Endocrinology & Metabolic Syndrome

Nikkhah, Endocrinol Metab Synd 2015, 4:1
DOI: 10.4172/2161-1017.1000153

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Intake Circadian Physiology: An Overlooked Public Health Concern

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Rec Date: Nov 29, 2014, **Acc Date:** Jan 09, 2015, **Pub Date:** Jan 16, 2015

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This article establishes a circadian chronological basis for food intake orchestration in modern and postmodern humans, and illuminates roadmaps for future real-world research.

Chronophysiology is an evolutionary multiscience that enables animals including humans to cope with the changing environment. Timing of food intake has been discovered to orchestrate postprandial circadian rhythms of nutrient ingestion, digestion, transport, and metabolism. As such, chrono-orchestration of food intake regulates appetite and eating rate [1,2]. Chrononutritional physiology is a major unnoticed sound science that, in light of realistic modeling and understanding of voluntary feed intake in food-producing ruminant models, offers practical perceptions towards establishing health-improving feasible nutritional programs and regimens [1-5]. This is crucial considering that reliable hunger and nutrient intake predictions are indispensable to healthy and onchophobic provision of foods and nutrients to human cells. Such insightful knowledge can help formulate guidelines to prevent overnutrition and health issues namely overweight gain, obesity, and diabetes [4].

The evolutionary patterns of food searching and intake behavior have contributed to circannual and circadian patterns of endocrinology and metabolism [2]. With the severe modifications in life style due to transition from tradition through modernity, natural rhythms of physical activity, appetite and nutrient intake have dramatically changed. Due to reduced physical training and overnutrition of fats and sugars, maximizing synchronies between external environments and internal physiological states has become more difficult. Untimely food intake has exacerbated the modern problems by increasing risks of obesity, glucose intolerance, insulin resistance, diabetes mellitus, and resulting cardiovascular irregularities [3].

Timing of food intake is a major feasible life manager that significantly affects how quickly nutrients are ingested, how extensively they are assimilated, and how proportionately the resulting substrates are distributed among different functions (i.e., deposition, oxidation, secretion, and excretion). These mechanisms are real-life scientific tools whereby the modern man will be able to optimize life satisfaction, health and longevity. However, circadian food intake chronology has not yet been accommodated in dietary reference intake guidelines [6,7].

Therefore, chronobiological management practices (e.g., circadian food intake timing and frequency) offer viable and pragmatic models to improve nutrient transformation and utilization. These strategies can well be practiced by all, particularly overweight people, diabetics, shift-workers, and athletes preparing for professional matches and games [8-10]. Future research will need to explore data on nutrigenomics and immunopathology of food intake chronology [8]. This is a path wherein medical nutrition will reveal and keep its innovative healthy disciplines on the rise.

Acknowledgments

Thanks to Iran's Ministry of Science Research and Technology, National Elite Foundation, and University of Zanjan for supporting the author's programs of optimizing the new millennium global science education.

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