

Human Circadian Rhythm: Fasting-Feeding Cycle

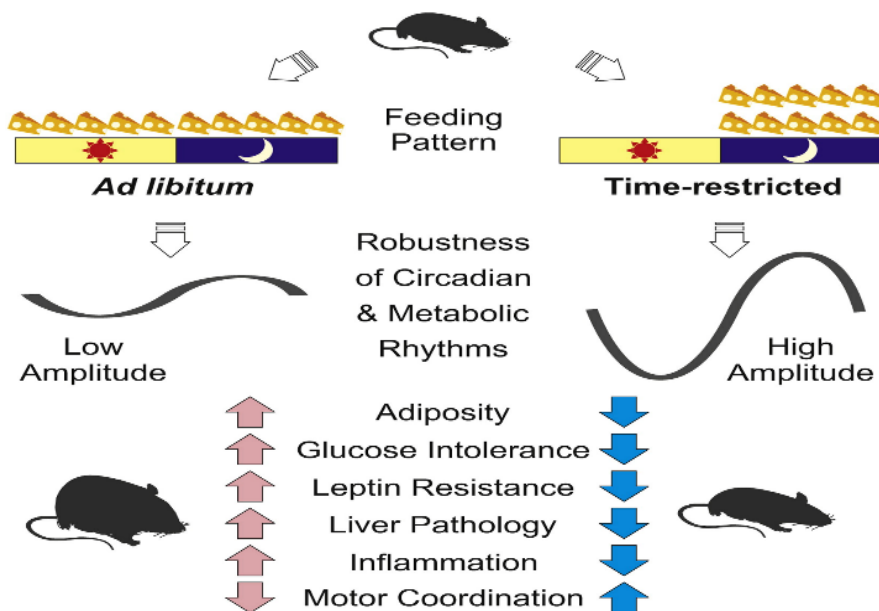
Digestion, assimilation, and metabolism of the food are at their best only during the daylight hours. Artificial light has extended the day of a modern human beyond the typical daylight hours. The feeding times have become long, extending to the late-night hours. The average modern human eats multiple meals over 14-15 hours in a 24-hour day.

Before 1970, most populations around the globe ate only three meals a day consumed within 10-12 hours of the daylight hours. There was no obesity in the world up until 1970. Lack of knowledge on ***“what to eat, when and how often to eat”*** is the major contributor to the global epidemic of obesity and its related food and lifestyle diseases.

“What we eat, when we eat and how often we eat are three critical determinants, in preventing obesity and metabolic diseases.”

Risks of late-night eating

- Lead to weight gain and diseases such as Obesity, Type 2 Diabetes, Metabolic Syndrome, PCOS, High blood pressure, Heart disease, and many more.
- Acid reflux disease – At 10.30 PM, the intestinal activities slow down. The meals consumed after 8 PM get fermented in the digestive tract causing bloating, gas, and acid reflux. The most common cause of acid reflux disease and indigestion is late-night eating.
- Excessive hunger – Staying awake late in the night increases the level of the hunger hormone ghrelin, which increases appetite and overeating. Late sleepers naturally become overeaters.
- Poor sleep – There should be a 2-3 hours time gap between food intake and sleep time. Food in the stomach increases internal body temperature by 1°C. To get deep sleep, the body's internal temperature must cool down by 1°C. This cool down for deep sleep occurs 2-3 hours after food intake.
- Poor memory and concentration – Late night eating leads to poor sleep. Deep sleep is essential for memory consolidation and concentration.



A groundbreaking experiment on mice in 2009, by Dr. Panda and associates at Salk Institute in California, gave us a revolutionary insight to the effect of the timing and frequency of eating on the body weight and health. Mice born out of the same parents fed a similar amount of the same kind of food got divided into two groups. One group was given free access to this food for all 24 hours of the day. The second group was assigned access to food only for 8 hours at the usual night time eating hours of the mice. After six weeks, the mice who ate all times of the day became obese. These mice also developed all the signs of the metabolic disease- high blood sugar, high-fat levels, and fatty liver. However, the mice who had access to food only during their regular night eating time of 8 hours, remained normal in weight and health. More interesting was the fact that excessive weight gain and the metabolic disease signs got reversed when the obese mice were put back on their usual time-restricted eating schedule.

“The time-restricted eating within the natural eating hours (in humans daylight) prevents and cures obesity, and its associated metabolic disease- high blood sugar, high blood fats, and fatty liver.”