
In The Name Of God

NIGHT EATING SYNDROME

What is Night Eating Syndrome?

- The Night Eating Syndrome (NES) was first described in 1955 by Albert Stunkard as a disorder characterized by morning anorexia, evening hyperphagia, and insomnia.

- Allison and colleagues proposed diagnostic criteria for NES in the absence of clear identification in the DSM IV-TR. Key criteria include consuming over 25% of daily calories after dinner or having at least two night eating episodes per week. Patients must recall and describe the night eating .

- For the first time, NES was officially included in the DSM-5 among the Other Specified Feeding or Eating Disorder (OSFED).

Diagnostic criteria for NES

1. **Core criteria (One of the following):**
   A. Evening hyperphagia and/or
   B. Nocturnal awakenings with food ingestion (at least 2 ×/week)

2. **Three of five associated symptoms:**
   A. Insomnia: Sleep initiation and maintenance insomnia
   B. Morning anorexia: Either in the form of lack of desire to eat in the morning or skipping breakfast more days than not
   C. Urges to eat at night
   D. Depressed evening mood
   E. A belief that one must eat to sleep

Diagnostic criteria for NES

3. Awareness and recall of evening and nocturnal eating episodes are present.

4. The disorder is associated with significant distress and/or impairment in functioning.

5. The disordered pattern of eating has been maintained for at least 3 months.

6. The disordered pattern of eating is not better explained by binge-eating disorder or another mental disorder, including substance use, and is not attributable to another medical condition or to an effect of medication.

7. The Disorder is not better explained by changes in the sleep-wake cycle(eg;night shift work)

EPIDEMIOLOGY

- The prevalence of NES is estimated to be 1.1%–1.5% in the general population and 6%–16% in obese individuals.
- Moreover, it was observed that there was an increase in obesity level and prevalence of NES. The prevalence of NES was found to be 15% in obese individuals and 42% in morbidly obese individuals.
- Up to 65% of patients undergoing bariatric surgery demonstrate symptoms of NES.
- The estimated prevalence of NES among patients with EDs ranges from 5% to 48%.
- There is also NES was estimated to exist in among 3.8%–12.4% of patients with DM.

EPIDEMIOLOGY

Prevalence of night eating syndrome

Population	%
General population	1.1–1.5
Obese individuals	6–16
Bariatric surgery candidates	17.7–64
Binge eating disorder	15–44
Bulimia nervosa	9–47.1
Anorexia nervosa	9.4
Psychiatric outpatients	12.4–22.4
Schizophrenia	12
Major depression	21.3–35.2
Diabetes mellitus	3.8–12.4

- NES typically begins during late adolescence but it is usually not diagnosed until complications begin to arise later in adulthood.
- Children rarely have this disorder.
- The onset of NES was related to stressful events
- NES appears to be long lasting with periods of remission and relapse, often tied to life stressors.

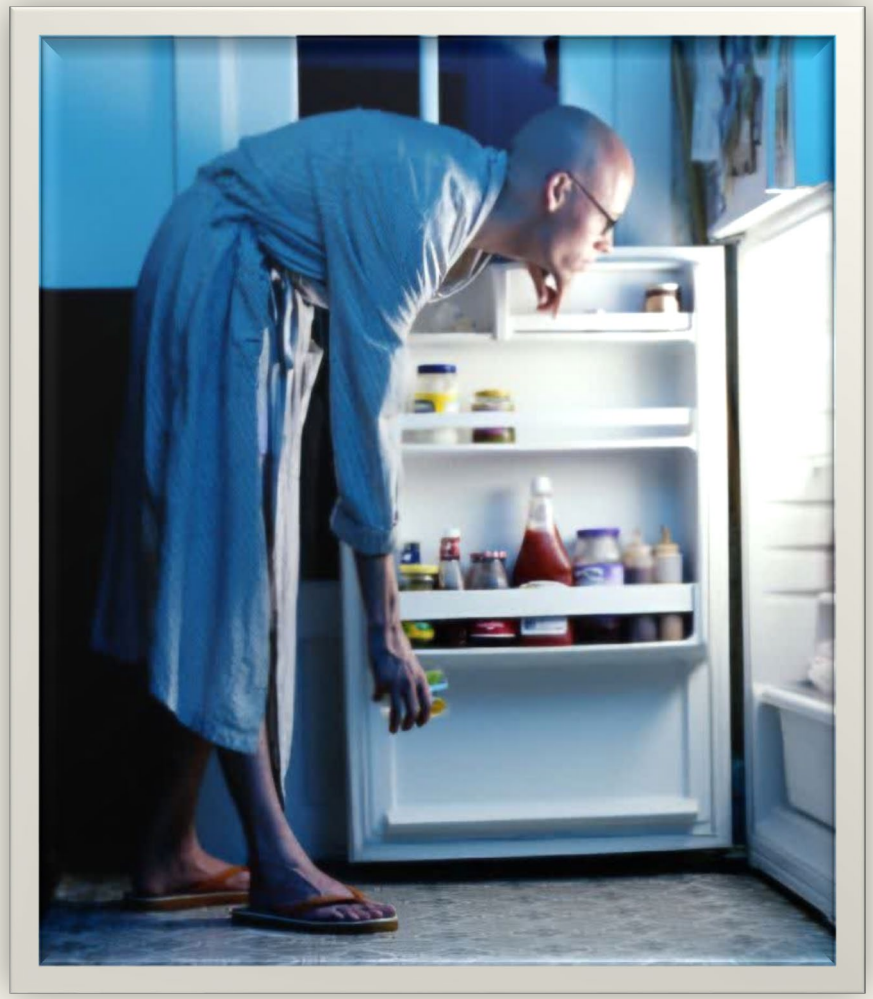
- People in their early adulthood are more of having a risk of NES, So ,Adolescent patients exhibiting conditions including depression, eating disorders, insomnia, and high levels of stress should be monitored for the development of night eating symptoms.

Measuring NES

1. Night Eating Questionnaire(NEQ)

2. Night Eating Diagnostic Questinnaire(NEDQ)

3. Night Eating Syndrome History and Inventory(NESHI)



NEQ

Please answer the following questions carefully and be sure to answer each question.
Thank you for your participation.

1. What time do you usually go to bed in the evening (turn out the lights in order to go to sleep)?	_____ pm
2. What time do you usually get out of bed in the morning?	_____ am
3. On most days, do you experience loss of appetite in the morning?	☐ No ☐ Yes
4. How often do you typically eat breakfast (after your final morning awakening)?	_____ times/week
5. What time do you usually have the first meal of the day?	_____ am/pm (please circle)
6. How much food do you generally eat after 7 p.m. as a percentage (%) from 0 - 100? (Please be specific, for example, 15%)	(0-100) _____%
7. What time do you usually have your evening meal?	_____ pm
8. How much food do you generally eat after your evening meal as a percentage (%) from 0 - 100? (Please be specific, for example, 15%)	(0-100) _____%
8a. For how long, have you been consuming at least this much after your evening meal?	number of years _____ number of months _____
9. On most days, do you have a strong urge to eat between dinner and sleep onset and/or during the night?	☐ No ☐ Yes
10. Do you have trouble falling asleep at night?	☐ No ☐ Yes
10a. If YES, how many times each week?	_____ times/week
11. Do you have trouble staying asleep at night?	☐ No ☐ Yes
11a. If YES, how many times each week?	_____ times/week
11b. If YES, how many times each week do you get out of bed during these awakenings?	_____ times/week ☐ none
12. How many times each week do you awake from sleep during the night to use the bathroom?	_____ times/week ☐ none

What are the causes of night eating syndrome?

Psychological causes of night eating syndrome:

1:Stress and emotion regulation:

For many with NES, eating becomes a way to cope with stress or negative emotions temporarily.

2:Personality Traits:

In the context of NES, it can be postulated that individuals with higher levels of impulsivity may be more prone to night binges . This is because impulsivity often leads to a lack of self-control, which could potentially result in overeating or binge eating during the night.

3:Mental health conditions:

There is a notable correlation between night eating syndrome and mental health disorders such as depression, anxiety.....with food being used to self-medicate, whether consciously or unconsciously.

Environmental and lifestyle causes of night eating syndrome

1: Dieting and irregular meal patterns

2: Lifestyle stressors

Physiological causes of night eating syndrome:

1: Circadian Rhythms :

Some researchers have characterized NES as a delayed circadian pattern of food intake.

The dysregulation of the sleep–wake rhythm and appetite in subjects affected by NES leads to a high caloric intake in the evening/night, compromising sleep quality and reducing appetite during the day.

2:Genetics:

- There's a gene called PER1 that's thought to play a role in controlling your biological clock. Scientists believe a defect in the PER1 gene could cause NES.
- Five times more likely to have first-degree relative with NES

Physiological causes of night eating syndrome:

3:Hormonal factors;

- Abnormal neuroendocrine patterns and NES:

Serum cortisol level was elevated among individuals with NES, consistent with this being a stress related disorder and increase in cortisol, which increases the sensation of hunger and reduces sleep.Additonally, the usual rises of both melatonin and leptin levels at night were blunted among those with NES,suggesting that these hormones were not serving their usual functions, at this time, of maintaining sleep and suppressing hunger, respectively.

- High level of serotonin
- Abnormal overactivation of hypothalamic-pituitary-adrenal axis
- Studies have shown that in subjects with NES, there is a delay in the secretion of Leptin, Ghrelin, and Cortisol which play a crucial role in controlling appetite, satiety, and sleep .
- Other studies link NES to a delayed release of melatonin, a sleep-promoting hormone

Comorbid Conditions

1. Other eating disorders (especially BED,BN)
2. Substance use disorder (alcohol use disorder)
3. Anxiety disorders (GAD)
4. Mood disorders (especially current and lifetime MDD)
5. Sleep disorders (Sleep apnoea and insomnia or other sleep problems)

1. Diabetes mellitus or hyperglycaemia (reported a significant correlation between NEQ scores and HbA1C)
2. Hypercholesterolemia
3. HTN
4. Cardiovascular disease
5. Obesity

The frequency of NES was higher in obese individuals compared to normal-weight individuals. NES was observed more frequently as BMI increased in obesity groups.

Unlike some other EDs, such as Anorexia Nervosa, NES is not dependent on an individual's Body Mass Index (BMI).

NES can occur in people within the normal range of weight corresponding to their age and height, however, is most found and researched in individuals with obesity .

This is important because **NES** has been found to be a risk factor for an earlier onset of obesity and is related to higher rates of depression and lower self-esteem.

Night eating syndrome and obesity

Obesity and NES

- Overall, comorbidity of NES and obesity has been linked to a poorer prognosis for long-term weight loss and maintenance, especially in bariatric surgery patients.
- In fact, NES was first described among individuals with unsuccessful weight loss management.
- These findings suggest the presence of deleterious effects of NES on weight loss management.
- Therefore, it is important to address NES symptoms in weight loss approaches.


Differential Diagnosis?
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1. Night Eating Syndrome (NES) and Sleep-related eating disorder (SRED)

- Although nocturnal eating episodes are an important feature of NES, these episodes are not solely occurring in NES.SRED is characterized as recurrent episodes of involuntary eating and drinking during sleep(mostly, in the first 3 h after falling asleep)and is considered as parasomnia rather than an eating disorder.
- SRED can be differentiated from NES by the unawareness of nocturnal eating episodes(in a state of total or partial unconsciousness) ,higher comorbidity with other sleep disorders such as sleepwalking and restless legs syndrome.
- A variety of medications and substances can precipitate SRED, including psychotropic medications (eg, anticholinergics, lithium, antipsychotics) and sedative-hypnotic agents, most notably the nonbenzodiazepine benzodiazepine receptor agonists (eg, zolpidem, zaleplon, eszopiclone)

- Unusual consumption of inedible foods and/or substances is also seen in patients with SRED, whereas the most common food choices in NES are breads, sandwiches, and sweets.

- Finally, it should be noted that some patients with nocturnal eating problems might be unable to differentiate between NES and SRED. Therefore, a thorough sleep history is essential to differentiate NES from SRED.

- Further sleep analysis such as polysomnography or videopolysomnography may be helpful in especially complicated cases.

Differential diagnosis between night eating syndrome and sleep – related eating disorder	NES	SRED
Nocturnal ingestion	+	+
Morning anorexia	+	+
Alterations level of consciousness	_	+
Amnesia of nocturnal event	_	+
Possible ingestion of harmful or toxic substances	_	+
Frequent association with sleepwalkers	_	+
Frequent comorbidity with PLMD,RLS or OSA	_	+

2)NES and BED

Clinical features	BN/BED	NES	SRED
Morning anorexia	Usually no	Yes	Yes
Evening hyperphagia	No	Yes	No
Daytime food cravings	Yes	Yes (evening only)	No
Nocturnal ingestions	Rarely	Yes	Yes
Awareness of nocturnal eating episodes	Yes	Yes	Clouded
Amnesia for events	No	No	Yes
Polysomnographic study	Normal	Low sleep efficiency	Sleep disorder found (e.g. Sleep apnoea, restless legs, sleep walking)
Treatment	CBT SSRIs Topiramate	Sertraline Other SSRIs (?) Topiramate (?)	Treat sleep disorder Dopamine agonists Topiramate


Treatment of NES

1)Cognitive behavioral therapy (CBT):

●Core components of CBT can be summarized as follow:
1)psychoeducation about NES and healthy eating, 2) eating modification, 3) relaxation strategies, 4) establishing sleep hygiene, 5) cognitive restructuring, 6) improving physical activity, and 7) establishing social support.

●Treatment typically focuses on behavioral techniques (e.g., closing the kitchen at a specific time and delaying getting out of bed), increased awareness of thoughts and behaviors associated with night eating (i.e., “If I don’t eat I won’t fall back to sleep”), cognitive restructuring, and sleep hygiene behaviors.

2)phototherapy:

● Bright light therapy improves symptoms of night eating syndrome , mood and sleep quality.

3)Progressive muscle relaxation (PMR)

● the controlled treatment trial of PMR for NES demonstrated a significant reduction in evening hyperphagia and increase in morning appetite ,the treatment have also evidenced reductions in stress, anxiety, fatigue, anger, depression and cortisol levels.

1)SSRI (Sertraline , Escitalopram)

- A recent study has found significant improvements in key night eating syndrome symptoms, including nocturnal ingestion and evening hyperphagia, with **sertraline**.

- Escitalopram has also been studied, but results have been contradictory, with some studies showing no effect and others evidencing significant improvement of NES symptoms.

2)Melatonin ,Ramelteon:

- Considering the low side effect profiles, melatonin and other melatonin agonists such as Ramelteon can be options for NES treatment.
- **Ramelteon** may be efficacious in the treatment of **sleep relating eating disorder and NES.**

3)Topiramate:

- Topiramate should be reserved for cases **resistant to treatment with SSRIs**.


THANK YOU FOR YOUR ATTENTION