

Association of Sleep Deprivation, Gut Microbiota and Diet in Obesity

Mahantayya V Math, Yashoda R Kattimani*, Rita M Khadkikar, Swati R Gawali, Priyanka Rane, Madhur Rai, Prachi Patil, Hitali Mali

Sir,

We have read the nice article News and Views by Ms. Renugasundari (IJCEP Vol 6, Issue (3), Jul-Sep, 2019 page 104) about sleep deprivation and obesity. Smith and colleagues have observed that there is an association between sleep and gut microbiome diversity.^[1] The microbiome composition observed by them shows that within phyla richness of *Bacteroidetes* and *Firmicutes* were positively correlated with sleep efficiency and abstract thinking. Several taxa (*Lachnospiraceae*, *Corynebacterium* & *Blautia*) were negatively correlated with sleep measures.^[1] Haro and colleagues suggested that gut microbiota may be different in men and women and that these differences may be influenced by the grade of obesity.^[2] Cao and colleagues have studied more than 62 thousand children aged 6 to 17 years in China and they observed that short sleep duration was associated with increased risks of more sugar beverage intake and less vegetable and fruit intake.^[3] Bhutani and colleagues have found that sleep deprived participants changed their food choices and they ate food with higher energy density (more calories per gram like doughnuts, chocolate chip cookies & potato chips).^[4] Sarah James and her colleagues have observed that children with shorter sleep durations have shorter telomeres and it is a risk for increased physiological stress and impaired health.^[5] In a survey 3105 adults in USA Sanchez and colleagues have noted that poor sleep quality is associated with increased night time snacking and junk food craving and consumption of snacks at night was associated with increased obesity and diabetes risk.^[6] Godos and colleagues have observed that regular intake of Mediterranean diet is associated with better sleep quality.^[7] Mediterranean-style diet is associated with

adequate sleep duration, less insomnia symptoms.^[8] The consumption of a Mediterranean-style diet has more favorable sleep patterns.^[8]

Sleep is just as essential as regular exercise and eating a balanced diet to keep good health.

REFERENCES

1. Smith RP, Easson C, Lyle SM, Kapoor R, Donnelly CP, Davidson EJ, et al. Gut microbiome diversity is associated with sleep physiology in humans. *PLoS One*. 2019;14(10):e0222394. doi:10.1371/journal.pone.0222394
2. Haro C, Rangel-Zúñiga OA, Alcalá-Díaz JF, Gomez-Delgado F, Perez-Martinez P, Delgado-Lista J, et al. Intestinal Microbiota is Influenced by Gender and Body Mass Index. *PLoS One*. 2016;11(5):e0154090. doi:10.1371/journal.pone.0154090
3. Cao M, Zhu Y, Sun F, Luo J, Jing J. Short sleep duration is associated with specific food intake increases among school-aged children in China: A national cross-sectional study. *BMC Public Health*. 2019;19(1):558. doi:10.1186/s12889-019-6739-8.
4. Bhutani S, Howard JD, Reynolds R, Zee PC, Gottfried J, Kahnt T. Olfactory connectivity mediates sleep-dependent food choices in humans. *Elife*. 2019;8:e49053. doi:10.7554/eLife.49053
5. James S, McLanahan S, Brooks-Gunn J, Mitchell C, Schneper L, Wagner B, et al. Sleep Duration and Telomere Length in Children. *J Pediatr*. 2017;187:247-52.e1. doi:10.1016/j.jpeds.2017.05.014
6. Sanchez C, Killgore W, Gehrels J, Alfonso-Miller P, Grandner M. 0127 Nighttime Snacking: Prevalence and Associations with Poor Sleep, Health, Obesity and Diabetes. *Sleep*. 2018;41(suppl_1):A49-50.
7. Godos J, Ferri R, Caraci F, Cosentino FII, Castellano S, et al. Adherence to the Mediterranean Diet is Associated with Better Sleep Quality in Italian Adults. *Nutrients*. 2019;11(5):976. doi:10.3390/nu11050976
8. Castro-Diehl C, Wood AC, Redline S, Reid M, Johnson DA, Maras JE, et al. Mediterranean diet pattern and sleep duration and insomnia symptoms in the Multi-Ethnic Study of Atherosclerosis. *Sleep*. 2018;41(11):zsy158. doi: 10.1093/sleep/zsy158.

Mahantayya V Math, Yashoda R Kattimani*, Rita M Khadkikar, Swati R Gawali, Priyanka Rane, Madhur Rai, Prachi Patil, Hitali Mali

Department of Physiology, MGM Medical College Navi Mumbai, Maharashtra, INDIA.

*Correspondence

Mahantayya V Math

Associate Professor, Department of Physiology, MGM Medical College Navi Mumbai, Maharashtra, INDIA.

Phone: +91-9969042925

Email: yashoda.ravindra@yahoo.com

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