

## Is our sleep time too short? Sleep deprivation as a pathophysiological condition of modern times

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From time immemorial sleep and dreams attract the attention of common people, artists, philosophers and scientists. In the remote past sleep and death were often associated and in Greek mythology “Thanatos” (Death) and “Hypnos” (Sleep) were considered twins.

In the first century before Christ the Roman poet and philosopher Titus Lucretius Carus described in his masterpiece “De rerum natura” the behaviour of dogs during sleep (1).

The first scientific studies regarding sleep in humans, however, were conducted at the beginning of the twentieth century, and during the fifties the “rapid eye movement sleep” (REM sleep) was characterized thanks to the pioneer research of E. Aserinsky and N. Kleitman (2).

In the eighties T.A. Wehr and co-workers elegantly demonstrated that the civilization of humanity had led to a shortening of the sleep period. In effect, the young volunteers of their fundamental experimentation spontaneously felt asleep (in the absence of artificial light) when darkness occurred and woke up when natural light appeared (3). These subjects, as a consequence, slept longer than comparable young persons immersed in artificial light, as usual in modern times.

In recent decades the number of hours slept per night in Western countries has progressively diminished and, in a parallel way, the quantity of scientific studies on sleep patterns and sleep deprivation has increased (4). Prolonged sleep deprivation negatively

affects the cognitive, emotional and organic functions of the human body, determining a deterioration in specific capacities, abilities and skills and a general worsening in the quality of life of sleep-deprived individuals. Sleeplessness accounts for an increase in anxiety and aggressiveness, a decrease in memorization capability and schematic thinking speed, and a worsening in decision-making faculties and speech fluency (4). Sleep is a powerful regulator and stabilizer of the so-called psycho-neuro-immune-endocrine system, and its “chronic” loss is associated to an enhanced risk in cardiocirculatory pathologies, diabetes mellitus and obesity. The negative effects of sleep deprivation are also identifiable through their “acute” expressions, as evidenced by the documented decline in overall effectiveness of people working round the clock; the results in performance tests after 19 hours of continuous wakefulness are in fact similar to those of people with an alcoholemic rate of 0.5 g/l (5), which is the legal driving limit in Italy. With reference to this biomedical awareness, in Italy a revealing colloquial expression exists, which in English may be translated as follows: “To be drunk tired”.

It can therefore be concluded that it scientifically appears better to sleep longer and quietly “Lying in the arms of Morpheus”, as another popular Italian saying goes. Not by chance, in Greek mythology Morpheus was one of the sons of “Nux” (The Night) and “Hypnos” (The Sleep).

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