PREVALENCE AND ASSOCIATED FACTORS OF SLEEP DISORDER AMONG ADULTS IN URBAN AND RURAL AREAS OF KOLAR

By

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Under the guidance of

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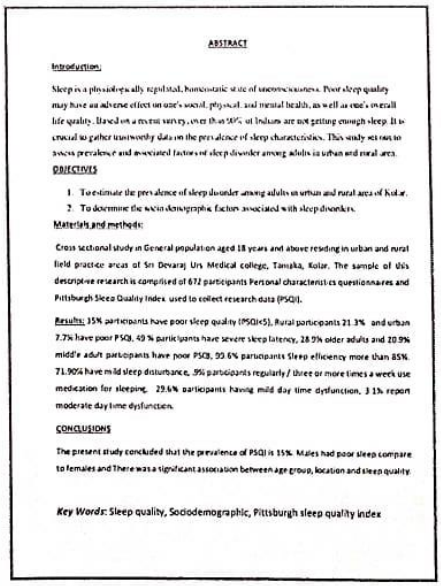

ABSTRACT

Introduction:

Sleep is a physiologically regulated, homeostatic state of unconsciousness. Poor sleep quality may have an adverse effect on one's social, physical, and mental health, as well as one's overall life quality. Based on a recent survey, over than 50% of Indians are not getting enough sleep. It is crucial to gather trustworthy data on the prevalence of sleep characteristics. This study set out to assess prevalence and associated factors of sleep disorder among adults in urban and rural area.

OBJECTIVES

1. To estimate the prevalence of sleep disorder among adults in urban and rural area of Kolar.
2. To determine the socio demographic factors associated with sleep disorders.

Materials and methods:

Cross sectional study in General population aged 18 years and above residing in urban and rural field practice areas of Sri Devaraj Urs Medical college, Tamaka, Kolar. The sample of this descriptive research is comprised of 672 participants Personal characteristics questionnaires and Pittsburgh Sleep Quality Index used to collect research data (PSQI).

Results: 35% participants have poor sleep quality (PSQI>5), Rural participants 21.3% and urban 7.7% have poor PSQI, 49 % participants have severe sleep latency, 28.9% older adults and 20.9% middle adult participants have poor PSQI, 99.6% participants Sleep efficiency more than 85%. 71.90% have mild sleep disturbance, .9% participants regularly / three or more times a week use medication for sleeping. 29.6% participants having mild day time dysfunction, 3.1% report moderate day time dysfunction.

CONCLUSIONS

The present study concluded that the prevalence of PSQI is 35%. Males had poor sleep compare to females and There was a significant association between age group, location and sleep quality.

Key Words: Sleep quality, Sociodemographic, Pittsburgh sleep quality index

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ABREVATION

BMI -Body Mass Index

CI -Confidence Interval

CTRI -Clinical Trials Registry-India

CVD – Cardio Vascular Disease

DSM 5 – Diagnostic and statistical manual of mental disorder

GATS -Global Adult Tobacco Survey

GLS – Global Sleep Score

ICD - International Classification of Disorders

ICSD 3- International Classification Of Sleep

IEC -Institutional Ethical Committee

MI - Myocardial Infraction

NFS -National Sleep Foundation

NREM – Non Rapid Eye Movement

OR -Odds Ratio

PSQI -Pittsburg Sleep Quality Index

QOL -Quality of life

REM - Rapid Eye Movement

RHTC – Rural Health Training Center/

RLJHRC - R L Jalappa hospital and research center

RLS – Restless Leg Syndrome

RR -Relative Risk

SD -Standard Deviation

SDUMC -Sri Devaraj Urs Medical College

SPSS - Statistical Package for the Social Sciences

SRD -Sleep Related Disorder

STATA -Software for Statistics and Data Science

SWS - Slow Wave Sleep

UHTC -Urban Health Training Center

USA -United States of America

WHO - World Health Organization

ABSTRACT

Introduction:

Sleep is a physiologically regulated, homeostatic state of unconsciousness. Poor sleep quality may have an adverse effect on one's social, physical, and mental health, as well as one's overall life quality. Based on a recent survey, over than 90% of Indians are not getting enough sleep. It is crucial to gather trustworthy data on the prevalence of sleep characteristics. This study set out to assess prevalence and associated factors of sleep disorder among adults in urban and rural area.

Objectives

1. To estimate the prevalence of sleep disorder among adults in urban and rural area of Kolar.
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Materials and methods:

A Cross sectional study conducted in the General population aged 18 years and above residing in urban and rural field practice areas of Sri Devaraj Urs Medical college, Tamaka, Kolar. The sample of this descriptive research is comprised of 672 participants Personal characteristics questionnaires and Pittsburgh Sleep Quality Index used to collect research data (PSQI).

Results: 15% participants have poor sleep quality (PSQI<5), Rural participants 21.3% and urban 7.7% have poor PSQI, 49 % participants have severe sleep latency, 28.9% older adults and 20.9% middle adult participants have poor PSQI, 99.6% participants Sleep efficiency more than 85%, 71.90% have mild sleep disturbance, .9% participants regularly / three or more times a week use medication for sleeping. 29.6% participants having mild day time dysfunction, 3.1% report moderate day time dysfunction.

Conclusions

The present study concluded that the prevalence of PSQI is 15%. Males had poor sleep compare to females and There was a significant association between age group, location and sleep quality.

Key Words: Sleep quality, Sociodemographic, Pittsburgh sleep quality index

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INTRODUCTION

1. INTRODUCTION:

Sleep is a physiologically regulated, homeostatic state of unconsciousness.[1] "Sleep is defined as a state of decreased awareness of environmental stimuli that are distinguished such as coma or hibernation and its relatively rapid reversibility."[2]

According to a simple behavioral definition, "sleep is a reversible behavioral state of perceptual disengagement and unresponsiveness to the environment."[3]

Infants need 12 to 15 hours of sleep, toddlers need 11 to 14 hours, preschoolers need 10 to 13 hours, and school-aged children need between 9 to 11 hours. Teenagers needed 8 to 10 hours of sleep, young adults needed 7 to 9 hours, and elderly persons needed 7 to 8 hours.[4]

According to the National Sleep Foundation, Across all age groups, excellent sleep quality is defined as "total sleep time of 85% or more of total time in bed, initiating sleep no later than half an hour while trying sleep, waking up no more than once during the night, and being able to resume Sleep within 15 minutes after an initial awakening".[5]

Self-reported sleep <6 hours a day has been Obesity, diabetes, and hypertension are all associated to an increased risk. This may be mediated by a reduction in physical delivering results by sleep deprivation.[6]

Poor sleep quality may have a significant impact on a person's social, physical, and mental health, as well as their overall quality of life..[7]

Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines insomnia as "difficulties beginning or sustaining sleep or early-morning waking those results in dissatisfaction with sleep quantity or quality." Any sleep problems caused by mental illnesses or physical diseases are not included in the definition.[8]

International Classification of Sleep Disorders (ICSD-3), insufficient sleep is defined as “reduced sleep pattern that has persisted for at least three months for most days of the week, along with complaints of sleepiness during the day”.[9]

The ICSD-3 has a similar fundamental structure to the ICSD-2, recognizing seven key sleep disorder criteria: insomnia, sleep-related breathing disorders, central hypersomnolence, circadian rhythm sleep-wake disorders, sleep-related movement disorders, parasomnias and unexplained sleep disorders. Guidelines for the management of insomnia, narcolepsy, and parasomnias have undergone significant changes.[10]

The term "parasomnia" was coined in 1932 by French researcher Henri Roger and is derived from the Greek words "para," which means "along the side of," and "Somnus," which means "sleep."[11]

The National Sleep Foundation reports that 59% of individuals aged 18 to 29 identify as night owls. They cannot obtain adequate sleep if they are unable to fall asleep earlier in the evening. Furthermore, sleep may be willingly lost owing to social considerations or involuntarily restricted due to living in a loud house or apartment.[12]

A healthy adult's sleep consists of 4 to 5 cycles of REM and NREM sleep, each lasting around 90 minutes. S1, S2, S3, and S4 are the four phases of NREM sleep. The American Academy of Sleep Medicine, sleep phases S3 and S4 are combined into N3 (AASM)[13]. Report on CDC survey results sleep deprivation affects 32.5% of adults, 34.1% of children, 74.6% of adolescents.[14]

In elderly, sleep problems may be both common and difficult. Their attention is a crucial part of holistic treatment that may affect quality of life. Sleep deprivation is associated with a higher risk of death, cardiovascular disease and poor Quality of Life (QOL).[15]

Shift employment with circadian disturbance was designated as a potential human carcinogen by the International Agency for Research on Cancer in 2007.[16] Sleep deprivation and the subsequent excessive daytime drowsiness is a prevalent sleep disorder among adults (EDS), Both biological and societal factors contribute to deprivation. Adolescent physiology, such as a biologically induced delayed sleep phase, is constantly present in many college students and older teens.[17] Some of the most common clinical indications of sleep disruption Symptoms of severe depression,, bipolar illness, and post-traumatic stress disorder include difficulty falling or staying asleep, poor sleep quality, nightmares, and excessive daytime drowsiness.[18]

Anxiety has been highlighted as one of the most negative repercussions of sleep deprivation and associated co-morbidities such as physical, mental, and social jetlag.[19] According to a recent study, over 90% of Indians do not get enough sleep, with up to 58% saying that poor sleep quality affects their job effectiveness and 11% falling asleep at work.[20]

In India, there is currently not enough published data on the prevalence of sleep disorders in the general population, especially in the community; so, the purpose of this study is to determine the prevalence of different sleep disorders in the general population in the community. Hence there is a need to study about sleep disorders among adults in Kolar.

OBJECTIVES OF STUDY

2 OBJECTIVES OF STUDY:

- To estimate the prevalence of sleep disorder among adults in urban and rural area of Kolar.

- To determine the socio demographic factors associated with sleep disorders among adults in urban and rural areas.

REVIEW OF LITERATURE

3 REVIEW OF LITERATURE

Sleep deprivation and insomnia are associated to a wide range of physical and mental health problems, increased risk of psychiatric disorders, suicide and chronic health disorders such as obesity, diabetes, cardiovascular disease etc.[21]

3.1 POPULATION AGEING

By 2030, 1/6th persons on the planet will be 60 or older. At this point, the population aged 60 and up may climb from 1 billion in 2020 to 1.4 billion. By 2050, the world's population of people aged 60 and up will have quadrupled. (There are 2.1 billion). The number of persons aged 80 and more is expected to triple between 2020 and 2050, reaching 426 million.[22]

According to World Health Organization (WHO) adult is a subject older than 18 years of age.[23]

Chronic insomnia was reported in 33% of adults. Insomnia was substantially correlated with increasing age and diabetes. 27 % of patients with insomnia were unaware of their illness.[24]

Department of Geriatrics, Amrita Institute of Medical Sciences, conducted a cross-sectional study, 52.5% reported poor sleep (PSQI >5). In contrast to individuals with >3 comorbid conditions showed a significant higher occurrence of poor sleep quality (PSQI >5) and daytime drowsiness. [25]

Table A. Sleep disorders in ≥ 60 years from different parts of world.

Author	Year	Prevalence rate	Geographical region
Foley et al.[26]	1995	23–34%	USA
Ohayon et al.[27]	1996	30%	France
Maggi et al.[28]	1998	45%	Italy
Chiu et al.[29]	1999	38.2%	Hong Kong (China)
Babar et al.[30]	2000	32.6%	Hawaii (Japanese Americans)
Pallesen et al.[31]	2001	38.6%	Norway
Schubert et al.[32]	2002	26.4%	USA
Sukying et al.[33]	2003	46.3%	Thailand
Su et al.[34]	2004	6%	Taiwan
Eser et al.[35]	2007	60.9%	Turkey (nursing home)
Makhlouf et al.[36]	2007	33.4%	Egypt (geriatric home)
Bonanni et al.[37]	2010	44.2%	Italy
López-Torres et al.[38]	2012	36.1%	Spain
Li et al.[39]	2013	49.7%	China (rural)
Tsou.[40]	2013	41%	Taiwan
Gambhir et al.[41]	2014	32%	India (hospital)
youb et al.[42]	2014	33.4%	Egypt
Yu et al.[43]	2015	10.4%	China
Ford et al.[44]	2015	21.3%	USA
Sagayadevan et al.[45]	2016	13.7%	Singapore (China, Malay, India)
Sakamoto et al.[46]	2017	15.2%	Ladakh, India
El-Gilany et al.[42]	2018	62.1%	Egypt (rural)
Anayansi et al.[47]	2019	59.6 - 66.8%	American Indian /Alaska
Bindu Krishnan et al.[48]	2020	62%	India
Tarushi Tanwar et al.[49]	2021	47.1%	New Delhi, India
Izraelle I. McKinnon.[50]	2022	57%	African-American women

a. GLOBAL SCENARIO

Insomnia strikes 10%-30% of the world's population, with some estimates of annual uses ranging as high as 50%-60%. It is more frequent in elderly residents, women, and people suffering from physical or mental illnesses.[24]

More over 20% of the general adult population in Canada and the United States suffer from insomnia, according to data from nationwide surveys, and this percentage is expected to rise over the next decades.[51] Another German study found that 34.7% were bad sleepers.[7-52]

In 2012 vs 2002, the risk of insomnia symptoms was dramatically higher among those aged 40-59 >16%, women >14%, and those in "very good" physical health >17%. [53] According to the survey, 35.9% of Germans have a PSQI of 5 or above, compared to 32.1% in Austria and 39.4% in Hong Kong. 16.6% of respondents aged 50 and over reported trouble sleeping.[54]

84% of patients were 'bad sleepers,' with global sleep scores (GLSc) more than 5. Excessive daytime drowsiness was reported in 57.5%, excessive daily tiredness in 72.5%, depression in 51.5%, and anxiety in 63.1%.[55] Inadequate sleep is more common among American Indians/Alaska Natives (AI/AN) than among non-Hispanic whites (NHW) (34.2%).[56]

b. INDIAN SCENARIO

A cross-sectional study conducted by St. Philomena's Hospital, Bengaluru revealed that prevalence of sleep disorders in India is high, the study pegged that 33% percentage of Indian adults having insomnia and insomnia was substantially related with increasing age and diabetes., 27% did not perceive the condition,[24] another cross study conducted at a tertiary care teaching hospital of Kolkata reported that 45.13% of

the study population suffered from chronic insomnia as per AIS Score, and a significant association of chronic insomnia with hypertension, diabetes, high cholesterol, heart disease, kidney disease, thyroid disease, asthma and chronic pain and gastritis.[57]

3.1.2 AGE RELATED SLEEP PROBLEMS

Healthy aging is associated with a reduction in daytime sleep propensity, sleep continuity, and Slow Wave Sleep (SWS) leads to an increase in daytime sleep propensity.[58] The age-related decline in SWS and decrease in daytime sleep inclination may indicate a decrease in homeostatic sleep requirements. Healthy elderly people who don't suffer from sleep disorders would assume to be less drowsy during the day than young adults..[59]

Carla.R et al., conducted a population-based study in Beaver Dam, Wisconsin with 2800 adults aged 53 -97 years. 26 % of the population reported one insomnia results indicate that symptoms of insomnia are common among older adults and are associated with a decrease in health-related quality of life.[60] A huge proportion of older persons in low-income areas are presently having sleep disorders, emphasizing the worldwide nature of this rising public health concern.[61] Percentage of insomnia is 33% among adults in India increasing age and diabetes were significantly associated with insomnia.[24] The age-adjusted prevalence of sleep problems ranged from 2.8% (China) to 17.0% (Poland).[52]Prevalence of nightmares in the elderly population studied was 21.7%,[62]

Older adults tend to sleep more lightly, take longer to start sleeping and sleep for shorter time spans than do younger adults. Older adults also tend to wake up multiple times during the night.[63]

3.1.3 GENDER DISCRIMINATION

Women reported difficulties in initiating sleep than men (10.1%, women 22.2%) and maintaining sleep (men 20.0%, women 29.4%) among age group 45-74 years old. Men who slept less had a higher BMI and greater difficulty initiating and sustaining sleep, whereas men who slept 9 hours were older and more likely to develop hypertension. Women who slept for 9 hours had a higher BMI and were more prone to have dyslipidemia. Increased and decreased sleep duration in women were linked to higher rates of hypertension, diabetes, menopause, and physical inactivity. [64]

Md Dilshad Manzar et al., conducted surveys 418 students overall, 43.1% had sleep problems, females were more affected (51.67% vs. 48.33% in males). The prevalence of circadian rhythm sleep disorder (11.6% vs. 9.5%) and delayed sleep phase syndrome (4.5% vs. 2.7%) was slightly higher in males.[65] Prevalence of sleep related disorder was found to be 37.3 % and 24.5% in female and male respectively. Female had significantly higher PSQI score as compared to male signifying poor sleep quality. Overall, 5.4% rated their own sleeping quality as very bad sleep.[25] The overall prevalence of SDB was 10.3%.; (9.9% in males and 10.8% in female subjects) It was found to correlate with increasing BMI.[62]

The prevalence of poor sleeper in females was 40.7%, which was significantly higher than that in males. Men might acquire a number of unhealthy sleeping habits. The use of alcohol, nicotine, and caffeine can all have an impact on your sleep.[66]

3.1.4 SLEEP DISORDERS AND PROBLEMS DURING PREGNANCY

Hormonal changes contribute to alterations in maternal sleep as early as the first trimester,[67] resulting in less total sleep, lower sleep efficiency, more frequent night

waking's, and less deep sleep than prior to pregnancy,[68] Common sleep disorders that tend to occur during pregnancy are obstructive sleep apnoea, restless legs syndrome, gastroesophageal reflux disorder, Obstructive Sleep apnoea, weight gain and nasal congestion lead many women to start snoring during pregnancy, which may be a risk factor for high blood pressure.[69] During the postpartum period, a woman's sensitivity to sleep disruption and mood disturbance is increased, and there is a strong bidirectional association between them. Both can have serious consequences for moms and their babies.[70]

3.1.5 URBANIZATION OF POPULATION

Compared with the urban population and the rural population presented a more predominantly early sleep pattern, as determined by the mid-sleep phase (rural: 2.26 ± 1.16; urban: 3.15 ± 1.55; *t*-test) also less social jetlag (rural: 0.32; urban: 0.55)[71]. Sleep quality could influence suicidality even in the absence of depressive symptoms in rural adults, which was convergent with the report of Geoffroy et al., that sleep complaints associated with increased suicide risk independently of psychiatric disorders in the US adult population.[72]

3.1.6 MARITAL STATUS AND IMPACT OF SPOUSES' SLEEP

A population-based study cross-sectional conducted in alameda country by Willian j et al., with 405 couples aged 51 to 94 years, findings suggest that spouses' sleep problems negatively impact partners' health and wellbeing.[73] According to living arrangements, sleep quality improved among empty nesters living as a couple, empty nesters living alone had poorer sleep quality (OR = 1.399), than nonempty nesters.[74]

3.1.7 HEALTH STATUS / BMI OF INDIVIDUAL

Chronic sleep loss and associated sleepiness and daytime impairments in adolescence are a genuine impediment to the achievement of academic success, health (for example depression, increased obesity risk), and safety (driving accidents).[75] Short sleep duration in both adults and children with an increased risk of obesity, an association that has long-range health implications.[76] Experimental studies of sleep restriction in healthy adult volunteers have shown that there are alterations in metabolic profiles (e.g: insulin, ghrelin, leptin, cortisol) associated with sleep loss, which result in insulin resistance, increased sympathetic nervous system activity, and increased hunger and decreased satiety.[77] Adults, getting less than seven hours of sleep a night on a regular basis has been linked with poor health, including weight gain. Body mass index of 30 or higher, diabetes, high blood pressure, heart disease, stroke, and depression.[63] PSQI global sleep-quality score was associated significantly with the presence of the metabolic syndrome, related to adiposity / waist circumference, body mass index, and percentage of body fat. This suggests that sleep quality may influence the metabolic syndrome.[78]

3.1.8 SOCIO ECONOMIC STATUS, EDUCATION AND OCCUPATION

Lower education, not living in partnership, and poorer self-rated quality of life (WHOQOL) with higher frequency of sleep problems.[61] 41.5 % of the elderly population was seen to suffer from excessive daytime sleepiness It correlated significantly with lower socio-economic strata.[62] Lower education levels and not living in partnership were consistently associated with higher prevalence of sleep problems.[61]

3.1.9 SOCIAL MEDIA

The prevalence of those with PSQ was 12.2%, and those with problematic internet use measured 23.3%, PSQ commonly exists among students and has a relationship with their psychological state and potentially addictive behavior, such as internet use.[5] Population estimates have shown that one-quarter to one-third of adolescents get inadequate nightly sleep, it has been speculated that this could be due to the increased use of internet and social media and increased competitiveness for academic performance.[79]

Adolescents with Internet addiction are characterized by late going to bed, late awakening, a decrease in the duration of night sleep, an increase in the time to fall asleep and frequent nighttime awakenings, and more pronounced daytime sleepiness.[80] The prevalence of those who had PSQ was 12.2% PSQ commonly exists among students and has a relationship with their psychological state and potentially addictive behaviour, such as internet use.[5]

3.1.10 ADDICTION

Smokers scored significantly lower on sleep quality, latency, duration, sleep efficiency than nonsmokers. Smokers also had more daytime dysfunction and a higher incidence of sleep problems.[81] Smoking at night was shown to be significantly associated with more of the insomnia and shorter sleep duration.[82]

Behavioral studies indicate that take up to two standard beverages before bedtime initially increases sleep, but these benefits fade after as little as three days of regular usage.[83] Alcohol intake may produce deep sleep at the initiation of the sleep cycle, but

if sleep continues for an extended period of time, total sleep quality may suffer attributable to a decrease in slow wave sleep and REM sleep rebound.[84]

Alcohol, nicotine, and caffeine may all interrupt sleep. This substance should be avoided in the night, consuming them might impact ability to sleep and sleep stages are differentially affected in users according to the drug to which they are addicted.[66]

3.1.10 CO-MORBIDITY / CHRONIC DISEASE

Inadequate sleep, or more specifically the suppression of slow wave and rapid eye movement sleep, has been associated with insulin resistance.[85]

Inadequate sleep is also associated with an increased risk of hypertension, cardiovascular disease, and mortality. Lower scores on a scale of self-rated health (SRH), which are also linked to insufficient sleep, have been shown to indicate an elevated risk of CVD and death.[86]

The short sleep duration and sleep complaints are modestly related to incident MI in middle-aged women but not men from the general population.[64]Sleep problems among children can be due to disease symptoms (e.g., pain, itching, wheezing) or medical management of the disease (e.g. nocturnal blood glucose monitoring)[87]

Sleep-Disordered Breathing and periodontal diseases are both associated with some systematic diseases, including cardiovascular diseases, metabolic disorders and cognitive dysfunction.[88]

3.1.11 NOCTURNAL VARIATION

Data from laboratory research show that reducing nocturnal sleep durations by as little as 1.3 to 1.5 hours for one night reduces daytime alertness by up to 32%, as

determined by the Multiple Sleep Latency Test.[89] Lifetime prevalence of Nocturnal Wandering (NW) was 29.2%.[90]

3.1.12 DISABILITY

Limited physical functionality or greater disability (WHODAS) and feelings of depression and anxiety were consistently strong, independent correlates of sleep problems, in both women and men.[61]

3.1.13 CONCEPTS OF QUALITY OF LIFE

Sleep-related disorders (SRDs) not only impair quality of life but also pose several health-related problems and have been considered "an unmet public health problem". Recognition and treatment of these disorders may help to prevent cardiovascular diseases, psychological disturbances, and accidents and also improve individual performance.[91]

3.2 PATHOPHYSIOLOGY

The regular sleep and waking states are created by a complicated neuronal network in the brain and are regulated by homeostatic and circadian processes. The two primary phases of sleep are rapid eye movement (REM) and non-REM (NREM).[92]

3.2.1 PHASES OF SLEEP

Two Types of Sleep

A sleep episode begins with Non-Rapid Eye Movement (NREM) stage 1, goes through stages 2, 3, and 4, and finally finishing with Rapid Eye Movement (REM).

NREM sleep accounts for 75 to 80 percent of total sleep duration, while REM sleep accounts for the remaining 20 to 25 percent. The initial NREM-REM sleep cycle lasts between 70 and 100 minutes on average.[3]

a. Non-Rapid Eye-Movement (NREM)
b. Rapid Eye Movement (REM)

Stage 1 Sleep

Stage 1 NREM sleep begins an episode. This stage generally lasts 1 to 7 mins (2 - 5 percentage) in the first cycle, comprising nearly 2 - 5 percent of the entire amount of sleep and It can be easily disrupted by loud noises. Stage 2 sleep lasts around 10 to 25 minutes in the first cycle and gradually increases in length with each subsequent cycle, eventually accounting for 45 to 55 percent of the overall sleep episode.[93]

Stage 2 Sleep

Lasts around 10 - 25 minutes (45 - 55%) in the first cycle.

Stages 3 and 4 Slow-Wave Sleep

Slow-wave sleep (SWS), which takes up 1/3rd of the night, stages 3 and 4, occurs during these stages. Only 3–8% of sleep time is spent in stage 3. In the initial cycle, stage 4 lasts for roughly 20 to 40 minutes (10 – 15%). Stage 4 of the NREM has the highest arousal threshold of any stage.[93]

Sleep is characterised by desynchronized (low-voltage, mixed-frequency) brain wave activity, muscle atonia and bursts of quick eye movements. There is an elevated risk of myocardial infarction in the morning because of the rapid spikes in heart rate and blood pressure that occur immediately waking.[3]

3.2.2 SLEEP DISORDERS INDICATORS

1. Sleep quality

2. Sleep latency / excessive daytime sleepiness

3. Nocturnal awakenings / increased movement during sleep

4. Sleep efficiency

5. Irregular breathing / Snoring[94]

3.3 Common sleep disorders

1. Insomnia.[95,96, 97]
2. Sleep apnoea.[98]
3. Restless legs syndrome (RLS)[99]
4. Narcolepsy[100]
5. Episodes of disorientation or confusion[101]

3.4 HEALTH EFFECTS OF SLEEP DISORDER

3.4.1 PHYSICAL EFFECTS

Sleepiness / Fatigue

Obesity / Diabetes / Hypertension / Stroke

Anger / Depression / Anxiety - Psychiatric disorders.[18]

3.4.2 COGNITIVE IMPAIRMENT

Performance deterioration / Attention and motivation

Diminishment of mental concentration / Intellectual capacity

Mental health complications / Inadequate rest impairs the ability to think

Handle stress / emotions.

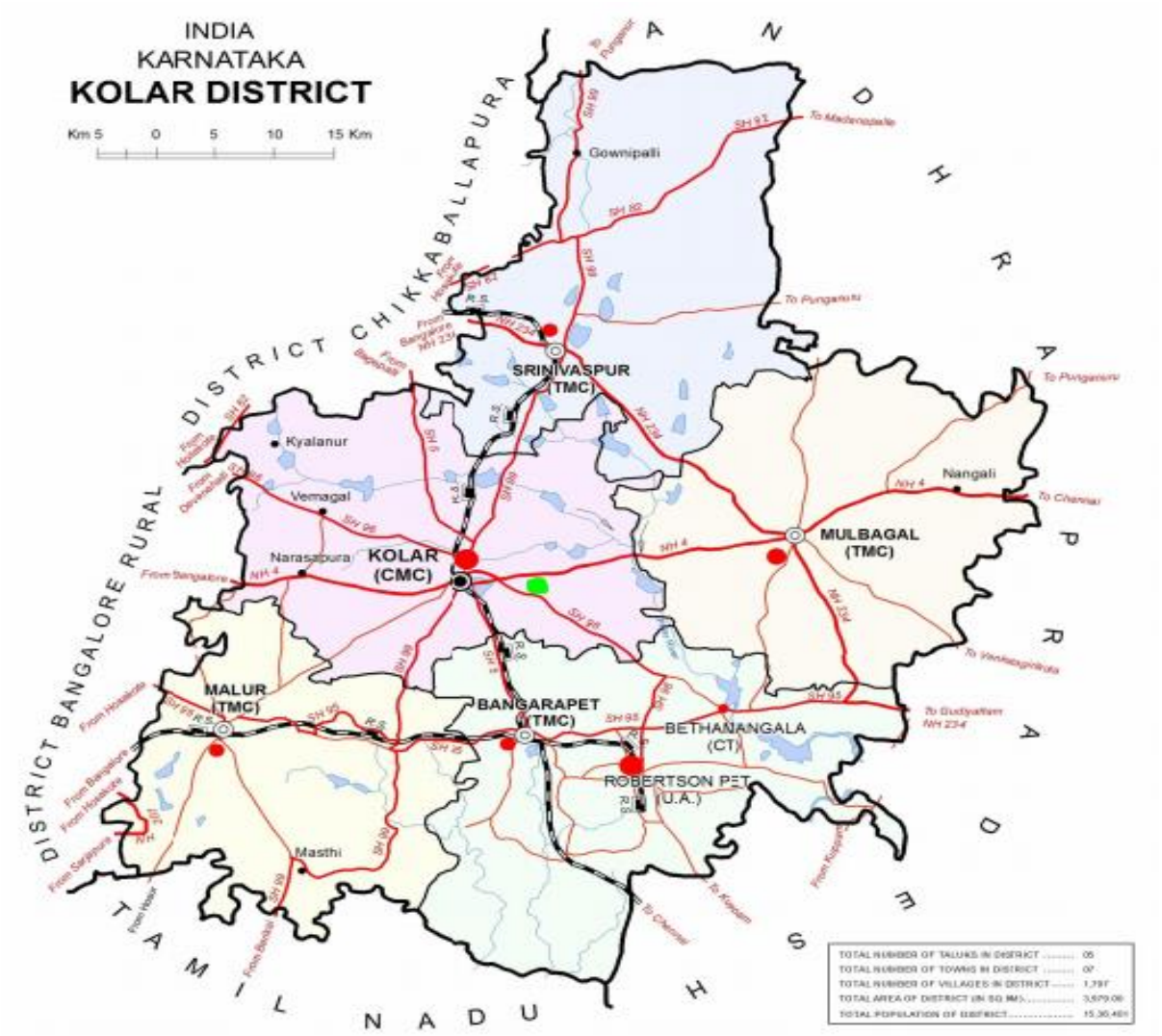
To maintain a healthy immune system[9]

MATERIALS AND METHODS

4 MATERIALS AND METHOD

4.1 Topography of Kolar district

Figure a: Map of Kolar District[102]



4.2. Study Setting:

Kolar district is located in southern Karnataka. It is bounded on the west by the Bangalore Rural district, on the north by the Chikballapur district, on the east by the Andhra Pradesh district of Chittoor, and on the south by the Tamil Nadu districts of Krishnagiri and Vellore.[103]

According to 2011 census the total population of Kolar is 15,36,401 with 7,76,396 males and 7,60,005 females, The population of Kolar is about 15.4 lakh with a literacy rate of 84%.[104]

The district includes six taluks, namely Mulbagal, Kolar, Bangarapet, Malur, Srinivaspura, and KGF.

The majority of the population speaks Kannada, with a significant number also speaking Telugu and Tamil

This study was undertaken in the rural and urban areas of Kolar District. The health care services in the district of Kolar are provided by both public and private healthcare sector. The public healthcare facilities include 264 Sub Centers, 65 Primary Health Centers (PHC's), two Community Health Centers (CHC), five Taluk hospitals, four Urban Health centers, and one District Hospital.[105]

4.3 Study Population:

The general population aged 18 and above who live in the urban and rural field practise areas of the Department of Community Medicine, Sri Devaraj Urs Medical College (SDUMC), Tamaka, Kolar.

a. Inclusion criteria:

- The general population aged 18 and above who live in urban and rural health training centres.

b. Exclusion criteria:

- Person who had diagnosed with mental illness.

4.4 **Sample Size**:

This sample size for this study was estimated based upon a survey done on prevalence of sleep among adults in urban population, the sample size was determined using self-reported PSQI. Prevalence of sleep problem was 37.8%, at 95% confidence interval with 5% alpha error, and for rural the estimated sample size is 311 by taking prevalence of 28.2% from a prior study, with a 95% confidence range and a 5% alpha error.

Calculation**:** $= \frac{Z_{\alpha}^{2}(p)\,(1-p)}{d^{2}}$

For Urban area: $= \frac{(1.96)^{2}\,(37.8)\,(62.2}{(5)^{2}}$

$= 361$

For Rural area $= \frac{(1.96)^{2}\,(28.2)\,(71.8)}{(5)^{2}}$

$= 311$

4.5 Sampling Procedure:

Rural Health Training Centre (RHTC) Devarayasamudra Rural field practice area has 22 villages with a total population of 11638, these 22 villages were under three sub-centres, sub-centres were considered as clusters for the study and from each sub-centre area 1 village will be selected by cluster sampling method. this village were

considered as clusters for the study, under three sub-centres, a from each sub-centre area 1 village will be selected by cluster sampling method.

Urban Health Training Center (UHTC) field practice area, there are 4 areas of which through simple random sampling Gandhi Nagar was selected it has 1083 households (5496 population) from UHTC 361 and RHTC 311 study participants was selected.

4.6 Study Design:

Community based cross sectional analytical study; this study was conducted from 1st January 2021 to 30th July 2022.

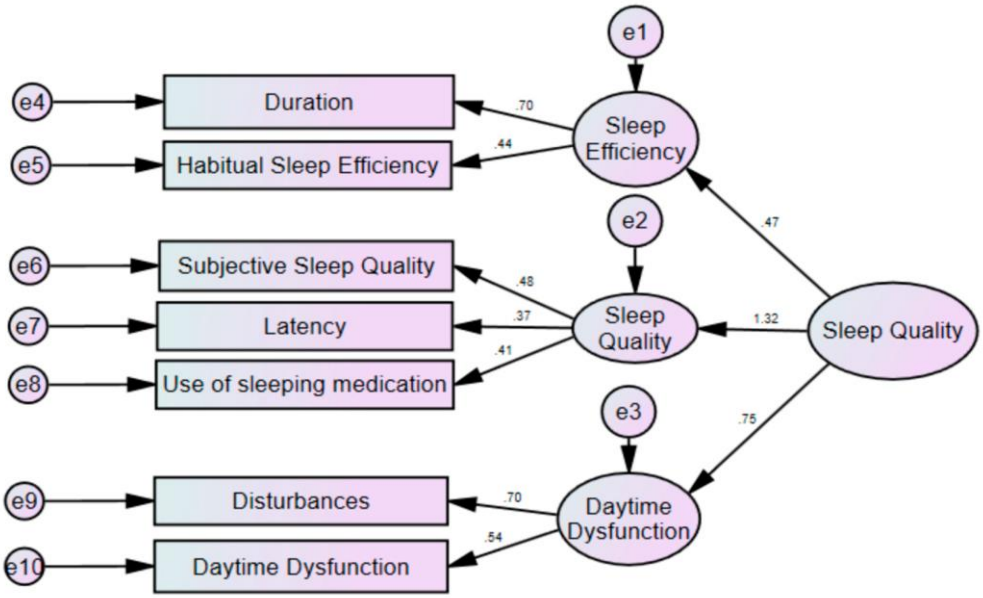
4.7 Study Tools:

4.7.1 Pretested Semi-structured questionnaire which was translated into local language and back translated to English to collect information on socio demographic characteristics. It was validated by pre-testing it on a subset of the sample group, and changes were made as needed.

4.7.2 PITTSBURGH SLEEP QUALITY INDEX (**PSQI)** is a self-administered screening tool which was designed for use by clinicians to aid in the diagnosis of sleep-related disorders. Cronbach's alpha in general population is 0.75. The PSQI was developed by Buysse et al. in 1989. It is a simple screening tool for assessing the sleep quality over the preceding month for patients with significant sleep disturbances. Nineteen items generate seven component scores: A. subjective sleep quality, b. sleep latency, c. sleep duration, d. habitual sleep efficiency, e. sleep duration, f. sleeping medication and g. daytime dysfunction. The total of these seven component scores yields one global score. Apart from the first four open questions, the rest are assessed on a 4-

point Likert scale. The global score can range from '0′ to '21′ and a score of > 5 suggests poor sleep quality[106]

Figure b. Model fit of the Pittsburgh Sleep Quality Index (PSQI); structural equation modelling.[107]



4.7.3 Pilot Study:

A pilot study was conducted among 30 participants residing in Gaddekannur before the start of the study. Modifications to the questionnaire where necessary were made based on the responses. These participants were excluded from the study.

4.8 Statistical Analysis:

The collected data were coded, recorded into an excel spreadsheet, and analyzed with SPSS 22. version software. Qualitative data will be represented as frequencies, proportions and chi-square will be the significance test for comparison. The mean and standard deviation will be used to depict quantitative data, and the t-test will be

utilised to determine significance. To determine the degree of association between various factors, an odds ratio with a 95% confidence interval will be produced. A p value of < 0.05 is considered statistically significant.

4.9 Approval For the Study

The study protocol was approved by the Institutional Ethical review Committee (IEC). No. SDUMC/KLR/IEC/573/2020- 21

4.10 Ethical Considerations:

The institutional ethical review committee of Sri Devaraj Urs Academy of Higher Education and Research, Kolar, has authorized this project. Before the research, the individuals and their guardians provided verbal informed consent. The respondents' anonymity was kept throughout the data analysis process.

RESULTS

5. RESULTS

TABLE 1: Distribution of participants according to Rural and Urban area

Location	Gender		Total
	Male	Female	
Rural (%)	155 (42.9%)	206 (57.1%)	361 (100%)
Urban (%)	126 (40.5%)	185 (59.5%)	311 (100%)
Total (%)	281 (41.8%)	391 (58.2%)	672 (100%)

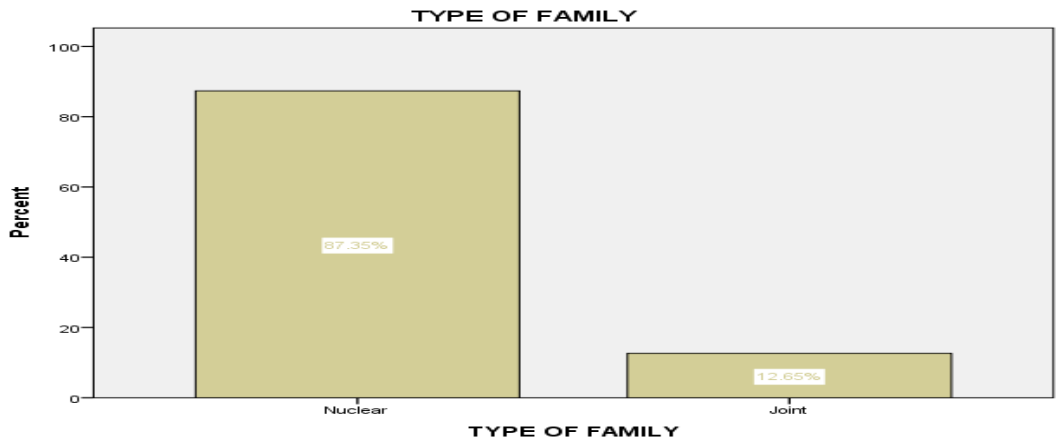
Community-based cross-sectional research was done. total participants enrolled in this study were six hundred and seventy-two. Out of these 672 participants, 53.7% were from Rural Health Training Centre -Devarayasamudra and 46.3% were from urban field practice area of Urban Health Training Centre -Gandhi Nagar, majority of participants were female 391(58.2%).

Table 2: Distribution of participants according Gender and Age

Age Group	GENDER		Total
	Male	Female	
Adolescence	13 (46.4%)	15 (53.6%)	28 (100%)
Young Adults	139 (41.9%)	193 (58.1%)	332 (100%)
Middle Adults	74 (38.7%)	117 (61.3%)	191 (100%)
Older Adults	55 (45.5%)	66 (54.5%)	121 (100%)
Total	281 (41.8%)	391 (58.2%)	672 (100%)

Female participants constituted 58.2% of study population. Majority of the study participants were in the age group between 20- 45 years 332 (49.4%), age group 45 - 65 years 191(28.42%) and 65 above 121 (18%) participants.

Figure 1: Distribution of participants according Types of family



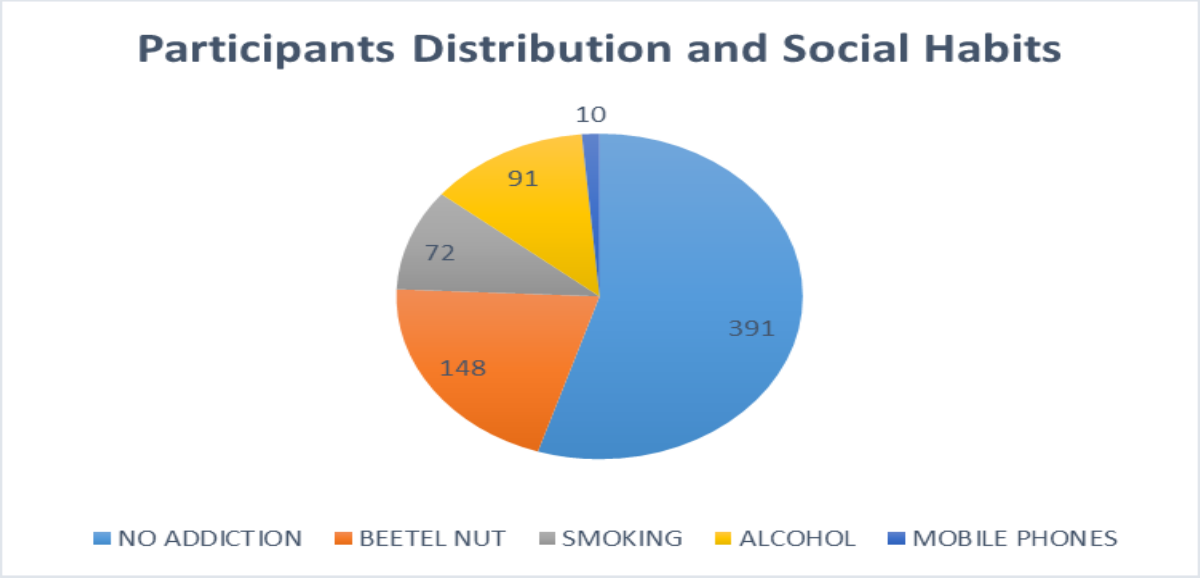
It observed that 87.35% participants from nuclear family and 12.65% from extended family.

TABLE 3: Participants distribution according to various comorbidity

Age-Group	Hypertension	Diabetes	Hypothyroidism	Asthma
Young Adult	20 (2.97%)	15(2.23%)	9 (1.34%)	3 (0.44%)
Middle Adults	62 (9.22%)	44(6.54%)	5 (0.74%)	2 (0.3%)
Older Adults	46 (6.84%)	48(7.14%)	1 (0.15%)	4 (0.6%)
Total	128 (19.04%)	107(15.92%)	15 (2.23%)	9 (1.33%)

128 (19.04%) participants had hypertension, 107(15.92%) study population had diabetes, 15 (2.23%) having hypothyroidism and 9(1.33%) having bronchial asthma. Young adult (6.9%) participants and 14.7 older adults had co-morbidity.

FIGURE 2: Participants Distribution According to social habits



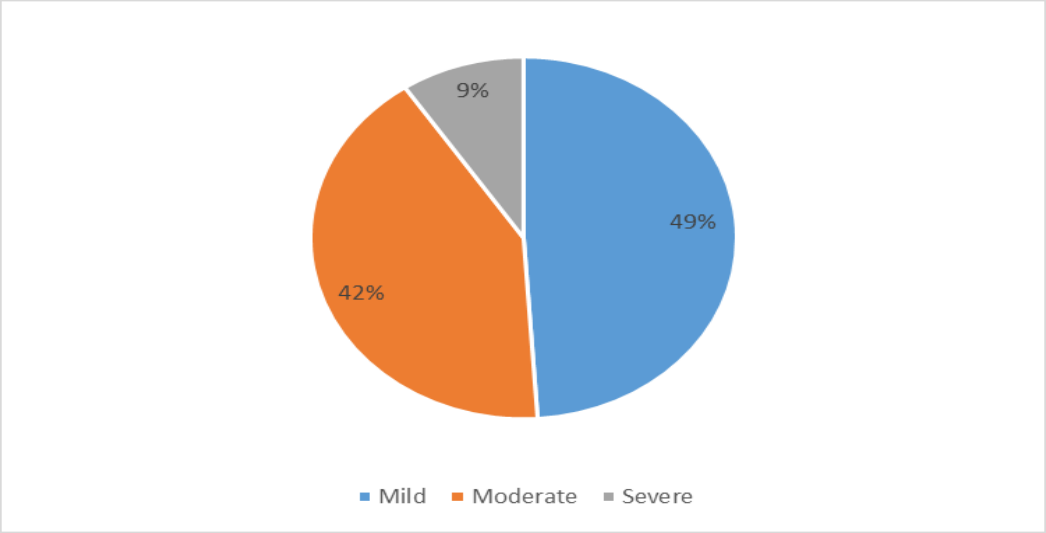
Study participants 391 (58.2%) having no addiction and 148 (22%) of participants using betelnut chewing,72(10.7%) having smoking habit, 91(13.5%) using alcohol and 10 (1.5%) having mobile addictions(gaming).

TABLE 4: Distribution of participants according subjective sleep quality

Sleep Quality	Frequency	Percent
Very Good	333	49.6 %
Fairly Good	286	42.6 %
Fairly Bad	37	5.5 %
Very Bad	16	2.4 %
Total	672	100 %

46.6% participants having very good sleep quality, 42.6% having fairly good sleep quality, 5.5% report fairly bad and 2.4% having very bad sleep quality.

Figure 3: Distribution of participants according to sleep latency



49 % participants having severe sleep latency, 42 % having moderate and 9% having mild sleep latency

TABLE 5: Distribution of participants according to sleep duration

Sleep Duration	Frequency	Percent
> 7 Hours	582	86.6 %
6 - 7 Hours	84	12.5 %
5 - 6 Hours	5	.7 %
<5 Hours	1	.1 %
Total	672	100 %

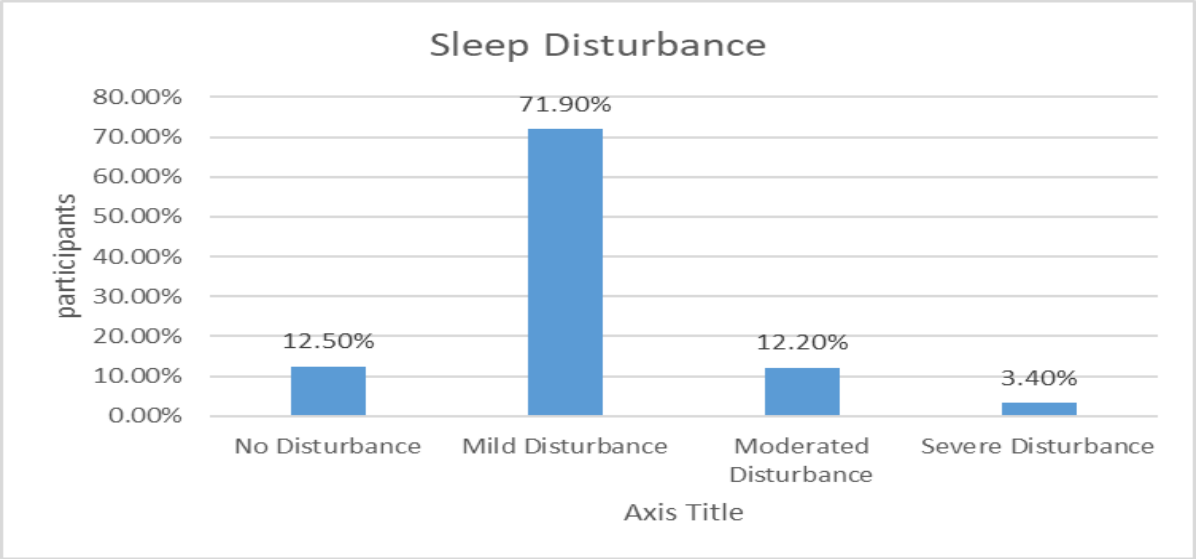
582 (86.6%) sleep more than 7 hours, 84 (12.5%) sleep 6-7 hours 5 (.1%) sleep 5-6 hours and 1 (.1%) sleep less than 5 hours.

Table 6: Distribution of participants according to sleep efficiency

Sleep Efficiency	Frequency	Percent
> 85%	669	99.6 %
75 - 84%	3	.4 %
Total	672	100 %

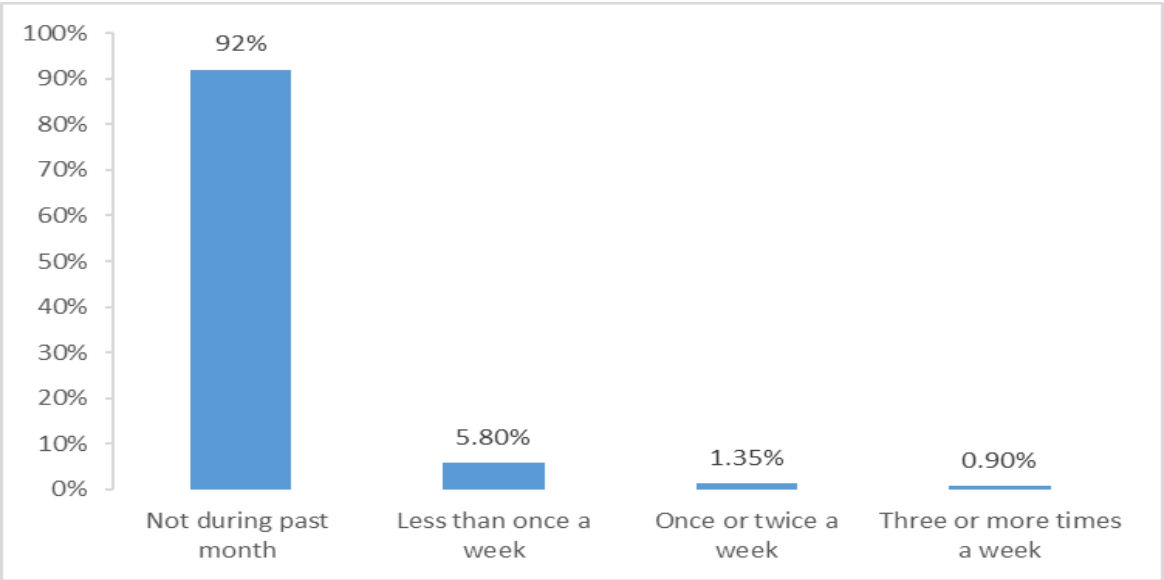
Sleep efficiency more 85% in 669 (99.6%) participants and only 3 (.4%) having 75 -84% sleep efficiency.

Figure 4: Distribution of participants according to sleep disturbance



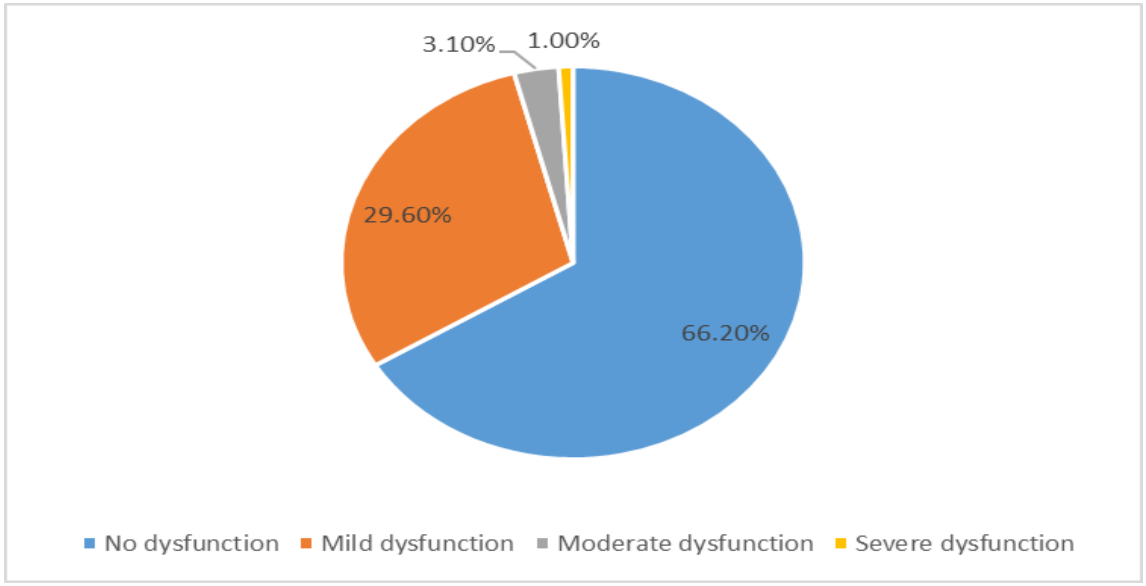
483 (71.90%) having mild sleep disturbance and 23 (3.40%) having sever sleep disturbance.

Figure 5: Distribution of participants according to use of sleep medication



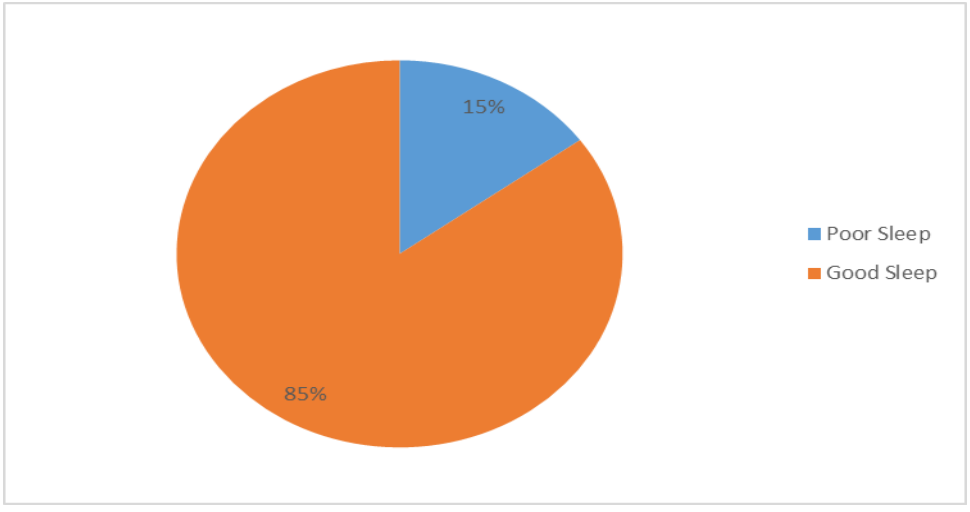
618 (92%) participants not using medicines for sleeping, 9 (1.35%) using medication once or twice a week and 6 (.9%) participants regularly / three or more times a week use medication for sleeping.

Figure 6: Distribution of participants according to day time dysfunction



445 (66.2%) not having day time dysfunction, 199 (29.6%) participants having mild day time dysfunction, 21 (3.1%) report moderate day time dysfunction and 7(1%) suffering from day time dysfunction.

Figure 7: Distribution of participants according to PSQI



101(15%) report poor sleep quality out of 571 (85%) participants.

5.1 Subjective Sleep Quality

Table 7: Association between subjective sleep quality and location

Location	Sleep Quality				Total	
	Very Good	Fairly Good	Fairly Bad	Very Bad		
Rural	139 (38.5%)	177 (49.0%)	31 (8.6%)	14 (3.9%)	361 (100%)	
Urban	194 (62.4%)	109 (35.0%)	6 (1.9%)	2 (0.6%)	311 (100%)	x^2- 47.688
Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	df -3 p-value - .00

62.4% of urban participants had very good sleep quality only 12.5% of rural participants had very bad sleep quality however this association between location and sleep quality was statistically significant.

Table 8: Association between gender and subjective sleep quality

Gender	Very Good	Fairly Good	Fairly Bad	Very Bad	Total	
Male	131 (46.6%)	122 (43.4%)	20 (7.1%)	8 (2.8%)	281 (100%)	
Female	202 (51.7%)	164 (41.9%)	17 (4.3%)	8 (2.0%)	391 (100%)	x^2- 3.641
Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	df -3 p-value = .303

51.7% of females had very good sleep quality however this association between PSQI and gender was not statistically significant.

Table 9: Association between age group and subjective sleep quality

Age Group	Sleep Quality				Total	
	Very Good	Fairly Good	Fairly Bad	Very Bad		
Adolescence	22 (78.6%)	6 (21.4%)	0 (0.0%)	0 (0.0%)	28 (100%)	
Young Adult	188 (56.6%)	138 (41.6%)	4 (1.2%)	2 (0.6%)	332 (100%)	
Middle Adults	87 (45.5%)	83 (43.5%)	15 (7.9%)	6 (3.1%)	191 (100%)	x^2- 70.986
Older Adults	36 (29.8%)	59 (48.8%)	18 (14.9%)	8 (6.6%)	121 (100%)	df - 9
Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	p-value - .00

78.6% of adolescence had good sleep quality and 29.8% in older adults having very good sleep and 6.6% had very bad sleep There was a significant association between age group and subjective sleep quality.

Table 10: Association between subjective sleep quality and Family Type

Family	Subjective Sleep Quality and Family Type				Total	
	Very Good	Fairly Good	Fairly Bad	Very Bad		
Nuclear	285 (48.6%)	259 (44.1%)	29 (4.9%)	14 (2.4%)	587 (100%)	
Extended	48 (56.5%)	27(31.8%)	8 (9.4%)	2 (2.4%)	85 (100%)	x^2- 6.300
Total	333 (49.6%)	286(42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	df - 3 p-value - .098

56.5% belongs to extended family had very good subjective sleep however this association between family type was not statistically significant.

Table 11: Association between qualification and sleep quality

Education	Qualification and Sleep Quality				Total	
	Very Good	Fairly Good	Fairly Bad	Very Bad		
Illiterate (%)	49 (48.0%)	42 (41.2%)	6 (5.9%)	5(4.9%)	102 (100%)	x^2- 46.156 df – 18 p-value - .00
Primary School (%)	13 (29.5%)	21 (47.7%)	10 (22.7%)	0 (0.0%)	44 (100%)	
Middle School (%)	55 (44.7%)	59 (48.0%)	6 (4.9%)	3(2.4%)	123 (100%)	
High School (%)	118 (52.9%)	89 (39.9%)	10 (4.5%)	6 (2.7%)	223 (100%)	
Diploma (%)	73 (54.1%)	60(44.4%)	2 (1.5%)	0 (0.0%)	135 (100%)	
Graduate (%)	21 (52.5%)	14 (35.0%)	3 (7.5%)	2 (5.0%)	40 (100%)	
Professionals (%)	4 (80.0%)	1 (20.0%)	0 (0.0%)	0 (0.0%)	5 (100%)	
Total	333 (49.6%)	286 (42%)	37 (5.5%)	16 (2.4%)	672 (100%)	

There was a significant association between literacy and subjective sleep quality. Graduates and professionals had very good sleep quality 52.2% and 80% respectively

Table 12: Association between participants occupation and sleep quality

Occupation	Occupation and Sleep Quality				Total	
	Very Good	Fairly Good	Fairly Bad	Very Bad		
Unemployed (%)	120 (48.0%)	102 (40.8%)	21 (8.4%)	7 (2.8%)	250 (100%)	x^2- 26.919 df – 21 p-value - .174
Unskilled (%)	99 (51.8%)	77 (40.3%)	11 (5.8%)	4 (2.1%)	191 (100%)	
Semi- Skilled (%)	51 (54.8%)	36 (38.7%)	3 (3.2%)	3 (3.2%)	93 (100%)	
Skilled (%)	35 (37.6%)	56 (60.2%)	1 (1.1%)	1 (1.1%)	93 (100%)	
Clerk (%)	18 (60.0%)	10 (33.3%)	1 (3.3%)	1 (3.3%)	30 (100%)	
Semi Professional (%)	6 (54.5%)	5 (45.5%)	0 (0.0%)	0 (0.0%)	11 (100%)	
Professional (%)	4 (100%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4(100%)	
Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672(100%)	

There was a no significant association between Occupation and sleep quality

Table 13: Marital Status and Sleep Quality

Marital Status	Marital Status and Sleep Quality				Total	
	Very Good	Fairly Good	Fairly Bad	Very Bad		
Married	273 (47.2%)	259 (44.7%)	32 (5.5%)	15 (2.6%)	579 (100%)	
Unmarried	46 (71.9%)	14 (21.9%)	3 (4.7%)	1 (1.6%)	64 (100%)	
Widowed	14 (48.3%)	13 (44.8%)	2 (6.9%)	0 (0.0%)	29 (100%)	x^2- 15.388
Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	df – 6 p-value – 0.17

71.9% of unmarried had very good sleep quality however this association between gender and sleep quality was not statistically significant.

Table 14: Association between co-morbidity and subjective sleep quality

Co-morbidity	Sleep quality				Total	
	Very Good	Fairly Good	Fairly Bad	Very Bad		
Normal	250 (53.0%)	182 (38.6%)	27 (5.7%)	13 (2.8%)	472 (100%)	
Hypertension	43 (46.2%)	46 (49.5%)	3 (3.2%)	1 (1.1%)	93 (100%)	
Diabetics	26 (36.1%)	42 (58.3%)	3 (4.2%)	1 (1.4%)	72 (100%)	x^2- 16.348
Hypertension and Diabetics	14 (40.0%)	16 (45.7%)	4 (11.4%)	1 (2.9%)	35 (100%)	df – 9
Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	p-value – 0.60

There was no significant association between co-morbidity and subjective sleep quality.

Table 15: Association between BMI and subjective sleep quality

BMI	Sleep Quality				Total	
	Very Good	Fairly Good	Fairly Bad	Very Bad		
Under weight	37 (55.2%)	23 (34.3%)	6 (9.0%)	1 (1.5%)	67 (100%)	
Normal	270 (48.9%)	242 (43.8%)	26 (4.7%)	14 (2.5%)	552 (100%)	
Obese	26 (49.1%)	21 (39.6%)	5 (9.4%)	1 (1.9%)	53 (100%)	x^2- 5.770
Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	df -6 p-value - .449

There was no significant association between BMI and subjective sleep quality

Table 16: Association between physical activity and subjective sleep quality

Physical Activity	Sleep Quality				Total	
	Very Good	Fairly Good	Fairly Bad	Very Bad		
No Exercise	213 (52.3%)	160 (39.3%)	21 (5.2%)	13 (3.2%)	407 (100%)	
Regular	119 (45.9%)	122 (47.1%)	16 (6.2%)	2 (0.8%)	259 (100%)	
Irregular	1 (16.7%)	4 (66.7%)	0 (0.0%)	1 (16.7%)	6 (100%)	x^2- 15.429
Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	df -6 p-value – 0.17

There was no significant association between physical activity and sleep quality.

Table 17: Association between addiction and subjective sleep quality

Variable	Category	Subjective sleep Quality				Total	
		Very Good	Fairly Good	Fairly Bad	Very Bad		
Betel Nut Chewing	Absent	268 (51.1%)	217 (41.4%)	25 (4.8%)	14 (2.7%)	524 (100%)	
	Present	65 (43.9%)	69 (46.6%)	12 (8.1%)	2 (1.4%)	148 (100%)	$x^2 - 5.131$
	Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	df – 3 P-Value - .162
	Absent	305 (50.8%)	248 (41.3%)	33 (5.5%)	14 (2.3%)	600 (100%)	$x^2 - 3.883$
	Present	28 (38.9%)	38 (52.8%)	4 (5.6%)	2 (2.8%)	72 (100%)	df – 3
	Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	P-Value -.274
	Absent	303 (52.2%)	232 (39.9%)	31 (5.3%)	15 (2.6%)	581 (100%)	
	Present	30 (33.0%)	54 (59.3%)	6 (6.6%)	1 (1.1%)	91 (100%)	$x^2 - 13.760$
	Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	df -3 P-Value -.003

There was significant association between alcohol, consumption and subjective sleep quality.

2.4% participants who use alcohol had very bad sleep quality.

Table 18: Association between meditation and Sleep Quality

Meditation	Meditation and Sleep Quality				Total	
	Very Good	Fairly Good	Fairly Bad	Very Bad		
No Medication	327 (49.8%)	280 (42.6%)	35 (5.3%)	15 (2.3%)	657 (100%)	
Medication	6 (40.0%)	6 (40.0%)	2 (13.3%)	1 (6.7%)	15 (100%)	x^2- 3.197
Total	333 (49.6%)	286 (42.6%)	37 (5.5%)	16 (2.4%)	672 (100%)	df – 3 p-value - .362

There was no significant association between mediation and subjective sleep quality.

5.2 SLEEP LATENCY

Table 19: Association between location and sleep latency

Location	Location and Sleep Latency			Total	
	Mild	Moderate	Severe		
Rural	154 (42.7%)	165 (45.7%)	42 (11.6%)	361 (100%)	x^2- 13.624
Urban	175 (56.3%)	115 (37.0%)	21 (6.8%)	311 (100%)	df -2
Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	p-value - .001

There was a significant association between sleep latency and location of participants, Urban participants had 56.3% sleep latency and rural participants 42.7% had mild sleep latency.

Table 20: Association between gender and sleep latency

Gender	Gender and Sleep Latency			Total	
	Mild	Moderate	Severe		
Male	134 (47.7%)	117 (41.6%)	30 (10.7%)	281 (100%)	
Female	195 (49.9%)	163 (41.7%)	33 (8.4%)	391 (100%)	x^2- 1.032
Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	df – 2 p-value - .597

There was no significant association between gender and sleep latency.

Table 21: Association between age group and Sleep latency

Age group	Age and Sleep Latency			Total	
	Mild	Moderate	Severe		
Adolescence	5 (17.9%)	15 (53.6%)	8 (28.6%)	28 (100%)	
Young Adult	164 (49.4%)	141 (42.5%)	27 (8.1%)	332 (100%)	
Middle Adults	98 (51.3%)	82 (42.9%)	11 (5.8%)	191 (100%)	x^2- 5.512
Older Adults	62 (51.2%)	42 (34.7%)	17 (14.0%)	121 (100%)	df - 2
Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	p-value - .064

There was no significant association between age group and sleep latency.

Table 22: Association between type of family and sleep latency

Type of Family	Mild	Moderate	Severe	Total	
Nuclear	297 (50.6%)	235 (40.0%)	55 (9.4%)	587 (100%)	
Extended	32 (37.6%)	45 (52.9%)	8 (9.4%)	85 (100%)	x^2- 5.512
Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	df -2 p-value - .064

There was no significant association between type of family and sleep latency.

Table 23: Association between BMI and sleep latency

BMI	Mild	Moderate	Severe	Total	
Under weight	29 (43.3%)	32 (47.8%)	6 (9.0%)	67 (100%)	
Normal	282 (51.1%)	221 (40.0%)	49 (8.9%)	552 (100%)	x^2-7.438
Obese	18 (34.0%)	27 (50.9%)	8 (15.1%)	53 (100%)	df - 4
Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	p-value -.114

There was no significant association between BMI and Sleep Latency.

Table 24: Association between education and sleep latency

Education	Mild	Moderate	Severe	Total	
Illiterate (%)	45 (44.1%)	45 (44.1%)	12 (11.8%)	102 (100%)	
Primary School (%)	29 (65.9%)	12 (27.3%)	3 (6.8%)	44 (100%)	
Middle School (%)	72 (58.5%)	44 (35.8%)	7 (5.7%)	123 (100%)	
High School (%)	102 (45.7%)	96 (43.0%)	25 (11.2%)	223 (100%)	
Diploma (%)	59 (43.7%)	64 (47.4%)	12 (8.9%)	135 (100%)	x^2- 18.958
Graduate (%)	18 (45.0%)	19 (47.5%)	3 (7.5%)	40 (100%)	df - 12
Professionals (%)	4 (80.0%)	0 (0.0%)	1 (20.0%)	5 (100%)	p-value - 0.90
Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	

There was no significant association between Education qualification and sleep latency.

Table 25: Association between occupation and sleep latency

Occupation	Occupation and Sleep Latency			Total	
	Mild	Moderate	Severe		
Unemployed (%)	117 (46.8%)	109 (43.6%)	24 (9.6%)	250 (100%)	
Unskilled (%)	98 (51.3%)	74 (38.7%)	19 (9.9%)	191 (100%)	
Semi- Skilled (%)	44 (47.3%)	40 (43.0%)	9 (9.7%)	93 (100%)	
Skilled (%)	46 (49.5%)	40 (43.0%)	7 (7.5%)	93 (100%)	
Clerk (%)	16 (53.3%)	12 (40.0%)	2 (6.7%)	30 (100%)	x^2- 7.546
Semi Professional (%)	5 (45.5%)	4 (36.4%)	2 (18.2%)	11 (100%)	df -14
Professional (%)	3 (75.0%)	1 (25.0%)	0 (0.0%)	4 (100%)	p-value - .912
Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	

There was no significant association between Occupation and Sleep Latency.

Table 26: Association between marital status and sleep latency

Marital Status	Marital Status and Sleep Latency			Total	
	Mild	Moderate	Severe		
Married	293 (50.6%)	236 (40.8%)	50 (8.6%)	579 (100%)	
Unmarried	20 (31.3%)	33 (51.6%)	11 (17.2%)	64 (100%)	x^2- 11.058
Widowed	16 (55.2%)	11 (37.9%)	2 (6.9%)	29 (100%)	df - 4
Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	p-value - 0.26

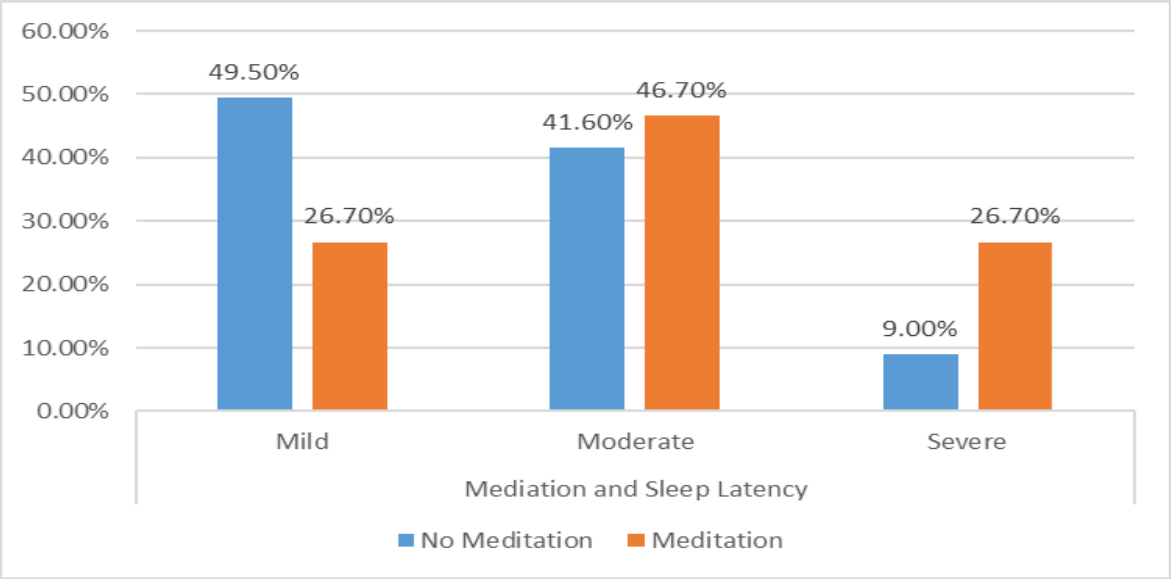
There was no significant association between Marital Status and Sleep Latency.

Table 27: Association between co-morbidity and sleep latency

Comorbidity	Sleep Latency			Total	
	Mild	Moderate	Severe		
Normal	229 (48.5%)	201 (42.6%)	42 (8.9%)	472 (100%)	
Hypertension	47 (50.5%)	37 (39.8%)	9 (9.7%)	93 (100%)	
Diabetics	41 (56.9%)	22 (30.6%)	9 (12.5%)	72 (100%)	x^2- 7.761
Hypertension and Diabetics	12 (34.3%)	20 (57.1%)	3 (8.6%)	35 (100%)	df - 6
Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	p-value - .256

There was no significant association between co -morbidity and sleep latency.

Figure 8: Association between mediation and sleep latency



There was no significant association between Mediation and Sleep Latency.

Table 28: Association between addiction and sleep latency

Variable	Category	Latency			Total	
		Mild	Moderate	Severe		
BETEL	Absent	242 (46.2%)	230 (43.9%)	52 (9.9%)	524 (100%)	$x^2 - 7.337$
	Present	87 (58.8%)	50 (33.8%)	11 (7.4%)	148 (100%)	df -2
	Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	p-value - .026
SMOKING	Absent	293 (48.8%)	247 (41.2%)	60 (10.0%)	600(100%)	$x^2 - 2.687$
	Present	36 (50.0%)	33 (45.8%)	3 (4.2%)	72 (100%)	df – 2
	Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	p-value - .261
ALCOHOL	Absent	277 (47.7%)	245 (42.2%)	59 (10.2%)	581 (100%)	$x^2 - 4.483$
	Present	52 (57.1%)	35 (38.5%)	4 (4.4%)	91 (100%)	df – 2
	Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	p-value - .106

There was no significant association between addiction and sleep latency.

Table 29: Association between sleep latency and exercise

Physical activity	Exercise and Sleep Latency			Total	
	Mild	Moderate	Severe		
No Exercise	186 (45.7%)	179 (44.0%)	42 (10.3%)	407 (100%)	
Regular	139 (53.7%)	99 (38.2%)	21 (8.1%)	259 (100%)	x^2- 5.193
Irregular	4 (66.7%)	2 (33.3%)	0 (0.0%)	6 (100%)	df - 4
Total	329 (49.0%)	280 (41.7%)	63 (9.4%)	672 (100%)	p-value - .268

There was no significant association Exercise and Sleep Latency

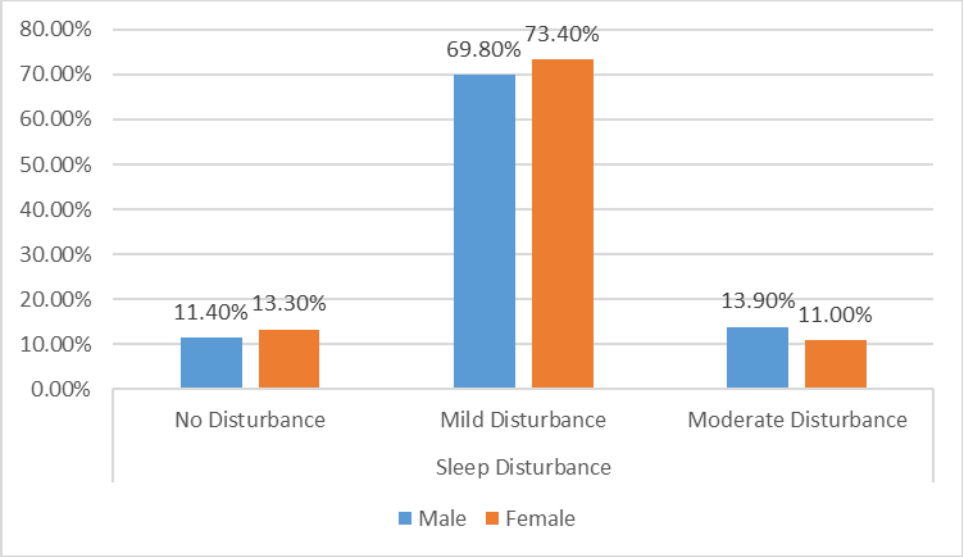
5.3 SLEEP DISTURBANCE

Table 30: Association between sleep disturbance and location

Location	Sleep Disturbance				Total	
	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance		
Rural	23 (6.4%)	256 (70.9%)	63 (17.5%)	19 (5.3%)	361 (100%)	
Urban	61 (19.6%)	227 (73.0%)	19 (6.1%)	4 (1.3%)	311 (100%)	x^2- 48.87
Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	df - 3 p-value - .00

There was a significant association between location and sleep disturbance 5.3% of rural participants and 1.3% urban participants had severe sleep disturbance.

Figure 9 : Association between gender and sleep disturbance



There was no significant association between Gender and sleep disturbance.

Table 31: Association between location and sleep disturbance

Age Group	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance	Total	
Adolescence	6 (21.4%)	21 (75.0%)	1 (3.6%)	0 (0.0%)	28 (100%)	
Young Adult	56 (16.9%)	248 (74.7%)	27 (8.1%)	1 (0.3%)	332 (100%)	x^2- 77.47
Middle Adults	20 (10.5%)	130 (68.1%)	35 (18.3%)	6 (3.1%)	191 (100%)	df – 9
Older Adults	2 (1.7%)	84 (69.4%)	19 (15.7%)	16 (13.2%)	121 (100%)	p-value -
Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	.00

There was a significant association between age group and sleep disturbance. Older adults had 13.2% and middle adults 3.1% had severe sleep disturbance. adolescence 75% had mild sleep disturbance.

Table 32: Association between sleep disturbance and type of family

Family	Sleep Disturbance				Total	
	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance		
Nuclear	72 (12.3%)	427 (72.7%)	69 (11.8%)	19 (3.2%)	587 (100%)	
Extended	12 (14.1%)	56 (65.9%)	13 (15.3%)	4 (4.7%)	85 (100%)	x^2- 1.920
Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	df -3 p-value - .589

There was no significant association between type of family and sleep disturbance

Table 33: Association between sleep disturbance and education

Education	Sleep Disturbance				Total	
	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance		
Illiterate (%)	10 (9.8%)	66 (64.7%)	16 (15.7%)	10 (9.8%)	102 (100%)	
Primary School (%)	0 (0.0%)	34 (77.3%)	9 (20.5%)	1 (2.3%)	44 (100%)	
Middle School (%)	10 (8.1%)	97 (78.9%)	13 (10.6%)	3 (2.4%)	123 (100%)	
High School (%)	30 (13.5%)	167 (74.9%)	20 (9.0%)	6 (2.7%)	223 (100%)	

Diploma (%)	24 (17.8%)	94 (69.6%)	17 (12.6%)	0 (0.0%)	135 (100%)	x^2- 49.03
Graduate (%)	10 (25.0%)	20 (50.0%)	7 (17.5%)	3 (7.5%)	40 (100%)	df – 18
Professionals (%)	0 (0.0%)	5 (100%)	0 (0.0%)	0 (0.0%)	5 (100%)	p-value - .00
Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	

There was a significant association between education qualification and sleep disturbance, Professionals had no sleep disturbance compare to illiterate, graduate and diploma.

Table 34: Association between sleep disturbance and Occupation

Occupation	Sleep Disturbance				Total	
	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance		
Unemployed (%)	25 (10.0%)	175 (70.0%)	39 (15.6%)	11 (4.4%)	250 (100%)	
Unskilled (%)	25 (13.1%)	140 (73.3%)	19 (9.9%)	7 (3.7%)	191 (100%)	
Semi- Skilled (%)	14 (15.1%)	67 (72.0%)	9 (9.7%)	3 (3.2%)	93 (100%)	
Skilled (%)	11 (11.8%)	73 (78.5%)	8 (8.6%)	1 (1.1%)	93 (100%)	x^2- 32.81
Clerk (%)	7 (23.3%)	20 (66.7%)	2 (6.7%)	1 (3.3%)	30 (100%)	df -21
Semi Professional (%)	1 (9.1%)	5 (45.5%)	5 (45.5%)	0 (0.0%)	11 (100%)	p-value - .048
Professional (%)	1 (25.0%)	3 (75.0%)	0 (0.0%)	0 (0.0%)	4 (100%)	
Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	

There was no significant association between occupation and sleep disturbance

Table 35: Association between Sleep Disturbance and marital status

Marital Status	Sleep Disturbance				Total	
	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance		
Married	68 (11.7%)	422 (72.9%)	67 (11.6%)	22 (3.8%)	579 (100%)	
Unmarried	16 (25.0%)	37 (57.8%)	10 (15.6%)	1 (1.6%)	64 (100%)	x^2- 17.497
Widowed	0 (0.0%)	24 (82.8%)	5 (17.2%)	0 (0.0%)	29 (100%)	df -6
Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	p-value - .008

There was no significant association between marital status and sleep disturbance

Table 36: Association between Sleep Disturbance co-morbidity

Co-morbidity	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance	Total	
Normal	69 (14.6%)	324 (68.6%)	61 (12.9%)	18 (3.8%)	472 (100%)	
Hypertension	8 (8.6%)	73 (78.5%)	10 (10.8%)	2 (2.2%)	93 (100%)	x^2- 11.915
Diabetics	5 (6.9%)	60 (83.3%)	6 (8.3%)	1 (1.4%)	72 (100%)	df - 9
Hypertension and Diabetics	2 (5.7%)	26 (74.3%)	5 (14.3%)	2 (5.7%)	35 (100%)	p-value - .218
Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	

There was no significant association between Co-morbidity and sleep disturbance

Table 37: Association between sleep disturbance and addiction

Variable	Category	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance	Total	
	Absent	82 (15.6%)	366 (69.8%)	57 (10.9%)	19 (3.6%)	524 (100%)	
	Present	2 (1.4%)	117 (79.1%)	25 (16.9%)	4 (2.7%)	148 (100%)	
	Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	$x^2 - 23.942$ df -3 P-Value - .00
SMOKING	Absent	81 (13.5%)	424 (70.7%)	74 (12.3%)	21 (3.5%)	600 (100%)	
	Present	3 (4.2%)	59 (81.9%)	8 (11.1%)	2 (2.8%)	72 (100%)	
	Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	$x^2 - 5.794$ df -3 P-Value -.122
	Absent	80 (13.8%)	408 (70.2%)	72 (12.4%)	21 (3.6%)	581 (100%)	
	Present	4 (4.4%)	75 (82.4%)	10 (11.0%)	2 (2.2%)	91 (100%)	
	Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	$x^2 - 7.746$ df – 3 P-Value - .052

There was a significant association, between addiction and sleep disturbance.

Participants with betel nut chewing had 2.7% severe disturbance, 16.9% had moderate dysfunction. Smoking had 2.8 had severe disturbance and 11.1% had moderate disturbance.

Table 38: Association between Sleep Disturbance BMI

BMI	Sleep Disturbance				Total	
	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance		
Under Weight	10 (14.9%)	45 (67.2%)	11 (16.4%)	1 (1.5%)	67 (100%)	x^2 – 15.76 df – 6 p-value - .015
Normal	73 (13.2%)	400 (72.5%)	58 (10.5%)	21 (3.8%)	552 (100%)	
Obese	1 (1.9%)	38 (71.7%)	13 (24.5%)	1 (1.9%)	53 (100%)	
Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	

There was no significant association between BMI and sleep disturbance

Table 39: Association between sleep disturbance and exercise

Exercise	Sleep Disturbance				Total	
	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance		
Sedentary	54 (13.3%)	280 (68.8%)	58 (14.3%)	15 (3.7%)	407 (100%)	x^2 – 9.982 df -6 p-value - .125
Regular	29 (11.2%)	200 (77.2%)	23 (8.9%)	7 (2.7%)	259 (100%)	
Irregular	1 (16.7%)	3 (50.0%)	1 (16.7%)	1 (16.7%)	6 (100%)	
Total	84 (12.5%)	483(71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	

There was no significant association exercise and sleep disturbance.

Table 40: Association between sleep disturbance and meditation

Meditation	Sleep Disturbance				Total	
	No Disturbance	Mild Disturbance	Moderate Disturbance	Severe Disturbance		
No Meditation	83 (12.6%)	472 (71.8%)	80 (12.2%)	22 (3.3%)	657 (100%)	x^2-.910 df -3 p-value -.823
Meditation	1 (6.7%)	11 (73.3%)	2 (13.3%)	1 (6.7%)	15 (100%)	
Total	84 (12.5%)	483 (71.9%)	82 (12.2%)	23 (3.4%)	672 (100%)	

There was no significant association between meditation and sleep disturbance

5.4 Pittsburgh Sleep Quality Index

Table 41: Association between location and PSQI

Location	PSQI		Total	
	Poor Sleep	Good Sleep		
Rural	77 (21.3%)	284 (78.7%)	361 (100.0%)	x^2- 24.242 df – 1 p-value - .00
Urban	24 (7.7%)	287 (92.3%)	311 (100.0%)	
Total	101 (15.0%)	571 (85.0%)	672 (100.0%)	

There was a significant association between location and PSQI. Rural participants 21.3% had poor PSQI and in urban 7.7% had poor PSQI.

Table 42: Association between gender and PSQI

Gender	PSQI		Total	
	Poor Sleep	Good Sleep		
Male	50 (17.8%)	231 (82.2%)	281 (100.0%)	x^2- 2.889
Female	51 (13.0%)	340 (87.0%)	391 (100.0%)	df – 1
Total	101 (15.0%)	571 (85.0%)	672 (100.0%)	p-value - .089

There was no significant association between gender and sleep quality.

Table 43: Association between age group and PSQI

Age group	PSQI		Total	
	Poor Sleep	Good Sleep		
Adolescence	4 (14.3%)	24 (85.7%)	28 (100%)	
Young Adult	22 (6.6%)	310 (93.4%)	332 (100%)	
Middle Adults	40 (20.9%)	151 (79.1%)	191 (100%)	x^2- 41.893
Older Adults	35 (28.9%)	86 (71.1%)	121 (100%)	df -3
Total	101 (15.0%)	571 (85.0%)	672 (100%)	p-value -.00

There was a significant association between age group and PSQI. 28.9% older adults and 20.9% middle adults' participants had poor PSQI.

Table 44: Association between type of family and PSQI

Type of Family	PSQI		Total	
	Poor Sleep	Good Sleep		
Nuclear	86 (14.7%)	501 (85.3%)	587 (100.0%)	x^2- .522
Extended	15 (17.6%)	70 (82.4%)	85 (100.0%)	df -1
Total	101 (15.0%)	571 (85.0%)	672 (100.0%)	p-value - .470

There was no significant association between type of family and PSQI, Participants from extended family 17.6% had poor sleep

Table 45: Educational qualification and PSQI

Education	PSQI		Total	
	Poor Sleep	Good Sleep		
Illiterate (%)	20 (19.6%)	82 (80.4%)	102 (100.0%)	
Primary School (%)	10 (22.7%)	34 (77.3%)	44 (100.0%)	
Middle School (%)	17 (13.8%)	106 (86.2%)	123 (100.0%)	x^2- 6.373
High School (%)	33 (14.8%)	190 (85.2%)	223 (100.0%)	df -6
Diploma (%)	15 (11.1%)	120 (88.9%)	135 (100.0%)	p-value -.383
Graduate (%)	6 (15.0%)	34 (85.0%)	40 (100.0%)	
Professionals (%)	0 (0.0%)	5 (100.0%)	5 (100.0%)	
Total	101 (15.0%)	571 (85.0%)	672 (100.0%)	

There was no significant association between educational qualification and PSQI.

Table 46: Association between occupation and PSQI

Occupation	PSQI		Total	
	Poor Sleep	Good Sleep		
Unemployed (%)	44 (17.6%)	206 (82.4%)	250 (100.0%)	
Unskilled (%)	31 (16.2%)	160 (83.8%)	191 (100.0%)	
Semi- Skilled (%)	14 (15.1%)	79 (84.9%)	93 (100.0%)	
Skilled (%)	6 (6.5%)	87 (93.5%)	93 (100.0%)	x^2- 13.138
Clerk (%)	2 (6.7%)	28 (93.3%)	30 (100.0%)	df – 7
Semi Professional (%)	4 (36.4%)	7 (63.6%)	11 (100.0%)	p-value -.069
Professional (%)	0 (0.0%)	4 (100.0%)	4 (100.0%)	
Total	101 (15.0%)	571 (85.0%)	672 (100.0%)	

There was no significant association between occupation and PSQI

Table 47: Association between marital Status and PSQI

Marital Status	PSQI		Total	
	Poor Sleep	Good Sleep		
Married	87 (15.0%)	492 (85.0%)	579 (100.0%)	
Unmarried	9 (14.1%)	55 (85.9%)	64 (100.0%)	x^2-.158
Widowed	5 (17.2%)	24 (82.8%)	29 (100.0%)	df - 2
Total	101 (15.0%)	571 (85.0%)	672 (100.0%)	p-value - .924

There was no significant association marital status and PSQI

Table 48: Association between co-morbidity and PSQI

Co-morbidity	PSQI		Total	
	Poor Sleep	Good Sleep		
No comorbidity	72 (15.3%)	400 (84.7%)	472 (100%)	x^2- 1.446 df – 3 p-value - .695
Hypertension	11 (11.8%)	82 (88.2%)	93 (100%)	
Diabetics	11 (15.3%)	61 (84.7%)	72 (100%)	
Hypertension and Diabetics	7 (20.0%)	28 (80.0%)	35 (100%)	
Total	101 (15.0%)	571 (85.0%)	672 (100%)	

There was no significant association co-morbidity and PSQI

Table 49: Association between addiction and PSQI

Variable	Category	Poor Sleep	Good Sleep	Total	
BETEL	Absent	78 (14.9%)	446 (85.1%)	524 (100%)	$x^2 -$ .039 df – 1 p-value - .844
	Present	23 (15.5%)	125 (84.5%)	148 (100%)	
	Total	101 (15.0%)	571 (85.0%)	672 (100%)	
SMOKING	Absent	89 (14.8%)	511 (85.2%)	600 (100%)	$x^2 -$ .169 df – 1 p-value - .681
	Present	12 (16.7%)	60 (83.3%)	72 (100%)	
	Total	101 (15.0%)	571 (85.0%)	672 (100%)	
ALCOHOL	Absent	91 (15.7%)	490 (84.3%)	581 (100%)	$x^2 -$ 1.246 df – 1 p-value - .246
	Present	10 (11.0%)	81 (89.0%)	91 (100%)	
	Total	101 (15.0%)	571 (85.0%)	672 (100%)	

There was no significant association addiction and PSQI.

Table 50: Association between BMI and PSQI

BMI	PSQI		Total	
	Poor Sleep	Good Sleep		
Under Weight	12 (17.9%)	55 (82.1%)	67 (100.0%)	
Normal	75 (13.6%)	477 (86.4%)	552 (100.0%)	x^2- 6.715
Obese	14 (26.4%)	39 (73.6%)	53 (100.0%)	df – 2
Total	101 (15.0%)	571 (85.0%)	672 (100.0%)	p-value -.035

There was no significant association BMI and PSQI

Table 51: Association between exercise and PSQI

EXCERSICE	PSQI		Total	
	Poor Sleep	Good Sleep		
No Exercise	73 (17.9%)	334 (82.1%)	407 (100.0%)	
Regular	26 (10.0%)	233 (90.0%)	259 (100.0%)	x^2- 9.318
Irregular	2 (33.3%)	4 (66.7%)	6 (100.0%)	df -2
Total	101 (15.0%)	571 (85.0%)	672 (100.0%)	p-value -.009

There was no significant association Exercise and PSQI

Table 52: Association between meditation and PSQI

Meditation	PSQI		Total	
	Poor Sleep	Good Sleep		
No meditation	95 (14.5%)	562 (85.5%)	657 (100.0%)	x^2- 7.491
Mediation	6 (40.0%)	9 (60.0%)	15 (100.0%)	df – 1
Total	101 (15.0%)	571 (85.0%)	672 (100.0%)	p-value -.006

There was no significant association between meditation and PSQI

Table 53: Assoociation of sleep andsocio demography

		aOR	95% CI lower	95%CI Upper
Location	Rural	-	-	-
	Urban (%)	4.933	2.822	8.621
Gender	Female	-	-	-
	Male (%)	3.156	1.660	6.002
Occupation	Professional	-	-	-
	Unemployed (%)	1.885	.962	3.694
	Unskilled (%)	2.112	.901	4.951
	Semi- Skilled (%)	4.575	1.632	12.828
	Skilled (%)	6.961	1.280	37.875
	Clerk (%)	.357	.085	1.499
Exercise	Exercise	-	-	-
	Mild exercise (%)	2.217	1.316	3.733
	Regular exercise (%)	.442	.071	2.771
Addiction	No addiction	-	-	-
	Alcohol (%)	2.321	1.037	5.193
Comorbidity	Comorbidity	-	-	-
	Hypertension (%)	.932	.456	1.905
	Diabetics (%)	.780	.370	1.644
	Hypertension and Diabetics (%)	.126	.056	.284
	Constant	.909		

It was observed that there is a significant association between sleep disorder and place of residence the odds of having sleep disorders among rural were 4.933(95% CI 2.822 – 8.621) times compare with urban. It also observed that the odds of having sleep disorder among female were 3.156 (95% CI 1.660 – 6.002).

DISCUSSION

6. DISCUSSION

A cross sectional study of prevalence of sleep disorders among the General population aged 18 years and above residing at Sri Devaraj Urs Medical College's urban and rural field practise areas Kolar, In total 672 participants were interviewed. In those 281 males and 391 females' participants, most of the males are of working group and females most of them are home makers. According to age group, majority (49.4%) of participants were between the ages group of 20 to 45 years, (28.42%) age group 45 -65 years and 18% were above 65 years. Participants 128 (19.04%) had hypertension, 107(15.92%) study participants had diabetes, 15 (2.23%) had hypothyroidism and 9(1.33%) had bronchial asthma. In addiction 58.2% study participants had no addiction, 22% participants using betelnut chewing, 10.7% had smoking habit 13.5% using alcohol and 1.5% had mobile addictions(gaming).

It was found that 15% of study participants report symptoms suggestive of poor sleep quality. The prevalence is a warning sign and have to be identified, treat and counsel adults in order to keep them mentally healthy. Screening for sleep quality in poor resource settings presents itself a great challenge, particularly when the population do not perceive it as a priority. The literature is about screening for poor sleep quality. Studies done in other countries have shown difference in the prevalence of sleep quality.

This study was designed with background knowledge of the Department of Community Medicine, SDUMC working in Kolar district, The purpose of this study was to determine the prevalence of sleep disorders among people in Kolar's rural and urban areas, as well as to identify sociodemographic characteristics linked with sleep disorders.

6.1 PREVALENCE OF SLEEP PROBLEM

Various research conducted throughout the world shown that insomnia affects 10 - 30% of the population, with some estimates ranging as high as 50%-60%.[71,66,57]. In a cross-

sectional study of 2045 non-institutionalized older people over the age of 65 in a Taiwanese metropolitan, the prevalence of one-month insomnia was 6%.[34] Study conducted in Egypt on 2017 reveals that it was 62.1%. Gargi mondal, Amit et al., conducted a study in Amritsar, Punjab revealed that sleep disorders were present in 83.4% of the population.[51], Ramaswamy G et al., conducted the study in rural southern India Prevalence and determinants of sleep disorders in that community was 36.3%. Swapna Baskar et al., conducted a research in Bangalore and discovered that chronic insomnia affects 33% of the adult population, with a statistically significant association with increasing age and diabetes.[24] Another study conducted in NIMHANS - Bengaluru reveals that 18.6% prevalence among healthy adults.[91] Another study conducted in Ladakh revealed that 15.2% study participants had poor sleep quality.[46]A hospital based study conducted in Sri Sunderlal hospital (North India) by Gambhir S et al., noted that prevalence was 32%.[41] This study reveals that 15% participants had poor sleep (PSQI >5). 5.5% report fairly bad and 2.4% having very bad sleep quality. 49 % participants having severe sleep latency, 42 % having moderate and 9% having mild sleep latency. Sleep duration 582 (86.6%) sleeping more than 7 hours, 84 (12.5%) sleep adequately 6-7 hours, 6 (.2%) sleep less than 5 hours. 5.3% of rural participants and 1.3% urban participants had severe sleep disturbance.[108]

6.2 PREVALENCE OF SLEEP QUALITY AND GENDER

Nazish rafique et al., a cross-sectional research done on 1925 college students in Dammam, Saudi Arabia, it was discovered that 33% of men and 37% of women had poor sleep quality.[109] Another cross-sectional study was conducted in the general hospital Bengaluru - St. Philomena's Hospital were Insomnia was rule out in patients, 68% were female and 32% males[24]. Another study done in Taiwan found that elderly women (8%) had a greater risk of sleep problem than males (4.5%).[34] A K Bhattacharjee et al,. conducted a study at

West Bengal with 1152 participants, insomnia was noticed in 16.9% female and 14.1% males.

In this study 17.8% females and 13% males reported poor sleep quality (PSQI), most of the female participants are homemakers. 2.8% males and 2% female report poor subjective sleep quality, sleep latency was more among males 10.7% and for female participants 8.4%. 5% of male participants and 2.3% female participants had reported sever sleep latency, 5% male and 2.3% female had severe sleep disturbance.

6.3 TYPE OF FAMILY AND SLEEP QUALITY

Youth were more likely to experience family complexity in stepparent households (61%) and joint families (38%) than in nuclear families (1.5%). Teenagers from single-parent and stepparent households had higher rates of short sleep duration on weekdays, long sleep start latency, prolonged awakening after sleep initiation, oversleeping, and insomnia.[110] another cross sectional study conducted in West Bengal reveals that insomnia prevalence was 21.2% in joint family and 9.8% in nuclear family[108]. This study reveals that participants belongs to extended family had 17.6% reported poor sleep quality while in nuclear family 14.7% had poor sleep quality (PSQI). 7.3% in nuclear family and 11.8% in extended family had poor subjective sleep quality. Sleep latency was same in both participant group 9.4%, 3.2% from nuclear and 4.7% from extended family had severe sleep disturbance.

6.4 SLEEP QUALITY AND AGE WISE DISTRIBUTION

The prevalence of sleep problem increased with age from 6% to 62.1% according to previous studies and 52.5% in those aged ≥80 years.[111] A cross-sectional research was carried out on randomly chosen 422 people with a prevalence of (PSQI score > 5) poor sleep quality of 28.6% in the age group of 40-49 years. Another research done in West

Bengal found that the age category of >60 years (20.2%) was followed by 50-60 years (18.2%) and 40-50 years (17.3%).[108] In our study 28.9% older adults and 20.9% middle adults reported poor sleep (PSQI >5). Sleep quality were very bad among 6.6% older adults and 3.1% middle adults compare with adolescence and young adult. 28.6% adolescence reported severe sleep latency. Severe sleep disturbance was reported by middle adults and older adults 3.1% and 13.2% respectively.

6.5 EDUCATION AND POOR SLEEP QUALITY

Higher chances of experiencing sleep problems were seen among respondents with educational backgrounds less than tertiary education (no schooling/preprimary: OR 1.54, 95% CI 1.13 to 2.10; primary: OR 1.58, 95% CI 1.26 to 1.98; secondary: OR 1.20). Illiterate and primary school participants had poor sleep (PSQI<5) 19.6% and 22.7% respectively. while graduate and professionals 85% and 100% respectively reported good sleep (PSQI > 5). Illiterate and graduate had report 4.9% and 5% of very bad subjective sleep quality, sleep latency was severe among professionals 20%, illiterate 11.8% and high school 11.2%. severe sleep disturbance was reported 9.8% and 7.5% among illiterate and graduates. Severe sleep disturbance was found in 9.8% illiterate and 7.5% graduates.

6.6 OCCUPATION AND POOR SLEEP QUALITY

According to National Health Interview Survey (NHIS) short sleep duration was highest among company and firm management (40.5%), and lowest among civilian employed individuals (29.9%). Transportation/warehousing came in second with 37.1% and manufacturing came in third with 34.8%.[112]in our study there was concluded that semi profession 36.4%, unemployed and unskilled had 17.6% and 16.2% respectively had poor sleep (PSQI). 3.3 clerked and 3.2% semiskilled had very bad sleep quality. Sleep latency

was more among semiprofessional, unemployed, unskilled and semiskilled participants (18.2%, 9.6%, 9.9%, 9.7%) respectively.

6.7 SLEEP QUALITY AND MARITAL STATUS

Suman Kumar et al conducted a study in West Bengal observed prevalence of insomnia was higher among married and highest among divorce/widowed, 9% among unmarried, 15.5% among married, and 35.5% among divorce/widowed).[108]

In this study poor sleep was reported more among widowed 17.2%. Very bad subjective sleep quality was in 2.6% married couples. Sleep latency 17.2% in unmarried participants and severe sleep disturbance 3.8% in married couples.

6.8 COMORBIDITY AND SLEEP PROBLEMS

In a Punjabi study, insomnia was reported as the most prevalent condition, affecting 73.4% of the population and another 4.8% of the population had it in addition to other sleep problems.[51] Diabetes was more prevalent in individuals with poor sleep quality and short sleep duration (6 h) as well as in those with poor sleep quality who slept for more than 8 hours. Poor sleep quality and short sleep duration (6 h) were both connected to an elevated risk of diabetes. In the majority of cases, angina, arthritis, and depression were substantially related with sleep disorders.[52] In India, 33% of individuals suffer from insomnia, and rising age and diabetes are substantially connected with insomnia.[24] in this study as co-morbidity increases which is inversely proportion to sleep quality. 53% normal participants report very good sleep quality, Hypertension and diabetics participants 20% reported poor sleep, diabetics and hypertension 15.3% and 11.8% respectively report poor sleep (PSQI). 2.9% report very bad sleep quality who had both hypertension and diabetics. Sleep latency was severe among diabetic participants 12.5%.

6.9 BMI AND SLEEP PROBLEMS

A cross-sectional study of 88 medical students in Lucknow revealed that PSQI >10 was 0%, 7.1%, 38.5%, and 43.8% in the normal weight, overweight, obesity grade I, and obese grade II groups, respectively.[113] another study conducted in Mysore revealed that, 247 medical students Out of the 94 patients with PSQIs > 5, 46% were overweight and 45% were obese.[114]

our study >BMI inversely proportion to sleep problems. Obese 26.4% had poor sleep and underweight 17.9% had poor sleep quality. Normal BMI (18.5 – 24.9) 86.4% report good sleep, sleep quality was very good among underweight participants 55.2%, 15.1% obese participants had severe sleep latency.

6.10 ADDICTIONS

According to an study conducted in southwest Ethiopia, current khat chewers (54.0%) had bad sleep quality, whereas alcohol drinkers (38.4%) had poor sleep quality and beer drinkers (63.3%) had a larger rate of poor sleepers.[115] In our study Betel nut users 14.9% report poor sleep quality, smokers 16.7% and alcoholic 11% report poor sleep (PSQI <5), smokers 2.8% report very bad subjective sleep quality.

SUMMARY & CONCLUSION

7. SUMMARY

A community-based cross-sectional survey was done in Kolar's rural and urban districts to estimate the prevalence of sleep problems, its associated factors among adults. The PSQI questionnaire was used to study a total of 672 participants majority of the participants were female 58.2% and majority (87.3%) belonged to nuclear families, 49.4% were age group between 20-45 years.

The prevalence of sleep problems was found overall of 15% adults. It is observed that elderly the prevalence of sleep problems was 28.9% higher with increasing age. Females had relatively higher prevalence of sleep problem when compare to male. Participants with comorbidity were found to have more prevalence of sleep problem. Rural participants 21.3% and in urban 7.7% had poor PSQI, in extended family 17.6% had poor sleep compare to nuclear family.

There was a significant association between age group, location and sleep quality.

8. CONCLUSIONS

The concludes that a consider number of adult populations suffer from sleep disorders, as age increases problems increase wise versa. The majority of adult sleep issues are characterized by predictable medical and behavioral causes, making them preventable. To improve health status of elderly population, it is necessary to conduct out more research in different areas to define various factors that are related to sleep disorders, psychological distress and disability, which will help in developing effective programmes for managing geriatric problems.

LIMITATIONS

9. LIMITATION

Several limitations should be addressed before drawing conclusions from the study. First, because our data are cross-sectional, we cannot analyse the temporal ordering of sleep quality and other relationship characteristics. Second, while home was shown to be the most common place for sleeping, no examination of home environment was done in this study. Some of the study's benefits include its community-based approach and high response rates. The study design focuses into the elements that have been linked to sleep disturbances in previous studies. The identification of these variables, as well as suitable remedial interventions, can aid in the prevention of sleep problem and its consequences for the health and well-being of the elderly.

RECOMMENDATIONS

10. RECOMMENDATION

It is recommended to identify other risk factors like cognition, grip strength and various environmental hazards contributing to sleep disorders. Identification of these factors provides insights to develop various preventive measures that are socially, culturally, and economically accepted by the community in our country. Community-based sleep problem registries and surveillance system can be set up.

We strongly emphasis on multidisciplinary approach to preventing trouble sleeping and improving quality of life. A complete sleep disorder risk assessment tool for simplified screening in Indian settings may be created, and sleep issue prevention must be prioritized in adult health programmes.

Studies on costs incurred during a sleep disorder event is It is critical to emphasize the economic effect on an individual, family, and the health system in order to gain policy attention. Awareness regarding sleep problems must be provided and reemphasized by the health care professionals at every opportunity to limit the grave consequences of sleep disorders.

Health education for elderly with respect to, social and physical group recreational activities will build their confidence and improves the quality of life. Health education should be given to the family members especially the young. Their role in keeping others happy, active and to support them physically, socially, environmentally is of at most importance.

We, suggest, longitudinal studies should be conducted in the coming feature, to estimate the direction of causation between quality of life and sleep problems.

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ANNEXURES

ANNEXURE -I

QUESTIONNAIRE

Proforma for data collection

Form No.:

1. Name/ ಹೆಸರು **:**

2. Address/ವಿಳಾಸ:

Age / ವಯಸ್ಸು	
Gender / ಲಿಂಗ	
Religion/ರಿಲಿಜ	
Education / ಶಿಕ್ಷಣ	
Occupation/ ಉದ್ಯೋಗ	
Marital status/ ವೈವಾಹಿಕ ಸ್ಥಿತಿ	
Total monthly family income/ ಒಟ್ಟು ಮಾಸಿಕ ಕುಟುಂಬದ ಆದಾಯ	
Number of family members / ಕುಟುಂಬ ಸದಸ್ಯರ ಸಂಖ್ಯೆ	
Smoking history / ಧೂಮಪಾನ ಇತಿಹಾಸ	
Tobacco chewing/ ತಂಬಾಕು ಚೂಯಿಂಗ್ Tobacco smoking/ ತಂಬಾಕು ಧೂಮಪಾನ Alcohol consumption/ ಮದ್ಯಪಾನ	
BMI / Exercise- ವ್ಯಾಯಾಮ	

Pittsburgh Sleep Quality Index (PSQI)

Name:…… Date: ……

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

Please answer all questions.

1. During the past month, what time have you usually gone to bed at night? _____
2. During the past month, how long (in minutes) has it usually taken you to fall asleep each night?
3. During the past month, what time have you usually gotten up in the morning? _____
4. During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.) _____

5. During the past month, how often have you had trouble sleeping because you…	Not during for past month	Less than once a week	Once or twice a week	Three or more times a week
a. Cannot get to sleep within 30 minutes				
b. Wake up in middle of the night or early morning				
c. Have to get up to use the bathroom				
d. Cannot breathe comfortably				
e. Cough or snore loudly				
f. Feel too cold				
g. Feel too hot				
h. Have bad dreams				
i. Have pain				
j. Other reason(s), please describe:				
6. How often have you taken medicine to sleep?				
7. How often have you had trouble staying awake?				
8. How much of a problem has it been for you to keep up enough enthusiasm to get things done?				
9. How would you rate your sleep quality overall?	Very good	Fairly good	Fairly bad	Very bad

ANNEXURE II
INFORMATION SHEET

Title: **PREVALANCE AND ASSOCIATED FACTORS OF SLEEP DISORDER AMONG ADULTS IN URBAN AND RURAL AREAS OF KOLAR.**

My name is Dr. Abhishek S V, A, Post graduate in the department of Community Medicine, Sri Deva raj Urs Medical College, Kolar. I am carrying out a study on prevalence of sleep disorder among adults in urban and rural areas of Kolar: a community based cross sectional study, The study has been reviewed by the local ethical review board and has been started only after their formal approval.

Sleep disorder are widespread health problems that reduce quality of life, increase risks for psychiatric and medical disease and raise health care utilization and cost among affected individuals under diagnosed and under treated. In this regard I will help you to find out symptoms of sleep disorder by giving a simple questionnaire, you need not have to answer any questions that you do not want to answer. However, your honest answer to these questions will help us to understand the symptoms of sleep disorder. We would greatly appreciate your help in responding to the questionnaire.

Participation in this study doesn't involve any cost for you. This study is not only beneficial to you but also to the community at large. The results gathered from this study will be beneficial in estimating the prevalence

All the information collected from you will be strictly confidential and will not be disclosed to any outsider unless compelled by law. This information collected will be used only for research.

There is no compulsion to participate in this study. You will be no way affected if you don't wish to participate in this study. You are required to sign only if you voluntarily agree to participate in this study. Further, you are at a liberty to withdraw from the study at any time, if you wish to do so. It is up to you to decide whether to participate. This document will be stored in the safe locker in the department of Community Medicine in the college and a copy is given to you for information.

For any further clarification you are free to contact the principal investigator,

Dr. Abhishek. s. v.

Mobile No: 9995104486.

ANNEXURE III

INFORMATION SHEET - KANNADA

ಮಾಹಿತಿ ಹಾಳೆ

ಶೀರ್ಷಿಕೆ: ಕೋಲಾರದ ನಗರ ಮತ್ತು ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳಲ್ಲಿ ವಯಸ್ಕರಲ್ಲಿ ನಿದ್ರಾಹೀನತೆಯ ಹರಡುವಿಕೆ ಮತ್ತು ಸಂಬಂಧಿತ ಅಂಶಗಳು.

ನನ್ನ ಹೆಸರು ಡಾ. ಅಭಿಷೇಕ್ ಎಸ್ ವಿ, ಎ, ಕಮ್ಯುನಿಟಿ ಮೆಡಿಸಿನ್ ವಿಭಾಗದಲ್ಲಿ ಸ್ನಾತಕೋತ್ತರ ಪದವಿ, ಶ್ರೀ ದೇವರಾಜ್ ಅರ್ಸ್ ಮೆಡಿಕಲ್ ಕಾಲೇಜು, ಕೋಲಾರ. ಕೋಲಾರದ ನಗರ ಮತ್ತು ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳಲ್ಲಿ ವಯಸ್ಕರಲ್ಲಿ ನಿದ್ರಾಹೀನತೆಯ ಹರಡುವಿಕೆಯ ಕುರಿತು ನಾನು ಅಧ್ಯಯನವನ್ನು ನಡೆಸುತ್ತಿದ್ದೇನೆ: ಸಮುದಾಯ ಆಧಾರಿತ ಅಡ್ಡ ವಿಭಾಗೀಯ ಅಧ್ಯಯನ, ಸ್ಥಳೀಯ ನೈತಿಕ ಪರಿಶೀಲನಾ ಮಂಡಳಿಯಿಂದ ಅಧ್ಯಯನವನ್ನು ಪರಿಶೀಲಿಸಲಾಗಿದೆ ಮತ್ತು ಅವರ ಔಪಚಾರಿಕ ಅನುಮೋದನೆಯ ನಂತರವೇ ಪ್ರಾರಂಭಿಸಲಾಗಿದೆ.

ನಿದ್ರೆಯ ಅಸ್ವಸ್ಥತೆಯು ವ್ಯಾಪಕವಾದ ಆರೋಗ್ಯ ಸಮಸ್ಯೆಗಳಾಗಿದ್ದು, ಇದು ಜೀವನದ ಗುಣಮಟ್ಟವನ್ನು ಕಡಿಮೆ ಮಾಡುತ್ತದೆ, ಮನೋವೈದ್ಯಕೀಯ ಮತ್ತು ವೈದ್ಯಕೀಯ ಕಾಯಿಲೆಯ ಅಪಾಯಗಳನ್ನು ಹೆಚ್ಚಿಸುತ್ತದೆ ಮತ್ತು ರೋಗನಿರ್ಣಯ ಮತ್ತು ಚಿಕಿತ್ಸೆಯಲ್ಲಿರುವ ಪೀಡಿತ ವ್ಯಕ್ತಿಗಳಲ್ಲಿ ಆರೋಗ್ಯ ರಕ್ಷಣೆಯ ಬಳಕೆ ಮತ್ತು ವೆಚ್ಚವನ್ನು ಹೆಚ್ಚಿಸುತ್ತದೆ. ಈ ನಿಟ್ಟಿನಲ್ಲಿ ನಾನು ಸರಳ ಪ್ರಶ್ನಾವಳಿಯನ್ನು ನೀಡುವ ಮೂಲಕ ನಿದ್ರಾಹೀನತೆಯ ಲಕ್ಷಣಗಳನ್ನು ಕಂಡುಹಿಡಿಯಲು ನಿಮಗೆ ಸಹಾಯ ಮಾಡುತ್ತೇನೆ, ನೀವು ಉತ್ತರಿಸಲು ಬಯಸದ ಯಾವುದೇ ಪ್ರಶ್ನೆಗಳಿಗೆ ನೀವು ಉತ್ತರಿಸಬೇಕಾಗಿಲ್ಲ. ಆದಾಗ್ಯೂ, ಈ ಪ್ರಶ್ನೆಗಳಿಗೆ ನಿಮ್ಮ ಪ್ರಾಮಾಣಿಕ ಉತ್ತರವು ನಿದ್ರೆಯ ಅಸ್ವಸ್ಥತೆಯ ಲಕ್ಷಣಗಳನ್ನು ಅರ್ಥಮಾಡಿಕೊಳ್ಳಲು ನಮಗೆ ಸಹಾಯ ಮಾಡುತ್ತದೆ. ಪ್ರಶ್ನಾವಳಿಗೆ ಪ್ರತಿಕ್ರಿಯಿಸುವಲ್ಲಿ ನಿಮ್ಮ ಸಹಾಯವನ್ನು ನಾವು ಬಹಳವಾಗಿ ಪ್ರಶಂಸಿಸುತ್ತೇವೆ.

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವಿಕೆಯು ನಿಮಗೆ ಯಾವುದೇ ವೆಚ್ಚವನ್ನು ಒಳಗೊಂಡಿರುವುದಿಲ್ಲ. ಈ ಅಧ್ಯಯನವು ನಿಮಗೆ ಮಾತ್ರವಲ್ಲದೆ ದೊಡ್ಡ ಸಮುದಾಯಕ್ಕೂ ಪ್ರಯೋಜನಕಾರಿಯಾಗಿದೆ. ಈ ಅಧ್ಯಯನದಿಂದ ಸಂಗ್ರಹಿಸಿದ ಫಲಿತಾಂಶಗಳು ಹರಡುವಿಕೆಯನ್ನು ಅಂದಾಜು ಮಾಡಲು ಪ್ರಯೋಜನಕಾರಿಯಾಗಿದೆ

ನಿಮ್ಮಿಂದ ಸಂಗ್ರಹಿಸಿದ ಎಲ್ಲಾ ಮಾಹಿತಿಯು ಕಟ್ಟುನಿಟ್ಟಾಗಿ ಗೌಪ್ಯವಾಗಿರುತ್ತದೆ ಮತ್ತು ಕಾನೂನಿನಿಂದ ಬಲವಂತದ ಹೊರತು ಯಾವುದೇ ಹೊರಗಿನವರಿಗೆ ಬಹಿರಂಗಪಡಿಸಲಾಗುವುದಿಲ್ಲ. ಸಂಗ್ರಹಿಸಿದ ಈ ಮಾಹಿತಿಯನ್ನು ಸಂಶೋಧನೆಗೆ ಮಾತ್ರ ಬಳಸಲಾಗುತ್ತದೆ.

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಯಾವುದೇ ಒತ್ತಾಯವಿಲ್ಲ. ನೀವು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಬಯಸದಿದ್ದರೆ ನೀವು ಯಾವುದೇ ರೀತಿಯಲ್ಲಿ ಪರಿಣಾಮ ಬೀರುವುದಿಲ್ಲ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಒಪ್ಪಿಕೊಂಡರೆ ಮಾತ್ರ ನೀವು ಸಹಿ ಮಾಡಬೇಕಾಗುತ್ತದೆ. ಇದಲ್ಲದೆ, ನೀವು ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಅಧ್ಯಯನದಿಂದ ಹಿಂದೆ ಸರಿಯಲು ಸ್ವತಂತ್ರರಾಗಿರುವಿರಿ, ನೀವು ಹಾಗೆ ಮಾಡಲು ಬಯಸಿದರೆ.. ಭಾಗವಹಿಸಬೇಕೆ ಎಂದು ನಿರ್ಧರಿಸಲು ನಿಮಗೆ ಬಿಟ್ಟದ್ದು. ಈ ಡಾಕ್ಯುಮೆಂಟ್ ಅನ್ನು ಕಾಲೇಜಿನ ಕಮ್ಯುನಿಟಿ ಮೆಡಿಸಿನ್ ವಿಭಾಗದಲ್ಲಿ ಸುರಕ್ಷಿತ ಲಾಕರ್‌ನಲ್ಲಿ ಸಂಗ್ರಹಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ಮಾಹಿತಿಗಾಗಿ ಪ್ರತಿಯನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುತ್ತದೆ.

ಯಾವುದೇ ಹೆಚ್ಚಿನ ಸ್ಪಷ್ಟೀಕರಣಕ್ಕಾಗಿ ನೀವು ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿಯನ್ನು ಸಂಪರ್ಕಿಸಲು ಮುಕ್ತರಾಗಿದ್ದೀರಿ,

ಅಭಿಷೇಕ್ ಡಾ. ರು. v.

ಮೊಬೈಲ್ ಸಂಖ್ಯೆ: 9995104486.

ANNEXURE IV

INFORMED CONSENT FORM

Sl. no:

Title:- PREVALANCE AND ASSOCIATED FACTORS OF SLEEP DISORDER AMONG ADULTS IN URBAN AND RURAL AREAS OF KOLAR.

I, the undersigned, agree to participate in this study and to undergo counselling and disclosure of my personal information and as outlined in this consent form.

I have been read out/ explained in my local language i.e. in Kananda and understand the purpose of this study and the confidential nature of the information that will be collected and disclosed during the study.

I have had the opportunity to ask questions regarding the various aspects of this study and my questions have been answered to my full satisfaction. The information collected will be used only for research.

I understand that I remain free to withdraw from this study at any time. Participation in this study is under my sole discretion and does not involve any cost to me.

Subject's name and signature /thumb impression

Name and signature of witness

1. Date:

2

Name and signature of interviewer

Name and signature of Principal Investigator: Dr. Abhishek S V

ANNEXURE V

INFORM CONSENT FORM - KANNADA

ತಿಳುವಳಿಕೆ ಒಪ್ಪಿಗೆ ಪತ್ರ

ಕ್ರಮ ಸಂಖ್ಯೆ:

ಅಧ್ಯಯನದ ಶೀರ್ಷಿಕೆ: ಕೊಲಾರ ನಗರ ಮತ್ತು ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳಲ್ಲಿ ವಯಸ್ಕರಲ್ಲಿ ನಿದ್ರೆಯ ಅಸ್ವಸ್ಥತೆಗಳ ಹರಡುವಿಕೆ: ಸಮುದಾಯ ಆಧಾರಿತ ಅಡ್ಡ ವಿಭಾಗೀಯ ಅಧ್ಯಯನ

ನಾನು, ಸಹಿ ಮಾಡದವರು, ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಮತ್ತು ನನ್ನ ವೈಯಕ್ತಿಕ ಮಾಹಿತಿಯ ಸಮಾಲೋಚನೆ ಮತ್ತು ಬಹಿರಂಗಪಡಿಸುವಿಕೆಗೆ ಒಳಗಾಗಲು ಒಪ್ಪುತ್ತೇನೆ ಮತ್ತು ಈ ಒಪ್ಪಿಗೆಯ ರೂಪದಲ್ಲಿ ವಿವರಿಸಲಾಗಿದೆ.

ನನ್ನ ಸ್ಥಳೀಯ ಭಾಷೆಯಲ್ಲಿ ಅಂದರೆ _____ ನಲ್ಲಿ ನನ್ನನ್ನು ಓದಲಾಗಿದೆ / ವಿವರಿಸಲಾಗಿದೆ ಮತ್ತು ಈ ಅಧ್ಯಯನದ ಉದ್ದೇಶ ಮತ್ತು ಅಧ್ಯಯನದ ಸಮಯದಲ್ಲಿ ಸಂಗ್ರಹಿಸಿ ಬಹಿರಂಗಪಡಿಸುವ ಮಾಹಿತಿಯ ಗೌಪ್ಯ ಸ್ವರೂಪವನ್ನು ಅರ್ಥಮಾಡಿಕೊಳ್ಳಿ.

ಈ ಅಧ್ಯಯನದ ವಿವಿಧ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುವ ಅವಕಾಶ ನನಗೆ ಸಿಕ್ಕಿದೆ ಮತ್ತು ನನ್ನ ಪೂರ್ಣ ತೃಪ್ತಿಗೆ ನನ್ನ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಲಾಗಿದೆ. ಸಂಗ್ರಹಿಸಿದ ಮಾಹಿತಿಯನ್ನು ಸಂಶೋಧನೆಗೆ ಮಾತ್ರ ಬಳಸಲಾಗುತ್ತದೆ.

ನಾನು ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಈ ಅಧ್ಯಯನದಿಂದ ಹಿಂದೆ ಸರಿಯಲು ಮುಕ್ತನಾಗಿರುತ್ತೇನೆ ಎಂದು ನಾನು ಅರ್ಥಮಾಡಿಕೊಂಡಿದ್ದೇನೆ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವಿಕೆಯು ನನ್ನ ಸ್ವಂತ ವಿವೇಚನೆಗೆ ಒಳಪಟ್ಟಿದೆ ಮತ್ತು ನನಗೆ ಯಾವುದೇ ವೆಚ್ಚವನ್ನು ಒಳಗೊಂಡಿರುವುದಿಲ್ಲ.

ವಿಷಯದ ಹೆಸರು ಮತ್ತು ಸಹಿ / ಹೆಬ್ಬೆರಳು ಅನಿಸಿಕೆ

ಸಾಕ್ಷಿಯ ಹೆಸರು ಮತ್ತು ಸಹಿ

1. ದಿನಾಂಕ: ದಿನಾಂಕ:

2. ದಿನಾಂಕ:

ಸಂದರ್ಶಕರ ಹೆಸರು ಮತ್ತು ಸಹಿ

ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿಯ ಹೆಸರು ಮತ್ತು ಸಹಿ: ಡಾ.ಅಭಿಷೇಕ್ ವ

ANNEXURE VI

DEFINITION OF VARIABLES

Operational definitions:

1. **Age:** Considered in completed years at the time of interview
2. **Gender:** Male and Female
3. **Socio- economic status:** modified B.G Prasad scale (January 2022)
4. **Residence:**

I. Rural: Area under Panchayat

II. Urban: Area under Municipality/Corporation

5. **Type of family:**
    - i Nuclear family: Consists of the married couple and their dependent children
    - ii Joint family: Consists of a number of married couples and their children who live together in the same household, also include three generation family.
6. **Educational Qualification:**
    - a. Illiterate: A person aged 7 years and above can't read and write.
    - b. Primary Education: Class IV pass
    - c. Middle School Education: Class VIII pass
    - d. Secondary School Education: Class X pass
    - e. Higher Secondary Education: Class XII pass
    - f. Graduate and above
7. **Addiction:**
    - a. Any substance/drug which is self- administered for nonmedical reasons, in quantities and frequencies which may impair an individual's ability to function effectively, and may result in social, physical or emotional harm.

b. Tobacco addiction is a strong craving for nicotine, a chemical in tobacco that makes it hard for people to quit tobacco despite many health risks.

c. Alcoholism: a physical dependence on alcohol.

8. **Occupation:**

Professional	Doctor, Engineer, Principal, Lawyer, Military officer, Senior executive, Business Proprietor, Writer, Scientist, Large employer, Director, University Professor, Police officer.
Semi Professional	Teacher, Pharmacist, Social worker, Owner of small business and manager, Farmer, others (Computer programmer, constructor, Govt employee, Nurse)
Skilled worker	Clerk, Supervisor, Carpenter, Tailor, Mechanic, Electrician, Railway guard, Painter, Baker, Driver, Shop assistant, constable, soldier, potter, barber, linesman, others (welder, gardener, cook, mason, postman, plumber)
Semi-skilled	Factory operator, Agricultural labor, shoemaker, security guard, shop helper
Unskilled	Laborer, Domestic servants, peon, sweeper, washerman, others.

9. **Socio- economic status** - Modified B.G.Prasad Scale, May 2021:22

10. **Medical Co-morbidities:**

i Hypertension: As per JNC VIII criteria.18

ii Fasting Plasma Glucose (FPG) > = 126mg/dl or 2 hr Plasma Glucose >200mg/dl

iii High Cholesterol, Heart disease, Liver disease, Kidney disease, Thyroid disease Asthma: as per relevant records and reports

4.2 Insomnia

Insomnia refers to the difficulty in initiation, maintenance, duration or quality of sleep. People may experience poor concentration, lower productivity, accidents at work or while driving and poorer work quality as a result of insomnia [102]

4.2.1 Sleep apnoea

Sleep apnoea is a common condition in which your breathing stops and restarts many times while you sleep.

4.2.2 Restless legs syndrome (RLS)

RLS is a condition that causes an uncontrollable urge to move the legs, usually because of an uncomfortable sensation with aches and pains throughout the legs typically happens in the evening or night-time hours when sitting or lying down. Restless legs syndrome, also known as Willis-Ekbom disease[104]

4.2.3 Narcolepsy

Narcolepsy is a chronic neurological disorder that affects the brain's ability to control sleep-wake cycles. They may feel rested after waking, but then feel very sleepy throughout much of the day[105]

4.2.4 Episodes of disorientation or confusion

Disruptive sleep-related disorders. Abnormal movements, talk, emotions and actions happen while you're sleeping although your bed partner might think you're awake.

Examples include sleep terrors, sleepwalking, nightmare disorder, sleep-related eating disorder and sleep paralysis.[106]

4.2.5 Sleep quality

Sleep quality is defined as an individual's self-satisfaction with all aspects of the sleep experience. Sleep quality has four attributes: sleep efficiency, sleep latency, sleep duration, and wake after sleep onset.[32]

4.2.6 Sleep Latency

Sleep latency, or sleep onset latency, is the time it takes for you to go from being fully awake to sleeping. Sleep latency and the time it takes to reach rapid eye movement sleep (REM sleep) are important factors in the amount and quality of your sleep.[33]

4.2.7 Sleep efficiency (SE):

Ratio of total sleep time (TST) to time in bed (TIB) (multiplied by 100 to yield a percentage). Captures a core problem for those suffering from insomnia.

4.2.8 Sleep disturbances

Sleep disturbances encompass disorders of initiating and maintaining sleep (DIMS, insomnias), disorders of excessive somnolence (DOES), disorders of sleep–wake schedule, and dysfunctions associated with sleep, sleep stages, or partial arousals (parasomnias).[35]

4.2.9 Sleep medicine

Sleep medicine is a medical specialty or subspecialty devoted to the diagnosis and treatment of specific sleep disorders (e.g., sleep apnoea) in the individual patient, occupational sleep medicine is implemented at the group level not only to sustain workplace productivity and safety.[36]

4.2.10 Daytime dysfunction

Defined as the inability to stay awake and alert during the major waking periods of the day, results in unintended lapses into drowsiness or sleep. Excessive daytime sleepiness the most common cause

Institutional ethical committee - IEC

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

SRI DEVARAJ URS MEDICAL COLLEGE

Tamaka, Kolar

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No. SDUMC/KLR/IEC/573/2020-21 **Date: 24-12-2020**

PRIOR PERMISSION TO START OF STUDY

The Institutional Ethics Committee of Sri Devaraj Urs Medical College, Tamaka, Kolar has examined and unanimously approved the synopsis entitled **"Prevalance and associated factors of sleeo disorder among adults in urban and rural areas of kolar"** being investigated by **DR. ABHISHEK S V**, Dr. Prasanna Kamath B T in the Department of Community Medicine at Sri Devaraj Urs Medical College, Tamaka, Kolar. **Permission is granted by the Ethics Committee to start the study.**

Member Secretary
Member Secretary
Institutional Ethics Committee
Sri Devaraj Urs Medical College
Tamaka, Kolar.

Chairman
CHAIRMAN
Institutional Ethics Committee
Sri Devaraj Urs Medical College
Tamaka, Kolar

GANTT CHART

STEP	ACTIVITY	TIME PERIOD								
		2021			2022			2023		
		Jan	Feb to Mar	April to Dec	Jan to June	July to Aug	Sept to Dec	Jan to Mar	April to July	Aug to Dec
1	Topic search, selection & synopsis writing									
2	Synopsis submission									
3	Approval by IEC*									
4	Proforma Preparation and validation									
5	Pilot project									
6	Review of literature									
7	Data collection									
8	Data analysis									
9	Dissertation writing									
10	Submission of dissertation									

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