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## **Night eating syndrome – prevalence characteristics of the health problem**

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**Key words: Night eating syndrome, public health, mental health**

### **Abstract**

Night eating syndrome (NES) is a relatively recent problem and despite the increase in the number of publications over the last years, it is still often underdiagnosed and its methods of treatment are still being developed. Over the past years, various definitions of NES have appeared, and the lack of a comprehensive version significantly impeded the comparison of research results and delayed in-depth knowledge of the syndrome. People who have been diagnosed with NES should be monitored for stress and anxiety disorders. Consideration should be given to the use of appropriate treatment methods, such as relaxation training or exercises in coping skills. Night eating syndrome can be inductive to becoming overweight and obese. Further research into this health problem is recommended. Inclusion of night eating syndrome during diagnosis in patients with type 2 diabetes, insomnia, and other eating disorders or mental health problems should be taken into account.

### **Introduction**

Rational nutrition consists of providing the human body with all the necessary nutrients in quantities and proportions appropriate to one's gender, age and type of work performed [1]. When creating a balanced diet, one can base it on the Pyramid of Healthy

Nutrition and Physical Activity as well as the related Healthy Nutrition Rules recommended by the Institute of Food and Nutrition in Poland.

It is worth remembering that food products contain nutrients in various amounts and proportions. There is no single product that would provide all nutrients in amounts sufficient for humans, which is why meal variety is something to take into account, i.e. consuming products from various food groups. It is also important to eat meals 4-5 times a day at about 3-hour intervals, which will allow the body to better utilize nutrients from food. It is inadvisable to eat less than three times a day, because long breaks between meals adversely affect concentration, cause heaviness, fatigue and weakness. This is caused by a drop in blood glucose levels. The last meal should be eaten 2-3 hours before bedtime [2].

In 2016, the Institute of Food and Nutrition published a new pyramid, created on the basis of the latest scientific research and recommendations of world experts. At the base of the pyramid is physical activity, at least 30-45 minutes a day, which combined with a balanced diet helps to prevent, among others, becoming overweight and obese [3].

Consumption of sweets between meals can be included among incorrect eating habits. Leaving the house without first eating breakfast or wrong meal distribution and size, which are the most common errors in human nutrition, can also be included. Poor human nutrition includes malnutrition as well as excessive consumption of food. When it is ongoing and long-lasting it can lead to latent or apparent impairments of bodily functions.

Night eating syndrome (NES) is a relatively recent problem and despite the increase in the number of publications over the last years, it is still often underdiagnosed and its methods of treatment are still being developed. Over the past years, various definitions of NES have appeared, and the lack of a comprehensive version significantly impeded the comparison of research results and delayed in-depth knowledge of the syndrome.

#### Night eating syndrome - definition

Night eating syndrome was originally defined as daily delayed eating of meals, which was characterized by three symptoms: evening or night gluttony, insomnia, and morning anorexia. The description of the phenomenon was published in 1955 in the work "The night-eating syndrome: A pattern of food intake among certain obese patients" [4, 5].

Night eating syndrome was not included in the ICD-10 classification as a separate disease entity. It was placed in the classification of mental disorders of the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders - 5 (DSM-5) in the category of "Other specified feeding or eating disorders" [6, 7].

Currently, NES is described as a daily delay in food intake with simultaneous normal sleep rhythm [4, 5]. It has been observed that NES symptoms intensify under the influence of stress. It has subsequently been concluded that they can probably be reduced by removing the patient from the stressful environment. NES is also associated with mood and sleep disorders. It can be the cause of becoming overweight and obese. The disease occurs independently or it can be associated with other diseases (e.g. obesity or depression) [8].

NES disorder consists of uncontrolled, usually recurring, binge eating during the night.

#### NES prevalence

The prevalence of NES in the study group surveyed by Rand et al. was estimated at 1.5% [4]. In the study of Zwaan et al., the prevalence in the general population of Germany was found at 1.1% in the sample [9]. Similar results were also obtained in the study of Zadjali et al. conducted on the Arab population of Oman, where the criteria of night eating syndrome were met by 1.5% of the test subjects. In a population adhering to the Mediterranean diet, the prevalence of NES was 3.5% with changed criteria, i.e. small intake and not eating meals in the morning, sleep disorders, and eating just before sleep or during sleep [6, 10].

It seems that night eating syndrome is more common in women than in men, but there are many discrepancies in the research. In addition, more women than men participate in studies, which may affect the dissonance between them. However, this syndrome is prevalent similarly in both sexes. The incidence of the syndrome and its characteristics among various racial groups is unknown [4, 11]. In the O'Reardon study, 30% of the study group suffering from night eating syndrome were male. Furthermore, Grilo and Masheb pointed out that 8.8% of men and 9.2% of women with binge eating disorder who had night eating episodes in at least half of the cases, suggested a similar prevalence among both sexes. Also, a similar percentage of women and men in the study of Andersen et al. confirmed waking up at night to eat a meal [4, 11].

Night eating syndrome is associated with a higher BMI (body mass index). Among obese patients, the incidence of NES ranges from 6% to 14%, whereas in a group of American patients before bariatric surgery the prevalence varied between 8% and 42%. However, NES also occurs in people with normal body mass (BMI = 18.5 – 25). Marshall et al. indicated that half of people who were overweight and had NES, reported normal body mass before the episodes of night eating started. This suggests that the nocturnal food syndrome may be one of the causes of becoming overweight and obese [4, 12].

The night eating syndrome was also reported in 15% of people being treated for binge eating disorder (BED) [4].

Among patients with type 1 and type 2 diabetes, the percentage of patients with NES is indicated to be 9.7% [13]. A four-center study conducted by Allison et al. on a group of 845 patients showed that the prevalence of night eating syndrome among obese people with type 2 diabetes is about 3.8%, while in the study of Morse et al. on a group of 714 people it was proven that NES affects 9.7% of patients with diabetes. In the study of Kenerdy et al. type 2 diabetes was confirmed along with coexisting eating disorders in young people [5].

Apart from patients with eating disorders, night eating syndrome also affects patients with mental and sleep disorders. The prevalence of NES among patients treated psychiatrically in outpatient clinics who met the diagnostic criteria was around 12.3%, whereas among persons applying to centers dealing with sleep disorders, the percentage was 5.8% [11, 13].

A study conducted by Lundgren et al. at two universities in the United States showed a fairly high frequency of night eating syndrome among patients in outpatient psychiatric centers, 16.5% met criteria that were confirmed by an individual interview. Higher results were obtained by Saraçlı et al., where, among the same group of patients, 22.4% met the diagnostic criteria of night eating syndrome. On the other hand, in a group of obese patients with schizophrenia or schizoaffective disorder, 12% met the full criteria based on the interview, while 8% met the criteria only on the basis of NEQ. Orhan et al. achieved a significantly higher score – in the group of depressed patients, 35.2% met the NES criteria [14, 15, 16, 17].

Night eating syndrome is often found in people experiencing stressful life events, but their role in the emergence and manifestation of symptoms is ambiguous. Pawlow et al. showed that the intensity of anxiety responses and anxiety as a trait in people suffering from night eating syndrome was higher than in healthy adults. In addition, the NEQ score correlated with the severity of anxiety among the study group. In a study comparing non-obese persons suffering from NES and healthy individuals without obesity, results showed that the former reported a much higher level of experienced stress and there was a higher probability that they met the diagnostic criteria defined during anxiety disorder interviews in the past (47.4%), compared to the control group (9.1%). In one study, people with night eating syndrome and comorbid binge eating disorder scored more points on the anxiety assessment scale on both state and trait anxiety, than those who only had NES. However, in a

study on the treatment of patients with NES, the majority (82.5%) reported only the minimum level of anxiety [11, 18].

## Conclusions

Based on the presented work, the following conclusions can be drawn:

- People who have been diagnosed with NES should be monitored for stress and anxiety disorders. Consideration should be given to the use of appropriate treatment methods, such as relaxation training or exercises in coping skills.
- Night eating syndrome can be inductive to becoming overweight and obese. Further research into this health problem is recommended.
- Inclusion of night eating syndrome during diagnosis in patients with type 2 diabetes, insomnia, and other eating disorders or mental health problems should be taken into account.

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