OPEN ACCESS

ISAR Journal of Medical and Pharmaceutical Sciences

Volume 3, Issue 3, 2025 | Page: 10-14

Abbriviate Title- ISAR J Med Pharm Sci

ISSN (Online)- 2584-0150

https://isarpublisher.com/journal/isarjmps

"Night Eating Syndrome": Causes, Consequences, and Nutritional Intervention

Dr V. Bhavani M.Sc, M.Phil, Ph.D, RD

Dietician, ESIC Medical College and Hospital, KK Nagar, Chennai

Secretary, Indian Dietetics Association, Chennai Chapter.

***Corresponding Author**

Dr V. Bhavani

Dietician, ESIC Medical College and Hospital, KK Nagar, Chennai.

Article History
Received: 15.01.2025
Accepted: 02.03.2025
Published: 20.03.2025

Abstract: - Night Eating Syndrome (NES) is a complex eating disorder characterized by excessive food intake during the evening and night time, often linked to emotional distress, circadian rhythm disruptions, and poor dietary habits. This paper explores the causes and consequences of NES, with a specific focus on hydration, emotional eating, and dietary strategies as potential intervention approaches. Emotional eating, a common feature of NES, is influenced by stress, mood disorders, and psychological distress, leading individuals to consume food as a coping mechanism. Additionally, dehydration plays a crucial but often overlooked role in NES, as the body may misinterpret thirst as hunger, triggering late-night cravings and reinforcing unhealthy eating patterns. Poor hydration can also contribute to fatigue, irritability, and increased emotional eating, further exacerbating NES symptoms. Effective dietary strategies, including balanced meal timing, nutrient-dense food choices, and hydration-focused interventions, may help regulate hunger cues, stabilize mood, and improve circadian alignment. This review highlights the need for a holistic approach in managing NES, incorporating psychological, nutritional, and behavioural modifications to promote healthier eating patterns and overall well-being.

Keywords: Night Eating syndrome, obesity, hunger, emotions, sleep, Hydration.

Introduction

Night Eating Syndrome (NES) is characterized by a rise in food consumption in the evening and at night, frequently coupled with nocturnal awakenings related to eating. In contrast to binge-eating disorder, NES is typified by a dysregulation of appetite hormones such cortisol, leptin, and ghrelin as well as circadian misalignment.

According to the DSM-V criteria, patients with NES must also experience at least three of five associated features:

(a) A lack of desire to eat in the morning and/or breakfast skipped four or more mornings per week.

(b) A strong urge to eat between dinner and bedtime and/or during the night.

(c) Sleep-onset and/or sleep maintenance insomnia at least four nights per week.

(d) A belief that one must eat in order to sleep.

(e) Depressed or worsening mood in the evening.

This constellation of symptoms must be accompanied by marked distress or impairment over a period of three months or more. Genetic, environmental, psychological, and neurological variables are all part of the complex etiology of NES

Pathophysiology of Night Eating Syndrome

(a) Circadian Rhythm Dysregulation

Disturbances in circadian rhythm, specifically in the secretion of cortisol and melatonin, have been associated with NES. People with NES have delayed melatonin onset, which increases their night-time appetite and food consumption. Stress-related eating behaviours are partly caused by dysregulated cortisol cycles.

(b) Hormonal Imbalances

NES patients have higher evening levels of the hunger hormone ghrelin, which encourages more eating at night. On the other hand, satiety-regulating leptin levels are below normal, which results in less control over appetite. Dietary therapies are crucial since the illness is made worse by insulin resistance and poor glucose metabolism.

(c) Gut Microbiota and Neurotransmitter Regulation

According to recent studies, gut microbiome is important in NES. Serotonin and dopamine levels can be affected by dysbiosis in the gut microbiota, which can affect mood and appetite control. Restoring gut health through probiotic and prebiotic therapies may alleviate symptoms of NES.

Cite this article:

Bhavani, V., (2025). "Night Eating Syndrome": Causes, Consequences, and Nutritional Intervention. *ISAR Journal of Medical and Pharmaceutical Sciences, 3*(3), 10-14.

Manifestations of NES

- Habitually eating at least 25% of daily calories after dinner
- Waking up during the night to eat at least twice a week
- Being consciously aware of night eating episodes, and able to recall them afterward
- Skipping breakfast or feeling reluctance to eat in the morning, at least four times per week
- Cravings for food after dinner or during the night
- Trouble falling or staying asleep at least four nights per week
- A belief that eating is necessary to fall asleep
- Depressed mood, particularly at night
- Experiencing distress or negative effects on daily functioning due to night eating episodes

Complications of NES

(a) Weight Gain and Obesity

Weight gain and an elevated risk of obesity are among the most serious side effects of NES. People with NES may have trouble effectively burning the extra calories they ingest since they consume a significant amount of their daily calories at night. Eating late at night is frequently linked to unhealthy, high-calorie, and carbohydrate-rich food choices, which exacerbate weight gain. This can eventually result in obesity, which raises the risk of many other illnesses, including as diabetes, heart disease, and joint issues

(b) Metabolic Disorders and Diabetes

NES has been associated with metabolic problems and insulin resistance, which raises the risk of type 2 diabetes considerably. Blood sugar levels fluctuate when the body's normal glucose metabolism is disrupted by eating heavy meals at night. These erratic trends may reduce insulin sensitivity, making it more difficult to properly control blood sugar. This can develop into diabetes and other metabolic disorders if it is not controlled.

(c) Cardiovascular Problems

Frequent late-night eating can have a detrimental effect on heart health, particularly when it involves foods heavy in fat and sugar. High blood pressure, higher cholesterol, and an increased risk of heart disease can result from consuming more calories at night and engaging in less physical activity. According to studies, eating at odd times, especially at night, might disrupt the body's circadian rhythm, which can impact cardiovascular health and raise the risk of hypertension and other heart-related disorders.

(d) Gastrointestinal Issues

Because of their erratic eating habits, people with NES frequently have digestive issues. Because lying down shortly after eating facilitates the flow of stomach acid back into the esophagus, eating late at night, especially before bed, can result in heartburn and acid reflux. Frequent eating at night can also worsen digestive health by causing indigestion, bloating, and gastrointestinal discomfort.

(e) Poor Sleep Quality

NES seriously interferes with regular sleep habits because it requires waking up in the middle of the night to eat. Regular awakenings can result in fragmented and poor-quality sleep, which can impair cognitive function, cause daytime weariness, and make people irritable. Hormonal imbalances associated with poor sleep quality can impact appetite management, increasing cravings and making it harder to maintain a healthy diet. Long-term health issues, such as an elevated risk of obesity, diabetes, and mental health disorders, can be exacerbated by chronic sleep deprivation brought on by NES.

(f) Depression and Anxiety

Mood disorders, especially anxiety and depression, are closely linked to NES. Feelings of low self-worth might be exacerbated by the guilt, frustration, or embarrassment that many people with NES express over their eating behaviours. The strain of being unable to regulate one's eating at night might exacerbate feelings of depression and anxiety. Moreover, NES-induced sleep disturbances might impair emotional stability and cognitive function, making mood disorder management even more challenging.

(g) Stress and Emotional Distress

Stress is a major contributing factor to NES as well as a result of it. Eating at night is a common coping strategy for people with NES who are experiencing stress, emotional anguish, or unsolved psychiatric concerns. However, this pattern frequently results in a vicious cycle because eating temporarily relieves the disorder, which is then reinforced by guilt and stress related to the activity. Without expert assistance, overcoming NES can be difficult due to this persistent mental distress.

(h) Low Self-Esteem and Social Impact

NES has a major effect on body image and self-esteem. Many people with NES experience social disengagement and avoidance of settings when their eating behaviours could be observed because they feel ashamed of their eating patterns. This can eventually lead to a diminished quality of life and feelings of loneliness and isolation. It can be more difficult to overcome emotional eating disorders when they are fuelled by negative body image and self-criticism.

(i) Disrupted Daily Routine and Productivity

NES patients' nocturnal eating habits might affect their day-to-day activities, such as their connections with others, their jobs, and their education. People with NES frequently feel exhausted, lethargic, and unmotivated during the day because they have trouble sleeping. This lack of energy can impair concentration, productivity, and general performance in day-to-day tasks. This can eventually affect academic achievement, professional development, and interpersonal relationships, resulting in more stress and annoyance.

(j) Difficulty Controlling Food Intake and Appetite Dysregulation

Controlling hunger is a common problem for people with NES. The disease is associated with an imbalance in hormones that regulate hunger, including ghrelin and leptin, which govern

sensations of fullness and hunger. People who have NES may therefore feel less hungry throughout the day and have more desires at night. Because of this imbalance, it is challenging to have a regular meal schedule, which results in irregular food consumption and bad eating habits.

(k) Increased Risk of Other Eating Disorders

People who suffer from emotional eating, bulimia, binge eating disorder (BED), or other eating disorders are frequently discovered to have NES. Additional disordered eating behaviours may be more easily developed as a result of the ongoing obsession with food and overnight eating episodes. Some people with NES may develop binge eating disorder, which involves consuming enormous quantities of food in one sitting, or they may develop emotional eating as a coping mechanism for stress and unpleasant feelings.

Emotional Eating

(a) Understanding Emotional Eating

The act of eating when one is emotionally distressed rather than physically hungry is known as emotional eating. People who are stressed, anxious, bored, depressed, or frustrated turn to emotional eating as a coping mechanism. Negative feelings can set off an unhealthy cycle of emotional eating, when the impulse to eat is triggered by guilt or other emotional pain, which in turn feeds the overeating habit. It can be challenging to distinguish between genuine hunger and the emotional need for comfort when emotional eating develops into a deeply set habit. Emotional eating, when coupled with NES, can exacerbate eating habits at night, further impairing sleep and general well-being.

(b) The Link Between Night Eating Syndrome and Emotional Eating

Emotional eating and NES are closely related because they share a number of behavioural and psychological characteristics. Since many people use food as a coping strategy to deal with stress, worry, or sadness, emotional eating plays a big role in NES.

Stress and cortisol dysregulation are two of the main biochemical processes that connect emotional eating disorder (NES) to emotional eating. Cortisol, a hormone that is crucial for controlling hunger, is elevated in response to prolonged stress. Cravings for meals high in calories and carbohydrates, which are frequently consumed during episodes of emotional eating, might be triggered by elevated cortisol levels. According to research, people with NES frequently experience elevated stress reactions, which increases their susceptibility to emotional eating, especially at night.

Additionally, there is a substantial correlation between NES and mood disorders, specifically anxiety and sadness. A greater desire to eat is a result of the emotional pain that many people with NES report experiencing in the evening. Dopamine levels in the brain are momentarily raised by eating, which results in a fleeting feeling of comfort and pleasure. However, it is challenging to interrupt the behaviour because this loop perpetuates the night-time emotional eating habit.

The disturbance of circadian rhythm is another aspect that connects NES and emotional eating. Hunger and sleep cycles are regulated by the body's innate biological clock. This rhythm is frequently out of sync in people with NES, which causes them to have more appetite and cravings at night. These cycles can be further upset by emotional turmoil, which can result in a delayed hunger signal and a greater desire to eat late at night.

Finally, a key component of both emotional eating and NES is the use of food as a coping strategy. A lot of people use food as a coping mechanism for feelings like irritation, grief, or loneliness. This conduct perpetuates an emotional reliance on food, establishing a vicious cycle in which eating behaviors are triggered by unpleasant emotions, which are then followed by feelings of shame or guilt. An unhealthy relationship with food and disordered eating patterns may result from this over time.

(c) Consequences of NES and Emotional Eating

Emotional eating and NES together can have detrimental effects on one's physical and mental well-being. Weight gain and obesity are among the most notable consequences, since consuming too many calories at night can result in increased fat storage and metabolic problems. Because irregular eating patterns might impact blood sugar homeostasis, NES has also been connected to insulin resistance and diabetes. Furthermore, NES is linked to an increased risk of heart disease and high blood pressure, among other cardiovascular conditions.

Emotional eating and NES both psychologically exacerbate emotional suffering. Many people's eating habits cause them to feel guilty, ashamed, and frustrated, which can exacerbate mood disorders including anxiety and depression. Since getting up several times to eat disturbs sleep patterns, the cycle of emotional eating and overnight food consumption frequently results in poor sleep quality. This can impact a person's everyday life and productivity by causing daytime weariness, trouble focusing, and a decline in general cognitive function.

Dietary Interventions

(i) <u>Meal Timing and Distribution</u>

(a) Early Time-Restricted Feeding (eTRF)

Early time-restricted feeding, which concentrates food intake in the first half of the day, is a successful strategy for NES. This method lessens nocturnal hunger signals and is in harmony with circadian rhythms. Research indicates that eTRF increases metabolism, decreases evening ghrelin levels, and improves insulin sensitivity.

(b) Structured Meal Plans

Having a regular breakfast, lunch, and supper schedule can help control hunger signals. Compensatory night eating is less likely when extended periods of fasting throughout the day are avoided.

(ii) <u>Macronutrient Composition</u>

(a) High-Protein Intake

Meals high in protein, especially at breakfast and dinner, have been demonstrated to increase feelings of fullness and decrease cravings. Protein promotes muscle maintenance, which is critical for metabolic health, and affects the release of hormones that control appetite.

(b) Complex Carbohydrates and Fiber

Blood sugar levels are stabilized and satiety is prolonged by consuming complex carbs and foods high in fiber, such as whole grains, legumes, and vegetables. Refined carbohydrates should be avoided at night to avoid glucose surges that might cause nocturnal hunger.

(c) Healthy Fats

Including healthy fats from foods like avocados, nuts, seeds, and olive oil promotes fullness and lessens night-time cravings for processed and high-sugar foods.

(iii) Micronutrient Considerations

(a) Magnesium and Zinc

Increased overnight awakenings and food cravings have been associated with deficiencies in zinc and magnesium. The diet should contain foods like leafy greens, nuts, and seeds that are high in these minerals.

(b) Vitamin D

Sleep difficulties and depression symptoms, which are prevalent in NES, have been linked to low vitamin D levels. Maintaining sufficient consumption through diet and supplements may enhance mood and quality of sleep.

(iv) Role of Probiotics and Prebiotics

Changes in the gut microbiome have been linked to NES. Yogurt, kefir, kimchi, and fermented vegetables are examples of foods high in probiotics that can help control serotonin production and lessen food cravings. Prebiotic fibers help maintain the equilibrium of the gut microbiota and are present in whole grains, garlic, onions, and bananas.

(v) Hydration and Night Eating Syndrome

(a) The Role of Hydration in Appetite Regulation

Keeping hydrated throughout the day can help regulate hunger signals and reduce the urge to eat at night. The brain can sometimes confuse thirst with hunger, causing people to eat when they actually need fluids. This confusion is especially important for people with NES, as dehydration can exacerbate late-night cravings, increasing the likelihood of consuming unnecessary food.

(b) Dehydration and Increased Late-Night Cravings

Feelings of hunger or cravings, especially for foods high in sugar or sodium, might be signs that the body needs fluids when it is dehydrated. Dehydration can exacerbate nocturnal eating patterns, as many people with NES already suffer with emotional eating and impulse control. Dehydration can also cause weariness and irritability, which can exacerbate emotional eating behaviors and NES symptoms.

(c) Hydration and Emotional Eating in NES

A steady circadian rhythm can be maintained by consuming enough water, as the body's hydration requirements change throughout the day. NES is linked to irregular circadian cycles, which result in a decrease in morning hunger and an increase in night-time food intake. Maintaining adequate water promotes metabolic functions and aids in sleep-wake cycles, both of which may improve appetite control and lessen episodes of midnight snacking. Reducing nocturnal food consumption and encouraging a more balanced eating pattern may be achieved by drinking enough water during the day, especially in the evening but not too close to bedtime.

(d) Hydration Strategies for Managing NES

1. **Drink Water Throughout the Day** – Staying hydrated consistently can help prevent dehydration-related cravings and reduce the likelihood of mistaking thirst for hunger.
2. **Hydrate Before Meals** – Drinking a glass of water before meals can promote satiety and prevent overeating, especially during evening meals.
3. **Avoid Excessive Caffeine and Sugary Drinks** – Caffeinated and sugary beverages can contribute to dehydration, increase cravings, and disrupt sleep patterns, worsening NES symptoms.
4. **Include Hydrating Foods in the Diet** – Foods with high water content, such as fruits, vegetables, and soups, can help maintain hydration levels and support appetite regulation.
5. **Monitor Hydration Before Bedtime** – While hydration is essential, drinking too much water right before bed can lead to nighttime awakenings, potentially reinforcing the habit of waking up to eat. It's best to drink water earlier in the evening rather than right before sleeping.

Since dehydration can simulate hunger and increase cravings at night, proper water is essential for managing NES. Avoiding needless snacking can be achieved by consuming 8–10 glasses of water each day. Furthermore, drinking herbal teas like peppermint or chamomile in the evening might help you unwind before bed and lessen cravings brought on by stress.

Dietary Guidelines for Night Eating Syndrome

1. **Follow a Structured Eating Schedule:** Maintain consistent meal times to regulate hunger and avoid prolonged fasting periods.
2. **Prioritize Protein Intake:** Include lean proteins (e.g., fish, poultry, tofu, eggs) in breakfast and dinner to enhance satiety.
3. **Choose Complex Carbohydrates:** Opt for whole grains, legumes, and vegetables instead of refined carbohydrates to stabilize blood sugar levels.
4. **Incorporate Healthy Fats:** Consume sources of unsaturated fats such as nuts, seeds, and olive oil to promote satiety.
5. **Increase Fiber Consumption:** High-fiber foods like leafy greens, whole grains, and legumes help prolong fullness and reduce late-night cravings.
6. **Stay Hydrated:** Drink sufficient water throughout the day to prevent dehydration, which can sometimes be mistaken for hunger.
7. **Limit Stimulants in the Evening:** Avoid caffeine and high-sugar foods in the evening to prevent sleep disturbances and nocturnal hunger.

8. **Consume Probiotic and Prebiotic Foods:** Support gut health with fermented foods and fiber-rich plant-based foods.
9. **Practice Mindful Eating:** Pay attention to hunger cues and eat without distractions to prevent emotional eating.
10. **Establish a Relaxing Evening Routine:** Engage in calming activities like reading or meditation to reduce stress-induced nighttime eating.

Behavioral and Lifestyle Strategies

(a) Mindful Eating

People can better regulate their eating habits by using mindful eating practices, such as observing hunger cues and eating in an environment free from distractions.

(b) Cognitive Behavioural Therapy (CBT)

CBT methods can help people recognize and change the thinking patterns that lead to episodes of night eating. Dietary counselling based on cognitive behavioural therapy improves adherence to regimented meal programs.

(c) Sleep Hygiene and Physical Activity

Reducing screen time before bed and adhering to a regular sleep schedule are two ways to improve sleep hygiene and control hunger hormones. Frequent exercise promotes metabolic health and lowers stress-induced eating, especially in the morning.

Pharmacological and Supplementary Interventions

Pharmacological alternatives can be adjuncts to dietary and behavioral measures, which are the cornerstones of managing NES. By altering serotonin levels, selective serotonin reuptake inhibitors (SSRIs) have demonstrated promise in easing NES symptoms. Circadian rhythm realignment may be aided by melatonin supplements. Herbal remedies like passionflower and valerian root have also shown promise in enhancing sleep quality and lowering overnight awakenings.

Conclusion

Night Eating Syndrome (NES) is a multifaceted eating disorder influenced by emotional distress, circadian rhythm disruptions, and poor dietary habits. Emotional eating plays a significant role in NES, as individuals often consume food in response to stress, anxiety, or negative emotions rather than physical hunger. Additionally, hydration status is an important but frequently overlooked factor, as dehydration can contribute to late-night cravings and reinforce unhealthy eating behaviors. The consequences of NES extend beyond weight gain and metabolic issues, affecting mental well-being, sleep quality, and overall health.

Effective management of NES requires a holistic approach that integrates psychological, nutritional, and behavioral interventions. Strategies such as mindful eating, balanced meal planning, emotional regulation techniques, and proper hydration can help individuals regain control over their eating patterns and reduce nighttime food consumption. Addressing the root causes of NES—such as stress, sleep disturbances, and improper hydration—can lead to long-term improvements in both physical and emotional well-being.