

# The night eating syndrome health and social care essay



## **Abstract**

The Night eating syndrome (NES) is an eating disorder which is consisted of evening hyperphagia, insomnia and morning anorexia. It can be classified into four groups through the time of eating episodes and psychological characteristic: depression. The prevalence of NES keeps increasing in general population, especially patients with specific disease. Therefore, in order to diagnose and assess the level of NES, the night eating questionnaire has been modified several times to achieve accurate results. After being diagnosed as having NES, three types of treatment could be adopted: pharmacological treatment, bright light therapy and psychological treatment.

## **Introduction**

### **1. 1 Definition**

Night eating syndrome (NES) was introduced into the scientific literature in 1955 by Stunkard as a food intake pattern of clinical significance among obese individuals. The core symptoms described as characteristic of NES are: nocturnal hyperphagia, insomnia, and morning anorexia. The first criterion, and the most important, is the consumption of large amounts of food during evening or night. The total calories of food intake during the evening eating episode should be at least a quarter of his total calories for the day. The second item is sleeplessness, being not able to sleep until midnight, and the third is morning anorexia with negligible food for breakfast. (Stunkard et al, 1955).

## 1. 2 Prevalence of NES

The prevalence of NES was reported as 1. 6% (Colles, Dixon et al., 2007) in general population samples, the rate was as high as the classic eating disorders: anorexia nervosa, 0. 9% for women and 0. 3% for men; binge eating, 1. 5% for women and 0. 5% for men (Hudson, Hiripi et al., 2007). However, the prevalence rates of NES in special populations were much higher. For example, NES prevalence has been evaluated as 6% to 16% among obese people. (Adami, Campostano, Marinari et al., 2002); 12% among patients diagnosed with schizophrenia or schizoaffective disorders. (Laura, Joseph, Erin et al., 2012)

## 2. Typology

The night eating syndrome could be classified into four subtypes depending on the time of eating episodes and the psychological condition. The largest class is " nondepressed late night eaters". Night eaters belonged to this group eat after 11 p. m., consume more than 50% of the daily caloric intake after 7 p. m. and do not have mood or sleep disturbance. The second class is " nondepressed evening eaters", those individuals eat more than 50% of daily caloric intake after 7 p. m. without eating after 11 p. m., and they don't have mood problems. The third class includes patients who eat after 11 p. m., consume more than 50% daily caloric intake after 7 p. m. and have mood and sleep problems, defined as " depressed late night eaters". The last class is called " depressed evening eaters". Those patients don't eat after 11 p. m., consume more than 50% of daily caloric intake after 7 p. m. and have mood or sleep disturbance. (Ruth H. Striegel-Moore et al.)

### **3. Diagnosis**

#### **3.1 Characteristic of NES**

The definitions of NES have been altered continuously in recent decades. Lack of consistent definition has made cross study comparisons difficult and has impeded diagnosis of the syndrome. However, the consistent diagnostic criteria were reached in 2008 by NES experts in the First International Night Eating Symposium (Allison et al., 2010). The first criterion, evening hyperphagia, is defined as consuming at least 25% daily food intake after the evening meal and/or two or more nocturnal ingestions (post sleep) eating per week. This criterion no more use the specific time frame (eating after 7 p. m.); therefore, the discriminations among culture and individuals regarding the meal timing have been solved. Moreover, it also averts the arbitrary post-dinner time frame which can increase the number of patients meet the criteria, especially among young adults. (Striegel-Moore, Franko, Thompson, Affenito,& Kraemer, 2006). The second criterion, the awareness during eating episodes, can differentiate NES from Sleep Related Eating Disorder (SRED). Patients with NES are conscious when eating at night and can recall the details in the next morning while people with SRED are unconscious when nocturnal ingestions take place. The third criterion requires meeting at least three of the five core descriptors of NES. The first descriptor is an absence of hunger in the morning and/or omission of breakfast four or more mornings per week. This character is not necessarily diagnostic because some persons having NES would take breakfast if their families and friends. The second item is the strong urge to eat after the evening meal and/or during the night, which is considered as a universal

descriptor of NES. Furthermore, patients who wake up and eat might have a more severe level of NES than those who eat after dinner but before (Colles, Dixon, & O'Brien, 2007). The third criterion is feeling difficult to sleep onset or maintained at least four nights per week, which illustrates insomnia as a highly important comorbidity caused by NES (Ceru-Bjork, Andersson, & Rossner, 2001). The fourth descriptor is a belief that one must eat so as to start or return to sleep once awakened. The final descriptor includes psychological condition: depressed and/or a worsening mood during the night, which presents the occurrences of emotional disturbances caused by NES.

### **3. 2 NES and other eating disorders**

NES has been clearly differentiated from binge eating disorder (BED) by two distinct behaviors. First, the energy intake of nocturnal ingestion is limited, which is little to be qualified as diagnosis of binge eating; second, there is a circadian delay that most night eaters consume food late at night, which is not recorded in BED. Compared to the apparent differences between NES and BED, it is more confusing to distinguish NES from sleep-related eating disorder (SRED). The most significant character of SRED is the low level of consciousness of eating and the lack of recall afterwards. (Schenck, Mahowald 1994). By contrast, NES patients are fully awake when nocturnal ingestion take place and they can clearly recall the episodes and food in the next morning. ( Vertrugno et al. 2006).

## **4. Comorbidity**

### **4.1 Eating disorders**

Patients diagnosed as having NES, without the exclusion criteria of other eating disorders, are more easily to have other types of eating disorders than normal individuals. Among patients who were diagnosed with NES, 18.9% reported a lifetime history of at least one type of eating disorder (de Zwaan et al., 2006). Among individuals attending weight loss programs, 36% were evaluated as meeting the criteria for BED (Napolitano et al., 2001). From the opposite perspective, NES has a higher prevalence among people having other eating disorders than in the general population. For instance, among individuals who were treated with BED, 28% of them were reported to have nocturnal eating episodes afterwards. (Grilo & Masheb, 2004).

### **4.2 Obesity**

The prevalence of NES among weight loss treatment seeking populations was clearly higher than that among normal populations, which suggested that NES has a certain association with obesity. Large numbers of studies showed a positive association between NES and body mass index (BMI). (Ceru-Bjork et al., 2001; Colles et al., 2007; Lundgren, Allison, Crow, et al., 2006). Furthermore, NES may also be positively associated with weight gain. When comparing obese and non-obese people in a study, 52% of obese persons with NES said that the nocturnal food intake precede their obesity and the non-obese people stated that they would gain unwanted weight with the time of night eating episodes. (Marshall et al., 2004).

### **4. 3 Depression**

Studies showed that NES would cause the worsening of mood during the night with depression symptoms. Among individuals diagnosed with NES of various BMI indices, 56% of them reported a history of major depressive disorders (de Zwaan et al., 2006), which rate was highly above that of the general population (American Psychiatric Association, 2000). Moreover, persons with NES had higher scores on the Beck Depression Inventory (BD-II; Beck, Steer, & Brown, 1996) and were more likely to meet diagnostic criteria for a lifetime major depressive disorder (52.6%). (Lundgren, Allison, et al., 2008). When comparing the level of depression among patients with BED, NES, and obesity, it was shown that the NES and BED groups had higher levels of depression than the obese group and the differences between NES and BED was slight (Allison, Grilo, et al., 2005). Moreover, patients with comorbid NES and BED had more severe depression problems than patients having NES only. (Colles et al., 2007).

### **4. 4 Sleep disorders**

Although a number of sleep-related eating disturbances have been documented (Schenck, Hurwitz, O'Conner, & Mahowald 1993; Schenck & Mahowald, 1994), the disorder which is most similar to NES is sleep-related eating disorder (SRED). According to the International Classification of Sleep Disorders (American Academy of Sleep Medicine, [AASM], 2005), SRED patients would have recurrent episodes of involuntary eating and drinking during sleep awakening which would have unpredictable problems. Problems include consumption of inedible food or substances, insomnia caused by recurring nocturnal ingestion, sleep-related injury, and dangerous related to

the preparation or quest for food, morning anorexia, and/or adverse health consequences such as weight gain.

#### **4. 5 Substance use**

Studies focusing on lifetime substance abuse among NES patients and normal people are limited, therefore, whether there is an association between NES and substance abuse still need more studies. However, among psychiatric outpatients, NES patients had a higher rate of substance use than normal persons, around 30. 6%. (Lundgren, Allison, Crow et al., 2006). Furthermore, there were several studies showing a positive and bi-directional association between sleep disorders and substance use disorder (Bootzin & Stevens, 2005). The reason was that people with sleep problems may get more sedatives or alcohol to alleviate their difficulties and the substance abuse also worsen sleep quality.

#### **4. 6 Anxiety and stress**

NES patients were reported to have worse and more frequent night eating episodes when feeling stressed and anxiety.(Allison et al., 2004; Spaggiari et al., 1994; Stunkard, et al., 1955). It has been found that both state and trait anxiety levels among NES patients were above the healthy adults, even reach the highest value. (Pawlow, O'Neil, and Malcom, 2003). Moreover, patients with both NES and BED had higher trait anxiety level than patients have NES only. (Napolitano et al., 2001).

### **5. Assessment**

The latest and the most comprehensive 14-item version of the NEQ was published in 2008 by Allison and colleagues (Allison et al., 2008). The



psychological aspects of NES can be evaluated by the newly added five, including the cravings and feelings of control over nocturnal eating and whether there is a feeling of compulsion to eat in order to go back to sleep. One more item was designed to evaluate the level of awareness during nocturnal eating episodes so as to distinguish NES from SRED. (Shenck & Mahowald, 1994). Moreover, three mood questions about mood conditions were excluded in order to decrease the percentile of mood questions. The current NEQ includes two items to evaluate morning hunger and the timing of first food consumption, four items about food cravings and control over eating behavior both before bedtime and during nighttime awakening, one item testing initial insomnia and one testing food quantity consumed after dinner, three items testing frequency of nocturnal awakenings and food ingestion, two of mood disturbance, and one about awareness of nocturnal eating episodes. In summary, the NEQ is a brief and efficient assessment tool which can be utilized in various settings. It can help to explore useful information for future diagnosis through studying the problems the NES patients commonly have; however, the amount of food is hard to be precise according to food recall during the interview. For example, the evaluation of evening hyperphagia may be unreliable for the following reasons: firstly, it is usually hard for people to estimate the number of calories consumed after evening meals separately from what they consumed during the meals; secondly, obese people tend to report smaller amount of food intake. (Lindroos, Lissner, & Sjostrom, 1993). Therefore, an interview and momentary assessment of food intake, or 24-hour food recall, could be adopted so as to get a more accurate assessment.

## **6. Current treatment**

According to the characteristics of NES, there have been three major types of treatment: pharmacological treatment, bright light therapy and psychological treatment.

### **6.1 Pharmacological treatment**

Recorded by the first case study, NES patients were treated with dexfenfluramine (15-30mg), a serotonergic anorectic drug. The results showed that few were completely recovered, while others have decreased more than 50% nocturnal eating episodes and restrained more than 70% of their caloric intake. (Spaggiari et al., 1994). Furthermore, a randomly controlled clinical trial assigned its NES patients to placebo and sertraline for an eight-week double blind flexible dose study. The results showed clear decrease in frequencies of nighttime awakenings (from 8.8 to 2.3 per night), post evening meal caloric intake (from 47.3% to 14.8% of daily total calories), and night eating episodes (from 8.3 to 1.6) in the sertraline group. Moreover, overweight patients in the sertraline group also reported large weight loss than overweight patients in the control group. (O'Reardon et al., 2006) Therefore, the confluence of evidence suggests a possible serotonergic basis to NES that may be resolved with sufficient doses of selective serotonin reuptake inhibitors (SSRIs), particularly setroline. And recent study showed that persons with NES showed greater serotonin transporter uptake ratios in the midbrain when compared with healthy controls, which shows insufficient serotonin availability in these regions. (Lundgren, Newberg, et al., 2008).

## **6. 2 Bright light therapy**

Given a possible serotonergic basis to NES, bright light therapy was tried in case studies. Friedman, Even, Dardennes, and Guelfi (2002) reported that a 51-year-old obese woman with NES and comorbid major depressive disorder was successfully treated. After two-year maintenance treatment of paroxetine, the depression got worsen with a dose of fourteen morning sessions of 10, 000 lx light (the equivalent of full daylight); however, the NES was successfully treated after another 12 sessions of light therapy. Another study showed that a 46-year-old normal weight man with NES and depressive disorder responded positively to a fourteen consecutive morning session of 10, 000 lx light. In conclusion, these results supported that bright light therapy do have a positive influence on NES and comorbid, and more studies could be focused on this method.

## **6. 3 Psychological treatment**

Due to the reason of high cost of medication and unpredictable side effects, lots of patients do not want to take medicines. Therefore, psychologists, who are equipped with knowledge and skills to identify and evaluate interventions for NES and its comorbidities, become their second choice. And the changed cognition, attitude and behaviors have been proved efficient and helpful when applied to patients of different health physical and psychological conditions. (Brown et al., 2002). In a case study employing a multiple baseline design, behavioral self-management strategies were put into practice in the treatment of NES. A number of interventions were reported as successful, including having self-instruction before sleep, putting tips on the refrigerator, maintaining food diary and nocturnal ingestion

frequency record, limiting pre-sleep consumption, avoiding liquid intake after evening meals, and placing obstacles from getting food easily. 7.

Conclusions NES is not as well-known as other eating disorders; therefore, it is more likely to be ignored for lacking sufficient cognition. Once diagnosed having NES, evaluation of sleep problems, mood disturbance, anxiety and depression level, eating episodes and substance abuse is critical to estimates the severity of night eating syndrome. However, the treatment for NES still remains limited, patients treated with serotonergic-based medications, bright light therapy, or psychological treatment are showing more improvement and are giving suggestions for future intervention development. For instance, clinical psychologists could pay more attention to interventions in outpatient settings, particularly among specific groups—patients with obesity, eating disorders, or insomnia. Increasingly comprehensive diagnosis methods and treatment can restrain the occurrence and alleviate symptoms of night eating syndrome. (Jillon, 2011).