

A SURVEY STUDY ON DISEASE PRODUCED BY SUPPRESSION OF SLEEP

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ABSTRACT

The *Nidra* is one of the sub pillars of life; it is natural urges among non suppressible urges. It regulates and normalizes the mental and physiological components. The main purpose of this study is to survey that kind of disorders and symptoms are produced by the suppression of sleep and how much it affects the human physiology by long time suppression of natural sleep. In this cross sectional survey study, subjects were screened for observational study. In chronic sleep disturbed more than one month 251 people were screened from *SSMD Ayurvedia college, Ludhiana* and other psychiatric hospital and analyzed symptoms *tandra, shiroroga, angamard, jrimbha, akshigaurava*, uneasiness, hypertension irritability and physiological objective parameter with Pittsburgh sleep quality index. Objective parameter such as pulse rate and blood pressure were measured and analyzed with statistically students 't' test. The p value of blood pressure and pulse rate has 0.0103 and 0.0393 found to be significant and sleep quality, latency and duration was also affecting in which sleep duration is less among group. The sleep disturbances and suppression produces the abnormality in BP and Pulse rate.

Keywords: Sleep, *Nidra*, Disorders by suppression of sleep.

INTRODUCTION

Sleep is defined as unconsciousness from which the person can be aroused by sensory or other stimuli¹. It is to be distinguished from coma, which person cannot be aroused. There are multiple stages of sleep, from very light deep sleep. Two type of sleep, during each night, a person goes through two stages of sleep rapid eye movement and non rapid eye movement. Sleep is a biologic process and essential of life for optimal health. Sleep plays a critical role in brain functions and systemic physiology, including metabolism, appetite regulation, and the functioning of immune, hormonal, and cardiovascular systems. Despite the importance of sleep, up to 70 million people in the US and ~45 million people in Europe have a chronic sleep disorder that impacts daily functioning and health. For

example, ~20% of the serious injuries that result from car accidents can be associated with driver sleepiness, independent of the effects of alcohol. Lifestyle and environmental factors, psychosocial issues, and medical conditions all contribute to sleep problems. There are ~100 sleep disorder classifications; however, they are typically manifested in one of the following three ways: failure to obtain the necessary amount or quality of sleep (sleep deprivation), an inability to maintain sleep continuity (disrupted sleep, also called sleep fragmentation, difficulty maintaining sleep, and middle insomnia), and events that occur during sleep (eg, sleep apnea, restless legs syndrome). The effects of sleep disorders on the body are numerous and widely varied across multiple body systems. For total positive

health Ayurveda has given three sub pillars- *Ahara*, *Nidra* and *Brahmacarya*² port the body itself.

The international classification of sleep disorders-2 (2005) (ICSD-2) classifies the sleep disorders in six major categories. Insomnia, Sleep related breathing disorders, Hypersomnias, Circadian rhythm sleep disorder, Parasomnia and Sleep related movement disorders³.

Material & Methods:

The study was made on the basis of long lasting disturbed sleep pattern. For chronic sleep disturbed subjects were selected from Hospital of SSMD Ayurvedic College and other in city psychiatric hospital. Subjects were filled the proforma of Pittsburgh sleep quality Index⁴ (PSQI) and Ayurvedic proforma with objective parameter as pulse and blood pressure.

In PSQI nine questioned has mentioned and three different sleep quality, latency and duration.

Selection of individual: In ayurvedic OPD, IPD and psychiatric hospital we had screened the complaint patient and interested people to fill the questionnaire and data were collected.

Inclusion criteria:-

1. Persons with body ache, headache, periorbital pain.
2. Person taking less sleep without any obvious organic disease.
3. Either sex.
4. Sleep disturbed more than one month.

5. 16-70 years of age
6. Willing individuals

Exclusion criteria: -

1. Accidental cases
2. Trauma cases
3. Persons unwilling to give consent for participation
4. Any person under treatment of long term drug therapy.

Survey study:-

- a) Source of Data: The data has been collected from OPD and IPD of SSMD Ayurvedic College, Moga and psychiatry hospital.
- b) Study Design: single group chronic insomnia people were screened for observational study.
- c) Sample Size: A total of 251 individuals with disturbed sleep patterns have been screened for the proposed study.

Observation and Results

The symptoms present due to suppression of *nidra* are different pattern. Irritability, Uneasiness, *shiroroga*, *tandra*, hypertensive, *angamarda*, *jrumbha* and *Akshigaurava* are present in sequence and commonly by the abundance and grading as first, second, third, fourth, fifth, sixth, seventh and eight position. It indicates the presence of symptoms in many people and latter one is less frequents. Some have common symptoms among all but some are not. Irritability is most common symptoms among them.

Table1: Ayurvedic classical symptoms occurrence in patients due to suppression of sleep (nidra).

SYMPTOMS of chronic sleep disorder					
			N	Percentage	Rank
1	<i>Tandra</i>	YES	110	43.82	4 th
		No	141	56.18	
2	<i>Shroroga</i>	YES	145	57.76	3 rd
		No	106	42.24	
3	<i>Angamard</i>	YES	103	41.03	5 th
		No	148	58.97	
4	<i>Jrumbha</i>	YES	96	38.24	7 th
		No	155	61.16	
5	<i>Akshigaurav</i>	YES	89	35.45	8 th
		No	162	64.55	
6	Uneasiness	YES	175	69.72	2 nd

		No	76	30.28	
7	Hypertensive	YES	86	35.64	6 th
		No	165	64.36	
8	Irritability	YES	201	80.07	1 st
		No	50	19.93	

Figure 1: Bar diagram of Ayurvedic classical symptoms due to suppression of sleep (*nidra*).

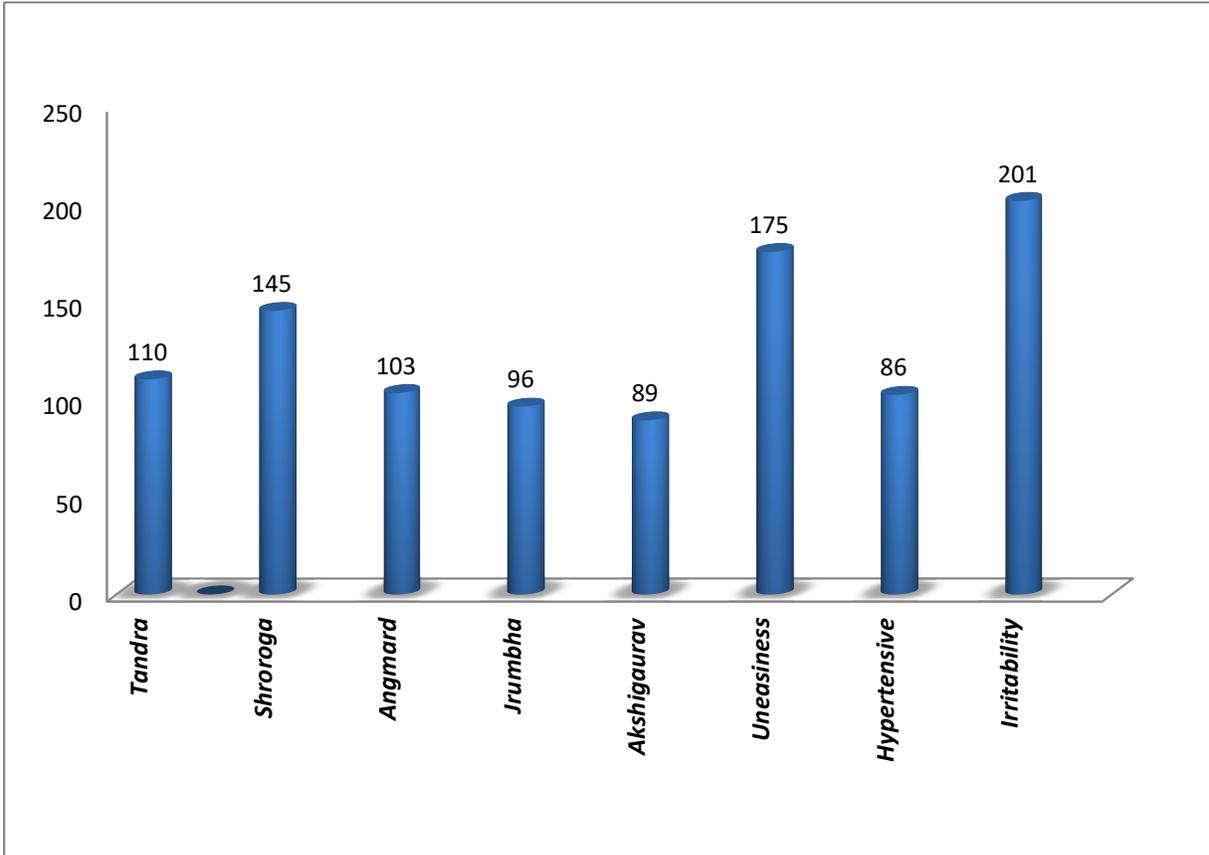


Table 2: Demographic data and objective parameter finding of sleep suppression population.

Relationship with variables								
VARIABLES		f	Mean	Std dev	test value	Df	p value	
1	Age (Year)	17 -- 70	251	80.88	11.345			
2	Sex	Female	125	80.96	11.01	t=0.099	249	0.921
		Male	126	80.81	11.71			
3	Social Eco. status	Lower Middle	50	80.7	10.74	F=0.325	3,247	0.807
		Middle	101	80.52	11.28			
		High Middle	50	82.3	12.41			
		High	50	80.4	11.17			
4	Addiction	Coffee	46	79.63	11.21	F=2.4228	4,246	0.0482*
		Alcohol	17	78.01	11.48			
		Smoking	35	82.28	12.31			
		Tea Coffee	78	81.07	11.47			

		Tabacco	75	84.97	11.42			
5	Occupation	Business	46	80.39	11.09	F=0.881	6,244	0.509
		Labour	27	81.33	12			
		Teacher	33	78.61	9.74			
		Doctor	15	79.33	10.6			
		Shopkeeper	53	81.11	11.97			
		H Wife	35	84.83	11.91			
		Working Wm.	42	80.26	11.38			
6	BP (mmHg)	Normal	165	83.96	11.15	t=2.3301	249	0.0103*
		Above Normal	86	80.44	11.75			
7	Pulse rate per minute	Normal	62	83.87	11.16	t=1.9742	249	0.0393*
		Above normal	189	80.96	11.2			

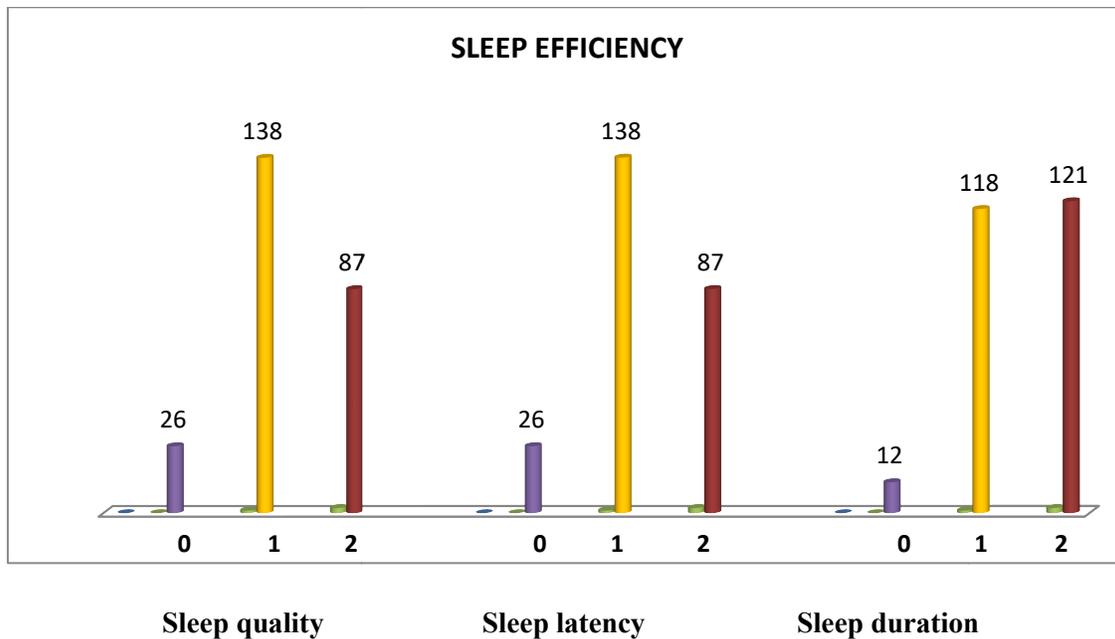
Addiction, blood pressure and pulse rate has statistically significant where p value is less than 0.05. Addiction p value is 0.0482, Blood pressure is 0.0103

and pulse rate is 0.0393 it shows statistically significant.

Table 3: Nature of sleep quality, latency and duration according to Pittsburgh sleep quality index proforma.

		SLEEP EFFICIENCY				
		Criterion	n	Percentage	Mean	
1	Sleep quality	0	26	10.35	84.15	
		1	138	54.98	82.45	
		2	87	34.67	76.96	
2	Sleep latency	0	26	10.35	84.15	
		1	138	54.98	82.63	
		2	87	34.67	76.96	
3	Sleep duration	0	12	4.78	89.58	
		1	118	47	80.11	
		2	121	48.2	80.19	

Figure 2: Bar diagram of sleep quality, latency and duration.



Sleep Quality: In chronic sleep disturbances sleep quality criteria 0, 1 and 2 has 26, 138 and 87 people respectively. 0 indicates very good, 1 indicates fairly good and 2 indicates fairly bad. Maximum number was 138 fairly good sleep qualities.

Sleep Latency: Sleep latency has 0,1 and 2 criteria indicating how long time to fall in sleep and sleep problems how much day you suffer. 26 people were criteria 0, 138 people were criteria 1 and 87 people were in criteria 2.

Maximum people were in criteria 1 in which person fall in sleep within 16 to 30 minutes for few days in a week. The total score was 2 in sleep latency.

Sleep Duration: Total 121 people were suffering from total sleep duration in criteria 2 which is fairly bad. Total sleep duration comes under 5-6 hour in night. 118 people were criteria 1 in which persons sleep duration was 6-7 hours. 12 people were 0 criteria where sleep duration was more than seven hours sleep duration.

Subjective parameter due to sleep disorder: *Jrimbha*, *angamard*, *akshigaurava*, *tandra*, uneasiness, hypertensive and irritability are the symptoms of acute sleep disorder with involvement of symptoms. One person may have two or more than two symptoms. *Jrimbha* is first one, second is *angamard*, third

one is *akshigaurava* along with incorporate other symptoms also.

DISCUSSION

Blood pressure- Maximum persons who are suffering from high blood pressure or borderline blood pressure are influence from long term sleep disorder because disturbance in biological clock special in sleep is one root cause of blood pressure. Study suggests that during sleep BP decreases and sleep deprivation increases it⁷.

Pulse rate- the persons who are suffering from tachycardia are prone to long term sleep disorders. There is no any direct relationship between tachycardia and insomnia⁵ but generally stress may be one factor or type 1 persons who need perfections in all deeds are prone to this.

Tandra – Due to improper sleep person generally feels *tandra* and main reason of *tandra* is there is aggravation of *Kapha dosha* and person feel heaviness in body and due to *tamas bhava* is more prone in body person detached from their *indriya-arth* and he or she is suffering from *tandra*. In spite of that *tandra* also present in *kapha vridhhi*, *ojo vyapada*, *balakshaya lakshana*, *kaphavrita prana vayu*, *arsh* predormal symptoms, *kushtha* pre dormal symptoms, quality of *nidra*, *sarp vega lakshana*, symptoms of *jwar*, *ati-*

sar, pandu, raktapitta, udavarta and arochaka. There were different symptoms according to their *dosha* and *dushya* involvement.

Shiroroga- Due to prolong time night awaking, person feels heaviness in head and disturbance in all three dosha, this disturbance leads to many disorder including *shiroroga*. It is broad term and many diseases come under the *shiroroga*. The cause of *shiroroga* is sleep disturbances. It is a symptom of *kanda visha symptoms, Udavarta symptoms*.

Angamarda- Symptoms are generally seen in prolonged time night awaking and here aggravated *Kapha dosha* enters in big as well as small *strotas* and it leads to *Angamarda* condition. It is present in *asrigdar, divaswap, symptoms of kita visha, pandu roga, panat-yaya, udavarta*. There is general body ache.

Akshigauravata: There is heaviness over eye and found in *majja vriddhi* symptoms. It is also symptoms of *kapha vriddhi* due to *viguna of vata dosha*.

Jrumbha – disturbance in sleep for a long time leads improper mechanism of biological clock. This improper mechanism leads malaise and yawning. It is found in *ardita, tandra laxana, grahani laxana, visha lakshana, mushaka dansh lakshana, jwar, murchha and udavarta lakshana*.

Uneasiness - Proper function of human body there is necessary to take proper and sufficient amount of sleep. If that is not achieved then person feels uneasiness in body.

Hypertension – Generally stress and hyper activity of mind leads to night awaking. If this situation happened for prolonged time then may be persons suffering from hypertension. This may be one reason for hypertension^{6,7}.

The cholinergic fibers from the midbrain and pons project to the cerebral cortex passing through the thalamus. The adrenergic fiber passes from all over the reticular formation project to the cerebral cortex. The serotonergic neurons from the raphe nucleus project to the thalamus, hypothalamus, cerebral cortex, and limbic system. It regulates sleep, wakefulness and consciousness.

The pontine and medullary reticulospinal tracts project from pontine nucleus and medulla oblongata to

spinal cord. The noradrenergic fibers from different parts of the reticular formation project to the cerebellum. The dopaminergic fibers from the midbrain reticular formation project to the basal ganglia. The serotonergic neurons in the raphe nucleus of the medulla project to the spinal cord. The descending reticular formation controls the tone of the extensor muscles.

The projections from reticular formation control the tone of the extensor muscles. The projections from reticular formation help to regulate respiratory, cardiovascular and vasomotor functions.

The sensory inputs to the reticular formation come from the areas connected to the reticular formation by the projection. There is extensive sensory input from the fibers carrying slow pain. The reticular formation has four distinct systems with a specific neurotransmitter. The neurotransmitters are acetylcholine, norepinephrine, serotonin and dopamine.

Irritability - For maintain homeostasis each and every function of human body should be take place in proper time and in proper manner. But if it could not be happen then person become anger and irritating.

CONCLUSION

The prevalence of disease associated with sleep suppression leads to high pulse rate; increased blood pressure, irritability, *shiroroga, jrumbha, angamard, akshigaurava* and uneasiness are more common and prominent. Ayurvedic seer has mentioned that sleep suppression leads to different system related problem and cause of disease.

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