ABSTRACT

A Comparative Study of Health and Nutrient Intake Based on Sleep Status Among Selected Adults in Ramnagar, Contai

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INTRODUCTION: Nowadays, inadequate sleep has rising global big issues. Various factors like workload, lifestyle, technology is significantly associated with sleep problem like sleep latency, sleep duration time. Sleep plays a important role in the secretion of growth hormones. Beside that cognitive effect, growth hormones of the body are trickle out for physical renewable and repair during sleep.

AIMS AND OBJECTIVES

- To obtain information about the physical and Physiological parameters with special emphasis on Height, Weightand BMI of Sleep Status (<8 hrs) and Sleep Status (>8 hrs).
- To evaluate the basic difference of nutritional status between the Sleep Status (<8 hrs) and Sleep Status(>8 hrs).

MATERIALS AND METHOD:

Place of study: Talgachhari, Kanpur and Mandar area of Ramnagar Block I , East Medinipur.

Study population: Study 103 families, 120 each group Sleep Status (<8 hrs) and Sleep Status (>8 hrs) were included in this study.

Study duration: This was cross-section observational study. Research was conducted during September to November, 2022

Statistical Analysis: The collected data were analysed and Mean, Standard Deviation, Standard Error was calculated along with the percentage. Student t-test was also performed to see the significance of the outcomes.

RESULT AND DISCUSSION

I have collected data from the above mentioned local area by random sampling. The findings health status show that the mean Age (y) ($t=13.318$, $p<0.05$), Weight (kg) ($t=36.53$, $p<0.05$), Height (cm) ($t=6.23$, $p<0.05$), BMI ($t=16.66$, $p<0.05$). The findings nutritional status show that Carbohydrate ($t=28.10$, $p<0.05$), Fat ($t=31.48$, $p<0.05$), Energy ($t=49.15$, $p<0.05$) of sleep status (>8hrs) is significantly higher than sleep status (<8 hrs). The mean sleep duration ($t= -52.57$, $p>0.05$) Protein ($t= -10.90$, $p>0.05$) of sleep status (>8hrs) is not significantly higher than sleep status (<8 hrs).

Short sleeper (5-6 h) consume high amount of carbohydrate, protein, sugar, total fat intake as opposed to lower consumption of dietary fiber compare to normal sleeper (7-8 h). Since, very sort sleeper (<5 h) indicated lower consumption of protein, carbohydrate, sugar, dietary fiber and total fat beside normal sleepers. Saturated fat negatively impacts sleep quality. Micronutrient intake has modifiable factor for lack of sleep and sleep difficulties. But micronutrient can't attention as much compared to macronutrient. Micronutrients have also mildest relation with sleep patterns. Various micronutrients like vitamin B1, folate, phosphorus, magnesium, iron, zinc, and selenium intake increase duration (12).

CONCLUSION:

Sleep is a natural recurring condition of rest for the body and mind. It is essential process that plays a crucial role in physical restoration, cardiovascular health, memory consolidation, body rejuvenation, immune system support, emotion regulation, cognitive function, hormone regulation, physical performance, maintain overall health and well-being.

KEYWORDS: Sleep, Lifestyle, Blood Pressure.

FULL PAPER

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1.0. INTRODUCTION

In human, sleep is a physiological process which is described as a repeated state of diminished attention to the environment. If we don't get enough sleep, we face different difficulties such as to think and focus high risk accident, slow reaction time, behavioral and attention problem.

Nowadays, inadequate sleep has rising global big issues. Various factors like workload, lifestyle, technology is significantly associated with sleep problem like sleep latency, sleep duration time (1).

Brain serotonin is an important sleep controlling hormone which synthesized from amino acid (especially tryptophan). It increases sleep efficacy; sleep time improve anxiety.

Serotonin is "feel good" chemical for both awake and sleep which is intermediary product to formation of melatonin at night. Melatonin a hormone secretes when it's dark but light inhibit melatonin production (2). In adults, tryptophan developed sleep and reduce sleep disturbances (3).

Sleep quality and dietary intake has closely bidirectional relationship. Inadequate diet and sleeping problem develop risk different chronic disease like obesity, type II diabetes, CVD. Researchers have revealed that carbohydrate and amino acid (mainly tryptophan) impact the levels of neurotransmitters in the intrinsic sleep processes which affect sleep patterns (4, 5).

Sleep plays a important role in the secretion of growth hormones. Beside that cognitive effect, growth hormones of the body are trickle out for physical renewable and repair during sleep. Due to sleep loss, growth hormones are reduced their secretion as a result body has lost its own repairing power and to protect itself also (3).

In earlier research, it was revealed that the intakes of macronutrients are associated with the quality sleep. It was found that the excessive amount of dietary lipid and carbohydrate controls the proportion of rapid eye movement and non-rapid eye movement. As the dietary fat and carbohydrate have the power to change the quality of sleep (6).

By providing the body amino acid tryptophan, dietary protein influences the sleep which is a sleep inducing nutrient probably (7). At first amino acid tryptophan transfer into 5-hydoxytryptophan, then serotonin which finally became melatonin at night to give initiation of sleep (8).

2.0. AIMS AND OBJECTIVES

- To obtain information about the physical and Physiological parameters with special emphasis on height, weightand BMI of Sleep Status (<8 hrs) and Sleep Status (>8 hrs).
- To know the health status of Sleep Status (<8 hrs) and Sleep Status (>8 hrs).
- To evaluate the basic difference of nutritional status between the Sleep Status (<8 hrs) and Sleep Status(>8 hrs).
- To study the nutritional status of Sleep Status (<8 hrs) and Sleep Status (>8 hrs).

3.0. METHODOLOGY

Place of study: Talgachhari, Kanpur and Mandar area of Ramnagar Block I , East Medinipur.

Study population: Study 103 families, 120 each group Sleep Status (<8 hrs) and Sleep Status (>8 hrs)

were included in this study.

Study duration: This was cross-section observational study. Research was conducted during September to November, 2022

Study setting/area: The study was done in association with Nurture Nutrition Solutions registered under Nurture Academy Welfare Trust which has been set up under MSME (Udyam), Niti Aayog (NGO Darpan), ISO 9001:2015, ISO 21001:2018 registered as a non-profit trust with Government of West Bengal, India the location of the study is Contai Sub divisional area, District Midnapur, West Bengal.

Statistical analysis: Student t test was performed to test the significance of the responses with the prevalence of Sleep Status (<8 hrs) and Sleep Status (>8 hrs). The collected data were analysed and Mean, Standard Deviation, Standard Error was calculated along with the percentage. Student t-test was also performed to see the significance of the outcomes.

4.0. RESULT AND DISCUSSION

The present study was undertaken at Talgachhari, Kanpur and Mandar area of Ramnagar Block I, East Medinipur. I want to collected data from local area of different health and nutritional status and their measurements of Height, Weight, BMI, Sleep Duration, Protein, Fat, Carbohydrate and Energy. I have collected data from the above mentioned local area by random sampling.

Health status

The findings show that the mean Age (y) ($t=13.318$, $p<0.05$), Weight (kg) ($t=36.53$, $p<0.05$), Height (cm) ($t=6.23$, $p<0.05$), BMI ($t=16.66$, $p<0.05$).

Nutritional status

The findings show that Carbohydrate ($t=28.10$, $p<0.05$), Fat ($t=31.48$, $p<0.05$), Energy ($t=49.15$, $p<0.05$) of sleep status (>8hrs) is significantly higher than sleep status (<8 hrs).

The mean sleep duration ($t= -52.57$, $p>0.05$) Protein ($t= -10.90$, $p>0.05$) of sleep status (>8hrs) is not significantly higher than sleep status (<8 hrs).

Short sleeper (5-6 h) consume high amount of carbohydrate, protein, sugar, total fat intake as opposed to lower consumption of dietary fiber compare to normal sleeper (7-8 h). Since, very sort sleeper (<5 h) indicated lower consumption of protein, carbohydrate, sugar, dietary fiber and total fat beside normal sleepers. Saturated fat negatively impacts sleep quality (9).

Short sleep duration affects by less intake of carbohydrate and protein (4). Also revealed that before bedtime high glycemic carbohydrate meal reduces sleep latency and time of sleep beginning which imposed in high level of tryptophan (10). The percentage of slow-wave sleep raised by lower intake of carbohydrate among healthy good sleepers (11). Micronutrient intake has modifiable factor for lack of sleep and sleep difficulties. But micronutrient can't attention as much compared to macronutrient. Evidence collected from epidemiological studies, suggesting that high energy intake in daily basis enhances sleep ruin. Micronutrients have also mildest relation with sleep patterns. Various micronutrients like vitamin B1, folate, phosphorus, magnesium, iron, zinc, and selenium intake increase duration (12).

5.0. CONCLUSION

Sleep is a natural recurring condition of rest for the body and mind. It is essential process that plays a crucial role in physical restoration, cardiovascular health, memory consolidation, body rejuvenation, immune system support, emotion regulation, cognitive function, hormone regulation, physical performance, maintain overall health and well-being.

To promote healthy sleep, it's beneficial to maintain a regular sleep schedule, create a sleep-friendly environment (cool, dark and quiet), avoid caffeine and stimulating activities close to bedtime, and establish a relaxing pre-sleep routine.

Carbohydrate and Minerals like magnesium and potassium can help relax muscles and promote sleep.

Proteins are essential for the synthesis of serotonin and dopamine. These neurotransmitters help regulate sleep-wake cycle, mood, and overall brain function.

6.0. REFERENCE

1. Chattu, V.K.; Chattu, S.K.; Burman, D.; Spence, D.W.; Pandi-Perumal, S.R. The Interlinked Rising Epidemic of Insufficient Sleep and Diabetes Mellitus. Healthcare 2019, 7, 37.
2. Zimmermann RC, McDougle CJ, Schumacher M, Olcese J, Heninger GR, Price LH. Urinary 6-hydroxymelatonin sulfate as a measure of melatonin secretion during acute tryptophan

depletion. Psychoneuroendocrinology 1993;18:567–78.
3. DuBose, J.R.; Hadi, K. Improving inpatient environments to support patient sleep. Int. J. Qual. Health Care 2016, 28, 540–553.
4. Peuhkuri, K, Sihvola, N & Korpela, R (2012) Diet promotes sleep duration and quality. Nutr Res 32, 309–319.
5. Ursin, R (2002) Serotonin and sleep. Sleep Med Rev 6, 55–67.
6. Phillips, F.; Chen, C.; Crisp, A.; McGuinness, B.; Kalucy, E.C.; Koval, J.; Kalucy, R.S.; Lacey, J.H. Isocaloric diet changes and electroencephalographic sleep. Lancet 1975, 2, 723–725.
7. Peuhkuri, K.; Sihvola, N.; Korpela, R. Diet promotes sleep duration and quality. Nutr. Res. 2012, 32, 309–319.
8. Keijzer, H.; Snitselaar, M.A.; Smits, M.G.; Spruyt, K.; Zee, P.C.; Ehrhart, F.; Curfs, L.M. Precision medicine in circadian rhythm sleep-wake disorders: Current state and future perspectives. Per. Med. 2017, 14, 171–182.
9. Grandner, M.A.; Jackson, N.; Gerstner, J.R.; Knutson, K.L. Dietary nutrients associated with short and long sleep duration. Data from a nationally representative sample. Appetite 2013, 64, 71–80.
10. Afaghi A, O'Connor H, Chow CM. High-glycemic-index carbohydrate meals shorten sleep onset. Am J Clin Nutr (2007) 85(2):426–30.
11. Afaghi, A, O'Connor, H & Chow, CM (2008) Acute effects of the very low carbohydrate diet on sleep indices. Nutr Neurosci 11, 146–154.
12. Grandner MA, Jackson N, Gerstner JR, Knutson KL. Dietary nutrients associated with short and long sleep duration. Data from a nationally representative sample. Appetite (2013) 64:71–80.