



Sleep behavior of apparently healthy people in Jaipur

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Abstract

Background: Disturbed Sleep is among the most frequent health complaints physicians encounter. Sleep deprivation and disruption of the circadian timing systems can lead to serious impairment of day-time functioning. Two groups of individuals are recognized based on sleep habits: Morning types and Evening types.

Objective: To find out the habitual timing and sleep habits in age group 20 to 50 years in apparently healthy individuals living in Jaipur.

Material and Methods: The study was conducted retrospectively on randomly selected 1000 apparently healthy subjects of age 20 to 50 years on self and recalling normal routine sleep pattern excluding change in on special occasions like examination, marriage parties etc.

Results: Out of 1000 subjects most of the people 506 (50.6%), were sleeping 7-8 hr, followed by 281 (28.1%) were sleeping 6-7 hr and the least was 8 (0.8%) were sleeping >9 hr. Out of 1000 subjects 775 (77.5%) were having a long consolidated sleep in night (Monophasic sleep) and 225 (22.50%) were having a long consolidated sleep in night and a few hours sleep in daytime or siesta (Biphasic sleep).

Conclusion: Majority of subjects in various groups (30% to 87%) living in Jaipur are sleeping 7-8 hr in night and least study population are sleeping < 6 hr and > 9hr. 77.5% of study population are not sleeping in daytime (no siesta) and having monophasic sleep and 22.5% were sleeping in daytime (siesta) and having a biphasic sleep.

Keywords: biphasic sleep, monophasic sleep, siesta, sleep behavior

Introduction

Disturbed Sleep is among the most frequent health complaints physicians encounter. Sleep deprivation and disruption of the circadian timing systems can lead to serious impairment of day-time functioning. Most adults sleep seven to eight hours per night, although the timing, duration and internal structure of sleep vary among apparently healthy individuals and as a function of age ^[1-2]. Overall human sleep deprivation experiments have proven that sleep deprivation causes sleepiness and impairment of performance, vigilance, attention, and concentration ^[3]. In addition, sleep deprivation may also causes some metabolic, hormonal and immunological effects. However sleep deprivation does not cause permanent memory or others CNS changes ^[4]. Even partial sleep deprivation reduces cellular immune responses. Some important studies from Van Cauters group have clearly documented an elevation of cortisol level following even partial sleep loss ^[5].

Newborns have a polyphasic sleep pattern sleeping from 16 to 20 hours a day and sleep requirement decreases to 10 hours per day between the ages of 3 to 5 years. Total sleep time drops to 9 to 10 hours at age 10 and about 7 to 7.5 hours during adolescence and in adults with an average of 8 hours which declines gradually to 6.5 hours in late adult life. However, there are wide individual differences in the length and depth of sleep, due apparently to genetic factors, early-life

conditioning, the amount of physical activity and particular psychological state ^[2, 3, 6]. Pre-school children have mainly a biphasic sleep-pattern which includes a mid-day nap and adults have monophasic nap-free sleep-pattern with a consolidated sleep at night. The sleep-pattern reverts to biphasic pattern in old-age and in some culture adults also have biphasic sleep-pattern ^[6].

Two groups of individuals are recognized based on sleep habits: Morning types and Evening types ^[4, 7] The morning types ("larks") wake up early rested, refreshed and work efficiently in the morning. Evening types ("owls") have difficulty getting up early in the morning and they then feel tired; in contrast they feel fresh and energetic toward the end of the day. These people perform best in the evening. If allowed their choice, they go to sleep late and wake up late. Morningness and Eveningness are most likely determined by a genetic component ^[3].

There is wide range of normal sleep length., adult with habitual sleep duration of fewer than four hours or greater than nine hours have increased mortality rates as compared to those sleep seven to eight hours per night ^[8-11].

The purpose of the present study is to find out the habitual timing and sleep habits in age group 20 to 50 years in apparently healthy individuals living in Jaipur. This study may be helpful for clinician to prescribe timing and duration of sleep to individuals living in Jaipur.

Material and Methods

The study was conducted retrospectively on randomly selected 1000 apparently healthy subjects of age 20 to 50 years on self and recalling normal routine sleep pattern excluding change in on special occasions like examination, marriage parties etc.

Inclusion Criteria

Male and females from age 20 to 50 years living in Jaipur and apparently healthy subjects

Exclusion Criteria

- Unhealthy people based on history taking and clinical examination.
- Persons not residing in Jaipur.
- People working in night duties and shift duties.
- Smokers and Alcoholics
- Subjects on sedatives, hypnotics, antihistaminic, anti-psychotics, drug addicts and taking any medicines which can affect sleep rhythm and pattern.
- Persons taking medicines for a long time.

Results

Out of 1000 subjects 604 (60.40%) subjects were males and 396 (39.6%) were females. 708 subjects were in age group from 20-30 years in which 435 (72.02%) were males and 273 (68.94%) were females. 167 were in age group 30-40 years in which 95 (15.73%) were males and 72(18.18%) were females. 125 subjects were in age group 40-50 years in which 74 (12.25%) were males and 51(12.88%) were females.

Out of 1000 subjects most of the people 506 (50.6%), were sleeping 7-8 hr, followed by 281 (28.1%) were sleeping 6-7 hr and the least was 8 (0.8%) were sleeping >9 hr. (Table 1)

In this study 708 subjects were in age group from 20 to 30 years among that 427 (60.31%), 203 (28.67%) 44 (6.21%), 23 (3.25%) 8 (1.13%) and 3 (0.43%) subjects were sleeping from 7- 8 hr, 6-7 hr, 8-9 hr, 5- 6 hr, <5 hr and >9 hr respectively. Similarly 167 subjects were in age group of 30-40 years among that 61(36.52%), 51 (30.54%), 26 (15.57%), 16 (9.58%), 10 (5.99%) and 3 (1.80%) were sleeping from 7-8 hr, 6-7hr, 5-6hr, <5hr, 8-9 hr and >9 hr respectively. (Table 2)

125 subject were in age group 40-50 year in which 51 (40.80%), 27 (21.60%), 22 (17.60%), 18 (14.40%), 5 (4%) and 2 (1.6%) were sleeping 5-6 hour, 6-7 hour, <5 hour, 7-8 hour, 8-9 hour and >9 hours respectively.

In this study out of 1000 subjects 405 were doing job in various services, 217 were doing own business, 191 were students. 187 females were limiting their work in in-house activities or housewives. Among that out of 191 students most of them 95 (49.74%) were sleeping in night 7-8 hr. Similarly out of 405 subjects, who were doing services, maximum 201 (49.63%) were sleeping in night 7-8 hr. (Table 3)

Out of 1000 subjects 775 (77.5%) were having a long consolidated sleep in night (Monophasic sleep) and 225 (22.50%) were having a long consolidated sleep in night and a few hours sleep in daytime or siesta (Biphasic sleep). (Table 4)

Table 1: Sex wise Distribution of Total Study Population according to Sleep Duration in Night

Duration	Male	Female	Total
<5HOURS	29	17	46
%	4.80%	4.29%	4.60%
5-6 HRS	66	34	100
%	10.93%	8.59%	10%
6-7 HRS	175	106	281
%	28.97%	26.77%	28.10%
7-8 HRS	291	215	506
%	48.18%	54.29%	50.60%
8-9 HRS	38	21	59
%	6.29%	5.30%	5.90%
>9 HRS	5	3	8
%	0.83%	0.76%	0.80%
TOTAL	604	396	1000

Table 2: Age wise Distribution of Total Study Population according to Sleep Duration in Night

Age in Years	<5 hrs	5-6 hrs	6-7hrs	7-8hrs	8 -9hrs	>9hrs	Total
20-30	8	23	203	427	44	3	708
	1.13%	3.25%	28.67%	60.31%	6.21%	0.43%	70.80%
30-40	16	26	51	61	10	3	167
	9.58%	15.57%	30.54%	36.52%	5.99%	1.80%	16.7%
40-50	22	51	27	18	5	2	125
	17.60%	40.80%	21.60%	14.40%	4%	1.60%	12.5%.
TOTAL	46	100	281	506	59	8	1000

Table 3: Profession wise Distribution of Sleep Duration in Night in Total Study Population

Profession	<5 hrs	5-6 hrs	6-7hrs	7-8hrs	8-9hrs	>9hrs	Total
Students	0	5	52	95	33	6	191
%	0%	2.62%	27.23%	49.74%	17.28%	3.13%	19.1%
Service	28	63	89	201	23	1	405
%	6.91	15.56	21.98	49.63	5.68	0.24	40.5%
Business	14	28	125	47	3	0	217
%	6.45	12.90	57.60	21.66	1.38	0.00	21.7%
Housewife	4	4	15	163	0	1	187
%	2.14%	2.14%	8.02%	87.17%	0.00%	0.53%	18.7%
Total	46	100	281	506	59	8	1000
%	4.60%	10.00%	28.10%	50.60%	5.90%	0.80%	100%

Table 4: Sex Wise Distribution of Total Study Population According to Sleep Frequency

Subjects	Monophasic	%	Biphasic	%	Total
Male	474	78.48%	130	21.52%	604
Female	301	76.01%	95	23.99%	396
Total	775	77.5%	225	22.50%	1000

Discussion

The present study was conducted on 1000 healthy subjects depending on self-reporting and recalling normal routine sleep pattern excluding change in pattern on special occasions like examinations, marriage party etc. Age of the subjects included in the study ranged from 20-50 years. 604 subjects were males and 396 subjects were females. All these subjects were

grouped in the groups as from 20 to 30 years, 30 to 40 years and 40 to 50 years.

Sleep Duration in Night

In present study majority of subjects in various groups were sleeping 7-8 hr and 6-7 hr and it was as following in various groups -

Among 1000 total study population 506 (50.6%), 281 (28.1%), 100 (10%) 59 (5.9%), 46 (4.6%) and 8 (0.8%) were sleeping 7-8 hr, 6-7 hr, 5-6hr, 8-9hr, <5hr and >9hr respectively.

Out of 708 subjects in age group from 20 to 30 years, 427 (60.31%), 203 (28.67%), 44 (6.21%), 23 (3.25%) 8 (1.13%) and 3 (0.43%) subjects were sleeping from 7- 8 hr, 6-7hr, 8-9hr, 5-6 hr, <5hr and >9hr respectively. Similarly among 167 subjects in age group of 30-40 years 61(36.53%), 51 (30.54%), 26 (15.57%), 16 (9.58%), 10 (5.99%) and 3 (1.80%) were sleeping from 7-8hr, 6-7hr, 5-6hr, <5hr, 8-9hr and >9hr respectively. Likewise out of 125 subjects in age group 40-50 years, 51 (30.54%), 27 (21.60%), 22 (17.60%), 18(14.40%), 5 (4%), 2 (1.6%) were sleeping 5-6 hr, 6-7hr, <5hr, 7-8hr, 8-9hr and >9hr respectively.

In this study among 1000 subjects 405 were doing job in various services, 217 were doing own business, 191 were students and 187 females were limiting their work in in-house activities or housewives. Out of 191 students, 95 (49.74%), 52 (27.23%), 33 (17.28%), 6 (3.14%) and 0 (0%) were sleeping in night 7-8hr, 6-7hr, 8-9hr, >9hr, 5-6hr and <5hr respectively. Similarly out of 405 subjects who were doing services, 201 (49.63%), 89 (21.98%), 63 (15.56%), 28 (6.91%), 23 (5.68%) and 1 (0.25%) were sleeping 7-8hr, 6-7hr, 5-6hr, <5hr, 8-9hr and >9hr respectively. Out of 217 subjects who were doing business 125 (57.60%), 47(21.66%), 28 (12.90%), 14(6.45%), 3 (1.38%) and 0 (0%) were sleeping 6-7hr, 7-8hr, 5-6hr, <5hr, 8-9hr and >9hr respectively. Likewise out of 187 female subjects who were housewives 163 (87.17%), 15 (8.02%), 4 (2.14%), 4 (2.14%), 1 (0.53%) and 0 (0%) were sleeping 7-8hr, 6-7hr, 5-6hr <5hr, >9 and 8-9hr respectively.

Charles *et al.* [2] described that most adults sleep 7-8 hr per night, although timing, duration, and internal structure of sleep vary among healthy individuals and as a function of age. At the extremes, infant and elderly have frequent interruptions of sleep.

According to Adam's principle of neurology human sleep-wake cycle is to be age linked. The newborn baby sleeps from 16 to 20 hours a day and the child 10-12 hours. Total sleep time drops to 9 to 10 hours at age 10 and to about 7 to 7.5 hour during adolescence, a gradual decline to about 6.5 hours in late adult life. However, there are wide individual differences in length and depth of sleep, due apparently to genetic factors, early life conditioning, the amount of physical activity, and particular psychological states.

Gangwisch *et al.* [12] documented in his study two fold greater risk for hypertension among adults in their fourth to sixth decades who sleep <5 hours each night.

In present study the age group from 20-30 years majority of subjects 427 (60.31%) were sleeping 7-8hr. Similarly in the age group 30-40 years 61(36.52%) were sleeping 7-8hr. In the age group 40-50 years 51(40.80%) were sleeping 5-6 hr. Our observations are comparable to previous studies as Charles *et*

al. [2] described that most adults sleep 7-8 hr per night, Andrew *et al.* [13] reported that Sixty-three percent of respondents slept for 7 to 8 hours. Gangwisch *et al.* [12] reported that Sixty-three percent of respondents in their study sleep for 7-8hr.

Short sleepers and long sleepers

Least number of subjects were sleeping <6hr and >9hr. In details we have reported as following -Among 1000 subjects 100 (10%), 59 (5.9%) and, 8 (0.8%) were sleeping 5-6hr, <5hr and >9hr respectively. Among 708 subjects in age group from 20 to 30 years 44 (6.21%), 23 (3.25%), 8 (1.13%) and 3(0.42%) subjects were sleeping from 8-9hr, 5- 6 hr, <5hr and >9hr respectively. Out of 167 subjects in age group of 30-40 years 26 (15.57%), 16 (9.58%), 10 (5.99%) and 3 (1.80%) were sleeping from 5-6hr, <5hr, 8-9hr and >9hr respectively. Among 125 subjects in age group 40-50 years, 5 (4%), 2 (1.6%) were sleeping 8-9hr and >9hr respectively.

Long sleepers (>8hr) and short sleepers (<6hr) and profession

Out of 191 students 33 (17.28%), 6 (3.14%) and 0 (0%) were sleeping in night >9hr, 5-6hr and <5hr respectively. Out of 405 subjects who were doing services 28 (6.91%), 23 (5.68%) and 1 (0.25%) were sleeping <5hr, 8-9hr and >9hr respectively. Similarly out of 217 subjects who were doing business 28 (12.90%), 14(6.45%), 3 (1.38%) and 0 (0%) were sleeping 5-6hr, <5hr, 8-9hr and >9hr respectively. Out of 187 female subjects who were housewives 4 (2.14%), 4 (2.14%), 1 (0.53%) and 0 (0%) were sleeping 5-6hr <5hr, >9 and 8-9hr respectively.

Najib *et al.* [14] have found in their study that no significant relative risk of incident among sleeping 5,6,7, or 8hr, but a significant increase in relative risk among those sleeping 9hr or more. Tuab *et al.* [15] reported in JACC study from Japan that best survival is experienced by those who sleep 6.5hr-7.5hr. and those reported sleeping 8hr and more had greater mortality and in JACC it was reported that there is more excess mortality associated with sleep above 7.5hr than those sleep below 6.5hr. long sleep was associated with more of the population excess mortality risk than short sleep and study found several forms of excess morbidity among who sleep 8 hr or more.

Yoko *et al.* [16] have found that males with short sleep (<6h) and females with long sleep (>9h) were at elevated risk of death (9h).

Our findings are in accordance with Andrew S *et al* [13] who reported in their study that 21% were short sleepers (6%, <6 hours; 15%, 6-7 hours); and 16% were long sleepers (10%, 8-10 hours; 6%, >10 hours).

In present study most of subjects were sleeping 7-8hr in various groups except in age group 40-50 years probably due to increased work responsibilities in this age group, changes occurring in body due to in apparent chronic illnesses or may be normal sleep. Least number of subjects in various groups were sleeping <6hr (15.9%) and >9hr (0.8%) and observations are comparable to reports of previous studies as mentioned above. Whether these sleep patterns of short <6hr and long sleep >9hr are normal sleep pattern or indication of illnesses in future it requires a long follow up study.

Conclusion

Majority of subjects in various groups (30% to 87%) living in Jaipur are sleeping 7-8 hr in night and least study population are sleeping < 6 hr and > 9hr. In age group 40-50 years majority are sleeping 5-6 hr and 6-7 hr in night and so majority are sleeping in night less than age group of 20-30 years and 30-40 years which may be normal sleep pattern for this age group or may be due to increase work responsibilities and /or in-apparent chronic illnesses changing the sleep pattern.

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