiction, sleep quality and depressive symptoms by Gupta, Taneja, Anand, Gupta, Gupta, Jha and Singh (2021). The purpose of this study was to evaluate the prevalence of internet addiction (IA), depressive symptoms, and poor sleep quality among medical undergraduate students and interns. It also aimed to investigate the relationships between IA, sleep quality, and depressive symptoms. Across-sectional questionnaire-based study was conducted in a medical college in Delhi.185 students were included as a samples. Study measured by Pittsburgh Sleep Quality Index (PSQI) Young's Internet Addiction Test (YIAT) and Patient Health Questionnaire-9 (PHQ). The result showed there was a link between depression, IA, and poor sleep quality. Medical students who may have IA must be identified because this addiction usually coexists with other psychological conditions.

Chatterjee, Kar (2021) were conducted a study on Smartphone addiction and quality of sleep among Indian medical students. This was a cross-sectional study. Study conducted on 24 medical students. The study was measured by Self-administered questionnaire with four parts –Socio-demographic characteristics, General health questionnaire (GHQ-12), Smartphone addiction scale-short version (SAS-SV), and Pittsburgh sleep quality index (PSQI). The result showed Smartphone addiction was found to affect 33.33% of females and 46.15% of males, respectively. 63.39% of research participants indicated they had problems falling asleep and 62.05% indicated they had poor health .The alarmingly high rate of excessive smartphone use among medical students is detrimental to their health and ability to sleep.

Varughese, Parel, Thomas and Varghese (2021) were conducted a study on the impact of music therapy on sleep quality among elderly residents in an old age home in South India. 46 elderly elderly people were participated. The study was measured by Modified Pittsburgh sleep quality index (MPSQI) was used to assess the sleep quality. Music therapy was given for

a period of 3 weeks from 8 pm to 8.45 pm daily. The result showed that music therapy is successful in enhancing elderly patients' quality of sleep.

A study conducted on Physical activity and sleep quality in relation to mental health among college students by Ghrouz, Noohu, Dilshad Manzar, Warren Spence, BaHammam and Pandi-Perumal (2019) .It was a cross-sectional stud. Study conducted 617 Indian college students from 18 to 30 years, including both genders. Measured by the Hospital Anxiety and Depression Scale, the International Physical Activity Questionnaire-Short Form, and the Pittsburgh Sleep Quality Index.Both male and female college students regularly struggle with their mental health. The result showed that there was a strong relationship between physical activity levels and good sleep habits and mental wellness.

Dubey, Nongkynrih, Gupta, Kalaivani, Goswami and Salve (2019) conducted the study on Sleep quality assessment of adolescents residing in an urban resettlement colony. The purpose of the study was to determine the incidence of poor sleep among teenagers living in an urban resettlement colony and to examine the relationship between poor sleep and its correlates. The interview focused on sociodemographic variable. Study measured by Pittsburgh sleep quality index, Perceived stress scale. The result showed that Teenagers aged 15 and under and the younger group had significantly shorter sleep durations in the current study than did the teenagers.

Khade, Behera and Korradi (2018) were conducted a study on Insomnia, Day Time Sleepiness and Sleep Quality among South Indian Nurses. It was a cross-sectional study. 190 nurses students were participate Medical College (42 were males and 148 were females). Measured by Epworth Sleepiness Scale (ESS), Regensburg Insomnia Scale (RIS) and Pittsburgh Sleep Quality Index (PSQI). Survey found that a high proportion of South Indian nurses had problems sleeping or staying asleep. Shorter shifts, more carefully scheduled night

shifts, and appropriate nursing staffs are needed for nurses' sleep health and wellbeing to improve. Patient care will improve and become more efficient result.

A study conducted on the Impact of internet addiction on quality of sleep among nursing students by Belsiyal, Goswami and Chauhan (2017). Study measured by Young's Internet Addiction Test and Pittsburgh Sleep Quality Index. 159 of the participant claimed to use social networking websites. 154 students in total (90%) used the internet for learning, whereas 144 (84%) did so for entertainment. The result showed that most of the subjects used the internet on average, but the results regarding sleep quality are quite alarming. Both addressing the detrimental impacts of problematic internet use and creating policies to improve young people's positive mental health indicators are essential.

A study on the Burnout and sleep quality medical and non-medical students by Shad, Thawani and Goel (2015).A cross-sectional study was conducted to assess the sleep disturbances and burnout. The 214 of Indian undergraduate students were collected as a sample (112 medical, 102 non-medical). Study measured by PSQI (Pittsburgh Sleep Quality Index) and OLBI (Oldenburg Burnout Invenquality. Study found encouraging a healthier and more proactive approach to addressing burnout and poor sleep quality will bring the awareness.

A study on Association of sleep quality with general health on Indian college students by Kaur, Sharma and Singh (2015). This was a self-administered, questionnaire-based study. 1,215 undergraduate students were participated. The study measured by Pittsburg Sleep Quality Index and General Health Index. The result showed that there was a strong correlation between the general health of college students and their sleep quality. The state of their general health has a significant impact on how well college students sleep.

**Studies on Quality of Life**

A study on the Factors Associated with Quality of Life among People Living with HIV in India by Koduri (2023). Face-to-face interviews were used to gather data from July 2019 to December 2019. To investigate the variables connected to the four areas of QoL and the overall QoL, multivariable logistic regression was used. According to the study's findings, treatments for raising overall QoL should focus on increasing ART adherence, helping people with low CD4 counts, and enhancing physical health. Improved nutrition, more physical exercise, and more access to healthcare are a few examples of such treatments. In order to create effective interventions, pinpoint training requirements, and influence policy to enhance QoL and increase the wellbeing of PLWH in Bhimavaram, this study offers new evidence.

A study conducted on the Quality of life among type 2 diabetes patients aged 30–64 years attending diabetes clinic in a tertiary care hospital in East Delhi, India by Kataria, Bhasin and Upadhyay Madhu (2023). A cross-sectional study was done in a tertiary care hospital in Delhi, India. The samples were collected information from 150 type 2 diabetes patients in interview-based method. Measured by QOLID. Patients with diabetes in our study had a surprisingly good quality of life. Study found who were younger, taking only one oral hypoglycemic prescription, free from issues or co-morbid disorders, and active more regularly fared better. The overall setup, the patient-friendly environment and the patient management system all played a big influence in the good QOL of our participants.

A study on the Relationship between Predominant Polarity, Lifetime Comorbid Anxiety Disorders and Subjective Quality of Life among Individuals with Bipolar Disorder in Singapore by Gunasekaran, The, Cetty, Mok and Subramaniam (2023). Samples from 74 outpatients in Singapore diagnosed with bipolar disorder were collected. To ascertain the connections between predominant polarity, lifetime comorbid anxiety disorders, and quality of life in terms of physical health, psychological health, social contacts, and environment, study employed multivariate regression models. The result showed a link between DPP, concurrent

anxiety disorders during a person's lifespan, and a reduced quality of life. This enables us to confirm our findings and apply our research methods to future studies with larger samples.

Rodriguez, Huntingdon, Juraskova, Preau, Etemadi and Duracinsky (2023) were conducted a study on Positive relations between sexual quality of life and satisfaction with healthcare in women living with HIV and/or HCV. Measured by PROQoL-Sex Life questionnaire. It's administered to 404 WHIV and WHCV in five countries. 191 living with HCV people were pparticipated. In the five nations, the result showed there was a strong correlation between the standard of healthcare, use of psychoactive substances (other than cocaine), and sexual quality of life for people with WHIV and WHCV. The studies highlight the various strategies that could be suggested to enhance sexual quality of life.

A study conducted on the Quality of life and stress in mothers of preterm infant with feeding done by Kamran, Tajalli, Ebadi, Sagheb, Fallahi and Kenner (2023) . Measured by Infants Feeding Readiness Assessment Scale (POFRAS), Parental Stress Scale: Neonate Intensive Care Unit (PSS – NICU), quality of life questionnaire (SF-36), and a socio-demographic questionnaire. The SF-36 domains, the POFRAS, and the PSS – NICU subscales did not correlate with one another. Study found that the relationship between stress and overall physical health could not be proven. Much of the maternal stress was caused by the infants' behaviour and appearance. The influence of the quality of life factor on mental health was greater than that on physical health. Medical professionals should educate mothers of premature newborns about the NICU environment, parental responsibilities, and the appearance and behaviour of their children.

A study on the Insomnia, Daytime Sleepiness, and Quality of Life among 20,139 College Students in 60 Countries around the World—A 2016–2021 by Babicki, Piotrowski and Mastalerz-Migas (2023). Their own questionnaire was distributed online via Facebook.com.

Measured by Athens insomnia scale (AIS), the Epworth sleepiness scale (ESS), and the Manchester short assessment of the quality of life (MANSA). 20,139 students from 60 different countries were included in the survey. Study found that the Students in nations with high GDP per capita indices are far less likely to experience insomnia than inhabitants of nations with low GDP per capita indices. Students' quality of life is undoubtedly impacted by sleep disorders

A study conducted on the Psychological distress, perceived burden and quality of life in caregivers of persons with schizophrenia by Stanley, Balakrishnan and Ilangovan (2017). Researchers in Thanjavur, India, used a quantitative cross-sectional design and survey methods to collect data from nurses working in a hospital. Information was gathered from patients and their carers using conventional techniques. Frequently, carers reported having a bad quality of life and a high load. Substantial quantities of anxiety and depression are present as well. The result showed that family carers require assistance in order to successfully manage their caring obligations. Peer support groups and psychoeducation are promoted as inexpensive, highly effective care options in India.

A study conducted on Perceived stress and professional quality of life and sleep in hemodialysis patients by Amin, Vankar, Nimbalkar and Phatak (2015). Study measured by Pittsburgh Sleep Quality Index (PSQI) and quality of life (QoL). Study was done in 115 HD patients. One hundred (87%) patients were poor sleepers. The result showed that there are links between areas of perceived stress and professional quality of life. Understanding the areas that influence the professional QOL of NICU nurses requires more study. The identification of stress and QOL issues among NICU nurses can help with the creation of suitable policies.

Rana, Mishra (2015) were conducted a study on Quality of life of unaffected siblings of children with chronic neurological disorders. 50 children aged 12–18 were participated.

Whose child sibling was suffering from a chronic neurological disorder, were enrolled. QoL was assessed by a validated version of the WHOQOL-BREF in Hindi. The result showed that the Siblings of children with chronic neurological disorders who weren't influenced by them had a considerably lower quality of life. In order to provide knowledge and coping mechanisms, health professionals may think about including older siblings of neurologically challenged children in family counselling sessions. The effectiveness of the family as a whole is likely to improve as a result of this intervention.

Wang, Yeh (2013) were conducted a study on quality of life of adults with type 2 diabetes in a hospital care clinic in Taiwan. This was a cross-sectional design. Measured by the audit of diabetes-dependent quality of life (ADDQoL). A sample of 256 outpatients with type 2 diabetes was participated. The first three life categories most negatively impacted were future, freedom to consume, and self-confidence. Diabetes patients had lower QoL, particularly in the "freedom to eat" category, which suggests that improving dietary flexibility would be a helpful way to improve QoL. Study found that a stronger negative impact of diabetes on quality of life was associated with being younger, male, more educated, having a low income, having more issues from diabetes, having a higher HbA1c, and using insulin. They must be considered when caring to the particular needs of patients.

# METHOD

# Chapter III

## Method

Methodology is known as the systematic and hypothetical study of the methods applied in a specific field of study. It is composed of the hypothetical study of the body of approaches and certain values that are associated with a specific branch of data. It naturally includes impression such as theoretical episode of the existing study has transformed the following points.

The procedure pertaining to the present study namely, “A study on sleep apnea, effects of sleep and quality of life among adults” was carried out involving the following steps:

- Objectives
- Hypotheses
- Area
- Sample
- Inclusion criteria
- Exclusion criteria
- Tools
- Procedure
- Analysis of data

### Objectives

The study used a static group comparison research design to determine the regulatory focus on teachers and the objectives are:

- To find the relationship between sleep apnea, effect of sleep and quality of life among adults.
- To assess the Level of sleep apnea among adults.
- To assess the Level of effect of sleep among adults.
- To assess the Level of quality of life among adults.
- To assess the gender differences between sleep apnea effects of sleep and quality of life among adults.

**Hypotheses**

The hypotheses are stated as Alternative Hypotheses, so that they can be either accepted or rejected, based on the results.

**H1.** There will be a significant relationship between sleep apnea, effect of sleep and quality of life among adults

**H2.** There will be a significant relationship between sleep apnea and effects of sleep among adults.

**H3.** There will be a significant relationship between sleep apnea and quality of life among gender.

**H4.** There will be a significant relationship between effect of sleep and quality of life among adults.

**H5.** There will be a significant gender difference on sleep apnea, effect of sleep and quality of life among adults.

**Area**

- The participants were selected from Tamil Nadu.

**Sample**

The sample consisted of 60 adults of age 18 to 30 years. The data was collected in person using random sampling technique.

**Inclusion Criteria**

- Adults age ranges from 18 to 30
- Both male and female participants were included.
- Participants who are interested and willing to cooperate to the study.

**Exclusion Criteria**

- Samples above the age of 31 and below the age of 18 were excluded.
- The participants who are unwilling to participate

## Tools

The following tools were used for data collection.

### *Stop bang questionnaire*

The STOP-BANG sleep apnea survey created by Chung et al, in the year of 2008. The STOP-Bang questionnaire was created as an OSA screening tool and includes 4 self-reportable (STOP: snoring, fatigue, witnessed apnea, and elevated blood pressure) and 4 demographic (Bang: age, neck size, and so forth) questions. There are two alternatives for each statement's response: "YES" or "NO." The participants are instructed to carefully read each statement and only check the box next to the item that best describes their situation. There is no time limits. The "YES" are scored as 1 and "NO" scored as 0. The STOP BANG possesses both sensitivity and specificity greater than 90% in patients with moderate to-severe OSA. A Scores of 2 or less is considered low risk, and a score of 5 or more is high risk for having either moderate or severe sleep apnea. The interpretation are 5-8 High risk of Sleep Apnea, 3-4 Intermediate of Sleep Apnea,0-2 low risk of Sleep Apnea.

### *WHO Quality of life brief*

The WHOQOL brief is a quality of life assessment developed by the WHOQOL Group with fifteen international field centres, simultaneously, in an attempt to develop a quality of life assessment that would be applicable cross-culturally in the year of 1995. The social, psychological, and physical health of a person are evaluated using the QOLQ, a dependable and well-established questionnaire. Many aspects of life satisfaction are covered in a series of questions, including physical health, mental health, social support, and overall wellbeing. Each

individual item of the WHOQOL-BREF is scored from 1 to 5 on a response scale. Only three (3, 4, 26) items need to be reversed before scoring. There are individual high and low scores for each domain. The WHOQOL-BREF was shown to be comparable To the WHOQOL-100 in discriminating between these subject groups, with similar values and significant differences between ill and well Subjects apparent in all domains. The test–retest reliabilities for domains were 0±66 for physical health, 0±72 for psychological, 0±76 for social relationships and 0±87 for environment.

***Pittsburgh sleep quality index***

The PSQI was developed by Daniel J. Buysse and colleagues to evaluate sleep quality and distinguish between people who get good sleep and those who don't in the year of 1988. The Pittsburgh Sleep Quality Index is a self-report questionnaire that assesses sleep quality over the course of a month. The measure, which takes between 5 and 10 minutes to complete, consists of 19 distinct items that come together to generate 7 components that add up to a single overall score. In scoring the PSQI, seven component scores are derived, each scored 0 (no difficulty) to 3 (severe difficulty). The component scores are summed to produce a global score (range 0 to 21). Higher scores indicate worse sleep quality. The interpretation are 1-5 good sleep, 5-21 poor sleep. Global scores for each diagnostic group were also significantly correlated between the two testing times with R's less than 0.40 for each group. Component scores within each subject group showed more variability across time but all of them were significantly correlated.

**Procedure**

The research topic was well examined and the hypotheses and objectives were formulated. The participants were chosen based on the random sampling method. They were interrogated about the research. Socio-demographic status profile, Stop Bang Questionnaire, Pittsburgh sleep quality index and WHO – Quality of Life brief were given to the participants and they were instructed to read each item very carefully and choose the options that suits them the best. Copies of the questionnaires were given to the participants' in-person and instructions were given for each individuals based on their requirements. They were informed that the data collected will be confidential. The scoring was done according to the scoring key and interpreted using the norms provided by the authors. The results were analyzed and the hypotheses were verified.

**Analysis of Data**

- The data was analyzed statistically using the SPSS (Statistical Package for the Social Sciences) software version 29.0.0.0.
- Pearson Correlation was used to find the relationship between sleep apnea, effect of sleep and quality of life among adults and Independent Sample T test was used to find gender difference on sleep apnea, effect of sleep and quality of life among adults.

**Ethical Consideration**

Accomplishment of any study depends upon cooperation and willingness of the subjects. If the subject is not willing or interested to take active contribution in this study and they might end up providing messy responses or false responses which could misled the overall finding of the

study. In order to confirm the quality data and also for ethical purposes the following steps should be adopted.

- Objectives of the study should be informed to all the subjects.
- Permission from the participant should be taken.
- Confidently and anonymity of the participants will be assured and maintained.

**Institutional Human Ethics Committee**

As the study involves human subjects, all procedures described in the study was reviewed and approved by the Institutional Human Ethics Committee, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore. The approval number for the research purpose is **AUW/IHEC/CP-22-23/XMT-04.**

# RESULT AND DISCUSSION

## RESULTS AND DISCUSSION

The results of the study titled "A study on sleep apnea, effects of sleep and quality of life among adults" are given below. The sample consists of 60 adults aged between 18 – 30 years of age. The data were analyzed using SPSS software version 29.0.0.0

The distribution analysis was done for sleep apnea, effects of sleep and quality of life.

**Table 1**

*Demographic Data*

(N = 60)

| *Demographic Data* | Number | Percentage (%) |
|---|---|---|
| Male | 30 | 50 |
| Female | 30 | 50 |

Percentage are rounded off

Table 1 shows the demographic data of responses of adults. In this study, out of 60 samples, there were 30 male adults who comprised 50% and the remaining 50% were 30 female adults.

**Figure 1**

*Demographic Data*

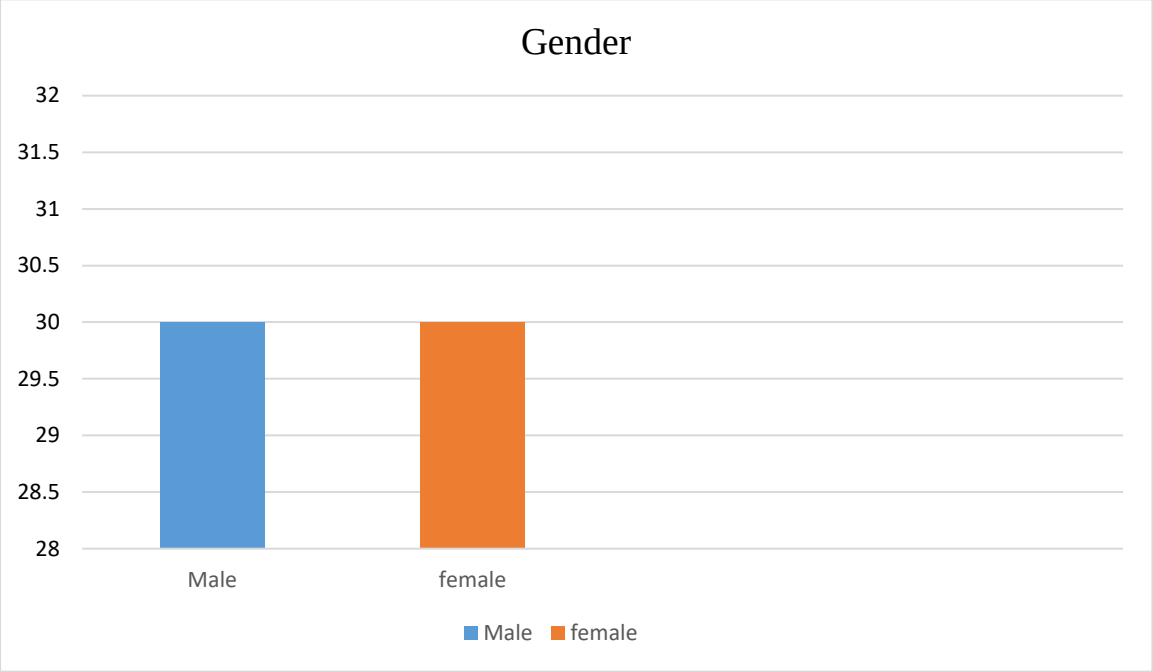


**Table 2**

*Level of Sleep Apnea*

(N = 60)

| Sleep apnea | Gender | Number | Percentage (%) |
|---|---|---|---|
| Low | Male | 21 | 35 |
| | Female | 24 | 40 |
| Intermediate | Male | 6 | 10 |
| | Female | 3 | 5 |
| High | Male | 3 | 5 |
| | Female | 3 | 5 |

Percentage are rounded off

Table 2 shows the level of Sleep Apnea in adults (male and female). The table clearly shows that 35% of male and 40% of female participants possess low level of sleep apnea. From this finding 75 % of adults, especially female who participated in this study possess low levels of sleep apnea which shows they have healthy sleep. 10% of male and 5% of female participants have intermediate level of sleep apnea. Which shows male adults may have high chances to affect by sleep apnea compared to the female. 5% of male and female participants possess high level of sleep apnea which shows they may have high chances to meet the sleep apnea. The participants who possess the intermediate and high level of sleep apnea may have nightmares, sleep deprivation, snoring , episodes of no breathing, breathing through the mouth, or loud breathing also common the symptoms of depression, dry mouth, dry throat, fatigue,

headache, irritability, mood swings, or weight gain. They can work on to prevent the sleep apnea through the regular physical exercise, healthy diet and psychological intervention.

**Figure 2**

*Level of Sleep Apnea*

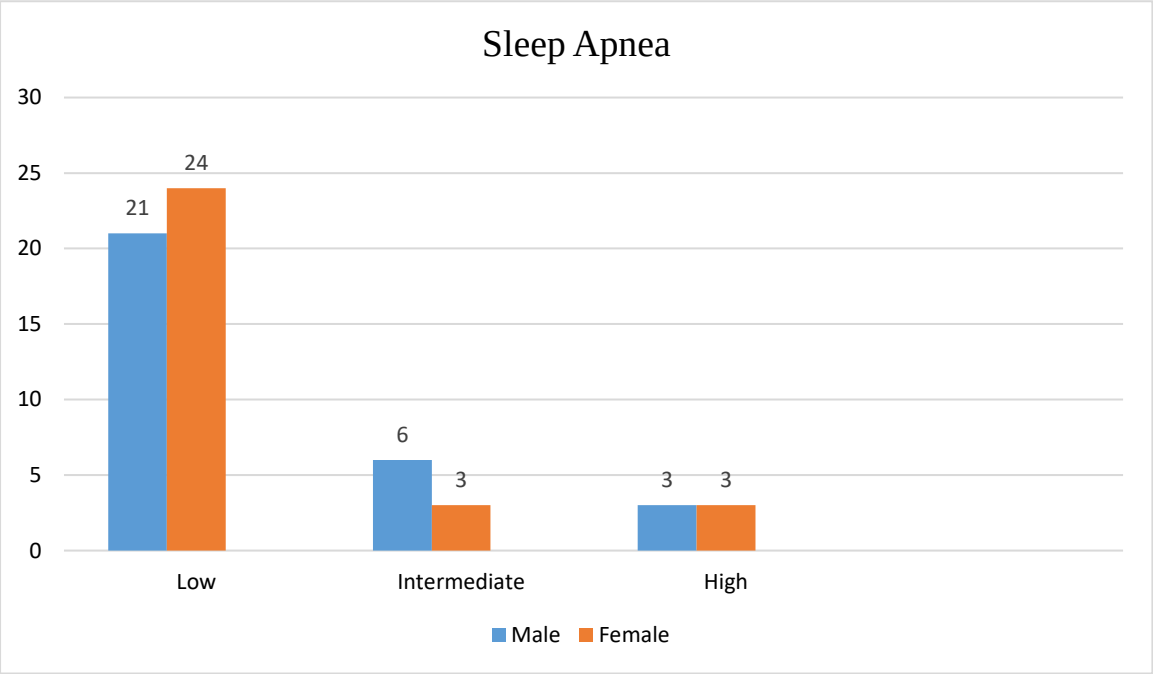


**Table 3**

*Level of Effects of Sleep*

(N = 60)

| Effects of Sleep | Gender | Number | Percentage (%) |
|---|---|---|---|
| Poor sleep | Male | 15 | 25 |
| | Female | 11 | 18.3 |
| Good sleep | Male | 15 | 25 |
| | Female | 19 | 31.6 |

Percentage are rounded off

Table 3 shows the level of Effects of Sleep in adults (male and female). The table clearly shows that 25% of the male and 18.3% female participants possess poor sleep. Male adults are more likely to have poor sleep compared to female who are participated in this study. These people may have much chances to meet the sleep apnea will have slightly have headache, muscle pain, leg jerking. About 25% of male and 31.6 % of female participants possess good sleep. This shows that both male and female adults have good sleep and female adults are more likely to have good sleep compared to male. This study shows that only 43% of participant have low level of Effects of Sleep. Findings shows that majority of the participants have good sleep, so they are less likely to have sleep apnea.

**Figure 3**

*Level of Effects of Sleep*

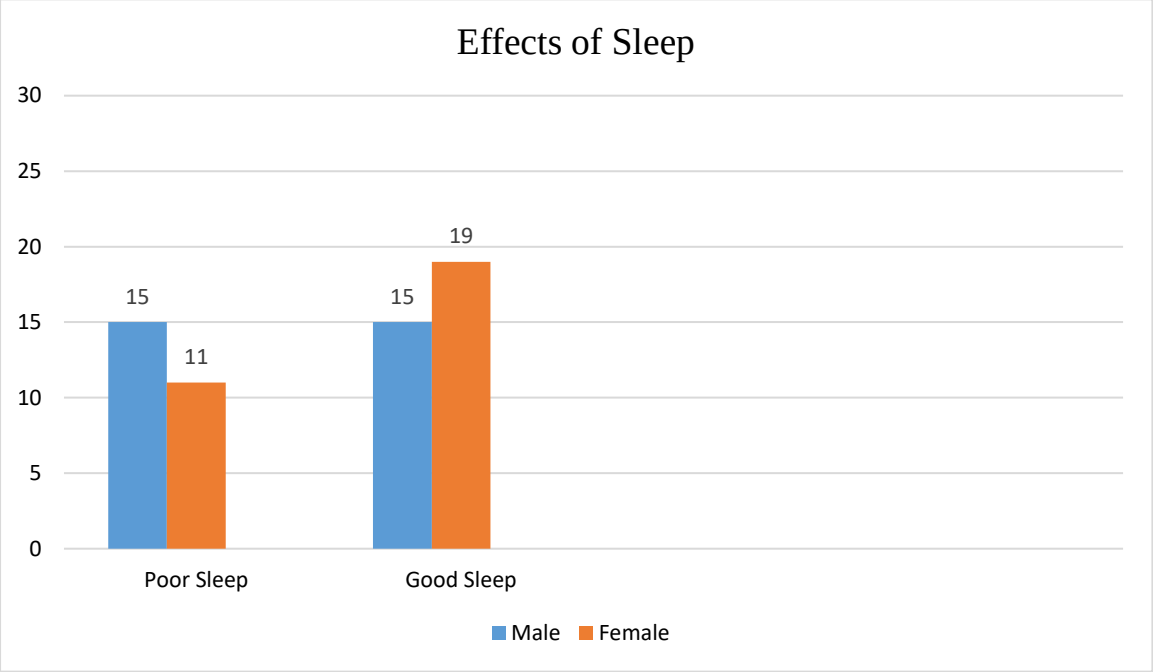


**Table 4**

*Level of Quality of life*

*(N=60)*

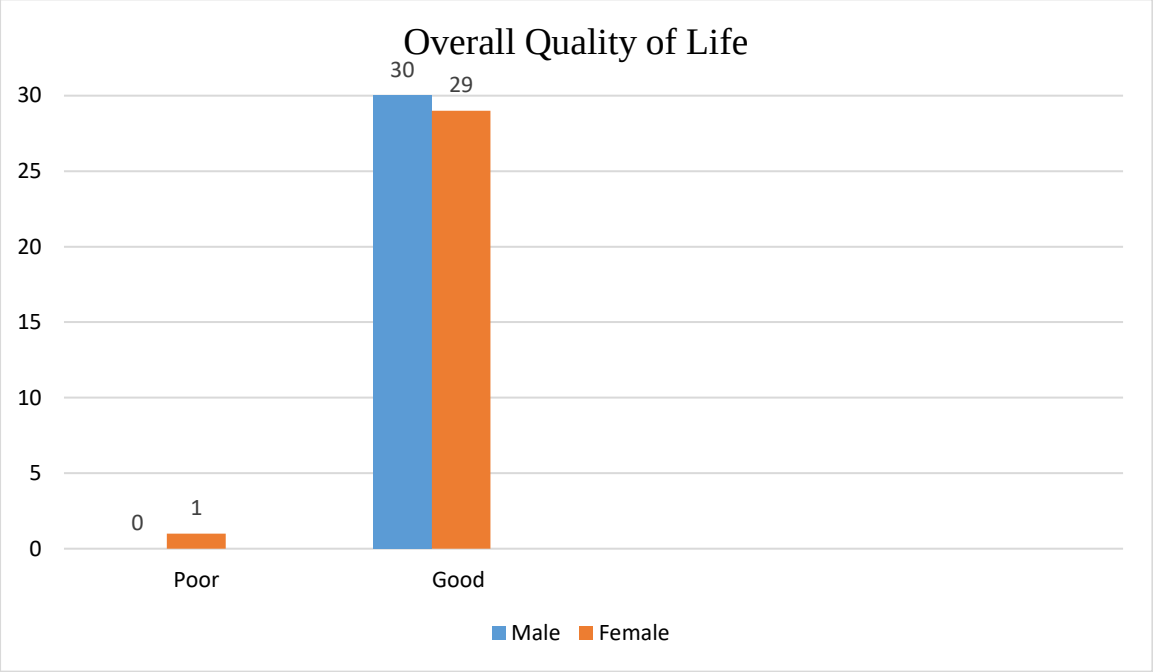
| Quality of life | Gender | Number | Percentage (%) |
|---|---|---|---|
| Poor Over all | Male | 0 | 0 |
| Quality of life | Female | 1 | 1.6 |
| Good Over all | Male | 30 | 50 |
| Quality of life | Female | 29 | 48.3 |
| Poor Physical | Male | 0 | 0 |
| | Female | 0 | 0 |
| Good Physical | Male | 30 | 50 |
| | Female | 30 | 50 |
| Poor psychological | Male | 0 | 0 |
| | Female | 0 | 0 |
| Good psychological | Male | 30 | 50 |
| | Female | 30 | 50 |
| Poor Environmental | Male | 0 | 0 |
| | Female | 0 | 0 |
| Good Environmental | Male | 30 | 50 |
| | Female | 30 | 50 |
| Poor Social | Male | 1 | 1.6 |
| | Female | 1 | 1.6 |
| Good Social | Male | 29 | 48.3 |
| | Female | 29 | 48.3 |

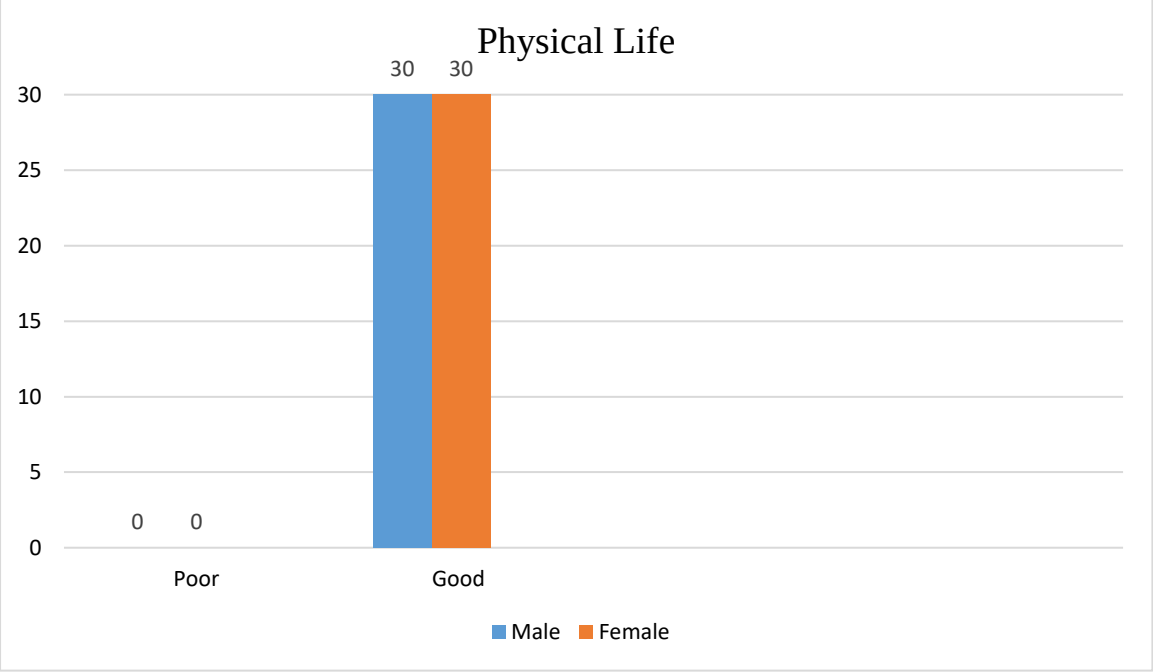
Percentage are rounded off

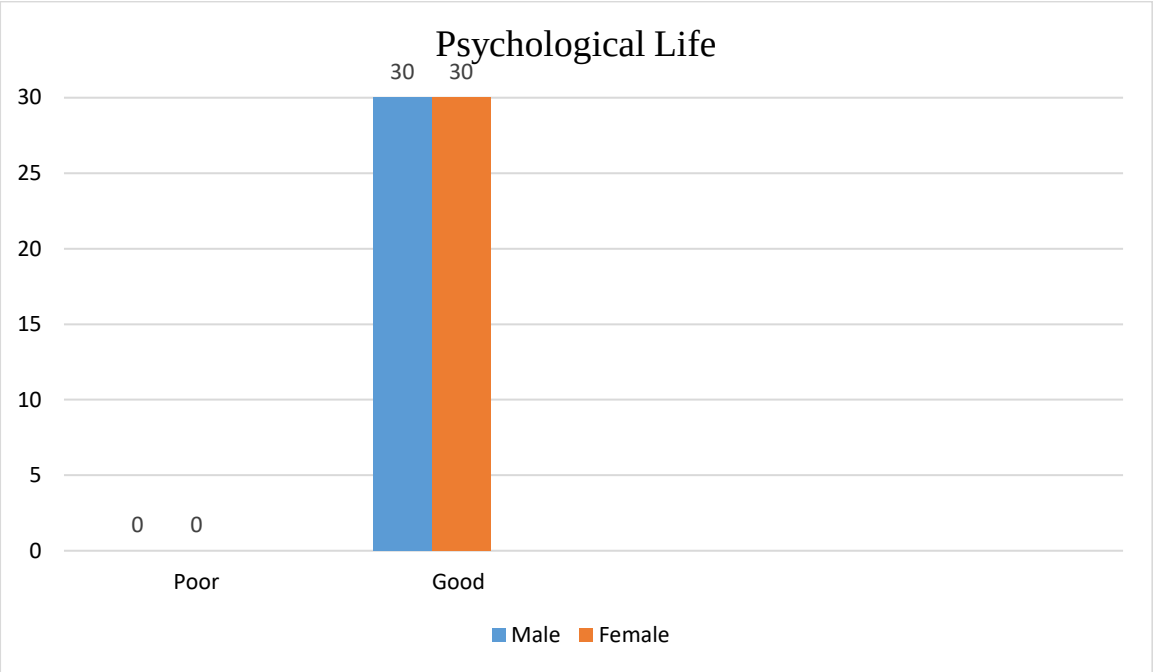
Table 4 shows the level of Quality of Life in adults (male and female). The table clearly shows the quality of life have 5 domains, in the domain of overall quality of life, 1.6% female have poor overall quality of life. Compared to female, male have highly good overall quality of life. 50% male and 48.3% female have good overall quality of life. In physical domain, 50% male and 50% female have good physical life. They have enough energy for daily activities, proper sleep. In Psychological life, 50% male and 50% female have good psychological life. They have high satisfaction in their life, good thoughts about their bodily appearance. In environmental life, 50% of male and female adults have good environmental life. So their surroundings, communication, personal and sexual relationship are good. In social life, 1.6 % male and female adults have poor social life, so these people will have poor transport facilities, no access to health centers and unhealthy environment resulting in poor social life. 48.3% male and female have good social life. Finding shows that majority of the participants have good quality of life.

**Figure 4**

*Level of Quality of Life*




Psychological Life
30
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10
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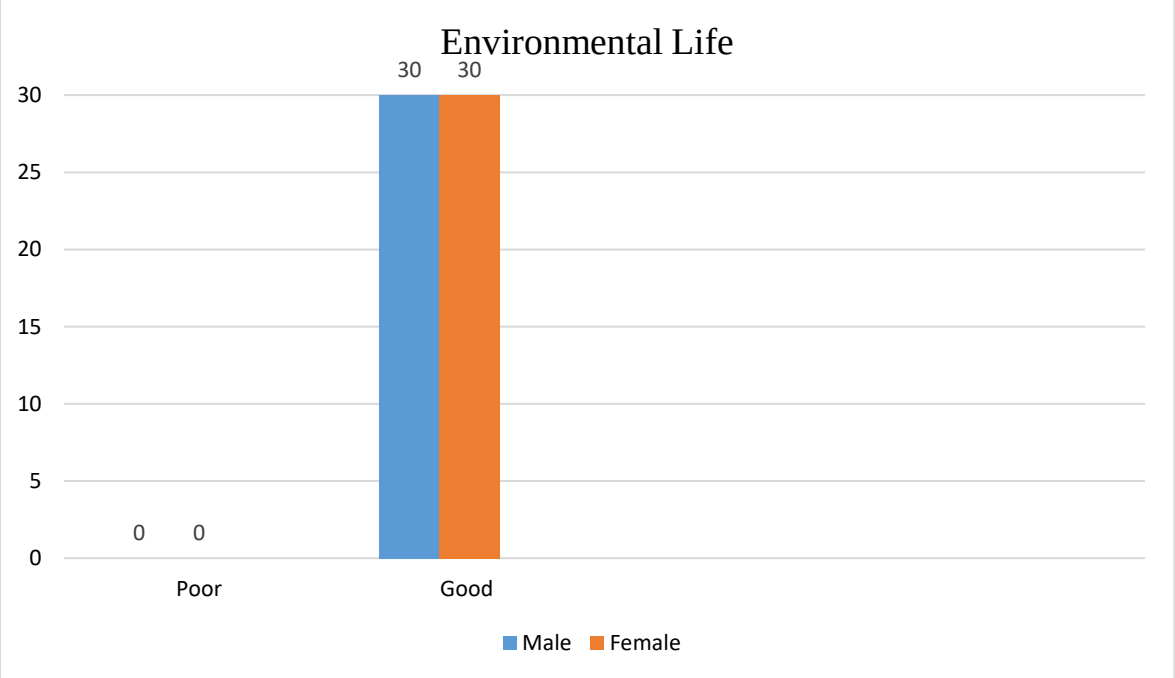
30
30
0
0
Poor
Good
Male
Female


Environmental Life
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Poor
Good
Male
Female

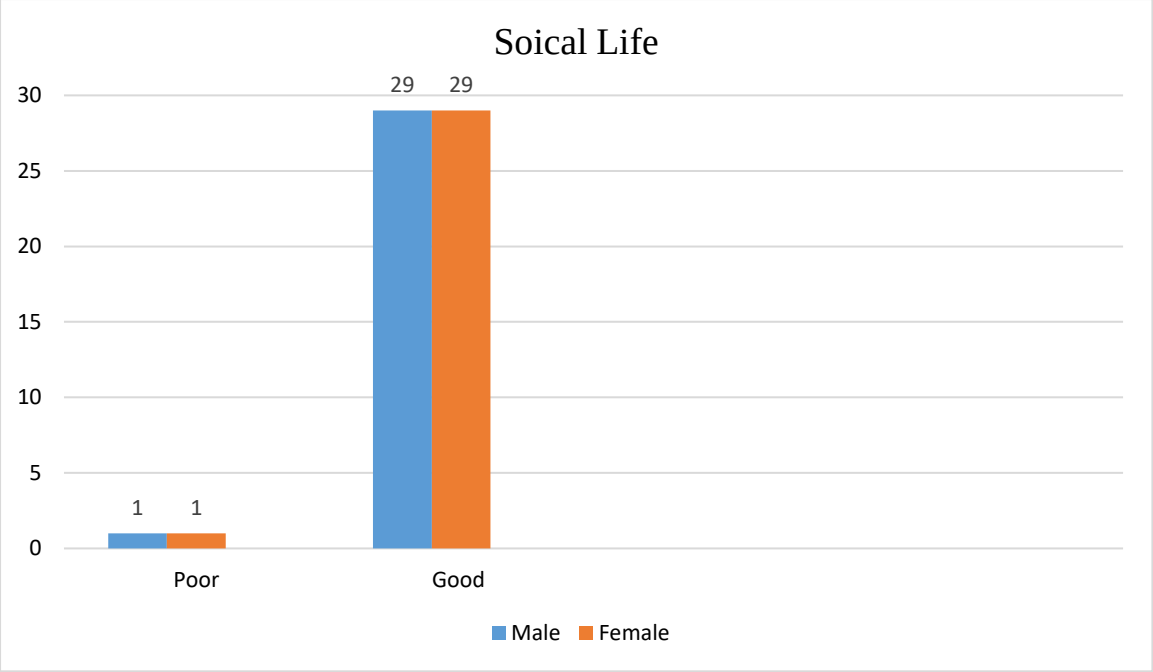
Soical Life
30
25
20
15
10
5
0
29
29
1
1
Poor
Good
Male
Female

**Table 5**

*Correlation between sleep apnea, effects of sleep and quality of life among adults*

| | N | Sleep Apnea | Effects of sleep | overall quality of life | Physiological | Psychological | Environmental | Sociological |
|---|---|---|---|---|---|---|---|---|
| Sleep Apnea | 60 | 1 | .967** | -.177 | -.173 | -.389** | -.309* | .100 |
| Effects of sleep | 60 | .967** | 1 | -.134 | -.136 | -.368** | -.293* | .136 |
| overall quality of Life | 60 | -.177 | -.134 | 1 | .385** | .374** | .134 | .085 |
| Physiological | 60 | -.173 | -.136 | .385** | 1 | .324* | .341** | .349** |
| Psychological | 60 | -.389** | -.368** | .374** | .324* | 1 | .639** | -.205 |
| Environmental | 60 | -.309* | -.293* | .134 | .341** | .639** | 1 | .065 |
| Sociological | 60 | .100 | .136 | .085 | .349** | -.205 | .065 | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 5 shows the correlation between the variables of sleep apnea, effects of sleep and quality of life among adults which is found to be significant at 0.01 level. The correlated score of sleep apnea and effects of sleep is found to be r = .968, p= <0.001, which indicates that sleep apnea and effects of sleep have positive significant correlation. There, if the sleep apnea increased, effects of sleep will increased in participants. The correlated score of sleep apnea and quality of life is found in Psychological life to be r= -.389, p = <0.001, which indicates that there is a negative significant correlation between sleep apnea and domain of psychological life in quality of life. The findings indicates that if the sleep apnea increased, the domain of psychological life in quality of life will decrease. Correlated score of sleep apnea and domain of environmental life in quality of life is found to be r= -.309, p= <0.001, which indicates that there is a negative significant correlation between sleep apnea and domain of environmental life in quality of life. The findings indicates that if the sleep apnea increased, the domain of environmental life in quality of life will decrease. The correlated score of effects of sleep and quality of life is found in Psychological life is r = -368, p = < 0.001, which indicates that there is a negative significant correlation between effects of sleep and domain of psychological life in quality of life. The findings indicates that if effects of sleep increased, the domain of psychological life in quality of life will decreased. And correlated score of effects of sleep and quality of life is found in environmental life to be r= -.293, p =<0.001 which indicates that there is a negative significant correlation between effects of sleep and domain of environmental life in quality of life. The findings indicates that if the effects of sleep increased, the domain of environmental life in quality of life will decrease. A study on Sleep Apnea and Health-Related Quality of Life: A Population-Based Study by Chen NK, et al (2017). This population-based study explored the relationship between sleep apnea and health-related quality of life. The research demonstrated that sleep apnea is associated with lower quality of life, including

physical, mental, and social well-being, emphasizing the need for effective management of sleep apnea to improve overall quality of life.

Hence the Hypothesis 1 stating***, "There will be a significant relationship between sleep apnea, effects of sleep and quality of life"*** is **accepted**.

**Table 6**

*Correlation between Sleep apnea and effects of sleep among adults.*

| Variables | N | sleep apnea | Effects of Sleep |
|---|---|---|---|
| Sleep apnea | 60 | 1 | .967** |
| Effects of sleep | 60 | . 967** | 1 |

**. Correlation is no significant at the 0.01 level (2-tailed)

The table 6 shows the correlation between sleep apnea and effects of sleep among adults which is found to be significant at 0.01 level. The correlated score of sleep apnea and effects of sleep is found to be r= .967, p= < 0.01, which indicates that sleep apnea have positive significant relationship with effects of sleep. The findings shows that if the sleep apnea increased, the effects of sleep will increase in the individuals due to unhealthy diets, smoking, obesity, alcohol consumption, smart phone addiction, lack of exercise all contribute to sleep apnea and its associated negative effects of sleep, such as disturbed sleep, breathing problems, and loud snoring. A study association between sleep apnea and daytime sleepiness: Redline et al., 2014 conducted a study on Sleep Heart Health Study" examined the association between sleep apnea and daytime sleepiness in a large cohort of adults. It found a significant positive relationship, indicating that sleep apnea was associated with increased daytime sleepiness which is similar to this study findings.

Hence the Hypothesis 2 stating, ***"There will be a significant relationship between sleep apnea, effects of sleep"*** is **accepted**.

**Table 7**

*Correlation between sleep apnea and quality of life among adults*

| | N | Sleep Apnea | Overall quality of life | Physiological | Psychological | Environmental | Sociological |
|---|---|---|---|---|---|---|---|
| Sleep Apnea | 60 | 1 | -.177 | -.173 | -.389** | -.309* | .100 |
| Overall quality of Life | 60 | -.177 | 1 | .385** | .374** | .134 | .085 |
| Physiological | 60 | -.173 | .385** | 1 | .324* | .341** | .349** |
| Psychological | 60 | -.389** | .374** | .324* | 1 | .639** | -.205 |
| Environmental | 60 | -.309* | .134 | .341** | .639** | 1 | .065 |
| Sociological | 60 | .100 | .085 | .349** | -.205 | .065 | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The table 7 shows the correlation between the variables of sleep apnea and quality of life among adults which is found to be significant at 0.01 level. The correlated score of sleep apnea and quality of life is found in Psychological life to be r = -.389, p = <0.01, which indicates that there is a negative significant correlation between sleep apnea and domain of psychological life in quality of life. Sleep apnea will have an impact on a person's psychological well-being,

including life satisfaction, self-esteem, and ideas regarding body image. Therefore, the psychological life domain of quality of life will decline as sleep apnea increases. Correlated score of sleep apnea and domain of environmental life in quality of life is found to be r = -.309, p= <0.05, which indicates that there is a negative significant correlation between sleep apnea and domain of environmental life in quality of life. Sleep apnea will have an impact on the area a person lives in because of dangerous surroundings, poor transportation, and inaccessible medical facilities. As a result, the quality of life domain environmental life will decrease along with the prevalence of sleep apnea. A study on "Impact of Sleep Apnea on Quality of Life in Middle-Aged Adults: A Longitudinal Analysis" by Smith, J., Johnson, R., et al (2015). This study followed a cohort of middle-aged adults over a five-year period and assessed the impact of sleep apnea on their quality of life. The results showed a significant negative relationship between sleep apnea severity and overall quality of life scores which is similar to this current study.

Hence the Hypothesis 3 stating, *"**There will a significant relationship between sleep apnea and quality of life among adults"*** is **accepted.**

**Table 8**

*Correlation between Effects of Sleep and Quality of Life among adults*

| | N | Effects of sleep | overall quality of life | Physiological | Psychological | Environmental | Sociological |
|---|---|---|---|---|---|---|---|
| Effects of sleep | 60 | 1 | -.134 | -.136 | -.368** | -.293* | .136 |
| overall quality of Life | 60 | -.134 | 1 | .385** | .374** | .134 | .085 |
| Physiological | 60 | -.136 | .385** | 1 | .324* | .341** | .349** |
| Psychological | 60 | -.368** | .374** | .324* | 1 | .639** | -.205 |
| Environmental | 60 | -.293* | .134 | .341** | .639** | 1 | .065 |
| Sociological | 60 | .136 | .085 | .349** | -.205 | .065 | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 8 shows the correlation between the variables of effects of sleep and Quality of Life among adults which is found to be significant at 0.01 level. The correlated score of effects of sleep and quality of life is found in Psychological life is r = -368, p = 0.01, which indicates that there is a negative significant correlation between effects of sleep and domain of

psychological life in quality of life. The findings indicates that if effects of sleep increased, the domain of psychological life in quality of life will decreased. And correlated score of effects of sleep and quality of life is found in environmental life to be r= -.293, p= 0.05 which indicates that there is a negative significant correlation between effects of sleep and domain of environmental life in quality of life. The findings indicates that if the effects of sleep increased, the domain of environmental life in quality of life will decrease. The effects of sleep will be impacted by sleep apnea, an unhealthy atmosphere, the presence of smartphones, and work pressure. The quality of life will decline as a result of sleep's detrimental impact on both the environmental and psychological aspects of existence. A study sleep symptoms, race/ethnicity, and socioeconomic position by Grandner, M. A., Petrov, M. E., Rattanaumpawan, P., Jackson, N., Platt, A., & Patel, N. P. (2013). This study examined the relationship between sleep symptoms and quality of life among a diverse sample of adults. The findings revealed that poor sleep quality was associated with lower overall quality of life, and this relationship was consistent across different racial/ethnic groups and socioeconomic positions which is similar to the current study.

Hence the Hypothesis 4 stating, ***"There will a significant relationship between effects of sleep and quality of life among adults"*** is **accepted.**

**Table 9**

*Group Statistics based on Gender and Independent Sample t- test for Gender Differences among Variables*

(N= 60)

| | Gender | N | Mean | Std. Deviation | Std. Error Mean | T | P |
|---|---|---|---|---|---|---|---|
| Sleep Apnea | Male | 30 | 2.0333 | 1.27261 | .23235 | .689 | .494 |
| | Female | 30 | 1.7667 | 1.69550 | .30955 | | |
| Effects of sleep | Male | 30 | 5.8667 | 3.00268 | .54821 | .354 | .725 |
| | Female | 30 | 5.5667 | 3.53976 | .64627 | | |
| Overall quality of Life | Male | 30 | 6.8000 | 1.18613 | .21656 | .639 | .526 |
| | Female | 30 | 6.5667 | 1.61210 | .29433 | | |
| Physiological | Male | 30 | 19.4000 | 2.48582 | .45385 | .093 | .926 |
| | Female | 30 | 19.3333 | 3.03239 | .55364 | | |
| Psychological | Male | 30 | 17.8000 | 3.64266 | .66506 | -1.428 | .159 |
| | Female | 30 | 19.1667 | 3.76997 | .68830 | | |
| Sociological | Male | 30 | 8.9000 | 2.32453 | .42440 | .929 | .356 |
| | Female | 30 | 8.3333 | 2.39732 | .43769 | | |
| Environmental | Male | 30 | 25.0000 | 3.46410 | .63246 | .453 | .652 |
| | Female | 30 | 24.5000 | 4.95323 | .90433 | | |

Table 9 shows the gender difference in sleep apnea, effects of sleep and quality of life among adults calculated by independent sample t-test. The mean scores of sleep apnea among male and female are 2.03 and 1.76. The mean scores of effects of sleep among male and female are 5.86 and 5.56. The mean scores of quality of life among male and female are 6.80 and 6.56. The mean scores of physiological among male and female are 19.40 and 19.33. The mean scores of psychological among male and female are 17.80 and 19.16. The mean scores of sociological among male and female are 8.90 and 8.33. The mean scores of environmental among male and female are 25.00 and 24.50. The t-value for sleep apnea is found to be .689, p = 0.494. The t-value for effects of sleep is found to be .354, p = 0.725. The t-value for quality of life is found to be .639, p= 0.526. Though the statistical value indicates that there is partially significant gender difference among the variable of sleep apnea, effects of sleep and quality of life. This may be because both genders could experience similar type of problems in sleep and health. A study gender Differences in the Impact of Sleep Apnea on Quality of Life" by Lee, C. et al. (2017). This study explores the gender differences in the impact of sleep apnea on quality of life. It examines the relationship between sleep apnea severity, symptoms, and health-related quality of life measures in both men and women. The findings highlight unique challenges faced by each gender and the need for tailored interventions.

Hence, the Hypothesis 5 stating, ***"There will be a significant gender difference in sleep apnea, effects of sleep and quality of life"*** is **accepted.**

# SUMMARY AND CONCLUSION

# Chapter V

## Summary and Conclusion

The present study was conducted to assess the relationship between sleep apnea, effects of sleep and quality of life among adults. Having a high quality of life requires maintaining good physical and mental health. Both physical and mental health benefit from sleep. The life cycle would be disrupted if sleep spread. People with sleep apnea are more likely to be involved in automobile and workplace accidents. Obesity considerably increases the risk of sleep apnea. It's possible that person inherited a narrow throat. Sleep apnea is two to three times common in men than in women. The risk is increased for women who are overweight or have gone through menopause. Sleep apnea is far more common in older people. Sleep apnea can cured if a person return to a healthy weight, but it can recur if she or he regain the weight. Therefore, sleep apnea will negatively affect the effects of sleep which could be poor sleep, nightmares, headache, trouble breathing. Hence, in this study an attempt to examine the people's quality of life and it will affect due to sleep apnea, and to find out the effects of sleep.

The study was initiated with the following objectives;

- To find the relationship between sleep apnea, effect of sleep and quality of life among adults.
- To assess the Level of sleep apnea among adults.
- To assess the Level of effect of sleep among adults.
- To assess the Level of quality of life among adults.
- To assess the gender differences between sleep apnea effects of sleep and quality of life among adults.

The study included a total sample of 60 adults (30 male and 30 female). The age range of the sample is between 18-30 years. Random sampling method was used in selecting the sample according to the inclusion and exclusion criteria.

**Tools used in the study were**

- Stop bang questionnaire ,Chung et al (2008)
- WHO Quality of life brief, World health organization (1995)
- Pittsburgh sleep quality index , Daniel J. Buysse and colleagues (1988)

The hypothesis formulated for the research were;

- There will be a significant relationship between sleep apnea, effect of sleep and quality of life among adults
- There will be a significant relationship between sleep apnea and effects of sleep among adults.
- There will be a significant relationship between sleep apnea and quality of life among gender.
- There will be a significant relationship between effect of sleep and quality of life among adults.
- There will be a significant gender difference on sleep apnea, effect of sleep and quality of life among adults.

The scoring was done according to the scoring key and interpreted using the norms provided by the authors. The results were analyzed using the SPSS software version 29.0.0.0. Pearson Correlation and Independent Sample T test were used to verify the hypothesis. The findings are as follows,

- There will be a significant relationship between sleep apnea, effect of sleep and quality of life among adults. Hence the formulated hypothesis 1 has been accepted.
- There will be a significant relationship between sleep apnea and effects of sleep among adults. Hence the formulated hypothesis 2 has been accepted.
- There will be a significant relationship between sleep apnea and quality of life among gender. Hence the formulated hypothesis 3 has been accepted.
- There will be a significant relationship between effect of sleep and quality of life among adults. Hence the formulated hypothesis 4 has been accepted.
- There will be a significant gender difference on sleep apnea, effect of sleep and quality of life among adults. Hence the formulated hypothesis 5 has been partially accepted.

**Conclusions**

People with sleep apnea face many difficulties in their life. Such as obesity, breathing issues, snoring, accidents. Due to sleep apnea, people's quality of life and effects of sleep will affect which could be dissatisfaction in life, low self- esteem, inferiority about physical appearance, wake up in the middle of the night, loud snores, cough, physical pain, nightmares, headache. Treating the sleep apnea is most effective way to improve the quality of life.it could be treated by changing the lifestyle, such as breathing exercise, weight loss, avoiding sedatives,

healthy diets and psychological intervention. While there is no permanent cure for sleep apnea but it could be manageable. Hence, majority of participants have less chance to meet sleep apnea. Least amount of participants have the chances to meet the sleep apnea. In order to cope with the disorder people needed maintain a healthy weight, healthy diets and regular exercise. Regular exercise can help ease the symptoms of sleep apnea even without weight loss. The present study has pointed out that there is a significant relationship between sleep apnea, effects of sleep and quality of life among adults. Adults who have the chances to meet the sleep apnea need to do the physical exercise, healthy diets and psychological intervention such as cognitive therapy, breathing device such as a CPAP machine which provide the constant air pressure in throat to keep the air way open while breathe.

**Limitations of the Study**

- The research is conducted from Tamil Nadu
- The sample size of the study was small
- The sample included both male and female adults (age 18-30 years)

**Suggestions for the Further Research**

- The study can include addition variables like sleep paralysis, life satisfaction
- The research can be expanded to diversified and cross-cultural samples
- Further research can be carried out on a larger sample size
- More in depth analysis can be carried out on sleep apnea, effects of sleep and quality of life of different age groups
- Intervention studies can be done.

## Implications

The present study suggests that people with sleep apnea were having high effects of sleep which affects the Individuals quality of life. Hence the regular exercise, healthy diets and Psychological intervention are needed for the individuals who are affected by the sleep apnea. In order to manage the sleep apnea, individuals can seek the psychologist and can learn the managing techniques such as lose weight, quit smoking and drinking, regular exercise. The study also suggest that individual with sleep apnea may face vehicle accident, obesity, trouble breathing and low quality of life.

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# APPENDICES

# Chapter VII

## Appendices

## Annexure I

**Student Consent Form:**

I (Hema. D R) am pursuing my Master's degree in Clinical Psychology and I would like to have your participation in this academic research. I assure confidentiality with the details provided by you and it will be used only for the academic purpose. Thank you for the same.

**Study Procedure**

You will be given three tests in form type along with socio demographic profile. You need to respond to all items in the tests. There is no risk in undertaking the study. There will be no direct benefits to you for your participation in this study. Your response to the question will be anonymous and kept confidential. Your participation in this study is voluntary. It is up to decide to whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign this form. You are free to withdraw at any time and without giving a reason. There is no cost to you for your participation in this study.

**Consent Form**

"By signing this consent form, I confirm that I have and understood the information and have the opportunity to ask questions. I understand that my participation is voluntary and I am free to withdraw at any time, without giving a reason and without cost. I voluntarily agree to take part in this study."

Name of the participant: Place:

Signature: Date:

## Annexure II

## Personal Data Sheet

NAME :

AGE :

GENDER :

RELATION TO THE CHILD: Mother/Father

SOCIO-ECONOMIC STATUS:

EDUCATION :

OCCUPATION :

AREA : Rural/ Semi Urban/ Urban

I assure that the data collected will be used only for the study and will not be used for any other purposes and confidentiality will be maintained throughout and even after the study.

**Annexure III**

**Avinashilingam Institute for Home Science and Higher Education for Women**

**Coimbatore – 641043, India.**

**Confidentiality Statement**

I Hema. D R, pursuing my II M.Sc., Clinical Psychology from the Department of Psychology in Avinashilingam Institute for Home science and Higher Education for Women, Coimbatore-43, is assigned to do a thesis as a part of the curriculum to complete my course. In this connection, I am going to collect the information from adults (18-30 years), as my topic is "A Study on sleep apnea, effects of sleep and quality of life among adults". I assure that the data collected will be used only for the study and will not be used for any other purposes and confidentiality will be maintained throughout and even after the study.

Place:

Date: Signature of the Researcher

## Annexure IV

## Stop – Bang Sleep Apnea Questionnaire

## Chung F et.al. 2008 and BJA 2012

Kindly go through each one of the statements given in the questionnaire carefully. Judge whether the statement concerned is true in your case or not, mark your judgement with regard to each of the statement in the questionnaire using the following code:

Tick YES if the statement is appropriate in describing you.

Tick NO if the statement is not at all appropriate in describing you.

| **STOP** | | |
|---|---|---|
| Do you snore loudly (louder than talking or loud enough to be heard through close doors)? | Yes | No |
| Do you often feel tired, fatigued, or sleepy during daytime? | | |
| Has anyone observed you stop breathing during your sleep? | | |
| Do you have or are you being treated for high blood pressure? | | |

| **BANG** | | |
|---|---|---|
| BMI more than 35 kg/m2? | Yes | No |
| Age over 50 years old? | | |
| Neck circumference >16 inches (40 cm)? | | |
| Gender: Male? | | |

| **TOTAL SCORE** | | |
|---|---|---|

**Annexure V**

**WHO Quality of Life Scale-Brief**

**World Health Organization (1995)**

This questionnaire asks how you feel about your quality of life, health, or other areas of your life. Please answer all of the questions. If you are unsure about which response to give to a Question, please choose the one that appears most appropriate. This can often be your first response. Please keep in mind standards, hopes, pleasures, and concerns. We ask that you think about your life in the last two weeks. For example, thinking about the last two weeks a question might ask:

| | | | | | |
|---|---|---|---|---|---|
| 1 How would you rate your quality of life? | Very dissatisfied | Fairly Dissatisfied | Neither satisfied nor dissatisfied | Satisfied | Very satisfied |
| 2. How satisfied are you with your health? | | | | | |

**The following questions ask about how much you have experienced certain things in the last two weeks.**

| | | | | | |
|---|---|---|---|---|---|
| 3. To what extent do you feel that physical pain prevents you from doing what you need to do? | Not at all | A Small amount | A Moderate amount | A great deal | An Extreme amount |
| 4. How much do you need any medical treatment to function in your daily life? | | | | | |
| 5. How much do you enjoy life? | | | | | |
| 6. To what extent do you feel your life to be meaningful? | | | | | |
| 7. How well are you able to concentrate? | | | | | |
| 8. How safe do you feel in your daily life? | | | | | |
| 9. How healthy is your physical environment? | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 10. Do you have enough energy for everyday life? | Not at all | A little | Moderately | Mostly | Completely |
| 11. Are you able to accept your bodily appearance? | | | | | |
| 12. Have you enough money to meet your needs? | | | | | |
| 13. How available to you is the information you need in your daily life? | | | | | |
| 14. To what extent do you have the opportunity for leisure activities? | | | | | |
| 15. How well are you able to get around physically? | | | | | |

**The following questions ask you to say how good or satisfied you have felt about various aspects of your life over the last two weeks.**

| | | | | | |
|---|---|---|---|---|---|
| 16. How satisfied are you with your sleep? | Very Dissatisfied | Fairly Dissatisfied | Neither Satisfied nor Dissatisfied | Satisfied | Very satisfied |

| | | | | | |
|---|---|---|---|---|---|
| 17. How satisfied are you with your ability to perform your daily living activities? | | | | | |
| 18. How satisfied are you with your capacity for work | | | | | |
| 19. How satisfied are you with yourself? | | | | | |
| 20. How satisfied are you with your personal relationships? | | | | | |
| 21. How satisfied are you with your sex life? | | | | | |
| 22. How satisfied are you with the support you get from your friends? | | | | | |
| 23. How satisfied are you with the conditions of your living place? | | | | | |
| 24. How satisfied are you with your access to health services? | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 25. How satisfied are you with your transport? | | | | | |

**The following question refers to how often you have felt or experienced certain things in the last two weeks.**

| | | | | | |
|---|---|---|---|---|---|
| 26. How often do you have negative feelings such as blue mood, despair, anxiety or depression? | Never | Infrequently | Sometimes | Frequently | Always |

## Annexure VI

## Pittsburgh Sleep Quality Index

## Daniel J. Buysse and colleagues (1988)

Please rate the extent to which you agree or disagree with each of the following statements.

The following questions relate to your usual sleep habits during the past month only. Your answers should indicate that most accurate reply for the minority of the days and nights in the past months.

| | |
|---|---|
| During the past month, how many hours do you usually spend in bed at night? | |
| During the past month, how long (in minutes) has it usually take you to fall asleep each night? | |
| During the past month, when have you usually gotten up in the morning? | |
| During the past month, how many hours of actual sleep did you get at night? (This may be different than the numbers of hours you spend in bed) | |

Please select the options which is appropriate in describing your sleep:

| | | | | |
|---|---|---|---|---|
| During the past month, how often have you had trouble sleeping because you cannot get to sleep within 30 minutes? | Not during the past month | Less than once a week | Once or twice a week | Three or more times a week |
| During the past month, how often have you had trouble sleeping because you wake up in the middle of the night or early morning? | | | | |
| During the past month, how often have you had trouble sleeping because you have to get up to use the bathroom? | | | | |
| During the past month, how often have you had trouble sleeping because you cannot breathe comfortably? | | | | |
| During the past month, how often have you had trouble sleeping because you cough or snore loudly? | | | | |

| | | | | |
|---|---|---|---|---|
| During the past month, how often have you had trouble sleeping because you feel too cold? | | | | |
| During the past month, how often have you had trouble sleeping because you feel too hot? | | | | |
| During the past month, how often have you had trouble sleeping because you have bad dreams? | | | | |
| During the past month, how often have you had trouble sleeping because you have pain? | | | | |
| Other reasons:<br>How often during the past month have you had trouble sleeping because of this? | | | | |

| | | | | |
|---|---|---|---|---|
| During the past month, how would you rate your sleep quality overall? | Very good | Fairly good | Fairly bad | Very bad |
| During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")? | Not during the past month | Less than once a week | Once or twice a week | Three or more times a week |
| During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity? | | | | |
| During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done? | No problem at all | Only a very slight problem | Somewhat of a problem | A very big problem |
| Do you have a bed partner or room-mate? | No bed partner or room mate | Partner/room-mate in other room | Partner in same room but not same bed | Partner in same bed |

# INSTITUTIONAL HUMAN ETHICS COMMITTEE


## Avinashilingam

**Institute for Home Science and Higher Education for Women**
**(Deemed to be university under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956) Re-accredited with 'A$^{++}$' Grade by NAAC.**
**Recognised by UGC Under Section 12 B**
**Coimbatore- 641043, Tamil Nadu, India**


06.01.2023



To
Ms. Hema, D. R.
Department of Clinical Psychology
Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore- 641043

DearHema,

Ref: Your proposal No. IHEC/22-23/CP-06 entitled "Study on Sleep Apnea and Effect of Sleep Quality and Quality of Life among Adults"submitted for approval of IHEC on 19.11.2022.

The Institutional Human Ethics Committee of our University hereby grants approval to your research proposal No.IHEC/22-23/CP-06 entitled "Study on Sleep Apnea and Effect of Sleep Quality and Quality of Life among Adults" submitted by you. The Approval number for the same is AUW/IHEC/CP-22-23/XMT-06.

We wish you all the best in your research endeavours.

Regards

6.1.23

Dr. A Thirumani Devi
Member Secretary

Institutional Human Ethics Committee